

MECO ADEQUACY OF SUPPLY
1988-~~1994~~ 1994 (SPECIAL REPORTS - PERMANENT)



January 29, 1999

William A. Bonnet, P.E.
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

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

Maui's 1998 system peak occurred on December 29, 1998 and was 176,000 kW (gross). Lanai's 1998 system peak occurred on November 17, 1998 and was 5,150 kW (gross). Molokai's 1998 system peak occurred on December 21, 1998 and was 6,600 kW (gross). Maui had a reserve margin of approximately 20% over the 1998 system peak. Lanai had a 1998 reserve margin of approximately 102%. Molokai had a 1998 reserve margin of approximately 83%.

Attachment 1 shows the expected reserve margins over the next three years, based on the MECO Forecast Planning Committee's 1998-2018 Long Term Sales and Peak Forecast dated June 8, 1998.

Maui's 1998 total system capability of 211,990 kW (gross) includes 16,000 kW of firm purchased power from Hawaiian Commercial & Sugar (HC&S) Company.

The following criterion is 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
January 29, 1999
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The sum of the reserve ratings of all available 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.

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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

Very truly yours,



Attachments

cc: Division of Consumer Advocacy



Table 1
Adequacy of Supply

Year	System Capability at Annual Peak Load ¹ (kW) [A]	Without Future DSM (With Acquired DSM)		With Future DSM	
		System Peak ² (kW) [B]	Reserve Margin (%) [[A-B] / B]	System Peak ² (kW) [C]	Reserve Margin (%) [[A-C] / C]
Maui Division					
<i>Recorded</i> 1998	211,990 ³	176,000	20%	N/A	N/A
<i>Forecasted</i> 1999	228,900 ⁴	181,200	26%	179,200	28%
2000	250,100 ⁵	185,900	35%	182,900	37%
2001	250,100 ⁶	191,300	31%	187,400	33%
Lanai Division					
<i>Recorded</i> 1998	10,400 ⁷	5,150	102%	N/A	N/A
<i>Forecasted</i> 1999	10,400	5,135	103%	5,135	103%
2000	10,400	5,225	99%	5,225	99%
2001	10,400 ⁸	5,317	96%	5,317	96%
Molokai Division					
<i>Recorded</i> 1998	12,050 ⁹	6,600	83%	N/A	N/A
<i>Forecasted</i> 1999	12,050	7,066	71%	7,004	72%
2000	12,050	7,171	68%	7,077	70%
2001	12,050	7,206	67%	7,082	70%

Notes:

- 1) The gross reserve ratings of the units are used in the determination of the system capability. For Maui Division, system capability includes 16,000 kW of firm purchased power from HC&S. All unit retirements 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.
- 2) The 1999 - 2001 annual forecasted system peaks for the island of Maui are based on the MECO Forecast Planning Committee's 1998-2018 Long Term Sales and Peak Forecast dated June 8, 1998. The Maui and Lanai annual forecasted system peaks are expected to occur in the month of November. The Molokai annual forecasted system peak is expected to occur in the month of December.
- 3) 1998 System Capability of 211,990 kW reflects the removal in December 1998 of the derations on units M8, M9, and M12 of 1.6 MW, 1.4 MW, and 1.5 MW, respectively. The removal of these derations was expected to be accomplished earlier in 1998, as reported in the MECO Adequacy of Supply letter dated January 30, 1998, and in the Maalaea Dual-Train Combined Cycle No. 2, Update on the Impact of M17 Delays (Docket No. 7744) dated May 29, 1998. Further delays, however, were incurred due to project design efforts, delays in fabrication and delivery of materials, difficulties in securing a contractor for project construction, and unforeseen difficulties during project excavation. Maalaea Unit 17, a 21,200 kW (gross) combustion turbine generator [phase I of a 60,400 kW (gross) dual train combined-cycle unit], was placed in Commercial Operation on December 30, 1998. A service date of November 1998, as reported in the MECO Adequacy of Supply letter dated January 30, 1998, was delayed due to delays in the PSD permitting process. The year-end system capability is 233,190 kW (includes M17).
- 4) 1999 System Capability of 228,900 kW reflects a reassessment of the Maalaea reciprocating diesel units' reserve ratings as indicated in Attachment 2.
- 5) MECO plans to place Maalaea Unit 19, a 21,200 kW (gross) combustion turbine generator [phase II of a 60,400 kW (gross) dual train combined-cycle unit], in service in September 2000. Additional information on this plan will be provided in the Maalaea Dual-Train Combined Cycle No. 2 Annual Review No. 4 (Docket No. 7744), to be filed with the Commission by February 12, 1999. Kahului 2, a 6,000 kW (gross) steam unit, was scheduled for retirement in December 1999. A previous 1996 remaining useful life (RUL) assessment evaluation conducted on the boiler of this unit during its 1996 overhaul confirmed that the boiler retirement could be deferred until December 2006. A RUL assessment evaluation of the steam turbine conducted during its 1998 overhaul similarly

confirmed that the steam turbine retirement could be deferred until December 2006. Therefore, the scheduled retirement date of Kahului 2 is deferred until December 2006.

- 6) MECO and HC&S executed a Letter of Agreement dated October 22, 1998 to extend the current PPA one year from December 31, 2000 to December 31, 2001. MECO and HC&S previously executed a Letter of Agreement dated December 11, 1997 to extend the PPA one year from December 31, 1999 to December 31, 2000. Maalaea Unit 1, one 2,500 kW EMD unit; and Maalaea Units 2 and 3, two 2,500 kW EMD units; were scheduled for retirement in December 2001 and 2002 respectively. MECO completed RUL assessment evaluations on these units in April 1998. The resultant Final Report, dated September 1, 1998, concluded that their scheduled retirement dates could be deferred to December 2006 and 2007 respectively. The year-end system capability is 234,100 kW, with the HC&S PPA expiration at the end of 2001.
- 7) Lanai City Units L7 and L8 continued in standby status at the Lanai City Power Plant, as reported in the MECO Adequacy of Supply letter dated January 30, 1998, while MECO continues to pursue disposition of these units to Miki Basin or an alternative suitable site. Castle & Cooke agreed to allow MECO to remain at the Lanai City Power Plant during the interim period. Units L7 and L8 are not included in the year-end system capability.
- 8) Miki Basin Units 1-6, six 1,000 kW EMD units, were scheduled for retirement in December 2001. MECO completed RUL assessment evaluations on these units in April 1998. The resultant Final Report, dated September 1, 1998, concluded that their scheduled retirement dates could be deferred to December 2006. This change is reflected in the system capability for Lanai Division.
- 9) Palaau Units 1 and 2, two 1,290 kW Caterpillar units; and Palaau Units 3, 4, and 5, three 970 kW Cummins units remain in peaking service as reported in the MECO Adequacy of Supply letter dated January 30, 1998. Because of the age and operating history of these units, MECO includes one Caterpillar unit and one Cummins unit (1,290 + 970 = 2,260 kW) towards firm capacity for the Molokai system.

MECO Unit Ratings
 As of January 29, 1999

	Previous Ratings (Gross MW)		Current Ratings (Gross MW)	
	NTL ¹	Reserve	NTL ¹	Reserve
M1	2.70	2.70	2.50	2.50
M2	2.70	2.70	2.50	2.50
M3	2.70	2.70	2.50	2.50
X1	2.70	2.70	2.50	2.50
X2	2.70	2.70	2.50	2.50
M4	5.60	6.16	5.60	5.60
M5	5.60	6.16	5.60	5.60
M6	5.60	6.16	5.60	5.60
M7	5.60	6.16	5.60	5.60
M8	5.60	5.60	5.60	5.60
M9	5.60	5.60	5.60	5.60
M10	12.50	12.85	12.50	12.50
M11	12.50	12.85	12.50	12.50
M12	12.50	12.50	12.50	12.50
M13	12.50	12.85	12.50	12.50
M14/15/16	58.00	58.00	58.00	58.00
M17 ²	21.20	21.20	21.20	21.20
Maalaea PP	176.30	179.59	175.30	175.30
K1	5.00	5.90	5.00	5.90
K2	5.00	6.00	5.00	6.00
K3	11.50	12.70	11.50	12.70
K4	12.50	13.00	12.50	13.00
Kahului PP	34.00	37.60	34.00	37.60
HC&S	12.00	16.00	12.00	16.00
Maui System	222.30	233.19	221.30	228.90

Notes:

- 1) NTL = Normal Top Load
- 2) Maalaea Unit 17 was placed in Commercial Operation on December 30, 1998. The M17 unit capacity normal top load rating is expected to be 21.2 MW (gross). Final determination of M17's normal top load rating will be made after completion and evaluation of its first unit performance test.
- 3) For long-range planning, MECO uses a system capability of 228.9 MW (gross).

