



1/31 G. File
C: JG ✓

PATSY H. NANBU
Vice President
Regulatory Affairs

FILED

2014 JAN 31 P 3: 58

PUBLIC UTILITIES
COMMISSION

January 31, 2014

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

Dear Commissioners:

Subject: Hawaiian Electric Company, Inc.,
Hawai'i Electric Light Company, Inc.
Maui Electric Company, Limited
2013 Net Energy Metering Status Report

Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., and Maui Electric Company, Limited respectfully submit their 2013 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,

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, 2013

Background

Sections 269-101 to 269-111, Hawai'i Revised Statutes, as amended, require net energy metering ("NEM") to be available to eligible customer-generators with a capacity of not more than 50 kilowatts ("kW") until the total rated generating capacity of eligible customers equals 0.5 percent of the electric utility's system peak demand. Systems must meet all applicable safety and performance standards and systems 10 kW or less are exempt from additional requirements to install additional controls, perform or pay for additional tests or purchase additional liability insurance. Hawaiian Electric Company, Inc. ("Hawaiian Electric"), Hawai'i Electric Light Company, Inc. ("Hawai'i Electric Light") and Maui Electric Company, Limited ("Maui Electric") (collectively, "the Utilities") were among the supporters of this legislation.

The NEM law states that eligible customers who own and operate a solar, wind turbine, biomass, or hydroelectric energy generating facility, or a hybrid system consisting of two or more of these facilities, with a capacity of not more than 50 kW, shall be credited at the retail rate (of the rate class the customer is normally assigned to) for electrical energy generated by the eligible customer-generator and fed back to the electric grid. Over a monthly billing period, the difference (i.e., net) between the customer-generated electrical energy and the electrical energy supplied through the electric grid is determined. In essence, customers are able to "bank" the excess renewable energy they generate and feed into the Utilities' grid for later use.

The Utilities are required to do a twelve-month reconciliation of the net electricity provided by the utility with the electricity generated by the customer-generator and any unused monetary credits from the customer-generator carried over from prior months since the last twelve-month reconciliation period, and provide in each regular bill information on net electricity production and consumption, monetary balances, and credits. Excess electricity generated by the customer-generator in each billing period is carried over to the next month as a monetary credit within each twelve-month period.

On April 10, 2006, the Public Utilities Commission of the State of Hawai'i ("Commission") issued Order No. 22380 in Docket No. 2006-0084, opening an investigative proceeding to address whether the Commission should increase: (1) the maximum capacity of eligible customer-generators to more than 50 kW; and (2) the total rated generating capacity produced by eligible customer-generators to an amount above 0.5 percent of an electric utility's system peak demand.

On September 21, 2006, the Commission issued Order No. 22884 in Docket No. 2006-0084 to amend the Stipulated Procedural Order (filed on August 14, 2006) to include whether the Commission should adopt, modify, or decline to adopt, in whole or in part, the NEM standard articulated in the Public Utility Regulatory Policies Act of 1978 ("PURPA"), as amended by the Energy Policy Act of 2005.

On March 13, 2008, the Commission issued Decision and Order ("D&O") No. 24089 approving the stipulated agreement reached by the parties of the docket submitted by the Utilities on September 17, 2007. The Commission approved the stipulated agreement reached by the parties that:

- Increases the maximum size of the eligible customer-generator that can qualify for a NEM agreement from 50 kW to 100 kW;

Net Energy Metering Status Report

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

December 31, 2013

- Increases the total rated generating capacity produced by eligible customer-generators from 0.5% to 1.0% of the utility's system peak demand;
- Reserves 40%, 50%, and 50% of the total rated generating capacity produced by eligible customer-generators for Hawaiian Electric, Hawai'i Electric Light, and Maui Electric, respectively, for residential and smaller commercial NEM customers (system sizes of 10 kW or less);
- Utilizes the Integrated Resource Planning ("IRP") process to evaluate impacts to the Utilities' systems and determine further adjustments to the NEM system size and cap limits (limits re-examined on an annual basis); and
- Recommends that the Commission not adopt or modify the standard for NEM as articulated PURPA, as amended by the Energy Policy Act of 2005.

In addition to the agreed-upon terms of the stipulation, the Commission ordered that the Utilities design and propose a NEM Pilot Program for the Commission's review and approval, which will allow on a trial basis a limited number of larger generating units for NEM.

