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

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PUBLIC UTILITIES COMMISSION
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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")

In accordance with paragraph 5.3a of General Order No. 7, the following information is respectfully submitted.[1]

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.

1.0 Maui Division

1.1 Peak Demand and System Capability in 2008

Maui's 2008 system peak occurred on January 9, 2008, and was 194,400 kW (net) or 199,000 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 35% over the 2008 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:

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[1] MECO's Adequacy of Supply ("AOS") report is due within 30 days after the end of the year.

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.

1.3 Peak Demand

1.3.1 Recorded Peak Demand

MECO's 2008 system peak of 199.0 MW (gross) or 194.4 MW (net) occurred on January 9, 2008. The 2008 annual gross peak was 10.3 MW lower than the 2007 gross system recorded peak of 209.3 MW (gross) or 204.4 MW (net) set on November 7, 2007. 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

MECO's lower system peak in 2008 compared to 2007 can be attributed in part to the slowing of Maui's economy, which is expected to continue in the short term. Weakening job growth, high electricity prices and slowing tourism dampened growth in sales and peaks. Additionally, the impact of business closures such as Aloha Airlines, ATA, Molokai Ranch and other retail, food and non-food sectors also slowed the growth in sales and peaks in 2008.

1.3.2 Projected Peak Demand

The following table shows the projected peak demand for Maui over the next seven (7) years:

Table 1.3.2-1: Maui Forecast Peak Demand (2009-2015)

Year	Forecast System Peak Demand without DSM and CHP Impacts, MW-Net	Forecast Future and Acquired DSM Impacts, MW-Net	Forecast Small Market CHP Impacts, MW-Net	Forecast Impacts of Load Management DSM, MW Net	Forecast System Peak Demand with Peak Reduction Benefits of DSM and CHP, MW-Net
2009	207.2	12.4	0.0	0.0	194.8
2010	210.2	13.1	0.4	0.9	195.7
2011	215.7	14.3	0.4	2.4	198.6
2012	222.2	15.0	0.4	3.7	203.0
2013	227.5	15.9	0.4	4.6	206.5
2014	232.8	16.5	0.4	6.1	209.8
2015	237.7	17.1	0.4	6.9	213.3

On December 12, 2008, MECO adopted a new sales and peak forecast. As shown in Attachment 1, Table 1, the peak demand is forecasted to increase slightly in 2009 compared to 2008. The peaks are expected to grow beginning in 2010, though at a slower pace and at lower levels than previously projected. The peak forecast reflects the lowered sales expectations due to the national recession and pessimistic economic outlook as a result of the credit and financial market crises. Substantial decreases in the forecasted peaks from previous projections account for the impact of the economy on visitor accommodations and ancillary services, delays in the completion of several large commercial and residential projects, as well as the increased focus by customers on energy efficiency and conservation. The number of residential customers is projected to continue to increase but at a slower pace in the near term due to the economy. The impact of business closures as stated in Section 1.3.1 and the slowing of many businesses in both visitor and local markets also contribute to the decline in sales and peaks projections.

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 7 (seven) load management contracts totaling 5,000 kW under Rider M., which reduced the evening peak by approximately 1,600 kW. In addition, Maui has had residential and commercial & industrial demand side management ("DSM") programs in place since 1996, which reduced the system peak by an estimated 11,800 net kW (net of free riders). Without the load management and DSM impacts, the Maui system peak would have been approximately 207,800 kW net, with a 26% reserve margin.

On February 13, 2007, the Commission issued Decision and Order No. 23258 in the Energy Efficiency Docket (Docket No. 05-0069). The Commission ordered that the energy efficiency programs transition to a non-utility administrator by January 2009. The impact of the transition is unknown at this time and there are uncertainties associated with obtaining the peak reduction impacts from a new, yet to be defined market structure. Should customer participation in the DSM programs be lower than estimated or delayed, the actual peak demand on Maui may exceed the peak forecast amounts used in this AOS filing.

On September 27, 2007, the Commission opened Docket No. 2007-0323, which will examine the selection of the non-utility administrator and refine the details of the new market structure. On September 18, 2008, the Commission issued a Request for Proposal ("RFP") for the non-utility administrator. In the RFP the Commission established a schedule for the selection and contracting of the non-utility administrator. The projected start date for the non-utility administrator is February 25, 2009.

On June 13, 2008, the Commission issued an order in Docket Nos. 95-0139, 95-0140, 95-0141, 95-0142 (Consolidated) granting MECO's request to offer customer incentives for the distribution and installation of CFLs to residential customers.