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January 30, 1998

William A. Bonnet, P.E.
President

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

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PUBLIC UTILITIES

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Limited

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

Maui's 1997 system peak occurred on October, 13, 1997 and was 174,700 kW. Lanai's 1997 system peak occurred on September 29, 1997 and was 4,950 kW. Molokai's 1997 system peak occurred on November 5, 1997 and was 6,600 kW. The total system capability of Maui had a reserve margin of approximately 19% over the 1997 system peak. Lanai had a 1997 reserve margin of approximately 110%. Molokai had a 1997 reserve margin of approximately 83%.

Attachment 1 shows the expected reserve margins over the next three years, based on the MECO Forecast Planning Committee's 1997-2002 Sales and Peaks Forecasts dated July 1997 (as revised October 31, 1997).

Maui's 1997 total generating capability of 207,490 kW includes 16,000 kW of firm purchased power from Hawaiian Commercial & Sugar (HC&S) Company.

The following criteria is 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.



The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
January 30, 1998
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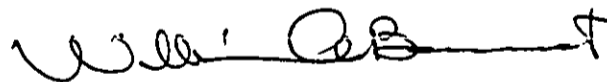
The sum of the reserve ratings of all available units minus the reserve rating of the largest available unit minus the reserve ratings of any units on maintenance must be equal to or greater than the system peak load to be supplied.

The following criteria 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

Very truly yours,



Attachment

cc: Division of Consumer Advocacy



Table 1
Adequacy of Supply

Year	System Capability at Annual Peak Load ¹ (kW) [A]	Without Future DSM (With Acquired DSM)		With Future DSM	
		System Peak ² (kW) [B]	Reserve Margin (%) [[A-B] / B]	System Peak ² (kW) [C]	Reserve Margin (%) [[A-C] / C]
Maui Division					
<i>Recorded</i> 1997	207,490 ³	174,700	19%	N/A	N/A
<i>Forecasted</i> 1998	231,990 ⁴	179,500	29%	174,800	33%
1999	231,990 ⁵	184,600	26%	178,200	30%
2000	225,990 ^{6,7}	189,600	19%	181,400	25%
Lanai Division					
<i>Recorded</i> 1997	10,400 ⁸	4,950	110%	N/A	N/A
<i>Forecasted</i> 1998	10,400	5,283	97%	5,168	101%
1999	10,400	5,415	92%	5,255	98%
2000	10,400	5,550	87%	5,343	95%
Molokai Division					
<i>Recorded</i> 1997	12,050 ⁹	6,600	83%	N/A	N/A
<i>Forecasted</i> 1998	12,050	7,080	70%	6,889	75%
1999	12,050	7,400	63%	7,145	69%
2000	12,050	7,500	61%	7,175	68%

Notes:

- 1) The gross reserve ratings of the units are used in the determination of the system capability. For Maui Division, system capability includes 16,000 kW of firm purchased power from HC&S. All unit retirements 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.
- 2) The 1998 - 2000 system peaks for the island of Maui are based on the MECO Forecast Planning Committee's 1997-2002 Sales and Peaks Forecasts dated July 1997 (as revised October 31, 1997). The Maui and Lanai annual forecasted system peaks are expected to occur in the month of November. The Molokai annual forecasted system peak is expected to occur in the month of December.
- 3) 1997 System Capability of 207,490 kW reflects the continued deration of units M8, M9, and M12 of 1.6 MW, 1.4 MW, and 1.5 MW respectively. The removal of these derations, originally expected by November 1997, were delayed due to project design delays. (see Note 4 for current schedule)
- 4) 1998 System Capability of 231,990 kW is based on the removal of the derations for Maalaea Units 8, 9, and 12 and the addition of Maalaea Unit 17, a 20,000 kW combustion turbine generator (phase I of a 58,000 kW dual train combined-cycle unit), scheduled to be placed in service in November 1998. An April 1998 in service date, as reported in the MECO Adequacy of Supply letter dated January 31, 1997, was delayed due to delays in the PSD permitting process (as reported to the PUC in a letter dated May 23, 1997 for Docket No. 7744). Maalaea Unit 12 is expected to be fully rated by March 1998 at 12,500 kW and Maalaea Units 8 and 9 are expected to be fully rated by May 1998 at 5,600 kW each. The year-end system capability is 231,990 kW (includes M17).
- 5) Kahului 2, a 6,000 kW steam unit, is scheduled for retirement in December 1999. A remaining useful life study was initiated on the boiler during its 1996 overhaul. The condition assessment report confirmed that the boiler retirement can be deferred until December 2006. A remaining useful life assessment of the steam turbine is scheduled for 1998 with expected comparable results. However, the deferral of the Kahului 2 retirement is pending the results of the steam turbine remaining useful life assessment. The year-end system capability is 225,990 kW (includes the Kahului 2 retirement).
- 6) MECO and HC&S executed a Letter of Agreement dated December 11, 1997 to extend the current PPA one year to December 31, 2000. MECO will be filing this letter agreement with the Commission shortly.

- 7) Maalaea 19, a 20,000 kW combustion turbine generator (phase II of a 58,000 kW dual train combined-cycle unit), is scheduled to be placed in service in December 2000. The year-end system capability is 229,990 kW (includes the Maalaea 19 addition and HC&S PPA expiration).
- 8) Lanai City Units L7 and L8 continued in standby status at the Lanai City Power Plant, as reported in the MECO Adequacy of Supply letter dated January 31, 1997, while MECO pursues disposition of these units to Miki Basin or an alternative suitable site. Castle & Cooke agreed to allow MECO to remain at the Lanai City Power Plant during the interim period. Units L7 and L8 are not included in the year-end system capability.
- 9) Palaau Units 1 and 2, two 1,290 kW Caterpillar units; and Palaau Units 3, 4, and 5, three 970 kW Cummins units; were returned to peaking service from standby service in June 1997 as reported in the MECO IRP 1997 Annual Evaluation Report (Docket No. 7258) filed with the PUC on June 2, 1997. Because of the age and operating history of these units, MECO credits one Caterpillar unit and one Cummins unit ($1,290 + 970 = 2,260$ kW) towards firm capacity for the Molokai system.



William A. Bonnet, P.E.
President

January 31, 1997

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PUBLIC UTILITIES
COMMISSION

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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

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

Maui's 1996 system peak occurred on December, 26, 1996 and was 174,800 KW. Lanai's 1996 system peak occurred on November 4, 1996 and was 5,020 KW. Molokai's 1996 system peak occurred on October 24, 1996 and was 6,750 KW. The total system capability of Maui had a reserve margin of approximately 19% over the 1996 system peak. Lanai had a 1996 reserve margin of approximately 181%. Molokai had a 1996 reserve margin of approximately 45%.

Attachment 1 shows the expected reserve margins over the next three years, based on the MECO Forecast Planning Committee's 1996-2016 Peak Forecasts dated July 31, 1996 for the island of Maui and the MECO Forecast Planning Committee's 1996-2001 Peak Forecasts dated June 27, 1996 for the islands of Lanai and Molokai.

Maui's 1996 total generating capability of 207,490 KW includes 16,000 KW of firm purchased power from Hawaiian Commercial & Sugar (HC&S) Company and reflects a reassessment of unit ratings. Attachment 2 shows the previous and current unit ratings.



The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
January 31, 1997
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The following criteria is 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

The sum of the reserve ratings of all available 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.