On April 28, 2008, the Utilities filed with the Commission a proposed NEM Pilot Program to investigate the impacts of large NEM systems on the electric grid. Multiple discussions were held with the Hawaii Renewable Energy Alliance ("HREA") and the Hawaii Solar Energy Association ("HSEA") to gain feedback on the proposed program so that industry considerations are adequately addressed. On September 25, 2009, the Commission issued its Feed-in Tariff Decision and Order in Docket No. 2008-0273 ("FIT D&O"). After the issuance of the FIT D&O, HREA, HSEA, and the Utilities (collectively known as "Parties") met to discuss the implications of the FIT D&O on the NEM Pilot Program. After significant consideration and discussion, the Parties concluded a number of significant developments have occurred since the NEM Pilot Program was envisioned. There are now a number of planned and on-going studies which would utilize available federal funding and industry involvement, which are likely to provide a more accurate gauge of distributed generation growth and achieve the same benefits and lessons that were contemplated by conducting a NEM Pilot Program. A stipulated¹ letter to the Commission was submitted on December 18, 2009 on the status of the proposed NEM Pilot Program informing the Commission that the Utilities' NEM Pilot Program, as proposed on April 28, 2008, is no longer necessary. On January 13, 2011, the Commission issued an Order Regarding Net Energy Metering Proposals which, among other things, denied the December 18, 2009 stipulation and ordered the Hawaiian Electric Companies to continue development of the pilot program.² On April 10, 2013, the Commission issued Order No. 31167, which among other things dismissed the Companies' revised NEM Pilot Program filed February 14, 2011.

Based on a review in mid 2008 of approved, pending, and planned systems expected to apply for NEM status, it was forecasted that these systems would exceed the recently-approved NEM system caps for Hawai'i Electric Light and Maui Electric by the end of 2008. Consistent with the NEM review process within IRP established by D&O 24089, adjustments to the NEM system cap were proposed to the Hawai'i Electric Light and Maui Electric IRP Advisory Groups in July 2008. There were no objections to Hawai'i Electric Light and Maui Electric proposals. As a result, on September 30, 2008, Hawaiian Electric and the Division of Consumer Advocacy of the

¹ See letter from the Consumer Advocate, Hawaiian Electric Companies, HREA, and HSEA (collectively referred to as the "NEM Parties") to the Commission in Docket No. 2006-0084, filed December 18, 2009.

² The Companies filed a revised Net Energy Metering Pilot Program on February 14, 2011.

Net Energy Metering Status Report

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

December 31, 2013

State of Hawai'i Department of Commerce and Consumer Affairs ("Consumer Advocate") filed stipulations for Commission approval under the Hawai'i Electric Light IRP-3 docket (Docket No. 04-0046) and Maui Electric IRP-3 docket (Docket No. 04-0077) on proposed changes to the NEM system caps for Hawai'i Electric Light and Maui Electric, respectively.

On December 3, 2008, in response to a request by the Commission (in a letter dated October 10, 2008) to file the stipulations in the NEM docket (Docket No. 2006-0084), Hawai'i Electric Light, Maui Electric and the Consumer Advocate filed their stipulations on the proposed changes to the NEM system caps for Hawai'i Electric Light and Maui Electric.

On December 26, 2008, the Commission issued an Order Approving, in Part, and Denying, in Part, Stipulations filed on December 3, 2008 ("December 26, 2008 Order") that:

- The increased NEM limits for Hawai'i Electric Light and Maui Electric, as proposed in the Stipulations, are approved.
 - NEM system cap from 1% to 3% of system peak demand; and
 - Hawai'i Electric Light and Maui Electric will reserve 40% of the NEM system cap for NEM systems of 10 kW or less and 60% of the NEM system cap for systems larger than 10 kW.
- Hawai'i Electric Light and Maui Electric will increase the system cap from 3.0% to 4.0% of system peak demand at the point when approved NEM applications equal or exceed 75% of the existing system peak demand cap for either the 10 kW and less or greater than 10 kW NEM eligible systems, for their respective Company. Hawai'i Electric Light and Maui Electric will notify the commission when this increase in the system cap to 4.0% of system peak demand goes into effect.
- The review of future increases in NEM system caps in IRP processes is denied due to the closing of IRP dockets by the Commission.
- The parties to Docket No. 2006-0084 shall submit a stipulated proposed plan to address the Utilities' and Consumer Advocate's NEM agreement as set forth by the Energy Agreement and inform the Commission of any new review process for considering future increases to the NEM limits.

