Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

GFile
C: BC
SJI
CKD
WT

FILED

2011 JAN 27 P 3:53
PUBLIC UTILITIES COMMISSION

January 27, 2011

Edward L. Reinhardt
President

The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
465 South King Street
Kekuanaoa Building, 1st Floor
Honolulu, Hawaii 96813

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Limited ("MECO")

The following information is respectfully submitted in accordance with paragraph 5.3a 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.

1.0 Maui Division

1.1 Peak Demand and System Capability in 2010

Maui's 2010 system peak occurred on December 28, 2010, and was 199,400 kW (net) or 203,800 kW (gross). The total system capability of Maui was 262.3 MW (net) at the time of the system peak, resulting in a reserve margin of approximately 32% over the 2010 system peak, as shown in Attachment 1.

1.2 Determination of Maui Division's Adequacy of Supply

1.2.1 Maui Division Capacity Planning Criteria

The following capacity planning criteria are used to determine the timing of an additional generating unit for the Maui Division:

New generation will be added to prevent the violation of the rule listed below where "units" mean all units and firm capacity suppliers physically connected to the system, and "available unit" means an operable unit not on scheduled maintenance.

The sum of the reserve ratings of all units minus the reserve rating of the largest available unit minus the reserve ratings of any units on maintenance must be equal to or greater than the system peak load to be supplied.

In addition, consideration will be given to maintaining a reserve margin of approximately 20 percent based on Reserve Ratings.

1.2.2 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 MECO broaden its consideration to ensure timely installation of generation capacity necessary to meet its customers' energy needs. As stated in the Capacity Planning Criteria:

The preceding rules apply to capacity planning in long-range generation expansion studies. The actual commercial operation date for the next unit to be added shall also be determined using these rules as guides, with due consideration given to short-term operating conditions, equipment procurement, construction, regulatory approvals, financial and other constraints, etc.

Other near-term considerations may include:

- the current condition and rated capacity of existing units;
- the preferred mix of generation resources to meet varying daily and seasonal demand patterns at the lowest reasonable capital and operating costs;
- the forecasted minimum demand;
- required power purchase obligations and contract terminations;
- the unpredictable output of supplemental resources;

- the uncertainties surrounding Non-Utility Generation ("NUG") resources;
- transmission system considerations; and
- system stability considerations for MECO's isolated system.

1.3 Peak Demand

1.3.1 Recorded Peak Demand

Maui's 2010 system peak of 203.8 MW (gross) or 199.4 MW (net) occurred on December 28, 2010. The 2010 annual gross peak was 0.5 MW lower than the 2009 gross system recorded peak of 204.3 MW (gross) (or 199.9 MW (net)) set on October 21, 2009. The following table shows the Maui historical system peak demand.

Table 1.3.1-1: Recorded System Peak Demand

Year	Recorded System Peak, MW-Net
2005	202.1
2006	206.4
2007	204.4
2008	194.4
2009	199.9
2010	199.4

Maui's lower system peak in 2010 compared to 2009 appears to have been due to energy conservation efforts resulting from higher electricity prices compared to 2009, which was partially offset by warmer weather and the lack of wind in the latter part of December.

1.3.2 Projected Peak Demand

The following table shows the projected peak demand for Maui over the next seven years:

Table 1.3.2-1: Maui Forecast Peak Demand (2011-2017)

Year	Forecast System Peak Demand without DSM Impacts, MW-Net	Forecast Future and Acquired DSM Impacts, MW-Net	Forecast Impacts of Load Management DSM, MW Net	Forecast System Peak Demand with Peak Reduction Benefits of DSM, MW-Net
2011	206.7	2.6	0.0	204.1
2012	210.4	3.9	0.8	205.7
2013	215.1	5.2	2.6	207.3
2014	219.2	6.5	4.0	208.7
2015	223.8	7.7	5.0	211.1
2016	228.6	8.9	6.0	213.7
2017	232.6	10.1	6.7	215.8

The forecasted peaks, including reductions from the Demand Side Management ("DSM") impacts, have not changed from what was adopted on June 10, 2010 ("June 2010 Peak Forecast"),[1] as previously communicated in the Adequacy of Supply ("AOS") Update letter filed with the Commission on June 30, 2010. The forecasted Maui peak for 2010 was 197.8 MW (net), which was 1.6 MW lower than the 2010 recorded net peak. As stated earlier, the recorded peak appears to have been influenced by warmer weather and a lack of wind.

The June 2010 Peak Forecast was developed based on the sales forecast adopted in June 2010 ("June 2010 Sales Forecast"). As the table above indicates, the peak demand is expected to continue its slow growth as the Maui economy gradually recovers from the recession. The number of customers is expected to increase, while the average use per customer is projected to continue its decline. Major factors that put downward pressure on average use per customer include

[1] On June 21, 2010, MECO and the Division of Consumer Advocacy ("Consumer Advocate") filed a Stipulated Settlement Letter in MECO's 2010 test year rate proceeding, Docket No. 2009-0163. In that proceeding, the Consumer Advocate proposed and MECO agreed to an even higher sales MWh forecast for Maui Division than that which is the basis for the June 2010 Peak Forecast.

continued energy conservation, installation of energy efficiency measures and expanded installation of renewable energy resources such as photovoltaic systems.

However, MECO needs to continue to evaluate and plan for the implementation of several different resource options that could serve as contingencies in the short and long term. These contingencies are discussed in more detail in Section 1.9 of this letter.

1.4 Reductions in Peak Demand

1.4.1 MECO's Energy Efficiency DSM Programs (Maui Division)

At the time of the system peak, Maui had in place seven load management contracts totaling approximately 5,300 kW under Rider M, which reduced the evening peak by approximately 2,700 kW. In addition, Maui has had residential and commercial & industrial energy efficiency DSM programs from 1996, which reduced the system peak by an estimated 15,633 kW-net (net of free riders).[2]

MECO continued to administer the SolarSaver Pilot ("SSP") Program through the end of its pilot program on June 30, 2010, consistent with the Commission's *Order Denying HECO Companies' Amendments to the SolarSaver Pilot Program, Filed December 31, 2008*, dated April 9, 2009, in Docket No. 2006-0425. Therefore, impacts for energy efficiency program participants and the SSP Program participants through June 30, 2010 were included in the calculation of the estimated system peak reduction stated above and is based on MECO and Hawaii Energy, Hawaii Public Benefits Fee (PBF) Administrator, records.

Projected long-term energy efficiency DSM impacts reflected in the AOS analyses are based on the utility's estimates developed prior to the transfer of energy efficiency program implementation to Hawaii Energy. Adjustments to the long-term projection will be made as forward-looking projections become available from the third party administrator.

Unlike the energy efficiency DSM Programs, load management DSM programs will continue to be administered by the utilities.