On August 24, 2008, MECO implemented the Residential Compact Fluorescent Lamps ("RCFL") Program to its residential customers on the islands of Maui, Molokai and Lanai. MECO's RCFL Program offer customer incentives of $1 to $3 per CFL, depending on the type of CFL purchased, to achieve the distribution and installation of approximately 22,000 CFLs in 2008.

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

1.4.2 Maui Load Management DSM Program

MECO plans to submit two (2) separate applications seeking Commission approval of its residential and commercial, and industrial direct load control programs, RDLC and CIDLC, respectively by June 30, 2009. The analysis in this report assumes load management impacts beginning in 2010.

The following table shows the cumulative forecasted peak impacts of the load management DSM programs for the years 2009-2015.

Table 1.4.2-1: Load Management DSM Program Impacts (2009-2015)

Year	Forecasted Impacts of Load Management DSM (MW-Net)
2009	0.0
2010	0.9
2011	2.4
2012	3.7
2013	4.6
2014	6.1
2015	6.9

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")

Firm DG resources can provide generating capacity if they can be reliably dispatched by the utility, or can reduce peak demand served by the utility if operated by customers. MECO has been including forecasted firm DG resources, namely CHP, in its AOS evaluations for the past several years, although MECO recognizes the uncertainties associated with forecasting the development

schedules of third-party CHP projects. The updated CHP forecast is based on possible third-party CHP projects with the following considerations: (1) new rules issued by the U.S. Environmental Protection Agency ("EPA") which will require more stringent emission controls for stationary diesel engines in the near future, (2) Commission criteria required to be met by MECO in order to provide customer-sited DG projects on a regulated utility basis, and (3) other uncertainties concerning customer-sited DG.

The cumulative forecasted impacts for the years 2009-2015, are shown in the table below. One 600kW CHP system was commissioned on Maui in early 2008. No CHP is forecasted in 2009 due to the lack of CHP activities in late 2008. A 500 kW CHP system is forecasted in 2010 and no further CHP development is forecasted for 2011 and beyond due to the more stringent emissions requirements for diesel engines. These forecasted impacts of the proposed CHP systems on future system peaks are also indicated in Attachment 1.[2]

Table 1.4.4-1: 3rd Party CHP Impacts (2009-2015)

Year	Forecasted Impacts of 3rd Party CHP (MW Net)
2009	0.0
2010	0.4
2011	0.4
2013	0.4
2013	0.4
2014	0.4
2015	0.4

[2] For purposes of this report, CHP systems are reflected in the System Peak numbers (based on the net equivalent capacity of the CHP system, taking into account the electrical capacity supplied to a customer, the reduction of the customer's electrical load through waste heat application for the system, and a reduction in line losses). The load reduction impacts of CHP systems and/or DG owned by third parties are also reflected in the System Peak numbers.

1.5 Total Firm Capacity

1.5.1 MECO Firm Capacity

1.5.1.1 Hana Distributed Generation

In the previous AOS report that was filed on January 30, 2008, it was stated that MECO planned to install communication and controls to the two 1,000 kW standby diesel engine generators, located at Hana Substation No. 41, to enable the units to be operated as dispatchable distributed generation. This communication and controls project commenced in 2007 and was completed in December 2008. This project provides MECO with the means to operate the Hana generators in parallel to the system and as emergency units. These units have the capability to be indirectly, remotely controlled and automatically brought on line. Currently, the units are used for fully automated emergency generation and are also used as dispatched generation, although requiring manual operation. As such, the units are currently utilized as both emergency generation and dispatchable generation. As a result, the Hana units have been designated as firm capacity and their capacity is included in the total reserve rating of the Maui system capability.

1.5.1.2 Total MECO Firm Capacity

MECO has a total of 246.3 MW-net of firm capacity with the completion of the Hana communication and controls project in 2008. A summary of MECO's firm capacity, as of December 31, 2008, is shown in Attachment 3.

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

MECO filed a letter with the Commission in Docket No. 6616 (Hawaiian Commercial & Sugar Company ["HC&S"]), on July 25, 2007, 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 will have more certainty as to the future revenue sources supporting its sugar business, MECO will 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

[3] A previous agreement between MECO and HC&S (June 28, 2005) not to issue a notice of termination of the PPA resulted in the termination of the PPA prior to the end of the day on December 31, 2011. At the time, the resulting need date for new firm capacity was deferred from 2009 to 2011.

parties will 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.