On October 20, 2008, the Governor of the State of Hawai'i, the State of Hawai'i Department of Business, Economic Development and Tourism, the Division of Consumer Advocacy of the Department of Commerce and Consumer Affairs, and the Utilities entered into an Energy Agreement. Among the numerous commitments contained in the Energy Agreement was the agreement that there should be no system-wide caps on NEM, and instead, distributed generation, including NEM, feeding into a circuit shall be limited on a per-circuit basis to no more than 15% of peak circuit demand for all distribution-level circuits of 12 kV or lower. For circuits approaching the 15% limit, the Utilities will perform a circuit-specific analysis to determine if the limit can be increased. In addition, the Energy agreement states that NEM will be replaced with an appropriate feed-in tariff and new NEM installations shall be required to utilize time-of-use metering equipment and rates. (See Energy Agreement Section 19, Net Energy Metering.)

Net Energy Metering Status Report

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

December 31, 2013

On August 14, 2009, the Utilities and the Consumer Advocate submitted their Proposed Plan to Address NEM, as set forth in the Energy Agreement. The Utilities proposed to move forward on the planned removal of the system-wide cap for NEM. A stipulation³ between the Utilities and the Consumer Advocate was filed with the Commission on January 7, 2010. On January 13, 2011, the Commission issued an Order Regarding Net Energy Metering Proposals which, among other things, approved with conditions, the January 7, 2010 stipulation.

Another commitment contained in the Energy Agreement, was the agreement to replace the current IRP process with a new Clean Energy Scenario Planning ("CESP") Process. (See Energy Agreement Section 32, CESP.) On February 11, 2009, the Utilities and the Consumer Advocate filed a stipulated letter requesting that any potential increases to the Utilities NEM limits be reviewed in each of the Utilities' CESP process in the same manner as the Parties agreed in their stipulation filed on September 17, 2007 and approved by D&O No. 24089. On October 27, 2009, pursuant to the Commission's March 25, 2009 letter, the Utilities provided additional briefing⁴ on a proposed process to consider any future increases to the existing Utilities' NEM limits.

On March 22, 2010, Maui Electric notified the Commission that it would be increasing its NEM system cap from 3.0% to 4.0% of system peak demand.⁵ In addition, Maui Electric emphasized that the allocations for the small systems with a generator size of 10 kW and less, would represent a reservation for these particular project sizes, in other words a floor rather than a ceiling to availability of the program capacity. On April 28, 2010, Hawai'i Electric Light filed a similar notification to the Commission that it would be increasing its NEM system cap from 3.0% to 4.0% of system peak demand.

On August 24, 2010, Hawaiian Electric and the Consumer Advocate filed a stipulation to increase its NEM system cap from 1% to 2% of system peak demand and reserve 40% of the 2.0% system peak demand for small systems with a generator size of 10 kW and less. On January 13, 2011, the Commission issued an Order Regarding Net Energy Metering Proposals which, among other things, dismissed the August 24, 2010 stipulation as moot.

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, 2013. In addition, a report on the estimates of the rate and revenue impact of NEM participation is shown in Appendix A.

³ A stipulation between the Utilities and the Consumer Advocate was filed with the Commission on January 7, 2010 recommending the removal of the NEM System Cap with the adoption of the Rule 14H modifications and the establishment of Reliability Standards. The maximum size of eligible customer-generator that qualifies for a NEM arrangements remains unchanged at 100 kW.

⁴ See letter from the Utilities to the Commission dated October 27, 2009, Docket No. 2006-0084 - Net Energy Metering (NEM).

⁵ See December 26, 2008 Order.

Net Energy Metering Status Report

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

December 31, 2013

NEM Status as of 12/31/13

	Information packets sent	No. of Installations ⁶	Installed kW ⁷	NEM System Cap, ⁸ kW
Hawaiian Electric				
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	*	14,013	83,544	N/A
Total Hawaiian Electric	565	28,216	167,154	N/A

⁶ Completed systems (i.e., NEM Agreements completed).

⁷ Installed kW reflects rated generating capacity installed in the year noted. Includes system expansions.

⁸ 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, 2013

NEM Status as of 12/31/13 (cont.)