[2] In addition to MECO implemented energy efficiency programs, Hawaii Energy, Public Benefits Fee Administrator, reported net kW impacts of 1,488 kW for the Program Year (PY) 2009, July 1, 2009 – June 30, 2010, as reported in the RW Beck Annual Report to the Hawaii Public Utilities Commission, dated September 10, 2010.

1.4.2 Maui Load Management DSM Program

Due to expected reserve capacity violations beginning in 2015, MECO plans to submit two separate applications seeking Commission approval of residential and commercial & industrial direct load control programs for Maui, RDLC and CIDLC, respectively, by June 30, 2011.

The following table shows the cumulative forecasted peak impacts of the load management DSM programs for the years 2011-2017. Forecasted impacts of load management DSM programs were assumed to begin in 2012.

Table 1.4.2-1: Load Management DSM Program Impacts (2011-2017)

Year	Forecasted Impacts of Load Management DSM (MW-Net)
2011	0.0
2012	0.8
2013	2.6
2014	4.0
2015	5.0
2016	6.0
2017	6.7

1.4.3 Net Peak Demand

The peak reduction benefits of energy efficiency DSM are reflected in the forecast of peak demand shown in Table 1.3.2-1. The load management programs are treated as a resource that can offset demand and are reflected in the calculation of reserve margins shown in Table 1 in Attachment 1.

1.4.4 Combined Heat and Power ("CHP") / Distributed Generation ("DG")

Firm DG resources can provide generating capacity if they can be reliably dispatched by the utility, or can provide reliable load reductions if operated by customers. MECO had previously forecasted firm DG resources, namely CHP, in its AOS evaluations for the past several years, but the lack of interconnection requests for new third-party CHP activities has caused MECO to not forecast potential third-party CHP projects. MECO has no utility CHP plans for the island

of Maui. MECO will include third-party CHP projects in its forecast as interconnection requests are received; however, there are no such requests at this time, so the current CHP forecast is zero.

MECO, with Hawaiian Electric's assistance, will continue to evaluate its options with DG, including potential utility-sited DG projects and dispatchable standby generation ("DSG") projects similar to Hawaiian Electric's Honolulu Airport DSG Project.

1.5 Total Firm Capacity

1.5.1 Total Maui Division Firm Capacity

The Maui Division has a total of 246.3 MW-net of firm capacity. A summary of MECO's firm capacity, as of December 31, 2010, is shown in Attachment 2.

1.5.2 HC&S Power Purchase Agreement ("PPA")

On July 25, 2007, MECO filed a letter with the Commission in Docket No. 6616 (Hawaiian Commercial & Sugar Company ["HC&S"]), which informed the Commission that MECO and HC&S agreed on July 2, 2007 not to issue a notice of termination of the PPA resulting in termination of the PPA prior to the end of the day on December 31, 2014.[3] This agreement was reached so that HC&S would have more certainty as to the future revenue sources supporting its sugar business, MECO would be able to rely on the continued availability of power from HC&S (a firm, non-fossil fuel power producer) beyond the end of 2011 in planning MECO's generating system and in meeting its Renewable Portfolio Standards, and both parties would have additional time in which to consider HC&S' future plans before negotiating a new, long-term PPA. For planning purposes, MECO assumes the HC&S PPA will terminate at the end of 2014. However, MECO will continue to have discussions with HC&S regarding the future of their operations. This may lead to negotiations for a possible agreement not to terminate the PPA beyond 2014. If the PPA is assumed to continue in effect beyond 2014, the timing for the need for future increments of firm capacity will be affected.

[3] A previous agreement between MECO and HC&S (June 28, 2005) not to issue a notice of termination of the PPA resulting in the termination of the PPA prior to the end of the day on December 31, 2011. MECO filed the June 28, 2005 letter with the Commission on July 27, 2005 in Docket No. 6616. At the time, the resulting need date for new firm capacity was deferred from 2009 to 2011.

1.5.3 Total Firm Capacity on Maui

The total firm generating capacity on Maui is 262.3 MW-net, including both MECO and HC&S generation. The Maui Division's total system capacity would be reduced by 16 MW if HC&S does not continue its operations beyond the December 31, 2014 termination date of the existing power purchase contract.

1.6 Load Service Capability

Based on the forecast provided in Section 1.3.2 above (including the peak reduction benefits of energy efficiency DSM), the projected peak reduction benefits of load management programs, the assumption that the HC&S PPA will terminate at the end of 2014, the total existing firm capacity on the MECO system, Maui Division's planned maintenance schedule as of May 2010, and the application of MECO's capacity planning criteria, there are projected reserve capacity shortfalls starting in 2015, as shown in Table 1.6-1 below, with the assumption that no new firm capacity is added to the system.

Table 1.6-1: Load Service Capability Margin Shortfall and Reserve Capacity Deficit Based on 20% Reserve Margin

Year	Forecast Peak Demand, MW-net	Total Firm Capacity on MECO System, MW-net	Largest Load Service Capability Margin Shortfall (Rule 1) MW-net	Largest Reserve Capacity Deficit by 20% Minimum Reserve Margin, MW-net
2011	204.1	262.3	0.0	0.0
2012	205.7	262.3	0.0	0.0
2013	207.3	262.3	0.0	0.0
2014	208.7	262.3	0.0	0.0
2015	211.1	246.3	-6.5	-7.0
2016	213.7	246.3	-8.9	-10.2
2017	215.8	246.3	-11.7	-12.7

1.7 Impact of New Forecast on Need for Additional Firm Generating Capacity

The timing of the need for additional firm generating capacity was determined through the application of Maui Division's capacity planning criteria, as explained in Section 1.2.1, and with consideration given to other factors, as described below. Two of the key inputs in the application of the capacity planning criteria are the forecasted peaks and the total system capacity. An analysis showed that with the June 2010 peak forecast and no additional firm capacity resources added to the Maui system, a capacity planning

criteria violation will occur in 2015 and in subsequent years. This means that additional firm capacity needs to be added to the system in 2015. Refer to Attachment 3 for the system capability charts used to determine the timing and extent of the violations.

1.7.1 Other Considerations in Determining the Timing of Unit Additions

The determination of the timing of the need for additional firm capacity is not based solely on MECO's capacity planning criteria. For example, Section 1.2.2 identified other factors that are considered. In addition, consideration is given to the uncertainty of the inputs used in the application of MECO's capacity planning criteria. For example, there may be an increasing need for firm capacity in the future if:

- The system peak is higher than forecasted. This could be due to hotter weather, lower rainfall resulting in higher irrigation and drinking water pumping loads or more rapid than forecasted economic growth that result in greater than forecasted peak demand. Consideration may be given to a higher peak forecast scenario as a representation of non-normal weather or more rapid economic growth.

- DSM programs (energy efficiency and load management ("LM")) provide peak reduction benefits that are less than currently projected.