The following criteria 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

Very truly yours,



Attachment

cc: C. W. Totto



ADEQUACY OF SUPPLY
 Maui Electric Company, Limited

Year	System Capability at the Annual Peak Load KW ⁽¹⁾ (A)	Without DSM		With DSM	
		System Peak KW ⁽²⁾ (B)	Reserve Margin % ((A - B) / B)	System Peak KW ⁽²⁾ (C)	Reserve Margin % ((A - C) / C)
Maui Division					
Recorded 1996	207,490 ⁽³⁾	174,800	19%	N/A	N/A
Forecasted 1997	211,990 ⁽⁴⁾	184,500	15%	183,000	16%
1998	231,990 ⁽⁵⁾	190,300	22%	187,400	24%
1999	225,990 ⁽⁶⁾	194,800	16%	190,000	19%
Lanai Division					
Recorded 1996	14,110 ⁽⁷⁾	5,020	181%	N/A	N/A
Forecasted 1997	10,400 ⁽⁸⁾	6,420 ⁽⁹⁾	62%	6,400 ⁽⁹⁾	63%
1998	10,400	6,580	58%	6,520	60%
1999	10,400	6,750	54%	6,660	56%
Molokai Division					
Recorded 1996	9,790 ⁽¹⁰⁾	6,750	45%	N/A	N/A
Forecasted 1997	9,790	7,500	31%	7,450	31%
1998	9,790	7,650	28%	7,540	30%
1999	9,790	8,000	22%	7,820	25%

Notes:

- 1) The gross reserve ratings of the units are used in the determination of the system capability. For Maui Division, system capability includes 16,000 KW of firm purchased power from HC&S. All unit retirements 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.
- 2) The 1997 - 1999 system peaks for the island of Maui are based on the MECO Forecast Planning Committee's 1996-2016 Peak Forecasts dated July 31, 1996 and for the islands of Lanai and Molokai the MECO Forecast Planning Committee's 1996-2001 Peak Forecasts dated June 27, 1996. The Maui annual forecasted system peak is expected to occur in the month of November. The Lanai annual forecasted system peak is expected to occur in November for 1997 when the system peak changes from an evening peak to a daytime peak with the addition of a new Lanai Quarry load on October 1, 1997. In 1998, the Lanai annual forecasted system peak is expected to switch from November to July due to the availability during the whole year of the new Lanai Quarry load. The Molokai annual forecasted system peaks are expected to occur in December.
- 3) 1996 System capability of 207,490 KW reflects a reassessment of unit ratings. See Attachment 2 for details.
- 4) 1997 System capability of 211,9900 KW is based on the removal of the derations for Maalaea Units 8, 9, and 12 before the annual system peak which is expected to occur in November 1997.
- 5) Maalaea Unit 17, a 20,000 KW combustion turbine generator (phase I of a 58,000 KW dual train combined-cycle unit), is scheduled to be in service in April 1998. An August 1997 in service date, as reported in the MECO Adequacy of Supply letter dated May 7, 1996, is delayed due to delays in the PSD permitting process. The year-end system capability is 231,990 KW (including M17).
- 6) Kahului 2, a 6,000 KW steam unit, is scheduled for retirement in December 1999. A remaining useful life study was initiated on the boiler during its 1996 overhaul with the results currently being evaluated. A remaining useful life study of the steam turbine is scheduled for 1998. The actual retirement date will depend on the results of both these useful life studies. The year-end system capability is 225,990 KW (excluding Kahului 2).

- 7) Miki Basin Units LL7 and LL8, two 2,200 KW diesel engine generators, began commercial operation on October 15, 1996. Lanai City Units L1, L2, L4, L7 and L8, a 680 KW unit, a 680 KW unit, and a 350 KW unit, a 1,000 KW unit, and a 1,000 KW unit, respectively, originally scheduled to be retired in December 1996 were not retired in 1996 due to delays in the construction of LL7 and LL8. See note 8 for additional information.
- 8) Lanai City Units L1, L2, L4 were retired on January 15, 1997. Lanai City Units L7 and L8 were placed into standby status at the Lanai Power Plant on January 15, 1997. Units L7 and L8 were originally scheduled for retirement in December 1996 along with the other Lanai City Power Plant units (see MECO Adequacy of Supply dated May 7, 1996), however, MECO is pursuing relocating these units to Miki Basin and has placed them in standby status during the interim. Castle & Cooke agreed to allow MECO to remain at the Lanai City Power Plant during the interim.
- 9) The Lanai system is forecasted to change to a daytime system peak in 1997.
- 10) Palaau Units 7, 8, and 9, three 2,200 KW diesel engine generators, began commercial operation on June 17, 1996. Palaau Units 1, 2, 3, 4, and 5; a 1,290 KW unit, a 1,290 KW unit, a 970 KW unit, a 970 KW unit, and a 970 KW unit, respectively, were placed into standby status in August 1996.

MECO Unit Ratings - Maui
As of January 31, 1997

	Current Ratings		Previous Ratings		Difference	
	NTL ¹	Reserve	NTL ¹	Reserve	NTL ¹	Reserve
M1	2.70	2.70	2.50	2.75	0.20	(0.05)
M2	2.70	2.70	2.50	2.75	0.20	(0.05)
M3	2.70	2.70	2.50	2.75	0.20	(0.05)
X1	2.70	2.70	2.50	2.75	0.20	(0.05)
X2	2.70	2.70	2.50	2.75	0.20	(0.05)
M4	5.60	6.16	5.60	6.16	-	-
M5	5.60	6.16	5.60	6.16	-	-
M6	5.60	6.16	5.60	6.16	-	-
M7	5.60	6.16	5.60	6.16	-	-
M8	4.00 ²	4.00 ²	5.60	6.16	(1.60)	(2.16)
M9	4.20 ³	4.20 ³	5.60	6.16	(1.40)	(1.96)
M10	12.50	12.85	12.50	13.75	-	(0.90)
M11	12.50	12.85	12.50	13.75	-	(0.90)
M12	11.00 ⁴	11.00 ⁴	12.50	13.75	(1.50)	(2.75)
M13	12.50	12.85	12.50	13.75	-	(0.90)
M14/15/16	58.00	58.00	58.00	58.00	-	-
K1	5.90	5.90	5.90	5.90	-	-
K2	6.00	6.00	6.00	6.00	-	-
K3	12.70	12.70	12.70	12.70	-	-
K4	13.00	13.00	13.00	13.00	-	-
MECO	188.20	191.49	191.70	201.31	(3.50)	(9.82)
HC&S	12.00	16.00	12.00	16.00	-	-
System	200.20 ⁵	207.49 ⁶	203.70	217.31	(3.50)	(9.82)

Notes:

- 1) NTL = Normal Top Load
- 2) Maalaea Unit 8 is temporarily derated to 4.0 MW. The unit is expected to be at a normal top load and a reserve rating of 5.6 MW before November 1997.
- 3) Maalaea Unit 9 is temporarily derated to 4.2 MW. The unit is expected to be at a normal top load and a reserve rating of 5.6 MW before November 1997.
- 4) Maalaea Unit 12 is temporarily derated to 11.0 MW. The unit is expected to be at a normal top load and a reserve rating of 12.5 MW before November 1997.
- 5) After Maalaea Units 8, 9, and 12 are returned to their NTL ratings, before November 1997, the expected system NTL capability will be 204.70 MW.
- 6) After Maalaea Units 8, 9, and 12 are returned to their Reserve ratings, before November 1997, the expected system Reserve capability will be 211.99 MW.
- 7) For long-range planning, MECO uses a system capability of 211.99 MW which is based on the removal of derations on Maalaea Units 8, 9, and 12.

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May 7, 1996

PUBLIC UTILITIES
COMMISSION
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FILED

Thomas J. Jezierny
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: Revision to 1996 Adequacy of Supply Report
Maui Electric Company, Limited

Due to revised retirement dates for four generating units, MECO has correspondingly revised its estimated system capability for the next three years, and has revised its 1996 Adequacy of Supply Report, as attached. The 1996 Adequacy of Supply report was initially submitted by transmittal letter dated January 31, 1996.

Background

In MECO's 1996 Adequacy of Supply letter, MECO stated that it was performing remaining useful life assessments on Maalaea Units 1-3 and Kahului 1¹. These assessments have been completed, and MECO has re-scheduled the retirement dates for these units as follows:

<u>Unit</u>	<u>Revised Retirement Date</u>	<u>Previous Retirement Date</u>
Maalaea Unit 1	December 2001	December 1996
Maalaea Unit 2	December 2002	December 1997
Maalaea Unit 3	December 2002	December 1997
Kahului Unit 1	December 2005	December 1998

These revisions correspondingly require changes to the Maui 1996-1998 System Capability and Reserve Margin at the Annual Peak (with and without DSM).

Very truly yours,

Attachment

cc: C. W. Tutto

¹ See MECO Adequacy of Supply Attachment, Notes 3, 4, and 5.

