



January 28, 2020

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PUBLIC UTILITIES
COMMISSION

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 Companies
2019 Net Energy Metering Status Report

Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc. and Maui Electric Company, Limited respectfully submit their 2019 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.

Sincerely,

Kevin M. Katsura
Director
Regulatory Non-Rate Proceedings

Attachment

c: 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, 2019

Status

The following table provides the status of NEM in the Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., and Maui Electric Company, Limited service territories as of December 31, 2019. 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 12/31/19

	Information packets sent	No. of Installations ¹	Installed kW ²	NEM System Cap. ³ 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	*	14,010	83,659	N/A
2014	*	6,830	46,242	N/A
2015	*	6,193	44,769	N/A
2016	*	4,709	40,902	N/A
2017	*	1,855	22,707	N/A
2018	*	355**	3,789**	N/A
2019	*	91	1,299	N/A
Total Hawaiian Electric	565	48,246	326,977	N/A

¹ Completed systems (i.e., NEM Agreements completed).

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

³ In 2011 the three companies NEM cap is based on individual circuit capacity and not total system capacity, therefore this metric is no longer applicable (N/A) from 2011 on.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, 2019

NEM Status as of 12/31/19 (cont.)

	Information packets sent	No. of Installations ¹	Installed kW ²	NEM System Cap, ³ 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
2014	*	2,080	13,046	N/A
2015	*	2,210	14,224.4	N/A
2016	*	1,298	9,621	N/A
2017	*	209	3,420	N/A
2018	*	14**	818**	N/A
2019	*	-2	16	N/A
Total Hawai'i Electric Light	278	11,145	73,861	N/A

Net Energy Metering Status Report

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

December 31, 2019

NEM Status as of 12/31/19 (cont.)

	Information packets sent	No. of Installations ¹	Installed kW ²	NEM System Cap, ³ kW
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	*	1,566	11,202	N/A
2014	*	1,901	12,832	N/A
2015	*	2,207	17,025	N/A
2016	*	1,791	15,408	N/A
2017	*	394	5,613	N/A
2018	*	121**	1,736**	N/A
2019	*	12	762	N/A
Total Maui Electric	220	11,631	88,122	N/A
TOTAL	*	71,022	488,960	

* 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 tried up in the preceding year (2018) 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 2020 and the associated estimated value per kWh, based on estimated annualized kWh production of NEM installations in place as of year-end 2019. 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 for Hawaiian Electric Company, Inc., have been revised based on base rates effective January 1, 2019 established in the Hawaiian Electric 2017 test year rate case (Docket No. 2016-0328), the Base Energy Rates for Hawai'i Electric Light Company, Inc., have been revised based on base rates effective February 1, 2019 established in the Hawai'i Electric Light 2016 test year rate case (Docket No. 2015-0170), and the Base Energy Rates for Maui Electric Company, Limited, have been revised based on base rates effective September 1, 2019 established in the Maui Electric 2018 test year rate case (Docket No. 2017-0150). For Hawai'i Electric Light Company, Inc., the calculation of lost contribution to fixed cost includes the 2019 Interim Rate Adjustment percent by rate class, applied to the Base Non-Fuel Energy rate. The calculation of lost contribution to fixed cost for Maui Electric Company, Limited, includes the applicable Production Energy Rates established in the Maui Electric 2018 test year rate case. For all Companies, the calculation of lost contribution to fixed cost includes the Base Fuel Energy Value established in the applicable rate case.