1.5.3 Total Firm Capacity on Maui

The total firm generating capacity on Maui will be 262.3 MW-net, including both MECO and HC&S generation and with the completion of the Hana communication and controls project in 2008.

1.6 Total Firm Capacity

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 projected peak reduction benefits of the CHP programs, the total existing firm capacity on the MECO system, Maui Division's planned maintenance schedule dated August 21, 2008, and the application of MECO's capacity planning criteria, the projected reserve capacity shortfalls are shown in Table 1.6-1 below, assuming 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
2009	194.8	262.3	0.0	0.0
2010	195.7	262.3	0.0	0.0
2011	198.6	262.3	0.0	0.0
2012	203.0	262.3	0.0	0.0
2013	206.5	262.3	0.0	0.0
2014	209.8	262.3	0.0	0.0
2015	213.3	246.3	-9.1	-9.6

1.7 Satisfying MECO's Need for Additional Firm Capacity

1.7.1 Firm Capacity Needed in 2015

In MECO's 2008 AOS letter, filed on January 30, 2008, MECO informed the Commission that the next increment of capacity would be needed in 2011. On July 31, 2008, MECO submitted a letter to the Commission stating that the need date for the next increment of additional firm generating capacity on the island of Maui had changed from 2011 to 2014. The primary reason for the deferral was a reduction in the forecast of peak demand.

As indicated in Section 1.5.2, 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. With both the extension of the non-termination contract agreement with HC&S and the assessment of reduced Maui system peaks, MECO's analyses indicate that the need for additional firm generation on Maui will be in 2015. However, if MECO's PPA with HC&S continues beyond year-end 2014 by mutual agreement of the parties, it is possible that the need for a firm capacity may be deferred to 2016 or beyond. MECO will continue to assess this need in future Adequacy of Supply analyses.

1.7.2 Competitive Bidding for New Generating Capacity

On December 8, 2006, the Commission issued Decision and Order No. 23121 ("D&O 23121") in Docket No. 03-0372 pertaining to competitive bidding for new generation. Attached to D&O 23121 was the Commission's Framework for Competitive Bidding dated December 8, 2006 ("CB Framework"). Section II.A.3 of the CB Framework requires that electric utilities that are subject to the CB Framework acquire new generating capacity through a competitive bidding process, unless a waiver is sought by the utility and the waiver is granted by the Commission. Although MECO has made substantial progress in obtaining the air permit for a simple cycle combustion turbine at its Waena site, MECO plans to solicit proposals, pursuant to the CB Framework, for new generating capacity in the 2015 timeframe via a competitive bidding process.

Section IV.B.2 of the CB Framework also states that the RFP issued by the electric utility shall identify any unique system requirements and important resource attributes of the type of capacity needed on the system. These attributes are discussed in Section 1.7.5 below.

On November 2, 2007, MECO submitted a request to the Commission to open a docket to receive filings, review approval requests, and resolve disputes, if

necessary, related to MECO's proposed RFP for the firm capacity needs in 2011 and 2015. The November 2nd request also asked for approval of the contract with the selected Independent Observer. On December 6, 2007, the Commission issued Order No. 23872 opening Docket No. 2007-0403 for the purposes requested by MECO. Since then, MECO had been working toward preparing a Draft Request for Proposals ("RFP") that would have been released in June 2008.

As indicated in this AOS report, the need date for the next increment of firm generating capacity has been deferred to 2015. With a 2015 unit addition need date, MECO is reassessing the scope and schedule of the planned competitive bidding process that was previously contemplated in its November 2, 2007 request. The results of this reassessment process will be submitted to the Commission in Docket No. 2007-0403.

Attributes of Firm Capacity for 2015

The attributes of the capacity needed in 2015 are described in Exhibit A of the MECO IRP-3 Stipulation between MECO and the Consumer Advocate, filed on September 21, 2007 in Docket No. 04-0077 ("MECO IRP-3 Stipulation"). The MECO IRP-3 Stipulation was approved by the Commission's Decision and Order, dated July 21, 2008, and the attributes are as follows:

> Nominal 20 MW Firm Capacity Resource in 2015 – Scope: Approximately 20 to 25 MW of firm generating capacity. The unit will be fueled by a renewable energy resource. The unit must be capable of peaking or cycling duty where the unit can be started quickly (less than 30-minute startup time) and can cycle off-line at least once per day. When on-line, the unit shall be fully dispatchable from minimum to full load by the utility and shall be capable of load-following, providing frequency control and voltage support according to standards to be determined by the utility. The unit must have black-start capability. Detailed specifications for the resource and definitions of the criteria will be developed at the time of the RFP is developed.