	Information packets sent	No. of Installations ⁵	Installed kW ⁶	NEM System Cap, ⁷ kW
Hawai'i Electric Light				
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
Total Hawai'i Electric Light	278	5,336	32,716	N/A
Maui Electric				
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	*	1,567	10,992	N/A
Total Maui Electric	220	5,206	34,536	N/A
TOTAL	*	38,758	234,406	

* 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 (2012) 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 2014 and the associated estimated value per kWh, based on estimated annualized kWh production of NEM installations in place as of year-end 2013. 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 contributions to fixed costs, the Maui, Lana'i, and Moloka'i Base Energy Rates and Production Energy Rates reflect final rates and associated cost of service for 2012 test year rates implemented August 1, 2013. The Base Energy Rates and Production Energy Rates for Hawaiian Electric and for Hawai'i Electric Light are unchanged from last year's report. For all Companies, the effective Purchased Power Adjustment Clause rates reflect the December 2013 rate values. This year, an additional calculation for lost contribution to fixed costs is made to include the impact of surcharges for 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 Adjustment rate. Lost kWh shifts the cost responsibility of these surcharges to other customers. 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. Lost contributions to fixed cost related to the Purchased Power Adjustment Clause, to the demand-side management surcharges, to the renewable energy infrastructure surcharge, and to the Rate Adjustment Mechanism Provision portion of the Revenue Balancing Adjustment rate are reflected in subsequent reconciliations of these surcharges and are eventually borne by customers who incur per kWh charges.

Hawaiian Electric Company

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM installations as-of December 31, 2013

Rate	Total Lost kWh/yr ¹	Base Energy Rate ² , cents/kWh	Eff. PPAC ³ , cents/kWh	REIP & DSM ⁴ , cents/kWh	RAM ⁴ , cents/kWh	Eff. Base Energy Rate Dec, cents/kWh	Production Energy Rate ⁵ , 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	233,744,027	22.4707	3.3179	0.1278	0.5524	26.4688	15.3950	11.0738	\$25,884,346
G	6,437,210	21.3317	2.8427	0.1274	0.5524	24.8542	15.4450	9.4092	\$605,690
J	39,040,280	16.9734	2.5845	0.1274	0.5524	20.2377	15.4560	4.7817	\$1,866,789
P	635,304	14.9013	2.4266	0.1274	0.5524	18.0077	15.3860	2.6217	\$16,656
Total	279,856,820								\$28,373,481

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2014 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$25,884,346		
G	\$605,690		
J	\$1,866,789		
P	\$16,656		
Total	\$28,373,481	6,525,400,000	0.43

Notes:

- 1 Annualized kWh generated from NEM installations as of 12/31/13: Hawaiian Electric Distributed Technology Applications.
- 2 Source: Base Energy Rates from Docket 2010-0080 (HECO 2011 Test Year).
- 3 Source: Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 5, filed 07/24/2012.
- 4 REIP and DSM rate from effective rate summaries for December 2013, RAM based on Decoupling Calculation workbook, Schedule A (with settlement revised 05/14/13), 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 2013. Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Hawai'i Electric Light

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2013

Rate	Total Lost kWh/yr ¹	Base Energy Rate ² , cents/kWh	Eff. PPAC ³ , cents/kWh	REIP & DSM ⁴ , cents/kWh	RAM ⁴ , cents/kWh	Eff. Base Energy Rate Dec, cents/kWh	Production Energy Rate ⁵ , 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	33,884,509	29.2689	2.3347	0.0000	-0.0021	31.6015	19.0760	12.5255	\$4,244,204
G	3,815,048	31.5858	2.3488	0.0000	-0.0021	33.9325	19.1990	14.7335	\$562,090
J	10,902,504	24.8033	1.7881	0.0000	-0.0021	26.5893	19.1130	7.4763	\$815,104
P	645,642	21.8184	1.5390	0.0000	-0.0021	23.3553	18.7610	4.5943	\$29,663
Total	49,247,704								\$5,651,061

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2014 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$4,244,204		
G	\$562,090		
J	\$815,104		
P	\$29,663		
Total	\$5,651,061	1,062,793,000	0.53

Notes:

- 1 Annualized kWh generated from NEM installations as of 12/31/13; Hawaiian Electric Distributed Technology Applications.
- 2 Source: Base Energy Rates, from Docket 2009-0164 (HELCO 2010 Test Year).
- 3 PPAC Rates Effective December 2013.
- 4 REIP and DSM rate from effective rate summaries for December 2013, RAM based on Decoupling Calculation workbook, Schedule A (with settlement revised 05/14/13), page 1. Filed 02/21/2012.
- 5 Source: Most-recently approved cost-of-service calculation, from Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2E, page 65.
- 6 Source: Hawai'i Electric Light Sales Forecast, May 2013. Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Maui Electric Company - Maui Division