For all Companies, the effective Purchased Power Adjustment Clause rates reflect the January 2020 values. The calculation for lost contribution to fixed cost includes the impact of surcharges for the residential and commercial demand-side management programs, the residential and commercial Demand Response Adjustment Clause (DRAC), 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, the DRAC, 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, 2019

Rate	Total Lost kWh/yr ¹	Non-fuel Base Energy Rate ² , cents/kWh	Eff: PPAC ³ cents/kWh	REIP, DSM & DRAC ⁴ cents/kWh	RAM ⁴ cents/kWh	Base Fuel Energy Value ² cents/kWh	Effective 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	G = sum(B-F)	H	I = G - H	J = A * I / 100	
R	422,456,770	11.2159	2.3077	-0.0019	0.3136	10.2278	24.0631	11.9950	12.0661	\$50,982,422
G	15,085,838	9.6013	3.2259	-0.2057	0.3136	10.2278	23.1629	12.0340	11.1289	\$1,678,885
J	87,866,087	5.3177	2.7978	-0.2057	0.3136	10.2278	18.4512	12.1020	6.3492	\$5,578,776
P	1,223,654	2.9200	2.5642	-0.2057	0.3136	10.2278	15.8199	12.0010	3.8189	\$46,730
Total	526,632,349									\$58,286,813

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2020 Sales ⁶ kWh/yr	Estimated Impact on Rates, \$/kWh
R	\$50,982,422		
G	\$1,678,885		
J	\$5,578,776		
P	\$46,730		
Total	\$58,286,813	6,458,100,000	0.90

$M = (K / L) * 100$

Notes:

- See Appendix A, page 3, column H.
- Source: Base Non-Fuel Energy Rates from Docket 2016-0328 (HECO 2017 Test Year) Sched R; Docket 2016-0328 (HECO 2017 Test Year); Final revised tariffs, Exhibit 2, Attachment 1, page 23, filed July 23, 2018. Sched G; Docket 2016-0328 (HECO 2017 Test Year); Hawaiian Electric Revised ECRC Tariff Proposal Exhibit 6, page 4, filed October 16, 2019. Sched J; Docket 2016-0328 (HECO 2017 Test Year); Hawaiian Electric Revised ECRC Tariff Proposal Exhibit 6, page 6, filed October 16, 2019. Sched P; Docket 2016-0328 (HECO 2017 Test Year); Hawaiian Electric Revised ECRC Tariff Proposal, Exhibit 6, page 12, filed October 16, 2019. Base Fuel Energy value from Docket 2016-0328 (HECO 2017 Test Year); Final revised tariffs, Exhibit 2, Attachment 1, page 23, filed July 23, 2018.
- PPAC Rates Effective January 2020.
- REIP, DSM, DRAC rates from effective rate summaries for January 2020, RAM based on Transmittal 19-03, Parties Stipulated Revision to Reply Statements of Position, Scenario 4, Schedule A, Page 1, Revised May 28, 2019, filed May 28, 2019.
- Source: Cost-of-service calculation, from Docket 2016-0328 (HECO 2017 Test Year); Final D&O, exhibit 3, page 80.
- Sales from 2020 Revenue Budget Forecast.

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

Rate	NEM kW Installed by Technology				NEM kWh Installed by Technology			Total kWh H= sum(E;G)
	A	B	C	D= sum(A;C)	E	F	G	
	PV kW NEM installed (Cumulative Dec 31, 2019) NEM ^A	Wind kW NEM installed (Cumulative Dec 31, 2019) NEM ^F	Hydro kW NEM installed (Cumulative Dec 31, 2019) NEM ^F	Total kW	PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^{A,B,D}	Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	
R	261,295	1	0	261,296	422,454,229	2,540	0	422,456,770
G	9,637	4	0	9,641	15,075,676	10,162	0	15,085,838
J	55,267	20	0	55,287	87,815,279	50,808	0	87,866,087
P	753	0	0	753	1,223,654	0	0	1,223,654
Total	326,952	25	0	326,977	526,568,839	63,510	0	526,632,349

Source: Grid Technologies Department.

^A NEM PV/wind/hydro kW data from respective 2019 utility detailed year end spreadsheets. HECO 2014 cumulative data used to breakout PTC/inverter kW counting method.

^B 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 2016, PV NEM capacity (kW) is PTC or inverter rating whichever is lower. For 2016 and beyond PV kW is STC or inverter rating whichever is lower). Multiply by hours in year-8760.

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

^E Wind capacity factor 29% .

