



January 30, 2023

The Honorable Chair and Members  
of the Hawai'i Public Utilities Commission  
Kekuanao'a Building, First Floor  
465 South King Street  
Honolulu, Hawai'i 96813

Dear Commissioners:

Subject: Adequacy of Supply Report  
Maui Electric Company, Limited

The following information is respectfully submitted in accordance with paragraph 5.3.a. of General Order No. 7, which states:

*The generation capacity of the utility's plant, supplemented by electric power regularly available from other sources, must be sufficiently large to meet all reasonably expectable demands for service and provide a reasonable reserve for emergencies. A Statement shall be filed annually with the Commission within 30 days after the close of the year indicating the adequacy of such capacity and the method used to determine the required reserve capacity which forms the basis for future requirements in generation, transmission, and distribution plant expansion programs required under Rule 2.3h.1.*

#### 2023 Adequacy of Supply Report Summary

- Maui Electric Company, Limited's ("Maui Electric" or the "Company") 2023 Adequacy of Supply employs the Energy Reserve Margin criteria, developed to review adequacy of supply in all hours of the year vs. during the peak hour of the day or peak day of the year, and incorporates the reliability contribution of variable and energy-limited resources, such as energy storage, and duration limited grid services, such as demand response resources. To the extent necessary, the Company respectfully requests Commission approval to use the Energy Reserve Margin criteria for purposes of the Adequacy of Supply Report pursuant to Order No. 38482 in Docket No. 2018-0165.<sup>1</sup>

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<sup>1</sup> See Order No. 38482 issued June 30, 2022, in Docket No. 2018-0165, at 27, which states: "If Hawaiian Electric wishes to employ this methodology outside of IGP, it must seek Commission approval to do so."

- For the island of Maui, Energy Reserve Margin criteria shortfalls occur in 2023. Energy Reserve Margin is satisfied from 2024 through 2027 with the addition of planned generation and storage resource additions.
- For the island of Lānaʻi, Energy Reserve Margin shortfalls occur in 2024 and 2025.
- For the island of Molokaʻi, Energy Reserve Margin is satisfied for the next five years 2023 through 2027.
- The peak load experienced on Maui in 2022 was 195.1 MW-net and was served by Maui Electric's total capability of 246.3 MW-net not including variable generation sources such as wind and solar.<sup>2</sup>
- The peak load experienced on Lānaʻi in 2022 was 6.00 MW-gross, and was served by Lānaʻi's total capability of 9.40 MW-gross, not including variable generation sources.
- The peak load experienced on Molokaʻi in 2022 was 5.80 MW-gross, and was served by Molokaʻi's capability of 12.01 MW-gross not including variable generation sources.

#### 1.0 Maui's Peak Demand and System Capability in 2022

Maui's 2022 system peak occurred on Tuesday, October 11, 2022, at approximately 6:46 p.m. and was 195.1 MW (net) or 199.4 MW (gross). During the peak, wind resources provided approximately 18.0 MW and there was no solar output.

##### 1.1 Rider M

At the time of system peak, Maui had in place nine load management contracts totaling approximately 4.1 MW under Rider M, which reduced the evening peak by approximately 2.4 MW-net.

#### 2.0 Criteria to Evaluate Maui Electric's Adequacy of Supply

Maui Electric's capacity planning criteria are applied to determine the adequacy of supply – whether or not there is enough generating capacity on the system. Maui Electric's capacity planning criteria take into account that the Company must provide for its own backup generation since, each island within its service territory cannot import emergency power from a neighboring utility.

The function of a planning criteria is to establish guidelines to manage the risk of insufficient generation capability from a diverse mix of generating resources available to the system in long-range generation expansion studies. Resource plan development is

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<sup>2</sup> Refer to Attachment 1, Table A1 for details of firm generating units.

evaluated based on a consistent guideline or criteria to provide adequate generation to meet customer demand, with reasonable reserves to account for routine maintenance or overhauls of units, unexpected outages of generating units, growth in customer demand over time, and possibilities of higher than forecasted instantaneous peak demand.

With the increasing quantities of variable renewable wind and solar resources, and future energy storage additions to the system, an Energy Reserve Margin criteria was developed considering the dynamic nature of variable resources and limited duration storage.<sup>3</sup> For the purposes of this adequacy of supply report, Maui Electric used this planning criteria.