The attributes listed are in support of Hawaii's energy objectives, which include (per H.R.S §226-18(a)):

- Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;
- Increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased;

- Greater energy security in the face of threats to Hawaii's energy supplies and systems; and
- Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use.

1.7.3 Appropriate Size of Capacity Blocks

As indicated above, MECO will be seeking blocks of 20 MW to 25 MW for the 2015 timeframe. With the anticipated load growth on the island of Maui, the need for capacity increases each year, as shown in Table 1.6-1. It is prudent to install a larger amount of capacity in 2015 to account for the load growth over the following 3 to 5 years, than to install several small increments of capacity on an annual basis for the following reasons:

- A large increment of capacity can account for unforeseen increases in forecasted demand.
- A large increment of capacity can offset energy efficiency and load management DSM impacts which may be unexpectedly lower than forecast.
- A large increment of capacity is designed to provide significant export power to the electric grid at the transmission level, as opposed to small increments of capacity (such as DG), which is sized to meet individual customer load or feed a distribution circuit.
- Larger increments of capacity provides for economies of scale, as determined in the IRP analysis.

1.7.4 Parallel Plan for Firm Capacity Needed in 2015

The Commission's CB Framework requires that new generating capacity be acquired through a competitive bidding process. As indicated earlier, MECO plans to employ a competitive bidding process to secure firm capacity in the 2015 timeframe.

Section II.D.2 of the CB Framework also requires the electric utility to develop a Parallel Plan, which would be implemented simultaneously with the selected bidder's project (assuming the winning bid is not the utility's bid). The utility's Parallel Plan would be terminated when there was reasonable assurance that the winning bidder's project will reach successful completion.

As indicated in Section VI.C. of the CB Framework, the requirement for the utility to pursue a parallel plan is triggered when the RFP process results in the

selection of non-utility (third party) projects. When the firm capacity unit was required in 2011 and, because of long-lead time activities such as air permitting and engineering, MECO started to work toward the installation of a nominal 21 MW simple cycle combustion turbine at the Waena Generating Station in 2011. With the deferral of the next unit to 2015, MECO has scaled back and has been working to obtain the air permit for such a generating unit.

Only air permitting activities for the Waena Unit 1 simple cycle combustion turbine is on-going. In August, September and October 2007, MECO submitted responses to DOH's March 2007 request for information and clarification in connection with the air permit application. On December 18, 2007, MECO submitted a permit application revision to use biodiesel as the primary fuel with no. 2 fuel oil as the backup fuel.

2.0 Lanai Division

2.1 Peak Demand and System Capability in 2009 - 2011

Lanai's 2008 system peak occurred on February 5, 2008 and was 5,300 kW (gross). Lanai had a 2008 reserve margin of approximately 77%. Attachment 1, Table 2, also shows the expected reserve margins over the next three years, based on the MECO 2009-2016 Sales and Peak Forecast dated December 2008.

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

Lanai has had residential and commercial & industrial demand side management ("DSM") programs in place since 1996, which reduced the system peak by an estimated 141 gross kW (net of free riders). Without the DSM impacts, the Lanai system peak would have been approximately 5,441 kW gross, with a 73% reserve margin.

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.

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 has commenced with the project design scheduled to be completed in the first quarter of 2009. The material procurement has also commenced with the material scheduled to be on-site by the second quarter of 2009. Construction is scheduled to begin in the first quarter of 2009, with an anticipated project completion and in service date of August 2009.

2.5 Lanai Sustainability Research ("LSR") Project

The Lanai Sustainability Research ("LSR") 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 facility is providing up to 200 kW of as-available energy. The current project schedule estimates the completion of the 1.2 MW PV facility, including the installation of a battery–based energy storage system (approximately 600 kW), by the end of 2009. The PV facility does not affect the Lanai system capability because it is an as-available resource.

The addition of the planned Manele Bay CHP unit and the recently installed 1.2 MW as-available photovoltaic array on Lanai will present operational challenges on existing units at Miki Basin. Interconnection and protection studies will be performed to identify the design and operational considerations for the integration of these projects into the Lanai system.