Hawai'i Electric Light

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM Installations as-of December 31, 2019

Rate	Total Lost, KWh/yr ¹	Non-Fuel Base Energy Rate ² , cents/kWh	Effective 2019 Interim Rate Adjustment ³ , %	Total Eff. Non-fuel Energy Rate, cents/kWh	Eff. PPAC ⁴ cents/kWh	REP & DSM ⁵ cents/kWh	RAM ⁶ cents/kWh	Base Fuel Energy Value cents/kWh	Total eff. Energy Rate, cents/kWh	Production Energy Rate ⁷ cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/yr
	A	B	C	D = B*(1+C)	E	F	G	H	I = D+E+G+H	J	K = I-J	L = A * K / 100
R	80,656,581	14,6680	4.06%	15,2679	1,7730	0.0000	0.0000	10,2440	27,2849	11,0960	16,1889	\$13,057,427
C	7,573,592	17,0266	3.14%	17,5612	1,8747	0.0000	0.0000	10,2440	29,6799	11,1920	18,4879	\$1,400,014
J	21,865,854	9,6448	4.91%	10,1213	1,8638	0.0000	0.0000	10,2440	22,2291	11,1810	11,0481	\$2,415,751
P	381,947	6,2243	6.44%	6,6251	1,4146	0.0000	0.0000	10,2440	18,2837	11,0010	7,2827	\$27,816
Total	110,475,943											\$16,901,008

Rate	Total Lost Contribution to Fixed Cost, \$/yr	Forecast 2020 Sales ⁸ kWh/yr	Estimated Impact on Rates, \$/kWh
	M = L	N	O = (M / N) * 100
R	\$13,057,427		
G	\$1,400,014		
J	\$2,415,751		
P	\$27,816		
Total	\$16,901,008	1,039,737,181	1.63

- Notes
- See Appendix A, page 5, column H.
 - Source: Base Non-Fuel Energy Rates from Docket 2015-0170 (HELCO 2016 Test Year) FINAL, Exhibit 2 Attachment 1, page 21, filed July 30, 2018.
 - Sched R Docket 2015-0170 (HELCO 2016 Test Year) FINAL, Exhibit 2 Attachment 1, page 21, filed July 30, 2018.
 - Sched G Docket 2015-0170 (HELCO 2016 Test Year) Final Tariffs Revised for ECR, Exhibit 5, Page 4, filed November 16, 2018.
 - Sched J Docket 2015-0170 (HELCO 2016 Test Year) Final Tariffs Revised for ECR, Exhibit 5, Page 6, filed November 16, 2018.
 - Sched P Docket 2015-0170 (HELCO 2016 Test Year) Final Tariffs Revised for ECR, Exhibit 5, Page 9, filed November 16, 2018.
 - Base Fuel Energy Value from Docket 2015-0170 (HELCO 2016 Test Year) FINAL, Exhibit 2 Attachment 1, page 21, filed July 30, 2018.
 - Source: Docket No. 2018-0358, TY 2019 Proposed Tariff Sheets and Supporting Exhibits, Exhibit 1, page 1, filed November 25, 2019.
 - PPAC Rates from effective rate summaries for January 2020.
 - REP and DSM rate from effective rate summaries for January 2020, RAM based on Hawai'i Electric Light Company, Inc.'s Proposed Tariff Sheets and Supporting Exhibits, Exhibit 2B, Page 1, filed in Docket No. 2018-0368 on November 25, 2019.
 - Source: Docket No. 2015-0170, TY 2016 Final D&O, Exhibit 3, page 79.
 - Sales from 2020 Revenue Budget Forecast