## 2.1 Energy Reserve Margin

The Energy Reserve Margin is the percentage which the system capacity must exceed the system load in each hour for planning objectives. With the increasing quantities of variable renewable wind and solar resources, this capacity planning criteria is intended to account for current and future variable generation resources considering the dynamic nature of energy provided by wind, PV and implications of limited duration storage. The hourly evaluation of available energy allows for statistical representation of the impact of variable and finite resources at all hours of the day in the assessment of energy margins. The Energy Reserve Margin for Maui is 30%, to provide reasonable reliability reserve to address some level of contingencies, forecast errors, and uncertainties inherent in the assumptions and methodology.

## 2.2 Other Considerations in Determining the Timing of Unit Additions

The need for new generation is not based solely on the application of the criteria previously mentioned. As capacity needs become imminent, it is essential that Maui Electric consider additional factors to ensure timely installation of generation capacity necessary to meet its customers' energy needs.

Other near-term considerations may include:

1. The current condition and rated capacity of existing units;
2. The preferred mix of generation resources to meet varying daily and seasonal demand patterns at the lowest reasonable capital and operating costs;
3. Required power purchase obligations and contract terminations;

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<sup>3</sup> Refer to Appendix C (page 102) of Hawaiian Electric's Integrated Grid Planning Grid Needs Assessment & Solution Evaluation Methodology filed on November 5, 2021, in Docket No. 2018-0165:  
[https://www.hawaiianelectric.com/documents/clean\\_energy\\_hawaii/integrated\\_grid\\_planning/20211105\\_grid\\_needs\\_assessment\\_methodology\\_review\\_point\\_book\\_1.pdf](https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/20211105_grid_needs_assessment_methodology_review_point_book_1.pdf)

4. The uncertainties surrounding Non-Utility Generation resources;
5. Transmission system considerations;
6. Meeting environmental compliance standards; and
7. System stability considerations for Maui Electric's isolated electrical systems.

While meeting the planning criteria implies a reasonable adequacy of supply, it is not equivalent to a guaranteed supply. As firm capacity resources are displaced to accommodate variable renewable energy, resource planning may need to include resource characteristics to mitigate adequacy of supply risks by having large amounts of offline reserves. This may include consideration of minimum fast-start capability and/or means to curtail demand on short notice.

### 3.0 Key Inputs to the 2023 Adequacy of Supply Analysis

In the application of Maui Electric's capacity planning criteria, the inputs drive the results. Key inputs are described in the following sections.

#### 3.1 Period Under Review

This adequacy of supply review covers the period 2023 to 2027.

#### 3.2 June 2022 Sales and Peak Forecast

In June 2022, a sales and peak forecast ("June 2022 S&P Forecast")<sup>4</sup> was developed which was subsequently approved by the Company for future planning purposes and used for this analysis.

The June 2022 S&P Forecast began with the development of the energy forecast (i.e., sales forecast) by rate class (residential, small, medium and large commercial and street lighting) and by layer (underlying load forecast and adjusting layers – energy efficiency, distributed energy resources, and electrification of transportation). The underlying load forecast is driven primarily by the economy, weather, electricity price, and known adjustments to large customer loads and is informed by historical data, structural changes, and historical and future disruptions. The impacts of energy efficiency ("EE"), distributed energy resources ("DER"), primarily photovoltaic systems with and without storage (i.e., batteries), and electrification of transportation (light duty electric vehicles ("EV") and electric buses ("eBus"), collectively "EoT") were layered onto the underlying sales outlook to develop the sales forecast at the customer level.

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<sup>4</sup> The June 2022 S&P Forecast was adjusted in January 2023 for updates to the Battery Bonus Program Forecast for Oahu and Maui. Update assumes 3 MW of Battery Bonus Enrollment on Maui by the end of 2024.

The sales and peak forecasts used for the analysis herein is the result of the methodology described above.

In addition, the forecast includes the impact of the Battery Bonus Program from customer-sited energy storage systems during the peak period (aka, Scheduled Dispatch).

For the purposes of Maui's analysis, a high weather peak scenario forecast was used to show asymmetric risks associated with unusual events that could occur in future years. Maui Electric has in past years experienced significantly higher peak loads than forecasted primarily due to unusually high temperature and humidity conditions. To evaluate the potential risk associated with higher peaks due to unusual conditions such as high temperature and humidity, a high weather peak scenario forecast was created. Historical weather data was used to define a 1 in 30 high temperature and humidity weather condition for the island of Maui. A regression model was used to derive the peak impact of the 1 in 30 weather condition, which is reflected in the high weather peak scenario forecast.