Conversely, if, individually or cumulatively, DSM programs, third party CHP projects, and load management programs provide greater impacts than currently forecasted, if system peak demand is lower than currently forecast, and/or if planned or unplanned firm projects on Maui enter the system prior to 2015, then the timing of the need for additional firm capacity could be deferred beyond 2015. In summary, MECO considers a number of potential scenarios with different inputs, or different levels of inputs, to determine when new firm generating capacity should be installed.[4]

1.8 Acquisition of Additional Firm Generating Capacity

1.8.1 Competitive Bidding is the Required Acquisition Mechanism

On December 8, 2006, the Framework for Competitive Bidding ("CB Framework") was adopted by the Commission in Decision and Order No. 23121 ("D&O 23121") in Docket No. 03-0372, pursuant to HRS §§ 269-7 and 269-15, and Hawaii Administrative Rules § 6-61-71. The Commission's CB Framework

[4] On June 30, 2010, MECO submitted an update to the January 28, 2010 AOS letter to the Commission. Sensitivity analyses (high peak, low peak, HC&S extension scenario) were provided in the AOS update letter.

states that "[c]ompetitive bidding, unless the Commission finds it to be unsuitable, is established as the required mechanism for acquiring a future generation resource or a block of generation resources, whether or not such resource has been identified in a utility's IRP."[5]

As stated above, MECO will need additional firm capacity in the 2015 timeframe. MECO will seek to acquire the additional firm capacity through a competitive bidding process.

1.8.2 Exemptions to the CB Framework

In D&O 23121, the Commission adopted "exemptions based on size" as proposed by the HECO Utilities. One exemption given in Section II.A.3.f. on page 5 of the CB Framework states in relevant part:

> This Framework also does not apply to: (i) generating units with a net output available to the utility of 1% or less of a utility's total firm capacity, including that of independent power producers, or with a net output of 5 MW or less, whichever is lower. For systems that cover more than one island (i.e., MECO's system, which has generation on Maui, Molokai and Lanai), the system firm capacity will be determined on a consolidated basis.

MECO's total firm capacity (gross reserve MW) as of December 31, 2010 is 290.11 MW, which is based on the following:

Maui:	267.7 MW
Lanai:	10.4 MW
Molokai:	12.01 MW

One percent of MECO's total firm capacity is 2.90 MW. As a result, for MECO, the CB Framework would not apply to proposed generating units with a net output available to the utility of 2.90 MW (i.e., the lower of 2.90 MW and 5 MW) or less.

1.8.3 Foundation for the Request For Proposals ("RFP")

1.8.3.1 Integrated Resource Planning ("IRP")

The CB Framework states "Any electric utility's IRP shall specify the proposed scope of the RFP for any specific generation resource or

[5] CB Framework, Section II.A.3. on page 3.

block of generation resources that the IRP states will be subject to competitive bidding."[6]

On April 30, 2007, MECO filed with the Commission its third major integrated resource plan ("MECO IRP-3") in Docket No. 04-0077. MECO's IRP-3 plan indicated that additional 20 MW firm capacity increments would be needed in the 2011 and 2013 timeframes based on MECO's June 2005 forecast of peak demand.[7] MECO also provided the anticipated scope of the RFP, which would seek the required amount of firm capacity.[8] Further definition of the scope of the RFP is provided in Section 6.3 below.

On July 28, 2008, the Commission issued its Decision and Order in Docket No. 04-0077. The Commission stated in relevant part:

> By this Decision and Order, the commission approves Maui Electric Company, Ltd.'s ("MECO") [footnote 1 omitted] third integrated resource plan ("IRP-3") and program implementation schedule ("Action Plan").

On December 9, 2008, the Commission issued an Order Closing Docket in Docket No. 04-0077 (Maui Electric Company, Limited, Integrated Resource Planning). In that Order Closing Docket, the Commission stated in relevant part:

> Here, having considered the filings, the commission will close this docket. As the commission is closing this docket to allow for resources to be diverted to development of a CESP framework [footnote 2 omitted], the commission directs MECO to suspend all activities pursuant to the IRP Framework. MECO is no longer required to: 1) meet with its Advisory Group; 2) file an initial evaluation report of its IRP-3 Plan and Action Plan by December 31, 2008, and a second evaluation report by December 31, 2009; and 3) file its IRP-4 by April 30, 2010.[9]

---

[6] Id., Section II.B.1., on page 7
[7] MECO IRP-3 report, Section 9.8, pages 9-28 and 9-29.
[8] Id., Section 9.9.4, on page 9-37.
[9] Order Closing Docket, page 4.

1.8.3.2 Adequacy of Supply ("AOS")

Despite the suspension of the MECO IRP-4 process, MECO continues its planning work in the normal course of conducting its business. As part of its normal planning work, MECO assesses the adequacy of its generating resources to provide reliable service and files Adequacy of Supply reports annually.

For example, on January 28, 2010, MECO filed its 2010 AOS report with the Commission and indicated that based on its June 2009 forecast of peak demand, additional firm capacity would not be needed until 2021. In its periodic assessment of its generating system reliability, MECO re-evaluated its need for capacity based on its June 2010 forecast of peak demand. MECO determined that additional firm capacity would be needed in the 2015 timeframe and reported that information to the Commission in the AOS Update letter dated June 30, 2010.

As provided above, the CB Framework states that the utility's IRP shall specify the scope of the RFP for any specific generation resource or block of generation resources that the IRP states will be subject to competitive bidding. Since MECO's IRP-4 process has been suspended, MECO is providing the scope of the RFP herein.

1.8.4 Scope of the RFP

1.8.4.1 Size (in MW) of RFP

MECO currently plans to seek up to 50 MW of firm capacity to accommodate anticipated load growth and to maintain generating system reliability in the event the HC&S PPA does not extend past the end of 2014. The RFP will be prepared in such a manner as to allow bidders to participate in two distinct bidding options aligned with the firm capacity needs for MECO.

1.8.4.2 Timing of Firm Capacity Needs

The first 25 MW will need to be in service by 2015 to accommodate the anticipated loss of HC&S capacity. The next 25 MW will need to be in service by 2018 to accommodate load growth. However, provisions in the RFP will be included to indicate that the capacity need dates may change due to unforeseen conditions and that bidders should

provide adjustment mechanisms in their proposals should MECO's need for capacity change.

1.8.4.3 Attributes of New Generation

The RFP will not specify the type of generating technology bidders should propose. Rather, the RFP will specify the attributes that proposed resources should possess. The attributes of desired future firm generating capacity are described below. Definitions of the terminology are described in Appendix 4. The description of the attributes and the definitions of the terminology will be refined as needed in the draft and final RFPs.