Hawai'i Electric Light

Estimated kW and kWh by technology and rate schedule

Rate	NEM kW installed by Technology				Total kW D = sum(A:C)	NEM kWh installed by Technology			Total kWh H = sum(E:G)
	A PV kW NEM installed (Cumulative Dec 31, 2019) NEM ^A	B Wind kW NEM installed (Cumulative Dec 31, 2019) NEM ^B	C Hydro kW NEM installed (Cumulative Dec 31, 2019) NEM ^C	D Total kW		E PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^{A,B}	F Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	G Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	
R	54,074	51	0	54,125	80,527,001	129,560	0	80,656,561	
G	5,085	0	0	5,085	7,572,582	0	0	7,572,582	
J	14,323	167	0	14,490	21,329,812	536,042	0	21,865,854	
P	112	0	49	161	167,327	0	214,620	381,947	
Total	73,594	218	49	73,861	109,586,721	665,602	214,620	110,476,943	

Source: Grid Technologies Department.

^A NEM PV/wind/hydro kW data from respective 2018 utility detailed year end spreadsheets.

^B 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- 8760)

^F Wind capacity factor range of 29% to 39%.

^F Hydro capacity factor of 50%.

Maui Electric Company - Maui Division

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEIR Installations as-of December 31, 2019

Rate	Total Lost kWh/yr ¹ A	Non-Fuel Base Energy Rate ² , cents/kWh B	Base Fuel Energy Value ² , cents/kWh C	Eff. PPAC ³ , cents/kWh D	REIP, DSM, DRAC ⁴ , cents/kWh E	RAM ⁴ , cents/kWh F	Total Eff. Energy Rate, cents/kWh G = sum(B-F)	Production Energy Rate ⁵ , cents/kWh H	Lost Contribution to Fixed Cost, cents/kWh I = G - H	Total Lost Contribution to Fixed Cost, \$/Yr J = A * I / 100
R	68,418,061	13.3097	15.9777	-0.0069	0.0000	0.2564	29.5359	17,4610	12.0749	\$10,676,356
G	12,342,984	14.2942	15.9777	-0.0079	-0.2278	0.2564	30.2926	17,5180	12,7746	\$1,576,762
J	24,270,929	9.6846	15.9777	-0.0083	-0.2278	0.2564	25.6826	17,6330	8.0486	\$1,953,703
P	1,757,606	7.2992	15.9777	-0.0050	-0.2278	0.2564	23.3005	17,5510	5.7485	\$101,053
Total	126,789,560									\$14,307,876

Rate	Total Lost Contribution to Fixed Cost, \$/Yr K = J	Forecast 2020 Sales ⁶ , kWh/yr L	Estimated Impact on Rates, \$/kWh M = (K / L) * 100
R	\$10,676,356		
G	\$1,576,762		
J	\$1,953,703		
P	\$101,053		
Total	\$14,307,876	1,006,221,816	1.42

Notes:

- 1 See Appendix A, page 7, column H.
- 2 Source: Base Non-Fuel Energy Rates from Docket 2017-0150 (Maui Electric 2018 Test Year) Sched R; Docket 2017-0150 (MECO 2018 Test Year) Parties' Joint Proposed Final Tariffs, Exhibit 2, Attachment 1, page 21, filed April 17, 2019. Sched G; Docket 2017-0150 (MECO 2019 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019. Sched J; Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019. Sched P; Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019. Base Fuel Energy Value from Docket 2017-0150 (MECO 2018 Test Year) Parties' Joint Proposed Final Tariffs, Exhibit 2, Attachment 1, page 21, filed April 17, 2019.
- 3 PPAC Rates Effective January 2020.
- 4 REIP and DSM rate from effective rate summaries for January 2020, RAM based on Transmittal 19-03, Parties Stipulated Revision to Reply Statements of Position, Scenario 4, Schedule A, Page 1, Revised May 28, 2019, filed May 28, 2019.
- 5 Source: Docket 2017-0150 (MECO 2018 Test Year), Parties' Joint Proposed Final Tariffs, Exhibit 3, page 78, filed April 17, 2019.
- 6 Sales from 2020 Revenue Budget forecast