Figure 1 and Table 1 below illustrate Maui's historical system peaks and compares them to the forecasts used in the 2022 and 2023 Adequacy of Supply analyses.

For both the recorded and forecast data, Table 1 includes the peak reduction benefits of energy efficiency programs and naturally occurring conservation.

Figure 1: Recorded Peaks and Future Year Projections

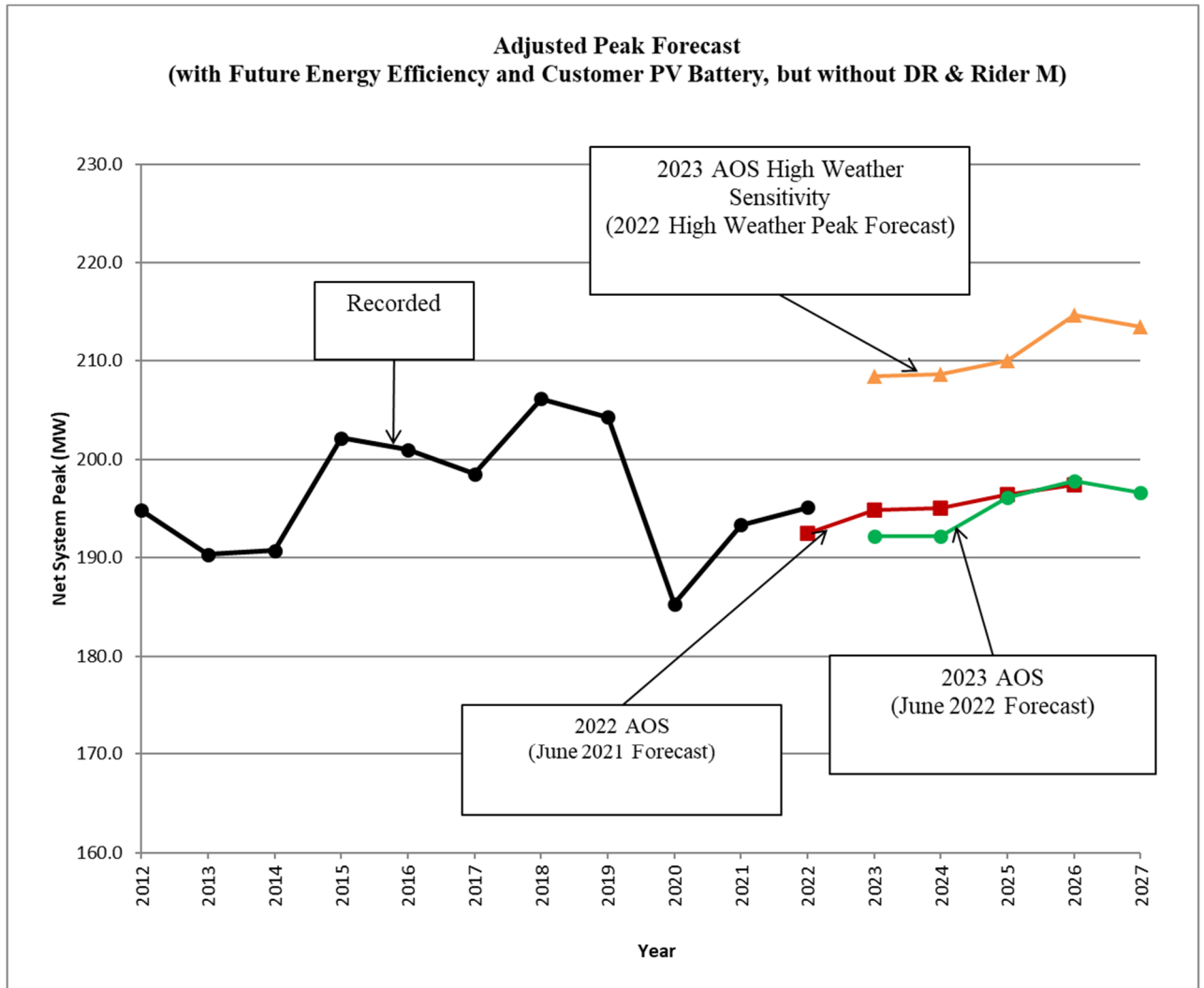


Table 1: Recorded Peaks and Future Year Projections  
Net System Peak (MW)