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2013

Rate	Total Lost kWh/Yr ¹ A	Base Energy Rate ² , cents/kWh B	Eff. PPAC ³ , cents/kWh C	REIP & DSM ⁴ , cents/kWh D	RAM ⁵ , cents/kWh E	Eff. Base Energy Rate Dec, cents/kWh F = sum(B:E)	Production Energy Rate ⁶ , cents/kWh G	Lost Contribution to Fixed Cost, cents/kWh H = F - G	Total Lost Contribution to Fixed Cost, \$/Yr J = A * H/100
R	33,822,094	33.5605	0.0861	0.0000	0.2982	33.9448	24.6820	9.2628	\$3,132,873
G	4,874,962	34.5890	0.0818	0.0042	0.2982	34.9732	24.6630	10.1102	\$492,868
J	10,343,296	30.4163	0.0544	0.0042	0.2982	30.7731	25.0050	5.7681	\$596,612
P	225,485	27.7504	0.0556	0.0042	0.2982	28.1084	24.8200	3.2884	\$7,415
Total	49,265,837								\$4,229,768

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2014 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, \$/kWh
R	\$3,132,873		
G	\$492,868		
J	\$596,612		
P	\$7,415		
Total	\$4,229,768	1,050,869,000	0.40

$M = (K/L) * 100$

Notes:

- 1 Annualized kWh generated from NEM installations as of 12/31/13; Hawaiian Electric Distributed Technology Applications.
- 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 December 2013.
- 4 REIP and DSM rate from effective rate summaries for December 2013, RAM based on Decoupling Calculation workbook, Schedule A (with settlement revised 05/14/13), 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, June 2013.
Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Maui Electric Company - Lana'i Division

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM Installations as-of December 31, 2013

Rate	Total Lost kWh/yr ¹	Base Energy Rate ² , cents/kWh	Eff. PPAC ³ , cents/kWh	REIP & DSM ⁴ , cents/kWh	RAM ⁴ , cents/kWh	Eff. Base Energy Rate Dec, cents/kWh	Production Energy Rate ⁵ , cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr $J = A * H / 100$
	A	B	C	D	E	F = sum(B-E)	G	H = F - G	J
R	205,980	42.7689	0	0.0000	0.2982	43.0671	35.2000	7.8671	\$16,205
G	63,231	44.8726	0	0.0000	0.2982	45.1708	35.4360	9.7348	\$6,155
J	177,215	42.5860	0	0.0000	0.2982	42.8842	35.5590	7.3252	\$12,981
P	-	40.2141	0	0.0000	0.2982	40.5123	34.9320	5.5803	\$0
Total	446,426								\$35,341

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2014 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$16,205		
G	\$6,155		
J	\$12,981		
P	\$0		
Total	\$35,341	25,319,000	0.14
Total Company			

Notes:

- 1 Annualized kWh generated from NEM Installations as of 12/31/13: Hawaiian Electric Distributed Technology Applications.
- 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 December 2013.
- 4 REIP and DSM rate from effective rate summaries for December 2013, RAM based on Decoupling Calculation workbook, Schedule A (with settlement revised 05/14/13), 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, June 2013.
Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Maui Electric Company - Molokai Division

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2013

Rate	Total Lost kWh/Yr ¹	Base Energy Rate ² , cents/kWh	Eff. PPAC ³ , cents/kWh	REIP & DSM ⁴ , cents/kWh	RAM ⁴ , cents/kWh	Eff. Base Energy Rate Dec, cents/kWh	Production Energy Rate ⁵ , 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	1,165,696	39.0927	0	0	0.0000	0.2982	28.8010	10.5899	\$123,446
G	194,028	44.8344	0	0	0.0000	0.2982	29.3620	15.7706	\$30,599
J	273,159	36.9705	0	0	0.0000	0.2982	29.2020	8.0687	\$22,035
P	149,328	29.5392	0	0	0.0000	0.2982	28.5660	1.2714	\$1,899
Total	1,782,211								\$177,979

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2014 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$123,446		
G	\$30,599		
J	\$22,035		
P	\$1,899		
Total	\$177,979	28,746,000	0.62

Notes:

- 1 Annualized kWh generated from NEM installations as of 12/31/13: Hawaiian Electric Distributed Technology Applications.
- 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 148, filed 06/17/2013.
- 3 PPAC Rates Effective December 2013.
- 4 REIP and DSM rate from effective rate summaries for December 2013, RAM based on Decoupling Calculation workbook, Schedule A (with settlement revised 05/14/13), page 1.
- 5 Docket 2011-0092 (MECO 2012 Test Year), Molokai Division, Exhibit 5, page 220, filed 06/17/2013.
- 6 Source: Maui Electric Sales Forecast, June 2013.
Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Re-Statement of NEM Lost Contribution to Fixed Costs at end of 2012

Attached is a re-calculation of the estimated lost contribution to fixed costs in 2013. The lost kWhs used in this calculation are the estimated annualized kWh sales expected to be forgone in 2013 based on NEM installations in place at the end of 2012. The rates used in the calculation include surcharges for DSM, REIP and the RAM portion of the RBA, as applicable, in addition to those the rates used in the calculations previously reported on January 31, 2013.

This calculation method using the estimate of the annualized kWh based on NEM installations at year end was used in the NEM reports following years 2008 through 2011 and is used again following the 2013 year.

In the report filed following the 2012 year, the estimate of lost kWh due to NEM installations was inadvertently calculated on a different basis. In 2012, the lost kWh included an estimate based on NEM installations in place at the end of 2011 plus the lost kWh from NEM installations in 2012 only for the portion of the year that such installations were in place in 2012 (i.e., not annualized).

Hawaiian Electric Company

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM Installations as-of December 31, 2012

Rate	Total Lost kWh/yr ¹ A	Base Energy Rate ² cents/kWh B	Eff. PPAC ³ cents/kWh C	REIP & DSM ⁴ cents/kWh D	RAM ⁴ cents/kWh E	Eff. Base Energy Rate, cents/kWh F = sum(B:E)	Production Energy Rate ⁵ cents/kWh G	Lost Contribution to Fixed Cost, cents/kWh H = F - G	Total Lost Contribution to Fixed Cost \$/Yr J = A * H / 100
R	108,071,409	22.4707	2.6960	0.0812	0.0927	25.3406	15.3950	9.9456	\$10,748,350
G	4,588,862	21.3317	2.5932	0.1081	0.0927	24.1257	15.4450	8.6807	\$398,345
J	26,784,916	16.9734	2.3479	0.1081	0.0927	19.5221	15.4560	4.0661	\$1,089,101
P	620,244	14.9013	2.1020	0.1081	0.0927	17.2041	15.3860	1.8181	\$11,277
Total	140,065,431								\$12,247,073

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2013 Sales ⁶ kWh/Yr	Estimated Impact on Rates, ¢/kWh	M = (K/L) * 100
R	\$10,748,350			
G	\$398,345			
J	\$1,089,101			
P	\$11,277			
Total	\$12,247,073	7,092,200,000		0.17

Notes:

- 1 Annualized kWh generated from NEM Installations as of 12/31/12: Hawaiian Electric Distributed Technology Applications.
- 2 Source: Base Energy Rates from Docket 2010-0080 (HECO 2011 Test Year).
- 3 Source: Base Energy Rates from Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 5, filed 07/24/2012.
- 4 REIP and DSM rate from effective rate calculation, from Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 13, filed 07/24/2012.
- 5 Source: Cost-of-service calculation, from Docket 2010-0080 (HECO 2011 Test Year); Final revised tariffs, Exhibit B, Attachment 1, page 24, filed 07/24/2012.
- 6 Source: HAWAIIAN ELECTRIC COMPANY (HECO) 2011 Test Year; Final revised tariffs, Exhibit B, Attachment 1, page 126, filed 07/24/2012.

Hawai'i Electric Light Company

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM Installations as-of December 31, 2012

Rate	Total Lost kWh/Yr ¹ A	Base Energy Rate ² , cents/kWh B	Eff. PPAC ³ , cents/kWh C	REIP & DSM ⁴ , cents/kWh D	RAM ⁴ , cents/kWh E	Eff. Base Energy Rate, cents/kWh F = sum(B:E)	Production Energy Rate ⁵ , cents/kWh G	Lost Contribution to Fixed Cost, cents/kWh H = F - G	Lost Contribution to Fixed Cost, \$/Yr J = A * H / 100
R	20,240,921	29.2689	2.4237	0.0000	-0.1952	31.4974	19.0760	12.4214	\$2,514,206
G	3,194,677	31.5858	2.4660	0.0000	-0.1952	33.8566	19.1990	14.6576	\$468,263
J	6,501,832	24.8033	1.9610	0.0000	-0.1952	26.5691	19.1130	7.4561	\$484,783
P	584,347	21.8184	1.6652	0.0000	-0.1952	23.2884	18.7610	4.5274	\$26,456
Total	30,521,777								\$3,493,708