ADEQUACY OF SUPPLY
 Maui Electric Company, Limited

REVISED May 7, 1996
 (Supercedes January 31, 1996 Report)

Year	System Capability at the Annual Peak Load KW ⁽¹⁾ (A)	Without DSM		With DSM	
		System Peak KW ⁽²⁾ (B)	Reserve Margin % ((A - B) / B)	System Peak KW ⁽²⁾ (C)	Reserve Margin % ((A - C) / C)
<i>Maui Division</i>					
Recorded					
1995	217,310	170,700	27	N/A	N/A
Forecasted					
1996	217,310 ⁽³⁾	175,200	24	173,900	25
1997	237,310 ⁽⁴⁾	181,900	30	179,100	33
1998	237,310 ⁽⁵⁾	187,400	27	182,700	30
<i>Lanai Division</i>					
Recorded					
1995	9,710	4,800	102	N/A	N/A
Forecasted					
1996	14,110 ⁽⁶⁾	5,440	159	5,410	161
1997	10,400	6,910 ⁽⁷⁾	51	6,850 ⁽⁷⁾	52
1998	10,400	7,110	46	7,020	48
<i>Molokai Division</i>					
Recorded					
1995	8,680	7,000	24	N/A	N/A
Forecasted					
1996	9,790 ⁽⁸⁾	6,820	44	6,770	45
1997	9,790	7,120	38	7,010	40
1998	9,790	7,400	32	7,220	36

Notes:

- 1) The gross reserve ratings of the units are used in the determination of the system capability. For Maui Division, system capability includes 16,000 KW of firm purchased power from HC&S. All unit retirements 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.
- 2) The 1996 - 1998 system peaks are based on the Forecast Planning Committee's 1995-2000 Sales and Peak Forecast dated June 29, 1995, and revised October 4, 1995. The Maui annual forecasted peaks are expected to occur in October. The Lanai annual forecasted peaks are expected to occur in August for 1996, and change to July for 1997 and 1998 when the system peak changes from an evening peak to a daytime peak. The Molokai annual forecasted peaks are expected to occur in November.
- 3) Maalaea Unit 17, a 20,000 KW combustion turbine generator (phase I of a 58,000 KW dual train combined-cycle unit), is scheduled to be in service in August 1997. A December 1996 in service date, as reported in the Adequacy of Supply letter dated January 31, 1996, is delayed due to delays in the PSD permitting process. Maalaea Unit 1, a 2,750 KW diesel engine generator, was scheduled for retirement in December 1996. However, a remaining useful life assessment was performed to re-evaluate the retirement date for this unit. As a result of this assessment, the retirement date for Maalaea Unit 1 has been rescheduled to December 2001.
- 4) Maalaea Units 2 and 3, two 2,750 KW diesel engine generators, were scheduled for retirement in December 1997. However, a remaining useful life assessment was performed to re-evaluate the retirement dates for these units. As a result of this assessment, the retirement dates for M2 and M3 have been rescheduled to December 2002.
- 5) Kahului 1, a 5,900 KW steam unit, was scheduled for retirement in December 1998. However, a remaining useful life assessment was performed to re-evaluate the retirement date for this unit. As a result of this assessment, the retirement date for K1 has been rescheduled to December 2005.
- 6) Miki Basin Units LL7 and LL8, two 2,200 KW diesel engine generators, are scheduled to be in service in September 1996. A March 1996 in service date, as reported in the Adequacy of Supply letter dated January 31, 1995, is delayed due to delays in the PSD permitting process. Lanai City Units L1, L2, L4, L7, and L8; a 680 KW unit, a 680 KW unit, a 350 KW unit, a 1,000 KW unit, and a 1,000 KW unit, respectively, are scheduled for retirement in December 1996 rather than June 1996, as reported in the Adequacy of Supply letter dated January 31, 1995. Unit retirements and the Lanai City Power Plant closure are tied to the addition of Units LL7 and LL8. The delay in the Lanai City Units

retirements allows for an estimated three month transition period. MECO will be moving its facilities out of Lanai City per the January 20, 1988 purchase agreement between MECO and Castle & Cooke. The year-end system capability is 10,400 KW (including LL7 and LL8, excluding L1, L2, L4, L7, and L8).

- 7) The Lanai system is forecasted to change to a daytime system peak in 1997.
- 8) Palaau Units 7, 8, and 9, three 2,200 KW diesel engine generators, are scheduled to be in service in May 1996. An October 1995 in service date, as reported in the Adequacy of Supply letter dated January 31, 1995, was delayed due to delays in the PSD permitting process. Palaau Units 1, 2, 3, 4, and 5; a 1,290 KW unit, a 1,290 KW unit, a 970 KW unit, a 970 KW unit, and a 970 KW unit, respectively, will be placed in standby status in July 1996. The standby status of Palaau Units 1, 2, 3, 4, and 5 was delayed from December 1995, as reported in the Adequacy of Supply letter dated January 31, 1995. The new date reflects the delay in the estimated service dates for Palaau Units 7,8 and 9, with an additional two month transition period.



Thomas J. Jezierny
President

January 31, 1996

MH
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RS

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

RECEIVED
OFFICE OF THE
COMMISSIONER
JAN 31 3 40 PM '96
PUBLIC UTILITIES

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Limited

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

Maui's 1995 system peak occurred on Monday, November 20, 1995 and was 170,700 KW. Lanai's 1995 system peak occurred on Friday, November 3, 1995 and was 4,800 KW. Molokai's 1995 system peak occurred on Monday, December 11, 1995 and was 7,000 KW. The total system capability of Maui had a reserve margin of approximately 27% over the 1995 system peak. Lanai had a 1995 reserve margin of approximately 102%. Molokai had a 1995 reserve margin of approximately 24%.

Maui's 1995 total generating capability of 217,310 KW includes 16,000 KW of firm purchased power from Hawaiian Commercial & Sugar (HC&S) Company.

The attached table shows the expected reserve margins over the next three years, based on the Forecast Planning Committee's 1995-2000 Sales and Peak Forecast dated June 29, 1995, revised October 4, 1995.

The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
January 31, 1996
Page 2

The following method is 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

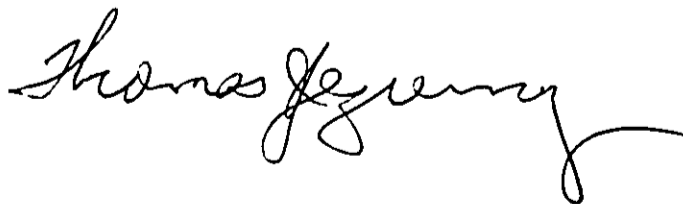
The sum of the reserve ratings of all available units minus the reserve rating of the largest available unit minus the reserve ratings of any units on maintenance must be equal to or greater than the system peak load to be supplied.

The following method 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

Very truly yours,



Attachment

cc: C. W. Totto



ADEQUACY OF SUPPLY
Maui Electric Company, Limited

Year	System Capability at the Annual Peak Load KW ⁽¹⁾ (A)	Without DSM		With DSM	
		System Peak KW ⁽²⁾ (B)	Reserve Margin % ((A - B) / B)	System Peak KW ⁽²⁾ (C)	Reserve Margin % ((A - C) / C)
<i>Maui Division</i>					
Recorded					
1995	217,310	170,700	27	N/A	N/A
Forecasted					
1996	217,310 ⁽³⁾	175,200	24	173,900	25
1997	234,560 ⁽⁴⁾	181,900	29	179,100	31
1998	229,060 ⁽⁵⁾	187,400	22	182,700	25
<i>Lanai Division</i>					
Recorded					
1995	9,710	4,800	102	N/A	N/A
Forecasted					
1996	14,110 ⁽⁶⁾	5,440	159	5,410	161
1997	10,400	6,910 ⁽⁷⁾	51	6,850 ⁽⁷⁾	52
1998	10,400	7,110	46	7,020	48
<i>Molokai Division</i>					
Recorded					
1995	8,680	7,000	24	N/A	N/A
Forecasted					
1996	9,790 ⁽⁸⁾	6,820	44	6,770	45
1997	9,790	7,120	38	7,010	40
1998	9,790	7,400	32	7,220	36

Notes:

- 1) The gross reserve ratings of the units are used in the determination of the system capability. For Maui Division, system capability includes 16,000 KW of firm purchased power from HC&S. All unit retirements 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.
- 2) The 1996 - 1998 system peaks are based on the Forecast Planning Committee's 1995-2000 Sales and Peak Forecast dated June 29, 1995, and revised October 4, 1995. The Maui annual forecasted peaks are expected to occur in October. The Lanai annual forecasted peaks are expected to occur in August for 1996, and change to July for 1997 and 1998 when the system peak changes from an evening peak to a daytime peak. The Molokai annual forecasted peaks are expected to occur in November.
- 3) Maalaea Unit 17, a 20,000 KW combustion turbine generator (phase I of a 58,000 KW dual train combined-cycle unit), is scheduled to be in service in December 1996. A June 1996 in service date, as reported in the Adequacy of Supply letter dated January 31, 1995, is delayed due to delays in the PSD permitting process. Maalaea Unit 1, a 2,750 KW diesel engine generator, is scheduled for retirement in December 1996. However, a remaining useful life assessment is being performed to determine the retirement date for this unit. The year-end system capability is 234,560 KW (including M17 and excluding M1).
- 4) Maalaea Units 2 and 3, two 2,750 KW diesel engine generators, are scheduled for retirement in December 1997. However, a remaining useful life assessment is being performed to determine the retirement date for these units. The year-end system capability is 229,060 KW (excluding M2 and M3).
- 5) Kahului 1, a 5,900 KW steam unit, is scheduled for retirement in December 1998. However, a remaining useful life assessment is being performed to determine the retirement date for this unit. The year-end system capability is 223,160 KW (excluding Kahului 1).
- 6) Miki Basin Units LL7 and LL8, two 2,200 KW diesel engine generators, are scheduled to be in service in September 1996. A March 1996 in service date, as reported in the Adequacy of Supply letter dated January 31, 1995, is delayed due to delays in the PSD permitting process. Lanai City Units L1, L2, L4, L7, and L8; a 680 KW unit, a 680 KW unit, a 350 KW unit, a 1,000 KW unit, and a 1,000 KW unit, respectively, are scheduled for retirement in December 1996 rather than June 1996, as reported in the Adequacy of Supply letter dated January 31, 1995. Unit retirements and the Lanai City Power Plant closure are tied to the addition of Units LL7 and LL8. The delay in the Lanai City Unit

retirements allow for an estimated three month transition period. MECO will be moving its facilities out of Lanai City per the January 20, 1988 purchase agreement between MECO and Castle & Cooke. The year-end system capability is 10,400 KW (including LL7 and LL8, excluding L1, L2, L4, L7, and L8).

- 7) The Lanai system is forecasted to change to a daytime system peak in 1997.
- 8) Palaau Units 7, 8, and 9, three 2,200 KW diesel engine generators, are scheduled to be in service in May 1996. An October 1995 in service date, as reported in the Adequacy of Supply letter dated January 31, 1995, was delayed due to delays in the PSD permitting process. Palaau Units 1, 2, 3, 4, and 5; a 1,290 KW unit, a 1,290 KW unit, a 970 KW unit, a 970 KW unit, and a 970 KW unit, respectively, will be placed in standby status in July 1996. The standby status of Palaau Units 1, 2, 3, 4, and 5 was delayed from December 1995, as reported in the Adequacy of Supply letter dated January 31, 1995. The new date reflects the delay in the estimated service dates for Palaau Units 7,8 and 9, with an additional two month transition period.

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RN
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MH



January 31, 1995

Thomas J. Jezierny
President

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

FILED
JAN 31 4 23 PM '95
PUBLIC UTILITIES
COMMISSION

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Limited

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

Maui's 1994 system peak occurred on Wednesday, December 28, and was 163,200 KW. Lanai's 1994 system peak occurred on Wednesday, August 10, and was 4,720 KW. Molokai's 1994 system peak occurred on Tuesday, November 15, and was 6,350 KW. The total system capability of Maui had a reserve margin of approximately 33% over the 1994 system peak. Lanai had a 1994 reserve margin of approximately 106%. Molokai had a 1994 reserve margin of approximately 37%.

Maui's 1994 total generating capability of 217,310 KW includes firm purchased power of 16,000 KW from HC&S.

The attached table shows the expected reserve margins over the next three years, based on the Forecast Planning Committee's 1994-2014 Sales, Sales Load Factor, and Peaks Forecast dated May 24, 1994.

The following method is used to determine the timing of an additional generating unit for the Maui Division:

The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
January 31, 1995
Page 2

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

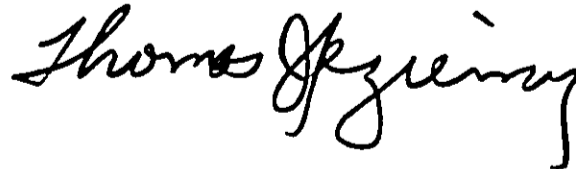
The sum of the reserve ratings of all available units minus the reserve rating of the largest available unit minus the reserve ratings of any units on maintenance must be equal to or greater than the system peak load to be supplied.

The following method 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 "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

Very truly yours,



Attachment



cc: C. W. Totto

ADEQUACY OF SUPPLY
 Maui Electric Company, Limited

Year	Year-End System Capability KW ⁽¹⁾	Without DSM		With DSM	
		System Peak KW ⁽²⁾	Reserve Margin % ⁽³⁾	System Peak KW ⁽⁴⁾	Reserve Margin % ⁽³⁾
<i>Maui Division</i>					
Recorded					
1994	217,310	163,200	33	163,200	33
Forecasted					
1995	217,310	178,000	22	178,000	22
1996	234,560 ⁽⁵⁾	182,100	29	180,500	30
1997	229,060 ⁽⁶⁾	188,300	22	185,200	24
<i>Lanai Division</i>					
Recorded					
1994	9,710	4,720	106	4,720	106
Forecasted					
1995	9,710	5,518	76	5,518	76
1996	10,400 ⁽⁷⁾	5,628	85	NA ⁽⁸⁾	NA ⁽⁸⁾
1997	10,400	5,728	82	NA ⁽⁸⁾	NA ⁽⁸⁾
<i>Molokai Division</i>					
Recorded					
1994	8,680	6,350	37	6,350	37
Forecasted					
1995	9,790 ⁽⁹⁾	6,325	55	6,325	55
1996	9,790	6,415	53	6,359	54
1997	9,790	6,485	51	6,375	54

Notes:

- 1) The gross reserve ratings of the units are used in the determination of the system capability. For Maui Division, system capability includes 16,000 KW firm capacity from HC&S. All unit retirements are planned for December 31 of the designated year unless otherwise specified.
- 2) The 1995 - 1997 system peaks without DSM are based on the Forecast Planning Committee's May 24, 1994 forecast.
- 3) The reserve margin reflects the difference between the year-end system capability and the system peak divided by the system peak.
- 4) The 1995 - 1997 system peaks with DSM are based on the Forecast Planning Committee's May 24, 1994 forecast and the DSM peak reduction from Docket No. 7258, Exhibit MECO-R-301, without freeriders, and MECO-R-305. DSM penetration is estimated to start in 1996.
- 5) Maalaea Unit 17, a 20,000 KW combustion turbine generator (phase I of a 58,000 KW dual train combined-cycle unit), is scheduled to be in service in June 1996. Maalaea Unit 1, a 2,750 KW diesel generator, is scheduled for retirement in December 1996.
- 6) Maalaea Units 2 and 3, two 2,750 KW diesel generators, are scheduled for retirement in December 1997.
- 7) Miki Basin Units LL7 and LL8, two 2,200 KW diesel engine generators, are scheduled to be in service in March 1996. Lanai City Units L1, L2, L4, L7, and L8; a 680 KW unit, a 680 KW unit, a 350 KW unit, a 1,000 KW unit, and a 1,000 KW unit, respectively, are scheduled to be retired in June 1996, rather than March 1996, as reported in the Generation Expansion Study for Lanai Update (filed with the Public Utilities Commission on September 6, 1994 in Docket No. 94-0106). Unit retirements and the Lanai City Power Plant closure are tied to the addition of Units LL7 and LL8. The three month extension of the Lanai City Unit retirements is the estimated transition period. MECO will be moving its facilities out of Lanai City per the January 20, 1988 purchase agreement between MECO and Castle & Cooke.
- 8) The expected DSM penetration for the Lanai system is only available for the evening peak at this time. The Lanai system is forecasted to change to a daytime system peak; therefore, the forecasted system peak with DSM is not available. DSM is not expected to change the need dates for Miki Basin Units LL7 and LL8.

ADEQUACY OF SUPPLY
January 31, 1995
Page 3 of 3

- 9) Palaau Units 7, 8, and 9, three 2,200 KW diesel engine generators, are scheduled to be in service in October 1995. Palaau Units 1, 2, 3, 4, and 5; a 1,290 KW unit, a 1,290 KW unit, a 970 KW unit, a 970 KW unit, and a 970 KW unit, respectively, will be placed in standby status in December 1995. The standby status of Palaau Units 1 and 2 is delayed from April 1995, as reported in the Adequacy of Supply letter dated January 31, 1994. The new date reflects the delay in the estimated service dates for Palaau Units 7 and 8, with an additional two months for a transition period.

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Thomas J. Jezierny
President

January 31, 1994

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JAN 31 4 19 1994

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, Ltd.