- The capacity to be provided in each increment of capacity (2015 and 2018) may come from multiple generating units.
- Each generating resource must provide firm capacity.
- Each generating resource must be dispatchable.
- The size, in MW, of any one generating resource shall not exceed 25 MW.
- The input energy (such as the fuel supply) to the generating units must be renewable and sustainable.
- Each generating resource must be quick-starting, i.e., the time between the start signal and synchronizing the generator to the system, closing the breaker and reaching minimum load shall be 10 minutes or fewer.
- Each generating resource must be able to cycle on and off multiple times per day.
- Each generating resource must be able to help regulate system frequency.
- Each generating resource must be able to help regulate voltage.
- Each generating resource must be able to increase or decrease their power output at a rate equal to or greater than 5 MW per minute.
- Each generating resource must use commercially available and proven technology.

- Each generating resource site must have black-start capability (i.e., capable of starting up on a completely de-energized utility grid).

1.8.5 Competitive Bidding Process

1.8.5.1 Request Commission Open a Docket

By February 2011, MECO will submit a request to the Commission to open a new docket to receive filings, review approval requests, and resolve disputes, if necessary, related to MECO's proposal to proceed with a competitive bidding process to acquire new firm capacity generation.

1.8.5.2 Request Commission Approval of Independent Observer Contract

By February 2011, MECO will also submit a request to the Commission to approve the contract for an Independent Observer. The Commission's Framework for Competitive Bidding requires the use of an Independent Observer when the utility seeks to advance a project proposal.

1.8.5.3 Timeline

The proposed timeline for the competitive bidding process is anticipated to take between 12 and 18 months from the issuance of the Draft Request for Proposals to selection of the Final Award Group. The actual timeline will be influenced by the number of bids received and the complexity of any issues that may be raised by participants.

1.9 Contingency Planning for Capacity Needed in 2015

Based on the currently forecasted 2015 need date for the next increment of firm capacity on Maui, MECO plans to solicit proposals in the 2011 timeframe, pursuant to the CB Framework, for new generating capacity via a competitive bidding process. MECO may have a limited ability to accelerate the installation schedule given the lead-time required in connection with a competitive bidding process and for the successful bidder to acquire the necessary permits, procure major equipment and construct the facility by 2015. However, with MECO targeting installation of new capacity by 2015, MECO will continue to perform contingency planning for the implementation of mitigating measures, given the uncertainties described above and to allow more time for the proper procedures involved with adding firm capacity to the Maui system.

As Table 1.7.4-1 illustrates, forecasted peaks can change dramatically from one forecast to the next. While forecasted peaks showed a marked decrease from the December 2008 peak forecast to the June 2009 peak forecast, the June 2010 peak forecast showed an increase from the June 2009 peak forecast.

Table 1.7.4-1
Comparison of Forecast Peaks

Year	Peak (MW-net) Reduced by Energy Efficiency DSM				
	Recorded[10]	December 2008 Forecast (Base Case)	June 2009 Forecast (Base Case)	June 2010 Forecast (Base Case)	Difference (June 2010 minus June 2009)
2005	202.1				
2006	206.4				
2007	204.4				
2008	194.4	196.7			
2009	199.9	194.8	185.8		
2010	199.4	197.1	183.9	197.8	13.9
2011		201.4	185.0	204.1	19.1
2012		207.2	185.9	206.5	20.6
2013		211.6	187.0	209.9	22.9
2014		216.3	188.3	212.7	24.4
2015		220.6	190.3	216.1	25.8
2016		225.2	192.5	219.7	27.2
2017			195.6	222.5	26.9

The June 2010 forecast has advanced the need for additional firm capacity to 2015. If MECO is unable to obtain firm capacity by 2015 or if the need for additional firm capacity is before 2015, MECO could implement one or more of the following mitigation measures including but not limited to: installing distributed generation or distributed standby generation, re-optimizing unit overhaul schedules, deviating from standard maintenance practices, coordinating with HC&S for the delivery of supplemental power,[11] or requesting voluntary customer curtailment of demand during load service capability shortfall periods.

[10] Record net peak of 206.5 MW occurred in October 2004.

[11] The delivery of supplemental power from HC&S assumes that the additional power is required prior to the termination of the HC&S PPA or that the HC&S PPA has not been terminated at the end of 2014.

With the unit addition need date for firm capacity forecasted for 2015, MECO will continue to explore and evaluate appropriate supply-side and demand-side resources for the Maui Division system.

2.0 Lanai Division

2.1 Peak Demand and System Capability in 2010 - 2013

Lanai's 2010 system peak of 4,825 kW (gross) occurred on December 27, 2010. Lanai had a 2010 reserve margin of approximately 112%. Attachment 1, Table 2, also shows the expected reserve margins over the next three years, based on the MECO 2011-2040 Peak Forecast dated June 2010.

2.2 Reductions in Peak Demand: Lanai's Energy Efficiency DSM Programs

Lanai has had residential and commercial & industrial demand side management programs in place since 1996, which reduced the system peak by an estimated 162.6 kW-gross (net of free riders).[12] Similar to Maui, energy efficiency impact projections reflected in the AOS analyses are based on the utility's estimates developed prior to July 1, 2009. Adjustments to the long-term projection will be made as further information becomes available from the third party administrator.

MECO continued to administer the SSP Program through the end of its pilot program on June 30, 2010. The energy efficiency program participant impacts for customers who participated in the SSP Program were included in the calculation of the estimated system peak reduction stated above and based on MECO and Hawaii Energy records through June 30, 2010.

2.3 Lanai Division Capacity Planning Criteria

The following criterion is used to determine the timing of an additional generating unit for the Lanai Division and the Molokai Division:

> *New generation will be added to prevent the violation of any one of the rules listed below where "units" mean all units and firm capacity suppliers physically connected to the system, and "available unit" means an operable unit not on scheduled maintenance.*

[12] In addition to MECO implemented energy efficiency programs, Hawaii Energy, PBF Administrator, reported gross kW impacts of 14 kW for the PY 2009, July 1, 2009 – June 30, 2010 as reported in the RW Beck Annual Report to the Hawaii Public Utilities Commission, dated September 10, 2010.

1. *The sum of the normal top load ratings of all units must be equal to or greater than the system peak load to be supplied.*

2. *With no unit on maintenance, the sum of the reserve ratings of all units minus the reserve rating of the largest available unit must be equal to or greater than the system peak to be supplied.*

3. *With a unit on maintenance:*

   a) *The sum of the reserve ratings of all units minus the reserve rating of the largest available unit must be equal to or greater than the daytime peak load to be supplied.*

   b) *The sum of the reserve ratings of all units must be equal to or greater than the evening peak load to be supplied.*

2.4 Lanai Combined Heat and Power Project

The Commission approved the CHP agreement between MECO and Castle & Cooke in Decision & Order No. 24058, filed February 28, 2008, in Docket No. 2006-0186. The project was completed and placed in-service on September 30, 2009.

2.5 Lanai Sustainability Research ("LSR") Project

The Lanai Sustainability Research project on the island of Lanai is a 1.2 MW photovoltaic ("PV") facility. The PV facility was first placed into service on December 19, 2008. Under the current PPA between MECO and LSR, the output of the facility will be integrated into the Lanai system in phases. Currently, the 1.2 MW PV facility is providing up to 600 kW of as-available energy and anticipates providing up to 1.2 MW with the installation of a battery–based energy storage system (approximately 1.125 MW), in 2011. The PV facility does not affect the Lanai system capability because it is an as-available resource.