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2013 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, \$/kWh
R	\$2,514,206		
G	\$468,263		
J	\$484,783		
P	\$26,456		
Total	\$3,493,708	1,116,998,000	0.31

$$M = (K/L) * 100$$

Notes:

- 1 Annualized kWh generated from NEM Installations as of 12/31/12; Hawaiian Electric Distributed Technology Applications.
- 2 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.
- 3 PPAC Rates Effective December 2012.
- 4 REIP and DSM rate from effective rate summaries for December 2012, RAM based on 2012 Decoupling Calculation workbook, Schedule A, page 1.
- 5 Source: Most-recently approved cost-of-service calculation, from Docket 2009-0164 (HELCO 2010 Test Year), Exhibit 2E, page 65, Filed 02/21/2012.
- 6 Source: Hawai'i Electric Light Sales Forecast.
Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Maui Electric Company - Maui Division

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM installations as-of December 31, 2012

Rate	Total Lost kWh/yr ¹ A	Base Energy Rate ² , cents/kWh B	Eff. PPAC ³ , cents/kWh C	REIP & DSM ⁴ , cents/kWh D	RAM ⁵ , cents/kWh E	Eff. Base Energy Rate, cents/kWh F = sum(B:E)	Production Energy Rate ⁵ , cents/kWh G	Lost Contribution to Fixed Cost, cents/kWh H = F - G	Total Contribution to Fixed Cost \$/Yr J = A * H / 100
R	22,426,214	26.5012	0.1427	0.0000	0.0000	26.6439	16.8870	9.7569	\$2,188,103
G	3,573,878	27.7371	0.1125	0.0203	0.0000	27.8699	17.0360	10.8339	\$387,190
J	7,353,930	23.8694	0.1127	0.0203	0.0000	24.0024	17.0770	6.9254	\$509,289
P	225,485	20.8356	0.1058	0.0203	0.0000	20.9617	16.8920	4.0697	\$9,177
Total	33,579,507								\$3,093,759

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2013 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, ¢/kWh
R	\$2,188,103	1,096,383,000	0.28
G	\$387,190		
J	\$509,289		
P	\$9,177		
Total	\$3,093,759		

$K = J$ L $M = (K / L) * 100$

Notes:

- 1 Annualized kWh generated from NEM installations as of 12/31/12: Hawaiian Electric Distributed Technology Applications.
- 2 Source: Base Energy Rates, from Docket 2009-0163 (MECO 2010 Test Year)- Maui Division, Updated Settlement. Sched R: Docket 2009-0163 (MECO 2010 Test Year), Maui Division, Updated Settlement, Attachment 8, page 9, filed 03/29/2012. Sched G: Docket 2009-0163 (MECO 2010 Test Year), Maui Division, Updated Settlement, Attachment 8, page 10, filed 03/29/2012. Sched J: Docket 2009-0163 (MECO 2010 Test Year), Maui Division, Updated Settlement, Attachment 8, page 17, filed 03/29/2012. Sched P: Docket 2009-0163 (MECO 2010 Test Year), Maui Division, Updated Settlement, Attachment 8, page 113, filed 03/29/2012. Plus Interim Rate Increase Effective June 1, 2012
- 3 PPAC Rates Effective December 2012.
- 4 REIP and DSM rate from effective rate summaries for December 2012, No RAM in 2012.
- 5 Docket 2009-0163 (MECO 2010 Test Year), Maui Division, Updated Settlement, Attachment 11, page 66, filed 03/29/2012.
- 6 Source: Maui Electric Sales Forecast. Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Maui Electric Company - Lanai Division

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM installations as-of December 31, 2012

Rate	Total Lost kW/yr ¹ A	Base Energy Rate ² , cents/kWh B	Eff. PPAC ³ , cents/kWh C	REIP & DSM ⁴ cents/kWh D	RAM ⁵ cents/kWh E	Eff. Base Energy Rate, cents/kWh F = sum(B:E)	Production Energy Rate ⁶ cents/kWh G	Lost Contribution to Fixed Cost, cents/kWh H = F - G	Total Contribution to Fixed Cost \$/Yr J = A * H / 100
R	139,293	34.2329	0	0.0000	0.0000	34.2329	26.8420	7.3909	\$10,295
G	22,338	36.3521	0	0.0000	0.0000	36.3521	27.0840	9.2681	\$2,070
J	35,741	35.3832	0	0.0000	0.0000	35.3832	27.1510	8.2322	\$2,942
P	-	31,8021	0	0.0000	0.0000	31.8021	26.7000	5.1021	\$0
Total	197,372								\$15,307