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

Maui's 1993 system peak occurred on Tuesday, October 5 and was 156,700 KW. Lanai's 1993 system peak occurred on Thursday, April 1 and was 4,490 KW. Molokai's 1993 system peak occurred on Tuesday, November 16 and was 6,058 KW. The total system capability of Maui had a reserve margin of approximately 39% over the 1993 system peak. Lanai had a 1993 reserve margin of approximately 116%. Molokai had a 1993 reserve margin of approximately 43%.

Maui's 1993 total generating capability of 217,310 KW includes firm purchased power of 16,000 KW from HC&S.

The attached table shows the expected reserve margins over the next three years, based on the Forecast Planning Committee's 1993-2013 Sales, Sales Load Factor, and Peaks Forecast dated May 26, 1993.

The Honorable Chairman and Members of
the Hawaii Public Utilities Commission
January 31, 1994
Page 2

The following method is used to determine the timing of an additional generation unit:

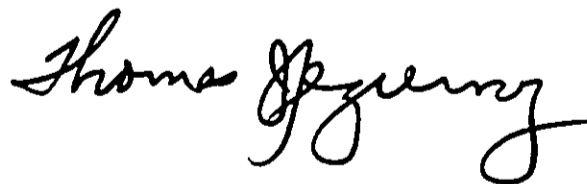
New generation will be added to prevent the violation of any one of the rules listed below where "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

In 1995, MECO will be using the following method to determine the timing of an additional generating unit for its Maui Division:

The sum of the reserve ratings of all available 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.

Very truly yours,



Attachment

cc: C. W. Tutto



ADEQUACY OF SUPPLY
Maui Electric Company, Ltd.

January 31, 1994

Maui Division

<u>Year</u>	<u>Year-End System Capability (KW)⁽¹⁾</u>	<u>Without DSM</u>		<u>With DSM</u>	
		<u>System Peak (KW)⁽²⁾</u>	<u>Reserve Margin (%)</u>	<u>System Peak (KW)⁽³⁾</u>	<u>Reserve Margin (%)</u>
Recorded 1993	217,310 ⁽⁴⁾	156,700	39	156,700	39
Forecasted 1994	217,310	175,900	24	175,900	24
1995	217,310	179,400	21	178,700	22
1996	234,560 ⁽⁵⁾	182,900	28	182,000	29

Lanai Division

Recorded 1993	9,710 ⁽⁶⁾	4,490	116	4,490	116
Forecasted 1994	9,710	5,541	75	5,481	77
1995	9,710 ⁽⁷⁾	5,791	68	5,693	71
1996	12,600 ⁽⁸⁾	5,924	113	5,800	117

Molokai Division

Recorded 1993	8,680 ⁽⁹⁾	6,058	43	6,058	43
Forecasted 1994	8,680	6,225	39	6,073	43
1995	7,590 ⁽¹⁰⁾	6,380	19	6,146	23
1996	9,790 ⁽¹¹⁾	6,517	50	6,217	57

ADEQUACY OF SUPPLY
January 31, 1994

Notes:

- 1) Units at reserve ratings. For Maui Division, includes 16,000 KW firm capacity from HC&S. All unit retirements are planned for December 31 of the designated year unless otherwise specified.
- 2) The 1994 - 1996 system peaks without DSM are based on the Forecast Planning Committee's ("FPC") May 26, 1993 forecast.
- 3) The 1994 - 1996 system peaks with DSM are based on the FPC's May 26, 1993 forecast and the DSM peak reduction from the MECO 1994-2013 Integrated Resource Planning Report filed with the Commission December 15, 1993 in Docket No. 7258.
- 4) Addition of Maalaea Units 16 and 15, a 20,000 KW combustion turbine generator ("CT") and a 18,000 KW steam turbine generator ("STG") (phases II and III of a 58,000 KW dual train combined-cycle unit ["DTCC"]). The 58,000 KW rating is the gross electrical rating of the DTCC.
- 5) Maalaea Unit 17, a 20,000 KW CT (phase I of a 58,000 KW DTCC), is scheduled to begin commercial operation in June 1996. Retirement of Maalaea Unit 1, a 2,750 KW diesel generator, in December 1996.
- 6) Lanai City units L1, L2, L4, and L8; a 680 KW unit, a 680 KW unit, a 350 KW unit, and a 1000 KW unit, respectively, will be retired in 1996, rather than placed in standby status in 1993 as reported in Docket No. 7258 and February 8, 1993 Adequacy of Supply filing. These units are required to be operated to keep the Miki Basin Power Plant under the established fuel limit.
- 7) Lanai City unit L7, a 1,000 KW unit, will be retired in 1996, rather than in 1995 as reported in Docket No. 7258. Unit retirements and the Lanai City Power Plant closure are tied to the addition of units LL7-LL9 in 1996. MECO will be moving out of Lanai City per the January 20, 1988 purchase agreement between MECO and Castle & Cooke.
- 8) Addition of Miki Basin units LL7, LL8, and LL9, three 2,200 KW diesel engine generators, in March 1996. Retirement of Lanai City units L1, L2, L4, L7, and L8 and the Lanai City Power Plant closure will follow the three unit additions at Miki Basin in March 1996.

ADEQUACY OF SUPPLY
January 31, 1994

- 9) Purchase of Palaaau units 3, 4, 5, and 6, four 970 KW units, from the Palaaau Corporation (formerly Cummins Hawaii). There is no change in system capability (refer to Docket No. 7569).
- 10) Palaaau units 1 & 2, two 1,290 KW units, placed in standby status in April 1995. Addition of Palaaau units 7 and 8, two 2,200 KW diesel engine generators, in May 1995. Palaaau units 3, 4, and 5, three 970 KW units, placed in standby status in December 1995.
- 11) Addition of Palaaau unit 9, a 2,200 KW diesel engine generator, in January 1996.

Handwritten initials: JN ST, PY NL, DL PS



February 8, 1993

Thomas J. Jezierny
President

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

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PUBLIC UTILITIES
COMMISSION

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Ltd.

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

Maui's 1992 instantaneous system peak occurred on Thursday, November 19 and was 159,700 KW. Lanai's 1992 instantaneous system peak occurred on Wednesday, April 22 and was 4,667 KW. Molokai's 1992 instantaneous system peak occurred on Monday, November 16 and was 6,018 KW. Maui had a reserve margin of approximately 12% over the 1992 instantaneous system peak. Lanai had a 1992 reserve margin of approximately 108%. Molokai had a 1992 reserve margin of approximately 44%.

Maui's 1992 total generating capability of 179,310 KW includes firm purchased power of 16,000 KW from HC&S. Molokai's 1992 total generating capability of 8,680 KW includes firm purchased power of 3,880 KW from Palaa Corporation.

The attached table shows the expected reserve margins over the next three years, based on the Forecast Planning Committee's 1992-1997 Sales, Peaks and Minimum Low Demand Forecast dated May 29, 1992.

The Honorable Chairman and Members of
the Hawaii Public Utilities Commission
February 8, 1993
Page Two

The following method is used to determine the timing of an additional generation unit:

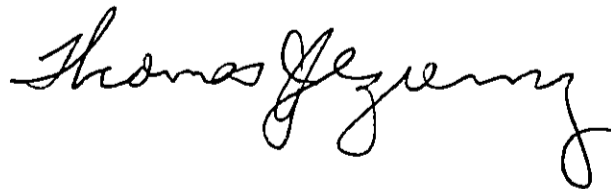
New generation will be added to prevent the violation of any one of the rules listed below where "available units" means all operable units and firm capacity suppliers physically connected to the system which are not on scheduled maintenance.

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

In 1995, MECO will be using the following method to determine the timing of an additional generating unit for its Maui Division:

The sum of the reserve ratings of all available 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.