Maui Electric Company - Maui Division

Estimated kW and kWh by technology and rate schedule

Rate	NEM kW installed by Technology			Total kW D= sum(A:C)	NEM kWh installed by Technology			Total kWh H= sum(E:G)
	A PV kW NEM installed (Cumulative Dec 31, 2019) NEM ^E	B Wind kW NEM installed (Cumulative Dec 31, 2019) NEM ^E	C Hydro kW NEM installed (Cumulative Dec 31, 2019) NEM ^F		E PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^E	F Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^E	G Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	
R	59,338	21	0	59,359	86,364,586	53,475	0	86,418,061
G	8,280	5	0	8,285	12,330,993	11,991	0	12,342,984
J	16,218	47	0	16,265	24,152,292	118,637	0	24,270,929
P	1,170	6	0	1,176	1,742,364	15,242	0	1,757,606
Total	85,006	78	0	85,084	126,590,235	199,345	0	126,789,580

Source: Grid Technologies Department.

^A NEM PV/wind/hydro kW data from respective 2019 utility detailed year end spreadsheets.

^B 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-8760.

^E Wind capacity factor range of 29%.

Maui Electric Company - Lanai Division

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2019

Rate	Total Lost kWh/yr ¹	Non-fuel Energy Rate ² , cents/kWh	Base Fuel Energy Value ³ , cents/kWh	RAM ⁴ cents/kWh	Eff. 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 = B + C + D	G	H = F - G	J = A * H / 100
R	672,082	13.7465	21.9611	0.2564	35.9640	26.5070	9.4570	\$63,559
G	98,972	15.6716	21.9611	0.2564	37.8891	26.7720	11.1171	\$11,003
J	355,978	13.7188	21.9611	0.2564	35.9363	26.9390	8.9973	\$32,028
P	-	11.7904	21.9611	0.2564	34.0079	26.4280	7.5799	\$0
Total	1,127,033							\$106,590

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2020 Sales ⁶ kWh/Yr	Estimated Impact on Rates, ¢/kWh
	K = J	L	M = (K / L) * 100
R	\$63,559		
G	\$11,003		
J	\$32,028		
P	\$0		
Total	\$106,590	34,458,622	0.31

Notes:

- 1 See Appendix A, page 9, column H.
- 2 Source: Base Non-Fuel Energy Rates from Docket 2017-0150 (Maui Electric 2018 Test Year)
Sched R: Docket 2017-0150 (MECO 2018 Test Year) Parties' Joint Proposed Final Tariffs, Exhibit 2, Attachment 1, page 121, filed April 17, 2019.
Sched G: Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019.
Sched J: Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019.
Sched P: Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019.
Base Fuel Energy Value from Docket 2017-0150 (MECO 2018 Test Year) Parties' Joint Proposed Final Tariffs, Exhibit 2, Attachment 1, page 121, filed April 17, 2019.
- 3 No PPAC effective January 1, 2020 at Lanai Division.
- 4 RAM based on Transmittal 19-03, Parties Stipulated Revision to Reply Statements of Position, Scenario 4, Schedule A, Page 1, Revised May 28, 2019, filed May 28, 2019.
- 5 Source: Docket 2017-0150 (MECO 2018 Test Year), Parties' Joint Proposed Final Tariffs, Exhibit 3, page 167, filed April 17, 2019.
- 6 Sales from 2020 Revenue Budget forecast

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

Rate	NEM kW Installed by Technology			Total kW D= sum(A:C)	NEM kWh Installed by Technology			Total kWh H= sum(E:G)
	A PV kW NEM installed (Cumulative Dec 31, 2019) NEM ^A	B Wind kW NEM installed (Cumulative Dec 31, 2019) NEM ^E	C Hydro kW NEM installed (Cumulative Dec 31, 2019) NEM ^F		E PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^{A,B}	F Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^E	G Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	
R	451	0	0	451	672,082	0	0	672,082
G	66	0	0	66	98,972	0	0	98,972
J	239	0	0	239	355,978	0	0	355,978
P	0	0	0	0	0	0	0	0
Total	757	0	0	757	1,127,033	0	0	1,127,033

Source: Grid Technologies Department

^A NEM PV/wind/hydro kW data from respective 2019 utility detailed year end spreadsheets.