Although, the addition of the Manele Bay CHP unit and the 1.2 MW as-available photovoltaic facility on Lanai presents operational challenges on existing units at Miki Basin, these installations also present a unique opportunity to integrate an as-available resource and a heat recovery resource into the Lanai grid. These projects allow MECO the opportunity to learn from these installations and to look at this as a stepping stone toward a greater amount of renewable energy resources into the utility grids. Interconnection and protection studies have been performed to identify the design and operational considerations for the integration of these projects into the Lanai system. In addition, the changes to the system are continually monitored.

3.0 Molokai Division

3.1 Peak Demand and System Capability in 2010 - 2013

Molokai's 2010 system peak of 5,700 kW (gross) occurred on December 27, 2010. Molokai had a 2010 reserve margin of approximately 111%. Attachment 1, Table 2, also shows the expected reserve margins over the next three years, based on the MECO 2011-2040 Peak Forecast dated June 20010.

3.2 Reductions in Peak Demand: Molokai's Energy Efficiency DSM Programs

At the time of the system peak, Molokai had in place one load management contract totaling 450 kW under Rider M, which reduced the evening peak by approximately 364 kW. In addition, Molokai has had residential and commercial & industrial DSM programs in place since 1996, which reduced the system peak by an estimated 506.8 kW-gross (net of free riders).[13] Similar to Maui and Lanai, energy efficiency impact projections reflected in the AOS analyses are based on the utility's estimates developed prior to July 1, 2009. Adjustments to the long-term projection will be made as further information becomes available from the third party administrator.

Further, as noted in section 1.4.1 and 2.2, MECO continued to administer the SSP Program through the end of its pilot program on June 30, 2010. The energy efficiency program participant impacts were included in the calculation of the estimated system peak reduction stated above and based on MECO and Hawaii Energy records through June 30, 2010.

3.3 Molokai Division Capacity Planning Criteria

Molokai Division's capacity planning criteria are identical to those of the Lanai Division. See Section 2.3 above, Lanai Division Capacity Planning Criteria.

[13] In additional to MECO implemented energy efficiency programs, Hawaii Energy, PBF Administrator, reported gross kW impacts of 18 kW for the PY 2009, July 1, 2009 – June 30, 2010, as reported in the RW Beck Annual Report to the Hawaii Public Utilities Commission, dated September 10, 2010.

4.0 Conclusion

MECO's generation capacity for the islands of Maui, Lanai and Molokai for the next three years is sufficiently large to meet all reasonably expected demands for service and provide reasonable reserves for emergencies. The Maui Division will need additional increments of firm capacity in 2015 and 2018 based on the planning assumption that HC&S will cease its provision of capacity and energy to MECO after December 31, 2014. MECO will employ a competitive bidding process to acquire the additional firm capacity.

Very truly yours,

Edward Reinhardt
President

Attachments

c: Division of Consumer Advocacy (with Attachments)

Table 1
Maui Adequacy of Supply

Year	System Capability at Annual Peak Load[II] (kW) [A]	With Future DSM (Includes Acquired DSM)[I] System Peak[III] (kW) [B]	Reserve Margin (%) [[A-B] / B]
Maui Division (Net Generation)			
Recorded			
2010	262,300 [IV]	199,400 [V]	32%
Future			
2011	262,300	204,100	29%
2012	262,300	205,700 [VI]	28%
2013	262,300	207,300	27%
2014	262,300 [VII]	208,700	26%
2015	246,300	211,100	17%
2016	246,300	213,700	15%
2017	246,300	215,800	14%
Maui Division (Gross Generation) [VIII]			
Recorded			
2010	267,700 [IV]	203,800 [V]	31%
Future			
2011	267,700	208,600	28%
2012	267,700	210,200	27%
2013	267,700	211,900	26%
2014	267,700 [VII]	213,300	26%
2015	251,700	215,700	17%
2016	251,700	218,400	15%
2017	251,700	220,500	14%

Notes – Table 1:

(I) System Peaks (With Future Peak Reduction Benefits of DSM Programs):
Implementation of full-scale energy efficiency DSM programs began in the second half of 1996 following Commission approval of the programs. The forecasted system peak values for the years 2011-2017 include the actual peak reduction benefits acquired in 1996-2009 and also include the estimated peak reduction benefits acquired in 2010, as well as peak reduction benefits of Rider M and T customer contracts. Forecasted energy efficiency DSM programs for 2011-2017 (future DSM) are based on the utility's estimates developed prior to July 1, 2009.

(II) The net reserve ratings of the units are used in the determination of the Maui system capability. In addition, the Maui Division system capability includes 16,000 kW (which includes 4,000 kW of system protection capacity) from HC&S. When the system capability at the time of the system peak differs from the year-end system capability, an applicable note will indicate the year-end system capability.

(III) The 2011-2017 annual forecasted system peaks are based on MECO's June 2010 Peak Forecast and includes reductions for existing 3rd Party CHP impacts. The Maui annual forecasted system peak is expected to occur in the month of August.

(IV) Includes the Hana generating units as firm capacity. Hana communications and control project was completed in 2008, enabling the Hana units to be dispatchable distributed generation.

The 30 MW Kaheawa Wind Power, LLC independent power producer ("IPP") wind farm resource was added to the Maui system on June 9, 2006. The installation of this wind resource will not affect the system capability because the wind resource is an as-available resource, which is not dispatchable and cannot provide given amounts of power at scheduled times.

On September 22, 2006, Makila Hydro, LCC, an IPP, completed construction of a 500 kW hydro-electric facility and commenced providing energy to the Maui system. The installation of this hydro resource does not affect the system capability because the hydro resource is an as-available resource, which is not dispatchable and cannot provide given amounts of power at scheduled times. Makila Hydro experienced equipment failure and became unavailable on October 15, 2006. In November 2009, after making repairs at its generation facility, Makila Hydro resumed power production through a new interconnection location. Since then, the facility has provided power to the Maui system on an intermittent basis, while the developer continues to work towards establishing regular daily operations.

(V) The actual 2010 recorded system peak was 203,800 kW (gross) which is equivalent to 199,400 kW (net).

(VI) Includes a reduction in system peak load due to the implementation of planned Commercial and Industrial Direct Load Control and Residential Direct Load Control Load Management DSM Programs developed in MECO's IRP-3 Report. Load management DSM Program impacts are forecasted to start in 2012.

(VII) Capacity planning assumption that the HC&S non-termination agreement will end on December 31, 2014.

(VIII) The Maui Division Gross Generation data is provided here for comparative purposes.