Very truly yours,



Attachment

cc: C. W. Totto



ADEQUACY OF SUPPLY
Maui Electric Company, Ltd.
February 8, 1993

Maui Division

<u>Year</u>	<u>Unit Additions KW</u>	<u>Year-End System Capability KW¹</u>	<u>Instantaneous System Peak KW²</u>	<u>Reserve Margin at Time of System Peak %</u>
Recorded				
1992	20,000 ³	179,310	159,700	12
Forecasted				
1993	38,000 ⁴	217,310	168,800	29
1994	0	217,310	176,300	23
1995	0	217,310	183,800	18

Lanai Division

Recorded				
1992	0	9,710	4,667	108
Forecasted				
1993	-2,710 ⁵	7,000	5,810	67
1994	0	7,000	5,910	18
1995	-1,000 ⁶	6,000	6,000	17

Molokai Division

Recorded				
1992	0	8,680	6,018	44
Forecasted				
1993	3,880 ⁷	8,680	6,250	39
1994	-2,580 ⁸	6,100	6,350	37
1995	1,490 ⁹	7,590	6,510	61

ADEQUACY OF SUPPLY

February 8, 1993

- 1) Units at reserve ratings. For Maui Division, includes 16,000 KW firm capacity from HC&S. For Molokai Division, includes 3,880 KW firm capacity from Palaau Corporation which is planned to be purchased by MECO in 1993 (refer to Docket No. 7569). All unit retirements are planned for December 31 of the designated year.
- 2) The 1993 - 1995 system peaks are based on the Forecast Planning Committee's May 29, 1992 forecast.
- 3) Maalaea Unit 14, a 20,000 KW combustion turbine (phase I of a 58,000 KW dual-train combined cycle unit), began commercial operation in May 1992. The 58,000 KW rating is the gross electrical rating of the combined cycle unit. In previous filings and in Docket No. 6603, a nominal rating of 56,000 KW was used. All other existing units are represented by their gross ratings.
- 4) Maalaea Units 16 and 15, a 20,000 KW combustion turbine generator and a 16,000 KW steam turbine generator (phases II and III of a 58,000 KW dual train combined-cycle unit). The 58,000 KW rating is the gross electrical rating of the combined cycle unit. In previous filings and in Docket No. 6603, a nominal rating of 56,000 KW was used. All other existing units are represented by their gross ratings.
- 5) Lanai City units L1, L2, L4, and L8; a 680 KW unit, a 680 KW unit, a 350 KW unit, and a 1000 KW unit, respectively, placed in standby status. Unit retirements are tied to the closure of the Lanai City Power Plant. MECO will be moving out of Lanai City per the January 20, 1988 purchase agreement between MECO and Castle & Cooke.
- 6) Lanai City unit L7, a 1,000 KW unit, placed in standby status. Unit retirement is tied to the closure of the Lanai City Power Plant. MECO will be moving out of Lanai City per the January 20, 1988 purchase agreement between MECO and Castle & Cooke.
- 7) Purchase of Palaau units 3, 4, 5, and 6, four 970 KW units, from the Palaau Corporation. This Non-Utility Generator provides 3,880 KW of firm purchase power. There is no change in system capability (refer to Docket No. 7569).
- 8) Retirement of Palaau units 1 and 2, two 1,290 KW units.
- 9) Addition of Palaau units 7 and 8, two 2,200 KW diesel engine generators. Retirement of Palaau units 3, 4, and 5, three 970 KW units.

Mau Electric Company, Ltd. 210 West Kamehameha Avenue • PO Box 300 • Kahului, Maui, HI 96732-0398 • (808) 871-8461



Thomas J. Jezierny
President

January 29, 1993 PUBLIC UTILITIES
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The Honorable Chairman and Members of
the Hawaii Public Utilities Commission
Kekuanaoa Building
465 South King Street, First Floor
Honolulu, Hawaii 96813

Dear Commissioners:

Subject: 1993 Adequacy of Supply Report
Additional Time to File MECO's 1993 Report

In accordance with paragraph 5.3a of G.O. No. 7, MECO's Adequacy of Supply Report is due within 30 days after the end of the year. We would appreciate additional time in which to prepare MECO's annual statement indicating its adequacy of capacity; until February 8, 1993.

Sincerely,

cc: C. W. Tutto

Maui Electric Company, Ltd. 210 West Kamehameha Avenue • PO Box 307 • Kahului, Maui, HI 96732-0398 • (808) 871-8461

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February 18, 1992

Thomas J. Jezierny
President

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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: Revision to MECO's 1992 Adequacy of Supply Letter

This revises MECO's 1992 Adequacy of Supply letter that was filed on January 31, 1992. This revision changes the size of Molokai's additional 1991 capacity addition from 1,000 KW (its nominal rating) to 970 KW (its on-site capability). The change correspondingly requires revision of the 1991 Year-End System Capability and Reserve Margin.

Sincerely,

Attachment

cc: C. W. Tutto

ADEQUACY OF SUPPLY

Maui Electric Company, Limited

REVISED
February 18, 1992

Maui Division

<u>Year</u>	<u>Unit Additions KW</u>	<u>Year-End System Capability KW (1)</u>	<u>Instantaneous System Peak KW (2)</u>	<u>Reserve Margin %</u>
Recorded 1991	0	159,310	149,100	7
Forecasted 1992	+20,000 (3)	179,310	161,500	11
1993	+36,000 (4)	215,310	171,200	26
1994	0	215,310	179,100	20

Lanai Division

Recorded 1991	0	9,710	4,470	117
Forecasted 1992	0	9,710	5,200	87
1993	-1,710 (5)	8,000	5,500	46
1994	0	8,000	5,770	39

Molokai Division

Recorded 1991	+970 (6)	8,680	5,650	54
Forecasted 1992	0	8,680	5,940	46
1993	0	8,680	6,090	43
1994	0	8,680	6,100	42

Notes:

- (1) Units at reserve ratings. For Maui Division, includes 16,000 KW firm power from HC&S. For Molokai Division, includes 3,880 KW firm power from Cummins.
- (2) The 1992-1994 system peaks are evening peaks based on the Forecast Planning Committee's May 17, 1991 forecast. Molokai peak forecast for the 1992-1994 period adjusted per the Forecast Planning Committee memo of November 12, 1991.

MECO ADEQUACY OF SUPPLY
REVISED February 18, 1992
(cont.)

- (3) Maalaea Unit #14, 20,000 KW combustion turbine (phase I of a 56,000 KW dual-train combined-cycle unit).
- (4) Maalaea Units #16 and #15, 20,000 KW combustion turbine and 16,000 KW steam turbine generator (phases II and III of a 56,000 KW dual-train combined-cycle unit).
- (5) Retirement of Lanai City units L1, L2 and L4 diesel generators and proposed transfer of units L7 and L8 to Miki Basin in order to comply with the terms of the January 20, 1988 purchase agreement between MECO and Castle and Cooke.
- (6) Firm power addition of 970 KW from Cummins.

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January 31, 1992

Thomas J. Jezierny
President

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The Honorable Chairman and Members of
the Hawaii Public Utilities Commission
465 South King Street
Kekuanaoa Building, 1st Floor
Honolulu, Hawaii 95813

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Ltd.

In accordance with paragraph 5.3a of G.O. No. 7, the following information is respectfully submitted.

Maui's 1991 instantaneous system peak occurred on Thursday, November 14 and was 149,100 KW. Lanai's 1991 instantaneous system peak occurred on Monday, November 18 and was 4,470 KW. Molokai's 1991 instantaneous peak occurred on Tuesday, December 10 and was 5,650 KW. The total system generation capability of Maui had a reserve margin of approximately 7% over the 1991 instantaneous peak. Lanai had a 1991 reserve margin of approximately 117%. Molokai had a 1991 reserve margin of approximately 54%.

Maui's 1991 total generating capability of 159,310 KW includes firm purchased power of 16,000 MW from HC&S. Molokai's 1991 total generating capability of 8,680 KW includes firm purchased power of 3,880 KW from Cummins.

The attached table shows the expected reserve margin over the next three years, based on the Forecast Planning Committee peak forecast dated May 17, 1991.

The following method is used to determine the timing of an additional generating unit.

The Honorable Chairman and Members
of the Hawaii Public Utilities Commission
January 31, 1992
Page Two

The total capability of our system must at all times be equal to or greater than the load to be supplied by the summation of the following:

For Day and Evening Peaks:

1. Normal rating of all available units.
2. With no unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

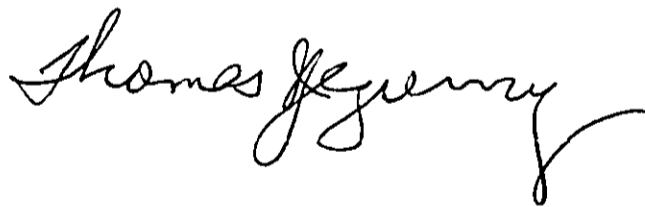
For Day Peak Only:

With a unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

For Evening Peak Only:

With a unit on maintenance, the reserve ratings of all available units.