^B 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-8760.

Maui Electric Company - Molokai Division

Estimated Lost Contribution to Fixed Costs and Surcharges based on NEM installations as-of December 31, 2019

Rate	Total Lost kWh/yr ¹	Non-fuel Energy Rate ² , cents/kWh	Base Fuel Energy Value ² , cents/kWh	PPAC cents/kWh	RAM ⁴ cents/kWh	Eff. Energy Rate cents/kWh	Production Energy Rate ⁵ cents/kWh	Lost Contribution to Fixed Cost, cents/kWh	Total Lost Contribution to Fixed Cost, \$/Yr. $I = A * H / 100$
	A	B	C	D	E	F = B + C + D + E	G	H = F - G	
R	2,239,757	15.1612	17.6887	0.0648	0.2564	33.1711	22.4840	10.6871	\$239,364
G	542,069	21.4602	17.6887	0.1042	0.2564	39.5095	22.7630	16.7465	\$90,777
J	466,120	13.2358	17.6887	-0.0033	0.2564	31.1776	22.7430	8.4346	\$39,315
P	148,920	6.4744	17.6887	0.0262	0.2564	24.4457	22.3560	2.0897	\$3,112
Total	3,396,865								\$372,566

Rate	Total Lost Contribution to Fixed Cost, \$/Yr	Forecast 2020 Sales ⁶ kWh/yr	Estimated Impact on Rates, \$/kWh
	J = I	K	L = (J / K) * 100
R	\$239,364		
G	\$90,777		
J	\$39,315		
P	\$3,112		
Total	\$372,566	28,470,435	1.31

Notes:

- 1 See Appendix A, page 11, column H.
- 2 Source: Base Non-Fuel Energy Rates from Docket 2017-0150 (Maui Electric 2018 Test Year)
Sched R: Docket 2017-0150 (MECO 2018 Test Year) Parties Joint Proposed Final Tariffs, Exhibit 2, Attachment 1, page 221, filed April 17, 2019.
Sched G: Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019.
Sched J: Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019.
Sched P: Docket 2017-0150 (MECO 2018 Test Year), Final Tariff Sheets Reflecting Fuel Unbundling, filed July 15, 2019.
Base Fuel Energy Value from Docket 2017-0150 (MECO 2018 Test Year) Parties Joint Proposed Final Tariffs, Exhibit 2, Attachment 1, page 221, filed April 17, 2019.
- 3 PPAC Rates Effective January 2020.
- 4 RAM based on Transmittal 19-03, Parties Stipulated Revision to Reply Statements of Position, Scenario 4, Schedule A, Page 1, Revised May 28, 2019, filed May 28, 2019.
- 5 Source: Docket 2017-0150 (MECO 2018 Test Year), Parties Joint Proposed Final Tariffs, Exhibit 3, page 256, filed April 17, 2019.
- 6 Sales from 2020 Revenue Budget forecast.

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				Total kWh H= sum(E:G)
	A PV kW NEM installed (Cumulative Dec 31, 2019) NEM ^A	B Wind kW NEM installed (Cumulative Dec 31, 2019) NEM ^F	C Hydro kW NEM installed (Cumulative Dec 31, 2019) NEM ^F	D= sum(A:C)	E PV kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^{A,B}	F Wind kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F	G Hydro kWh generated in one year from NEM installed (Cumulative Dec 31, 2019) NEM ^F		
R	1,504	0	0	1,504	2,239,757	0	0	2,239,757	
G	364	0	0	364	542,069	0	0	542,069	
J	313	0	0	313	466,120	0	0	466,120	
P	100	0	0	100	148,920	0	0	148,920	
Total	2,281	0	0	2,281	3,396,865	0	0	3,396,865	

Source: Grid Technologies Department.

^A NEM PV/wind/hydro kW data from respective 2018 utility detailed year end spreadsheets.

^B 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-8760.