3.0 Molokai Division

3.1 Peak Demand and System Capability in 2009 - 2011

Molokai's 2008 system peak occurred on March 11, 2008 and was 6,000 kW (gross). Molokai had a 2008 reserve margin of approximately 100%. Attachment 1, Table 2, also shows the expected reserve margins over the next three years, based on the MECO 2009-2016 Sales and Peak Forecast dated December 2008.

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

At the time of the system peak, Molokai had in place 1 (one) load management contract totaling 450 kW under Rider M., which reduced the evening peak by approximately 360 kW. In addition, Molokai has had residential and commercial & industrial demand side management ("DSM") programs in place since 1996, which reduced the system peak by an estimated 466 gross kW (net of free riders). Without the load management and DSM impacts, the Molokai system peak would have been approximately 6,826 kW net, with a 76% reserve margin.

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.

4.0 Conclusion

In consideration of the above, MECO has sufficient capacity to meet the forecasted loads on the islands of Maui, Lanai and Molokai for the next three years.

With the December 2008 sales and peak forecast and other updated information, the need date for additional firm generating capacity on Maui has been determined to be 2015. MECO's activities, such as those related to the planned RFP and any parallel or contingency plans, will be based on that need date.

Very truly yours,

Edward L. Reinhardt

Attachments

c: Division of Consumer Advocacy (with Attachments)

Table 1
Maui Adequacy of Supply

	With 3rd Party CHP[I]				
		Without Future DSM (Includes Acquired DSM)[II]		With Future DSM (Includes Acquired DSM)[III]	
Year	System Capability at Annual Peak Load[IV] (kW) [A]	System Peak[V] (kW) [B]	Reserve Margin (%) [[A-B] / B]	System Peak[V] (kW) [C]	Reserve Margin (%) [[A-C] / C]
Maui Division (Net Generation)					
Recorded					
2008	262,300 [VI]	194,400 [VII]	35%	N/A	N/A
Future					
2009	262,300	196,600	33%	194,800	35%
2010	262,300	199,200	32%	195,700 [VIII]	34%
2011	262,300	204,700	28%	198,600	32%
2012	262,300	211,600	24%	203,000	29%
2013	262,300	217,800	20%	206,500	27%
2014	262,300 [IX]	223,500	17%	209,800	25%
2015	283,500 [X]	229,000	24%	213,300	33%
Maui Division (Gross Generation) [XI]					
Recorded					
2008	267,700 [VI]	199,000 [VII]	35%	N/A	N/A
Future					
2009	267,700	201,300	33%	199,400	34%
2010	267,700	203,900	31%	200,300 [VIII]	34%
2011	267,700	209,600	28%	203,300	32%
2012	267,700	216,600	24%	207,800	29%
2013	267,700	223,000	20%	211,400	27%
2014	267,700 [IX]	228,800	17%	214,800	25%
2015	289,200 [X]	234,400	23%	218,400	32%

Notes – Table 1:

(I) With 3rd Party CHP: Forecasted system peaks include reductions for CHP impacts.[4]

(II) System Peaks (Without 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 2009-2015 include the actual peak reduction benefits acquired in 1996-2007 and also include the estimated peak reduction benefits acquired in 2008, as well as peak reduction benefits of Rider M and T customer contracts, and CHP impacts.

(III) System Peaks (With Future Peak Reduction Benefits of DSM Programs). The forecasted System Peaks for 2009-2015 include the peak reduction benefits of energy efficiency DSM programs (acquired and future) and peak reduction benefits of Rider M and T customer contracts, and CHP impacts.

(IV) 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.

On October 20, 2008, the Governor of the State of Hawaii, the State Department of Business, Economic Development & Tourism, the Division of Consumer Advocacy of the Department of Commerce and Consumer Affairs, and the Hawaiian Electric Companies executed the Hawaii Clean Energy Initiative Agreement ("Energy Agreement"), which documents a course of action to move the State away from its dependence on imported fossil fuels for electricity and ground transportation, and toward "indigenously produced renewable energy and an ethic of energy efficiency." A product of the Hawaii Clean Energy Initiative, the Energy Agreement is a commitment on the part of the State and the Hawaiian Electric Companies to accelerate the addition of new, clean resources on all islands. MECO is negotiating with a number of parties for the purchase of renewable energy in hopes that these projects prove to be feasible and in the best interest of its customers. The impact of these potential resources on the MECO system is not reflected in this Adequacy of Supply.

(V) The 2009-2015 annual forecasted system peaks are based on MECO's December 2008 Sales and Peaks Forecast and includes reductions for CHP impacts. The Maui annual forecasted system peak is expected to occur in the month of August.