Year	Actual Net-to-System	June 2021 Peak Forecast	June 2022 Peak Forecast	2022 High Weather Peak Forecast
2012	194.8			
2013	190.3			
2014	190.7			
2015	202.2			
2016	201.0			
2017	198.5			
2018	206.2			
2019	204.3			
2020	185.3			
2021	193.4			
2022	195.1	192.5		
2023		194.8	192.2	208.4
2024		195.0	192.2	208.6
2025		196.4	196.1	210.0
2026		197.4	197.8	214.7
2027			196.6	213.5

### 3.3 Projected Peak Reduction Benefits of Demand Response Programs

Maui Electric is committed to pursuing demand response (“DR”) programs designed to provide cost-effective resource options as identified in the Hawaiian Electric Companies’ Integrated Demand Response Portfolio Plan.<sup>5</sup>

In 2015, the Hawaiian Electric Companies submitted to the Commission for approval a DR Portfolio Application in Docket No. 2015-0412. In 2016, Maui Electric filed an application seeking to expand its Fast DR Program from 0.2 MW to 5.0 MW (“Fast DR Expansion Application”).<sup>6</sup> A Revised DR Portfolio filing was filed on February 10, 2017, which provided modified approval requests and

<sup>5</sup> Refer to Docket No. 2007-0341.

<sup>6</sup> See Application filed in Docket No. 2016-0232.

DR program design and targets following consistent with the DR Portfolio used in PSIP Update Report filing on December 23, 2016. On January 25, 2018, the Commission issued Decision and Order No. 35238, approving the Companies' Revised DR Portfolio tariff structure framework.

The Commission supported the approach of working with aggregators to implement the DR portfolio. In 2019 and 2020, the utilities signed a multi-year Grid Services Purchase Agreement ("GSPA") with a third party aggregator. Currently, the Companies are implementing two GSPA contracts<sup>7</sup> that were approved by the Commission on August 9, 2019 and December 31, 2020. Customer enrollment under these GSPA contracts have been delayed by the COVID-19 pandemic, but the Companies are diligently working with the aggregators to catch up. For the purposes of the analysis, Maui Electric's adequacy of supply was calculated with forward looking peak reduction benefits from existing activities of Fast DR and the GSPA for Maui. The DR impacts in Table 2 lists the peak reductions from 5:00 PM to 9:00 PM that has been added as a load reducing resource for the purposes of contributing to this Adequacy of Supply analysis for 2023-2027.

Table 2: DR Peak Reduction

Year	DR Peak Reduction Impacts (MW-Net)
2023	2.1
2024	0.2
2025	0.2
2026	0.2
2027	0.2

### 3.4 Planned Maintenance Schedules for the Generating Units on the System

Planned overhaul and maintenance outages reduce generating unit availabilities. The schedules for planned overhaul and maintenance outages change frequently due to unforeseeable findings during outage inspections or to changes in priorities due to unforeseeable problems or circumstances. When major revisions to planned and/or maintenance outages occur, the Planned Maintenance Schedule is

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<sup>7</sup> Originally there were three GSPA contracts. One contract worth approximately 5 MW of capacity reduction was mutually terminated on October 20, 2022. The Company notified the Commission of this status update in the Modification & Evaluation Report filed on November 30, 2022 in Docket No. 2007-0341.



revised. The Planned Maintenance Schedule used in this analysis was updated on January 4, 2023.

### 3.5 Reductions of Firm Generating Capacity

There are no reductions in firm generating capacity throughout the study period. Kahului Power Plant and the Mitsubishi Units (Maalaea 10 – 13) are assumed to be retired at the start of 2028. If these units were to be retired earlier, it is likely that there will be shortfalls during the study period.

### 3.6 Resource Additions

In January 2017, the Company filed a letter with the Commission requesting to open a docket to solicit proposals for new renewable dispatchable generation. The Commission subsequently issued Order No. 34856 and opened Docket No. 2017-0352 to receive filings, review approval requests, and resolve disputes, if necessary, related to the plan to proceed with competitive procurement of this generation. Request for Proposals (“RFP”) for the above docket were separated into three stages, Stage 1, 2 and Stage 3.