Table 2
Lanai and Molokai Adequacy of Supply

		With Acquired DSM [I]	
Year	System Capability at Annual Peak Load[II] (kW) [A]	System Peak[III] (kW) [B]	Reserve Margin (%) [[A-B] / B]
Lanai Division (Gross Generation)			
Recorded			
2010	10,230 [IV]	4,825	112%
Future			
2011	10,230	4,733	116%
2012	10,230	4,766	115%
2013	10,230	4,799	113%
Molokai Division (Gross Generation)			
Recorded			
2010	12,010 [V]	5,700	111%
Future			
2011	12,010	5,734	109%
2012	12,010	5,769	108%
2013	12,010	5,803	107%

Notes – Table 2:

(I) System Peaks (Includes Acquired DSM):
Implementation of full-scale DSM programs began in the second half of 1996 following Commission approval of the programs. The forecasted system peak values for the years 2011-2013 include the actual peak reduction benefits acquired in 1996-2009 and also include the estimated peak reduction benefits acquired in 2010. Currently no future DSM impacts are forecasted for Lanai or Molokai.

(II) The gross reserve ratings of the units are used in the determination of the Lanai and Molokai system capabilities. When the system capability at the time of the system peak differs from the year-end system capability, an applicable note will indicate the year-end system capability.

(III) The 2011 - 2013 annual forecasted system peaks are based on MECO's June 2010 Peak Forecast. The Lanai and Molokai annual forecasted system peaks are expected to occur in the month of January.

(IV) Miki Basin Units LL-1 to LL-6 (six 1,000 kW diesel engine-generator units totaling 6,000 kW) were converted to peaking status at the end of 2006, and as such, can be relied on for 5,000 kW of capacity to the Lanai system.

MECO signed an agreement with Castle & Cooke Resorts for the installation of an 884 kW (net including electric chiller offset and auxiliary loads) CHP system at the Manele Bay Hotel. The CHP system was installed and placed in-service as of September 30, 2009.

MECO signed an agreement with Lanai Sustainability Research, LLC for the installation of a 1.2 MW photovoltaic system on the island of Lanai. In December 2008, partial facility completion and operation of this as-available resource was added to the Lanai system. Completion of the entire facility is projected to be in 2011. Refer to Section 2.5 for further details. The installation of this PV resource does not affect the system capability because the PV resource is an as available resource, which is not dispatchable and cannot provide given amounts of power at scheduled times.

(V) Palaau Units 1 and 2 (two 1,250 kW Caterpillar units), and Palaau Units 3, 4, 5 and 6 (four 970 kW Cummins units) operate in peaking service. Because of the age and operating history of these units, MECO includes one Caterpillar unit and two Cummins units (1,250 + 970 + 970 = 3,190 kW) towards firm capacity for the Molokai system.

Maui Unit Ratings

As of December 31, 2010

Units	Gross (MW)		Net (MW)	
	Reserve	NTL(I)	Reserve	NTL(I)
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(II)	58.00	58.00	56.78	56.78
M17/18/19(II)	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
HC&S(III)	16.00	12.00	16.00	12.00
Hana 1(IV)	1.00	1.00	0.97	0.97
Hana 2(IV)	1.00	1.00	0.97	0.97
Maui System	267.70	260.10	262.28	254.69

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). In the first and second quarters of 2008, MECO 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) All values for HC&S are net to the system. The reserve ratings include an additional 4.0 MWs of system protection capacity.

(IV) Units located at Hana Substation No. 41. In December 2008, a communication and controls project was completed. This project provides MECO with the means to operate the Hana generators in parallel to the system and as emergency units. These units also have the capability to be indirectly, remotely controlled and automatically brought on line. With the completion of the project, the Hana units have been designated as firm capacity and are included in the total reserve rating of the Maui system capability.

Lanai Unit Ratings

As of December 31, 2010

Units	Gross (kW)	
	Reserve	NTL(I)
LL-1 (V)	1,000	1,000
LL-2 (V)	1,000	1,000
LL-3 (V)	1,000	1,000
LL-4 (V)	1,000	1,000
LL-5 (V)	1,000	1,000
LL-6 (V)	1,000	1,000
LL-7	2,200	2,200
LL-8	2,200	2,200
Miki Basin GS	9,400	9,400
Manele Bay CHP (VI)	1,000	830
Lanai System	10,400	10,230

(V) Miki Basin Units LL-1 to LL-6 (six,1,000 kW diesel engine-generator units totaling 6,000 kW) were converted to peaking status at the end of 2006, and as such, can be relied on for 5,000 kW of capacity to the Lanai system.

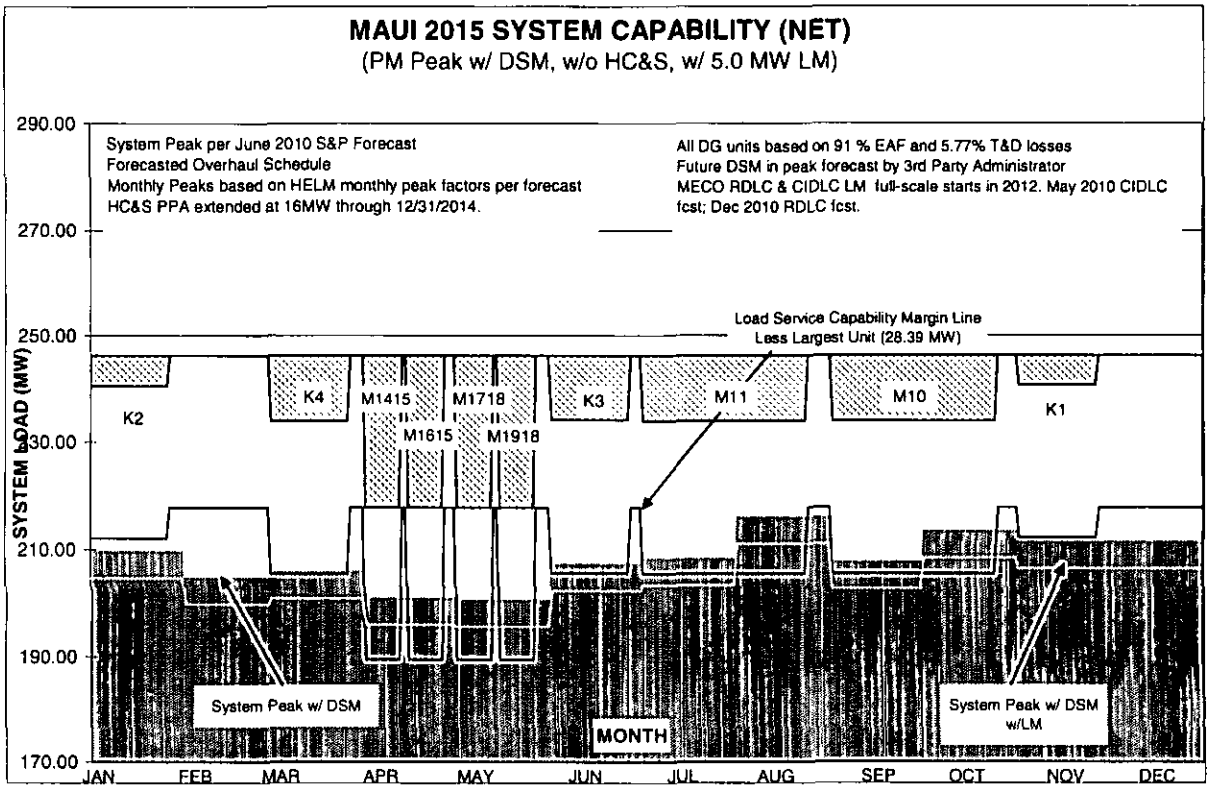
(VI) Manele Bay CHP in-service date of September 30, 2009.