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[4] CHP impacts are from a CHP forecast dated December 3, 2008. These impacts are at system level based on a T&D loss factor of 5.96%. For capacity planning analysis, an availability factor is also included to account for periods when the utility CHP is unavailable due to forced outage and maintenance.

(VI) 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.

A 30 MW independent power producer ("IPP") wind farm resource was added to the Maui system on June 9, 2006. MECO and Kaheawa Wind Power ("KWP") executed a new purchase power agreement ("PPA") on December 3, 2004. MECO submitted an Application in Docket No. 04-0365 on December 16, 2004, requesting Commission approval of the PPA. On March 18, 2005, the Commission issued Decision & Order No. 21701 approving the PPA. 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. MECO and Makila executed a PPA on May 10, 2005. MECO submitted an application in Docket No. 05-0161 on June 28, 2005, which among other things, requested Commission approval of the PPA. On May 10, 2006, the Commission issued Decision & Order No. 22460, approving the PPA. 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. Makila Hydro anticipates repairs to be completed in 2009 and resume energy production.

Maalaea Unit 18, steam turbine generator (Phase III of a nominal 56,780 kW (net) dual train combined-cycle unit), was placed in service on October 27, 2006.

MECO filed a letter with the Commission in Docket No. 6616 (HC&S), on July 25, 2007, 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.[5]

(VII) The actual 2008 recorded system peak was 199,000 kW (gross) which is equivalent to 194,400 kW (net).

(VIII) Includes a reduction in system peak load due to the implementation of planned Commercial and Industrial Direct Load Control (CIDLC) and Residential Direct Load Control (RDLC) Load Management DSM Programs developed in MECO's IRP-3 Report. Load management DSM Program impacts are forecasted to start in 2010.

[5] Previously, in a letter dated June 28, 2005, MECO and HC&S had agreed that neither company would give written notice of termination resulting in a 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.

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

(X) For capacity planning purposes, a firm generation unit is scheduled to be installed to replace the lost capacity of HC&S. The Waena Unit 1, a 21,180 kW (net) combustion turbine generator, is scheduled to be placed in service in 2015, pending the result of the MECO competitive bidding process and successive permitting and construction scheduling.

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

Table 2
Lanai and Molokai Adequacy of Supply

		Without Future DSM (Includes Acquired DSM)(I)		With Future DSM (Includes Acquired DSM)(II)	
Year	System Capability at Annual Peak Load(III) (kW) [A]	System Peak(IV) (kW) [B]	Reserve Margin (%) [[A-B] / B]	System Peak(IV) (kW) [C]	Reserve Margin (%) [[A-C] / C]
Lanai Division (Gross Generation)					
Recorded					
2008	9,400 (V)	5,300	77%	N/A	N/A
Future					
2009	9,400 (VI)	5,383	75%	N/A	N/A
2010	10,284	5,419	90%	N/A	N/A
2011	10,284	5,634	83%	N/A	N/A
Molokai Division (Gross Generation)					
Recorded					
2008	12,010 (VII)	6,000	100%	N/A	N/A
Future					
2009	12,010	5,890	104%	N/A	N/A
2010	12,010	5,890	104%	N/A	N/A
2011	12,010	5,912	103%	N/A	N/A

Notes – Table 2:

(I) System Peaks (Without Future Peak Reduction Benefits of DSM Programs):
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 2009-2011 include the actual peak reduction benefits acquired in 1996-2007 and also include the estimated peak reduction benefits acquired in 2008.

(II) System Peaks (With Future Peak Reduction Benefits of DSM Programs):
Currently no future DSM impacts are forecasted for Lanai or Molokai.

(III) The gross reserve ratings of the units are used in the determination of the Lanai and Molokai system capabilities. All unit projected retirement dates are planned for December 31 of the designated year unless otherwise specified. 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.