Maui Electric’s Stage 1 AES Kuihelani Solar (Docket No. 2018-0436) project is included in this analysis as of November 2023. Maui Electric’s Stage 2 project – Kamaole Solar (Docket No. 2021-2026) is also included in this analysis as of December 2024. The Paeahu Solar (Docket No. 2018-0433) and the Waena BESS project (Docket No. 2020-0132) are under review and are not included in this analysis.

On February 18, 2022, the Commission provided guidance to develop a Stage 3 RFP for Maui. Pursuant to Order No. 38735 filed on December 1, 2022, Hawaiian Electric filed its proposed final Stage 3 Maui RFP on December 22, 2022. The Stage 3 RFP for Maui was issued on January 20, 2023.

Maui CBRE phase 1 project ROIZ (0.03 MW, existing) and CBRE LMI (3 MW added June 2025, and 5 MW added October 2025) are included in this analysis.

1.6 MW of distributed generation (“DG”) located at Kuihelani is included in this analysis and is assumed to be in service first quarter of 2023.

## 4.0 Results of Analysis

### 4.1 Description of Scenarios

For the Energy Reserve Margin analysis, two scenarios were analyzed. A Base peak forecast, and a high weather peak forecast.

#### 4.2 Energy Reserve Margin

The results of the Energy Reserve Margin analysis are shown in Table 3.

In the Base scenario, Energy Reserve Margin criteria shortfalls occur in 2023. Energy Reserve Margin is satisfied from 2024 through 2027 with the addition of planned generation and storage resource additions.

In the High Weather scenario, the Energy Reserve Margin is not satisfied in 2023. Future peaks are highly uncertain, as such Maui Electric plans to adjust maintenance schedules throughout the year, to the extent possible, to mitigate shortfalls.

Table 3: Maui Estimated Energy Reserve Margin Shortfall Hours

Number of Hours Below Energy Reserve Margin Target (Pass/Fail 30% Criteria)		
Year	Base Scenario	High Weather Scenario
2023	164 (FAIL)	184 (FAIL)
2024	0 (PASS)	0 (PASS)
2025	0 (PASS)	0 (PASS)
2026	0 (PASS)	0 (PASS)
2027	0 (PASS)	0 (PASS)

Table 4: Maui Estimated Energy Reserve Margin Percentage

Lowest Estimated Hourly Energy Reserve Margin Percentage		
Year	Base Scenario	High Weather Scenario
2023	16%	5%
2024	48%	38%
2025	50%	44%
2026	50%	48%
2027	50%	42%

## 5.0 Mitigation Measures

Maui Electric recognizes a need to implement various measures on Maui to improve its energy reserve margin and to allow for the retirement of Kahului Power Plant. As a result, Maui Electric has taken a portfolio approach, considering a variety of mitigation measures.

### 5.1 Additional Grid Services

The Company's Customer Energy Resources group will develop a new RFP and GSPA contract from the recent lessons learned from O'ahu and Hawai'i Island. The Company will issue an RFP for 20 MW of capacity load reduction (5:00pm – 9:00pm) on February 1, 2023 per Commission Order No. 38744 issued on December 22, 2022 in Docket No. 2017-0352. The RFP will have a grid service operational date in summer of 2026.

### 5.2 Temporary Distributed Generation

Maui Electric's application to purchase and install approximately 4.95 MW of temporary distributed generation ("Temp DG") remains suspended.<sup>8</sup> However, the Company believes Temp DG is the lowest risk alternative to supplemental DR capacity in the near-term. Temp DG units can be operational in six months or less, and provide a high level of dependable capacity, relative to the other options available to Maui Electric. Currently the Company is pursuing 1.6 MW DG to go in service first quarter 2023.

### 5.3 Refinement of Maintenance Schedule

Maui Electric's normal maintenance scheduling practices are performed by the Maui Electric Generation Division. Scheduling involves many different operational factors. Maintenance scheduling can be expected to be adjusted numerous times over the year due to changing operational factors. In the event of reserve capacity shortfalls, rearranging maintenance schedules, to the extent possible, may provide some level of mitigation

### 5.4 Call for Conservation

Maui Electric may request voluntary customer curtailment of demand during capacity reserve shortfall conditions. However, because this is strictly voluntary, and the Company has no direct control in the implementation of this measure, it should not be considered as dependable as other measures such as demand

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<sup>8</sup> See Order No. 34437 Suspending the Docket, issued on March 9, 2017 in Docket No. 2016-0234.

response. Also, the potential benefit of this option is likely to reduce over time, as increased customer participation in demand response programs becomes more common.