Molokai Unit Ratings

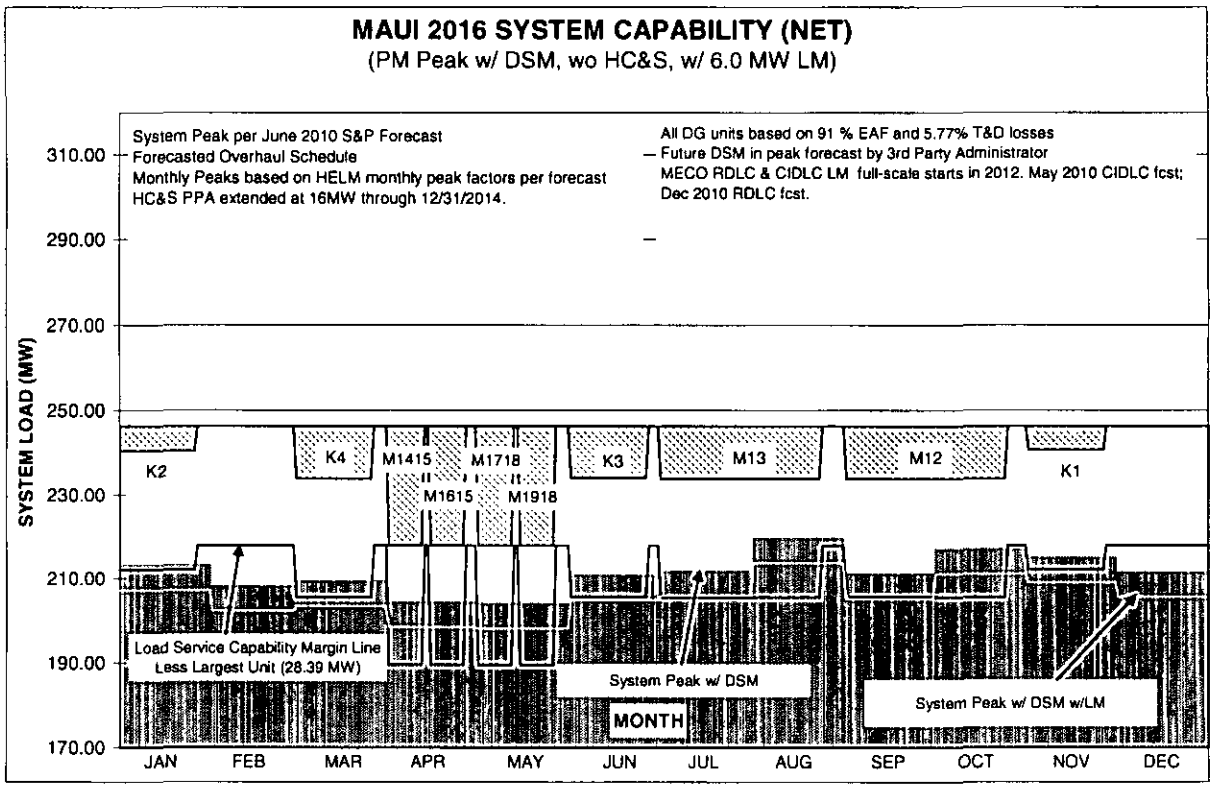
As of December 31, 2010

Units	Gross (kW)	
	Reserve	NTL[(I)]
P-1[(VII)]	1,250	1,250
P-2[(VII)]	1,250	1,250
P-3[(VII)]	970	970
P-4[(VII)]	970	970
P-5[(VII)]	970	970
P-6[(VII)]	970	970
Solar CT	2,220	2,220
P-7	2,200	2,200
P-8	2,200	2,200
P-9	2,200	2,200
Palaau GS	12,010	12,010

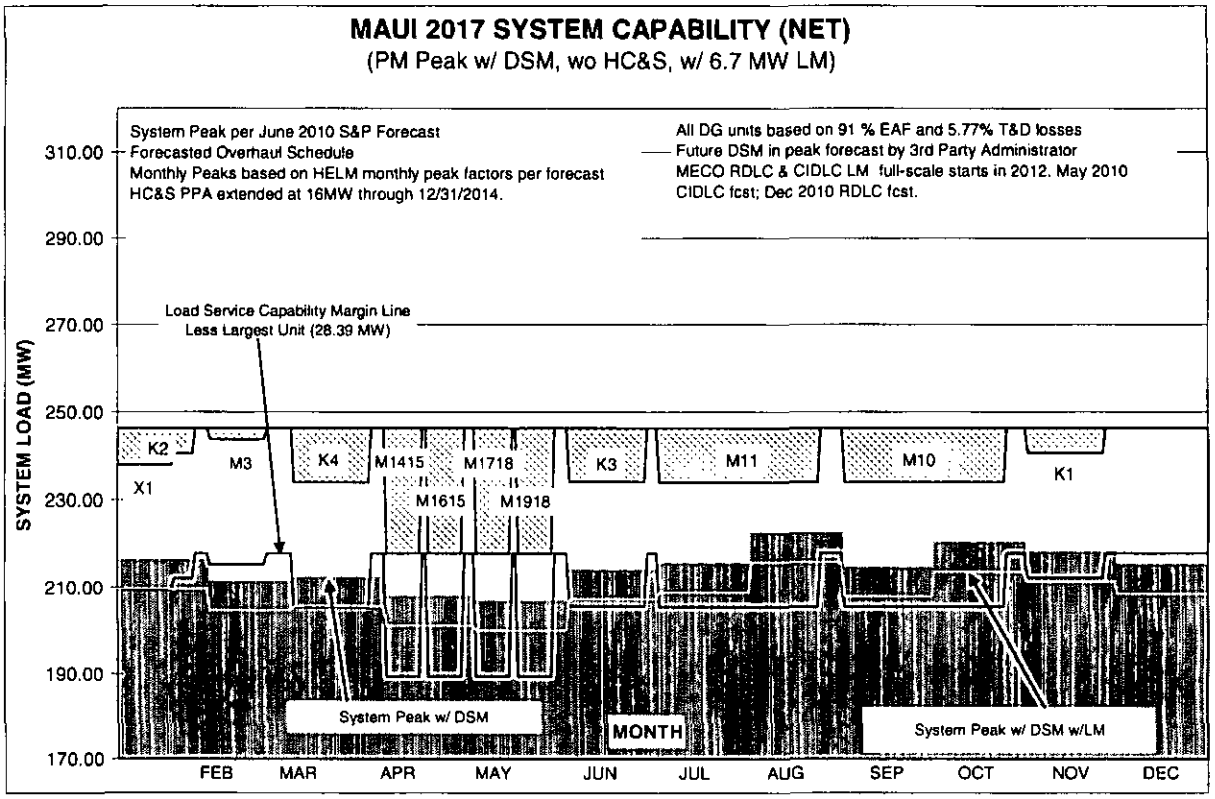
(VII) Palaau Units 1 and 2 (two 1,250 kW Caterpillar units), and Palaau Units 3, 4, 5 and 6 (four 970 kW Cummins units) operate in peaking service. Because of the age and operating history of these units, MECO includes one Caterpillar unit and two Cummins units (1,250 + 970 + 970 = 3,190 kW) towards firm capacity for the Molokai system.