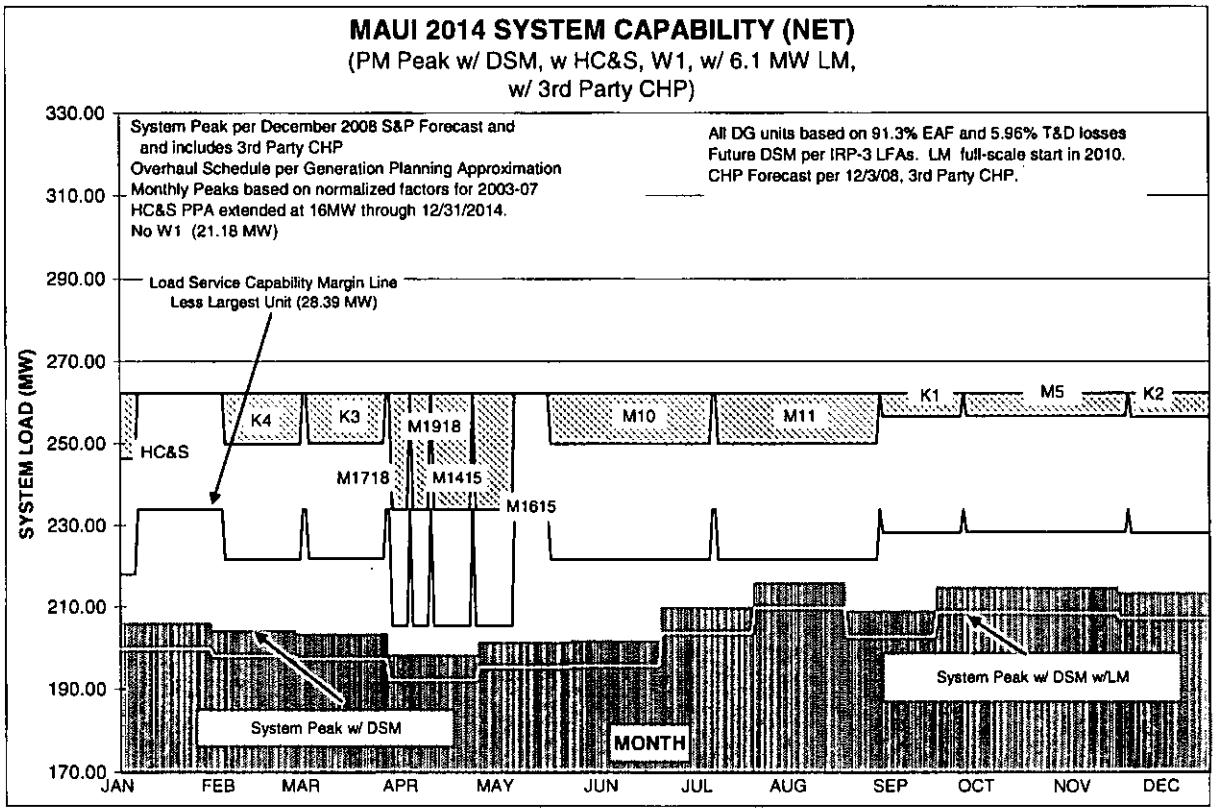
(IV) The 2009 - 2011 annual forecasted system peaks are based on MECO's December 2008 Sales and Peaks Forecast. The Lanai and Molokai annual forecasted system peaks are expected to occur in the months of December and January, respectively.

(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.