## 6.0 Lāna'i Division

### 6.1 Peak Demand and System Capability in 2022

Lāna'i's 2022 system peak of 6,000 kW (gross) occurred on January 1, 2022 (6:13 p.m.). The total system capability of Lāna'i was 9,400 kW-gross at the time of the system peak.

At times during 2022, Lāna'i received energy from Lanai Sustainability Research, LLC ("LSR"), a PV independent power producer.

Maui Electric developed and adopted its peak forecast in June 2022 that was used in this analysis for Lāna'i.

### 6.2 Lāna'i Division Capacity Planning Criteria

The Energy Reserve Margin for Lāna'i is 60% to provide reasonable reliability reserves to address some level of contingencies, forecast errors, and uncertainties inherent in the assumptions and methodology.

### 6.3 Lāna'i Division Results of Analysis

#### 6.3.1 Energy Reserve Margin Results

The results of the Energy Reserve Margin criteria analysis are shown in Table 7.

Table 7: Lāna'i Estimated Energy Reserve Margin Shortfall Hours

Year	Number of Hours Below Energy Reserve Margin Target (Pass/Fail 60% Criteria)
2023	1 (PASS)
2024	295 (FAIL)
2025	47 (FAIL)
2026	1 (PASS)
2027	0 (PASS)

Table 8: Lāna‘i Estimated Energy Reserve Margin Percentage

Year	Lowest Estimated Hourly Energy Reserve Margin Percentage
2023	70%
2024	30%
2025	50%
2026	70%
2027	80%

In 2024 and 2025 the larger 2,200 kW units on Lāna‘i are taken offline for maintenance resulting in Energy Reserve Margin criteria shortfalls for those years.

#### 6.4 Mitigation Measures

Mitigation measures and additional resources are needed for Lana‘i to meet its Energy Reserve Margin criteria.

##### 6.4.1 Refinement of Maintenance Schedule

Maui Electric’s normal maintenance scheduling practices are performed by the Maui Electric Generation Division. Scheduling involves many different operational factors. Maintenance scheduling can be expected to be adjusted numerous times over the year due to changing operational factors. In the event of reserve capacity shortfalls, rearranging maintenance schedules, to the extent possible, may provide some level of mitigation

##### 6.4.2 Lāna‘i Request for Proposals (“RFP”)

The Lāna‘i RFP sought to add photovoltaic paired with battery energy storage projects.<sup>9</sup> These projects would allow Lāna‘i to meet its Energy Reserve Margin criteria. The RFP required project proposals to have a guaranteed commercial operations date no later than August 31, 2025. A 17.5 MW photovoltaic paired with battery energy storage project was selected; however, due to uncertainties regarding Pūlama Lāna‘i’s intent to design and construct a microgrid to serve the energy demand for the Four Seasons Lāna‘i and Sensei Lāna‘i, the Company and the Lāna‘i Solar project have agreed to continue but not execute the power purchase agreement at this time until there is greater

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<sup>9</sup> See November 22, 2021 Filing in Docket No. 2015-0389, Community-Based Renewable Energy.

clarity about the need for this project, given that these resorts represent approximately 40% of the island's load.

#### 6.4.3 Call for Conservation

Maui Electric may request voluntary customer curtailment of demand during capacity reserve shortfall conditions. However, because this is strictly voluntary, and the Company has no direct control in the implementation of this measure, it should not be considered as dependable as other measures such as demand response.

### 7.0 Moloka'i Division

#### 7.1 Peak Demand and System Capability in 2022

Moloka'i's 2022 system peak of 5,800 kW (gross) occurred on October 17 (6:30 p.m.). The total system capability on Moloka'i was 12,010 kW-gross at the time of the system peak.

Maui Electric developed and adopted its peak forecast in June 2022 that was used in this analysis for Moloka'i.

#### 7.2 Moloka'i Division Capacity Planning Criteria

The Energy Reserve Margin for Moloka'i is 60% to provide reasonable reliability reserves to address some level of contingencies, forecast errors, and uncertainties inherent in the assumptions and methodology.

#### 7.3 Moloka'i Division Results of Analysis

##### 7.3.1 Energy Reserve Margin Results

The results of the Energy Reserve Margin criteria analysis are shown in Table 11. Molokai CBRE phase 1 project Kawea(0.25 MW added Q1 2023) is included in this analysis. This analysis does not include the recently negotiated CBRE projects. The Energy Reserve Margin criteria for Moloka'i is satisfied in the years 2023 to 2027.