Month (1)	System Peak w/ DSM w/ Riders w/ Small Mkt CHP (MW) (2)	System Cap (MW) (3)	Maint (MW) (4)	Reserve (MW) (5)=(3)-(4)-(2)	% Reserve (Less Maint) (5) / (2)	Lrgst Avail (MW) (7)	LSC Diff (MW) (8) = (5) - (7)	LSC Diff + LM (impact) (MW) (8) + 5.0 MW
JAN	209.7	246.28	5.8	30.8	15%	28.39	2.4	7.4
FEB	204.8	246.28	0.0	41.4	20%	28.39	13.1	18.1
MAR	206.0	246.28	12.4	27.9	14%	28.39	-0.5	4.5
APR	201.0	246.28	28.4	16.9	8%	28.39	-11.5	-6.5
MAY	200.6	246.28	28.4	17.2	9%	28.39	-11.1	-6.1
JUN	207.4	246.28	12.2	26.7	13%	28.39	-1.7	3.3
JUL	208.4	246.28	12.3	25.6	12%	28.39	-2.8	2.2
AUG	216.1	246.28	12.3	17.9	8%	28.39	-10.5	-5.5
SEP	207.8	246.28	12.3	26.2	13%	28.39	-2.2	2.8
OCT	213.5	246.28	12.3	20.5	10%	28.39	-7.9	-2.9
NOV	211.5	246.28	5.6	29.2	14%	28.39	0.8	5.8
DEC	211.5	246.28	0.0	34.8	16%	28.39	6.4	11.4



Month (1)	System Peak w/ DSM w/ Riders w/ Small Mkt CHP (MW) (2)	System Cap (MW) (3)	Maint (MW) (4)	Reserve (MW) (5)=(3)-(4)-(2)	% Reserve (Less Maint) (5) / (2)	Lrgst Avail (MW) (7)	LSC Diff (MW) (8) = (5) - (7)	LSC Diff + LM (impact) (MW) (8) + 6.0 MW
JAN	213.2	246.28	5.8	27.3	13%	28.39	-1.1	4.9
FEB	208.2	246.28	0.0	38.0	18%	28.39	9.6	15.6
MAR	209.4	246.28	12.4	24.5	12%	28.39	-3.9	2.1
APR	204.4	246.28	28.4	13.5	7%	28.39	-14.9	-8.9
MAY	204.0	246.28	28.4	13.9	7%	28.39	-14.5	-8.5
JUN	210.9	246.28	12.2	23.2	11%	28.39	-5.1	0.9
JUL	211.9	246.28	12.3	22.1	10%	28.39	-6.3	-0.3
AUG	219.7	246.28	12.3	14.2	6%	28.39	-14.1	-8.1
SEP	211.2	246.28	12.3	22.7	11%	28.39	-5.7	0.3
OCT	217.0	246.28	12.3	16.9	8%	28.39	-11.5	-5.5
NOV	215.0	246.28	5.6	25.6	12%	28.39	-2.7	3.3
DEC	211.6	246.28	0.0	34.7	16%	28.39	6.3	12.3



Month (1)	System Peak w/ DSM w/ Riders w/ Small Mkt CHP (MW) (2)	System Cap (MW) (3)	Maint (MW) (4)	Reserve (MW) (5)=(3)-(4)-(2)	% Reserve (Less Maint) (5) / (2)	Lrgst Avail (MW) (7)	LSC Diff (MW) (8) = (5) - (7)	LSC Diff + LM (impact) (MW) (8) + 6.7 MW
JAN	216.4	246.28	8.3	21.6	10%	28.39	-6.8	-0.1
FEB	211.4	246.28	2.5	32.4	15%	28.39	4.0	10.7
MAR	212.3	246.28	12.4	21.6	10%	28.39	-6.8	-0.1
APR	207.9	246.28	28.4	10.0	5%	28.39	-18.4	-11.7
MAY	206.8	246.28	28.4	11.1	5%	28.39	-17.3	-10.6
JUN	214.1	246.28	12.2	20.1	9%	28.39	-8.3	-1.6
JUL	215.6	246.28	12.3	18.3	9%	28.39	-10.0	-3.3
AUG	222.5	246.28	12.3	11.4	5%	28.39	-17.0	-10.3
SEP	214.6	246.28	12.3	19.4	9%	28.39	-9.0	-2.3
OCT	220.3	246.28	12.3	13.6	6%	28.39	-14.8	-8.1
NOV	218.1	246.28	5.6	22.6	10%	28.39	-5.8	0.9
DEC	215.3	246.28	0.0	31.0	14%	28.39	2.6	9.3

Terminology for New Generating Unit Attributes

Firm Capacity – The amount of energy producing capacity which can be guaranteed to be available at a given time.

Dispatchable – The ability to turn on or turn off a generating resource at the request of the utility's system operators, or the ability to increase or decrease the output of a generating resource from moment to moment in response to signals from a utility's Automatic Generation Control System, Energy Management System or similar control system, or at the request of the utility's system operators.

Renewable Energy – Energy generated or produced using the following sources:

1. Wind
2. The sun
3. Falling water
4. Biogas, including landfill and sewage-based digester gas
5. Geothermal
6. Ocean water, currents, and waves, including ocean thermal energy conversion
7. Biomass, including biomass crops, agricultural and animal residues and wastes, and municipal solid waste and other solid waste
8. Biofuels
9. Hydrogen produced from renewable sources

Sustainable Fuel Supply – Lasting and stable fuel supply, including transportation and fuel related services if applicable.

Commercially Available and Proven Technology – Technology that has been commercially operating for at least five years, with capacity factors within design and dispatch parameters, and at a scale of 100 KW or larger and be scalable to produce energy on a commercial level submitted.