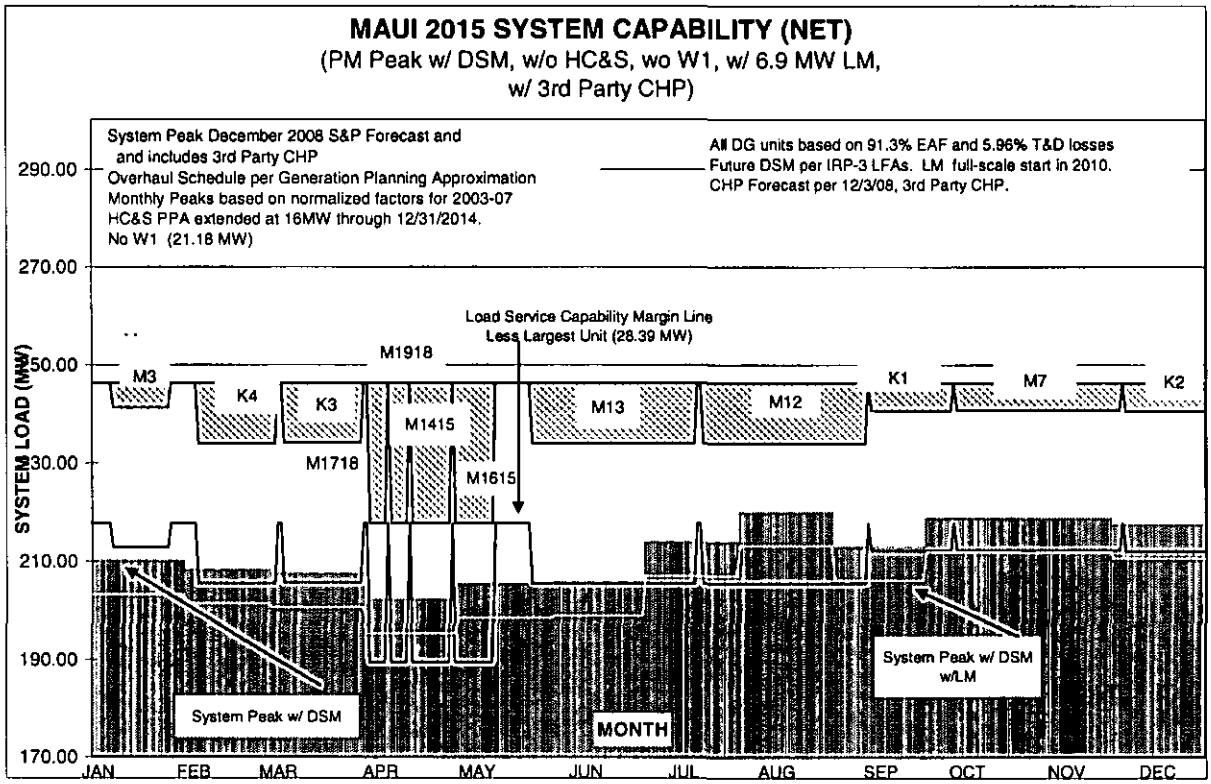
(VI) MECO has signed an agreement with Castle & Cooke Resorts for the installation of an 884 kW (net including electric chiller offset and auxiliary loads) CHP system at the Manele Bay Hotel in the third quarter of 2009. Refer to Section 2.3 for further details

MECO has 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 the fourth quarter of 2009. Refer to Section 2.4 for further details.

(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) + 6.1 MW
JAN	206.0	262.28	16.0	40.3	20%	28.39	11.9	18.0
FEB	204.2	262.28	12.4	45.7	22%	28.39	17.3	23.4
MAR	203.5	262.28	12.4	46.4	23%	28.39	18.0	24.1
APR	198.3	262.28	28.4	35.6	18%	28.39	7.2	13.3
MAY	201.5	262.28	28.4	32.4	16%	28.39	4.0	10.13
JUN	201.8	262.28	12.3	48.1	24%	28.39	19.7	25.8
JUL	209.8	262.28	12.3	40.1	19%	28.39	11.7	17.8
AUG	215.8	262.28	12.3	34.1	16%	28.39	5.7	11.8
SEP	209.0	262.28	12.3	41.0	20%	28.39	12.6	18.7
OCT	214.7	262.28	5.6	42.0	20%	28.39	13.6	19.7
NOV	214.6	262.28	5.5	42.2	20%	28.39	13.8	19.9
DEC	213.4	262.28	5.8	43.1	20%	28.39	14.8	20.9



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) + 6.9 MW
JAN	210.2	246.28	5.0	31.1	15%	28.39	2.7	9.6
FEB	208.4	246.28	12.4	25.5	12%	28.39	-2.9	4.0
MAR	207.6	246.28	12.4	26.3	13%	28.39	-2.1	4.8
APR	202.2	246.28	28.4	15.7	8%	28.39	-12.7	-5.8
MAY	205.5	246.28	28.4	12.4	6%	28.39	-16.0	-9.1
JUN	205.8	246.28	12.3	28.1	14%	28.39	-0.2	6.7
JUL	214.0	246.28	12.3	20.0	9%	28.39	-8.4	-1.5
AUG	220.1	246.28	12.3	13.8	6%	28.39	-14.6	-7.7
SEP	213.1	246.28	12.3	20.9	10%	28.39	-7.5	-0.6
OCT	219.0	246.28	5.6	21.7	10%	28.39	-6.7	0.2
NOV	218.9	246.28	5.5	21.9	10%	28.39	-6.5	0.4
DEC	217.6	246.28	5.8	22.9	11%	28.39	-5.5	1.4

Maui Unit Ratings

As of December 31, 2008

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, 2008

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

(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.

Molokai Unit Ratings

As of December 31, 2008

Units	Gross (kW)	
	Reserve	NTL[I]
P-1[VI]	1,250	1,250
P-2[VI]	1,250	1,250
P-3[VI]	970	970
P-4[VI]	970	970
P-5[VI]	970	970
P-6[VI]	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

(VI) 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.