Table 11: Moloka'i Estimated Energy Reserve Margin Shortfall Hours

Year	Number of Hours Below Energy Reserve Margin Target (Pass/Fail 60% Criteria)
2023	0 (PASS)
2024	0 (PASS)
2025	0 (PASS)
2026	0 (PASS)
2027	0 (PASS)

Table 12: Moloka'i Estimated Energy Reserve Margin Percentage

Year	Lowest Estimated Hourly Energy Reserve Margin Percentage
2023	150%
2024	140%
2025	160%
2026	160%
2027	170%

7.4 Reductions in Peak Demand: Moloka'i's Rider M

At the time of system peak, Moloka'i had in place one load management contract totaling approximately 366 kW under Rider M, which reduced evening peak by approximately 360 kW.

8.0 Conclusion

The Maui Division's Energy Reserve Margin shortfalls occur in 2023. Energy Reserve Margin is satisfied from 2024 through 2027 with the addition of planned generation and storage resource additions.

The Lāna'i Division's Energy Reserve Margin shortfalls occur in 2024 and 2025.

The Moloka'i Division's Energy Reserve Margin is satisfied for the next five years 2023 through 2027.

The Honorable Chair and Members  
of the Hawai'i Public Utilities Commission  
January 30, 2023  
Page 16

Maui Electric recognizes that the environment for resource planning has increased in complexity and uncertainty. Nonetheless, Maui Electric will continue its portfolio approach to meet its obligation to serve, which includes increased renewable energy contributions, energy storage resources, the pursuit of supply side options, and customer program options, as well as continuing to consider other potential options.

Sincerely,

/s/ Kevin M. Katsura

Kevin M. Katsura  
Director  
Regulatory Non-Rate Proceedings

Attachment

c: Division of Consumer Advocacy (with Attachment)



Table A1:

**Maui Unit Ratings Installed**  
 As of December 31, 2022

Units	Gross (MW)		Net (MW)	
	Reserve	NTL <sup>(I)</sup>	Reserve	NTL <sup>(I)</sup>
M1	2.50	2.50	2.50	2.50
M2	2.50	2.50	2.50	2.50
M3	2.50	2.50	2.50	2.50
X1	2.50	2.50	2.50	2.50
X2	2.50	2.50	2.50	2.50
M4	5.60	5.60	5.51	5.51
M5	5.60	5.60	5.51	5.51
M6	5.60	5.60	5.51	5.51
M7	5.60	5.60	5.51	5.51
M8	5.60	5.60	5.48	5.48
M9	5.60	5.60	5.48	5.48
M10	12.50	12.50	12.34	12.34
M11	12.50	12.50	12.34	12.34
M12	12.50	12.50	12.34	12.34
M13	12.50	12.50	12.34	12.34
M14/15/16 <sup>(II)</sup>	58.00	58.00	56.78	56.78
M17/18/19 <sup>(II)</sup>	58.00	58.00	56.78	56.78
Maalaea GS	212.10	212.10	208.42	208.42
K1	5.90	5.00	5.62	4.71
K2	6.00	5.00	5.77	4.76
K3	12.70	11.50	12.15	10.98
K4	13.00	12.50	12.38	11.88
Kahului GS	37.60	34.00	35.92	32.33
Hana 1 <sup>(III)</sup>	1.00	1.00	0.97	0.97
Hana 2 <sup>(III)</sup>	1.00	1.00	0.97	0.97
Maui System	251.70	248.10	246.28	242.69

Notes:

(I) NTL = Normal Top Load

- (II) The NTL rating for long-term capacity planning purposes for each of the two Maalaea Dual Train Combined Cycle units, Maalaea Unit 14/15/16 and Maalaea Unit 17/18/19, is 56.78 MW (net). Maui Electric performed capability tests on Maalaea Unit 14/15/16 and Maalaea Unit 17/18/19, respectively. Maalaea Unit 14/15/16 resulted in a net NTL rating of 56.27 MW (0.51 MW lower than the rated NTL) and M17/18/19 resulted in a net NTL of 56.20 MW (0.58 MW lower than the rated NTL). With consideration that the capabilities of these units can vary depending on ambient weather conditions, it was determined that the rated NTL of 56.78 MW (net) is acceptable.
  
- (III) Units located at Hana Substation No. 41.

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