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2013 Sales ⁶ kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$10,295		
G	\$2,070		
J	\$2,942		
P	\$0		
Total	\$15,307	24,659,000	0.06

Notes:

- 1 Annualized kWh generated from NEM installations as of 12/31/12: Hawaiian Electric Distributed Technology Applications.
- 2 Source: Base Energy Rates, from Docket 2009-0163 (MECO 2010 Test Year)- Lanai Division, Updated Settlement.
Sched R: Docket 2009-0163 (MECO 2010 Test Year), Lanai Division, Updated Settlement, Attachment 9, page 9, filed 03/29/2012.
Sched G: Docket 2009-0163 (MECO 2010 Test Year), Lanai Division, Updated Settlement, Attachment 9, page 10, filed 03/29/2012.
Sched J: Docket 2009-0163 (MECO 2010 Test Year), Lanai Division, Updated Settlement, Attachment 9, page 17, filed 03/29/2012.
Sched P: Docket 2009-0163 (MECO 2010 Test Year), Lanai Division, Updated Settlement, Attachment 9, page 29, filed 03/29/2012.
Plus Interim Rate Increase Effective June 1, 2012
- 3 PPAC Rates Effective December 2012.
- 4 REIP and DSM rate from effective rate summaries for December 2012, No RAM in 2012.
- 5 Docket 2009-0163 (MECO 2010 Test Year), Lanai Division, Updated Settlement, Attachment 12, page 66, filed 03/29/2012.
- 6 Source: Maui Electric Sales Forecast.
Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.

Maui Electric Company - Molokai' Division

Estimated Lost Contribution to Fixed Costs and Surcharges, based on NEM Installations as-of December 31, 2012

Rate	Total Lost kWh/Yr ¹	Base Energy Rate ² , cents/kWh	Eff. PPAC ³ , cents/kWh	REIP & DSM ⁴ , cents/kWh	RAM ⁴ , cents/kWh	Eff. Base Energy Rate, cents/kWh	Production Energy Rate ⁵ , 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	805,116	31,3604	0	0.0000	0.0000	31,3604	21,4430	9,9174	\$79,847
G	120,223	37,2566	0	0.0000	0.0000	37,2566	21,7460	15,5106	\$18,647
J	273,159	29,9333	0	0.0000	0.0000	29,9333	21,6370	8,2963	\$22,662
P	149,328	23,5461	0	0.0000	0.0000	23,5461	21,1680	2,3781	\$3,551
Total	1,347,826								\$124,707

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2013 Sales ⁶ , kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$79,847		
G	\$18,647		
J	\$22,662		
P	\$3,551		
Total	\$124,707	29,988,000	0.42

Notes:

- 1 Annualized kWh generated from NEM Installations as of 12/31/12; Hawaiian Electric Distributed Technology Applications.
- 2 Source: Base Energy Rates, from Docket 2009-0163 (MECO 2010 Test Year)- Molokai Division, Updated Settlement. Sched R: Docket 2009-0163 (MECO 2010 Test Year), Molokai Division, Updated Settlement, Attachment 10, page 9, filed 03/29/2012. Sched G: Docket 2009-0163 (MECO 2010 Test Year), Molokai Division, Updated Settlement, Attachment 10, page 10, filed 03/29/2012. Sched J: Docket 2009-0163 (MECO 2010 Test Year), Molokai Division, Updated Settlement, Attachment 10, page 17, filed 03/29/2012. Sched P: Docket 2009-0163 (MECO 2010 Test Year), Molokai Division, Updated Settlement, Attachment 10, page 28, filed 03/29/2012. Plus Interim Rate Increase Effective June 1, 2012
- 3 PPAC Rates Effective December 2012.
- 4 REIP and DSM rate from effective rate summaries for December 2012, No RAM in 2012.
- 5 Docket 2009-0163 (MECO 2010 Test Year), Molokai Division, Updated Settlement, Attachment 13, page 66, filed 03/29/2012..
- 6 Source: Maui Electric Sales Forecast. Since the lost kWh in Column A represents kWh from all installations since the inception of Net Metering, part of the lost contribution to fixed cost is already reflected in utility rates.