Sincerely,



Attachment

cc: C. W. Tutto



ADEQUACY OF SUPPLY

Maui Electric Company, Limited

January 31, 1992

Maui Division

<u>Year</u>	<u>Unit Additions KW</u>	<u>Year-End System Capability KW (1)</u>	<u>Instantaneous System Peak KW (2)</u>	<u>Reserve Margin %</u>
Recorded 1991	0	159,310	149,100	7
Forecasted 1992	+20,000 (3)	179,310	161,500	11
1993	+36,000 (4)	215,310	171,200	26
1994	0	215,310	179,100	20

Lanai Division

Recorded 1991	0	9,710	4,470	117
Forecasted 1992	0	9,710	5,200	87
1993	-1,710 (5)	8,000	5,500	46
1994	0	8,000	5,770	39

Molokai Division

Recorded 1991	+1,000 (6)	8,710	5,650	54
Forecasted 1992	0	8,710	5,940	47
1993	0	8,710	6,090	43
1994	0	8,710	6,100	43

Notes:

- (1) Units at reserve ratings. For Maui Division, includes 16,000 KW firm power from HC&S. (See Docket No. 6616.) For Molokai Division, includes 3,880 KW firm power from Cummins.
- (2) The 1992-1994 system peaks are evening peaks based on the Forecast Planning Committee's May 17, 1991 forecast. Molokai peak forecast for the 1992-1994 period adjusted per the Forecast Planning Committee memo of November 12, 1991.

- (3) Maalaea Unit #14, 20,000 KW combustion turbine (phase I of a 56,000 KW dual-train combined-cycle unit). (See Docket No. 6603.)
- (4) Maalaea Units #16 and #15, 20,000 KW combustion turbine and 16,000 KW steam turbine generator (phases II and III of a 56,000 KW dual-train combined-cycle unit). (See Docket No. 6603.)
- (5) Retirement of Lanai City units L1, L2 and L4 diesel generators and proposed transfer of units L7 and L8 to Miki Basin in order to comply with the terms of the January 20, 1988 purchase agreement between MECO and Castle & Cooke, Inc.
- (6) Addition of a 1,000 KW Cummins diesel generator.



Thomas J. Jezierny
President

November 26, 1991

Hawaii Public Utilities Commission
Kekuanaoa Building
465 South King Street, 1st Floor
Honolulu, Hawaii 96813

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COMMISSION

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Subject: MECO 1991 Generating Capacity Situation

Dear Commissioners:

This provides additional information regarding MECO's activities towards informing customers of the current Maui generating capacity situation.

Action Plans

As we discussed at our meeting of November 1, 1991, Attachment #1 is MECO's Action Plans for five possible "load deficit" scenarios which may result in service interruptions. It provides examples of generation difficulties, the determination of remaining, available generation capacity, and the actions required to avoid or minimize rolling blackouts. In general, the scenarios designate the following sequential steps:

1. attempt to obtain additional generating capacity,
2. call for voluntary load reduction from hotels and the Department of Water Supply,
3. request specific customer conservation and load shifting measures, and
4. as a last measure, rolling blackouts.

Letter to Commercial Customers

Attachment #2 is a copy of a letter MECO sent to its 6,100 commercial (rate schedules "G", "J", "H", and "P") customers. This was mailed out in conjunction with news articles regarding rolling blackouts that appeared in the Maui News and the Honolulu Advertiser in September.

MECO Newspaper Ads

As some attendees to our November 1 meeting did not receive a copy, I am attaching (Attachment #3) a copy of newspaper advertisements that we have placed in the Maui News.

Survey of Residential Customers

We now have the results of a survey of residential customers that was conducted to measure their awareness of MECO's capacity situation. SMS conducted a telephone survey of 102 Maui residents between November 5 and 7. There is a margin of error of + or - 10%, with a 95% confidence level. The results are as follows:

	<u>% yes</u>	<u>% no</u>	<u>don't know</u>
1. Are you familiar with the term "rolling blackout"?	57%	43%	---
2. Did you now that Maui would be facing rolling blackouts in the next two months?	35%	65%	---
3. Where did you hear about the rolling blackouts?			
Maui News	58%	---	---
Radio	47%	---	---
Honolulu Advertiser	8%	---	---
Television	8%	---	---
ConsumerLines	8%	---	---
Star Bulletin	3%	---	---
Other	22%	---	---
4. Do you think there are things residents like you can do to help minimize the possibility or impact of rolling blackouts?	57%	12%	31%
5. Do you think that you, personally, will take any steps to reduce the chance of rolling blackouts?	56%	28%	16%

With respect to question #1, we hope that the reason 43% of the respondents are unfamiliar with the term "rolling blackouts" is because they have not experienced one. We are disappointed with the response to Question #2, as we had hoped our efforts were more effective. (A Maui newspaper reporter has commented that, based on this experience with the public's general awareness of



Hawaii Public Utilities
Commission
November 26, 1991
Page 3

current events, a 36% "YES" response is excellent.) Lastly, we are please that over half of the respondents indicated (in response to questions #4 and #5) an awareness of and a willingness to help avert the necessity of rolling blackouts.

Based on this survey, MECO is reassessing its public relations and advertising options and will keep the Commission and Consumer Advocate appraised of its actions. We also welcome any suggestions on how to better manage Maui's current generating capacity situation.

Very truly yours,

Thomas J. Jernigan

Attachments

cc: C. W. Tutto
W. H. W. Lee



MECO ACTION PLANS
Based on 5MW Deration

SCENARIO NO. 1 (Small deficit, short period, little notice)

Example: MECO loses 2.75MW diesel (M1-3,X1,X2) with valve breakage over 24 hour period.

Available capacity: 147MW -- Deficit Duration: 2 hrs.

ACTION REQUIRED:

1. Additional purchase power from HC&S.
2. Shed Wailuku Ag Iao Pump load (interruptible load).
3. Contact Dept. of Water Supply as presently done and Public Works to shed pump loads.
4. Contact hotels to shed loads (as needed).
5. Load shedding / rolling blackouts

SCENARIO NO. 2 (Small deficit, short period, long notice)

Example: MECO loses 6.1MW (K1 or K2 or M4-M9) for 3 days.

Available capacity: 144MW -- Deficit Duration: 3 hrs.

ACTION REQUIRED:

1. Additional purchase power from HC&S.
2. Shed Wailuku Ag Iao Pump load (interruptible load).
3. Contact Dept. of Water Supply as presently done and Public Works to shed pump loads.
4. Contact hotels to shed loads (as needed).
5. If 1, 2, 3 & 4 not sufficient, request public conservation.

SCENARIO NO. 3 (Large deficit, short period, moderate notice)

Example: MECO loses 13MW (K3 or K4 or M10-13) for 12 hour period starting at noon.

Available Capacity: 137MW -- Deficit Duration: 3 hrs.

ACTION REQUIRED:

1. Additional purchase power from HC&S.
2. Shed Wailuku Ag Iao Pump load (interruptible load).
3. Contact Dept. of Water Supply as presently done and Public Works to shed pump loads.
4. Contact hotels to shed loads (as needed).
5. If 1, 2, 3 & 4 not sufficient, request public conservation.

SCENARIO NO. 4 (Large deficit, long period, moderate notice)

Example: MECO loses HC&S (16MW) and 13MW (K3 or K4 or M10-M13) from 6am to 12 midnight.

Available Capacity: 121MW -- Deficit Duration: 14 hrs.

ACTION REQUIRED:

1. Shed Wailuku Ag Iao Pump load (interruptible load).
2. Contact Dept. of Water Supply as presently done and Public Works to shed pump loads.
3. Contact hotels to shed loads (as needed).
4. Radio announcement / general public conservation solicitation
(This could include suggestions on conservation options available--Refer to MECO Energy Allocation/Curtailment Plan)
5. Rolling blackouts (duration of 1 hr. maximum) / radio announcement
(This should include advance warnings of areas to be rolled and information on duration whenever possible).

SCENARIO NO. 5 (Moderate deficit, moderate period, long notice)

Example: MECO loses 13MW (K3 or K4 or M10-13) for 30 days.

Available Capacity: 137MW -- Deficit Duration: 3 hrs.

ACTION REQUIRED:

1. Additional purchase power from HC&S.
2. Shed Wailuku Ag Iao Pump load (interruptible load).
3. Contact Dept. of Water Supply as presently done and Public Works to shed pump loads.
4. Contact hotels to shed loads (as needed).
5. Radio announcement and printed advertisements / general public conservation solicitation
(This could include suggestions on conservation options available--Refer to MECO Energy Allocation/Curtailment Plan)
6. Planned rolling blackouts (duration of 1 hr. maximum) / radio announcement
(This should include advance warnings of areas to be rolled and information on duration whenever possible). Rotate the circuits that are automatically shed by under-frequency relays in order to share the burden more equally over the 30 day period.



Thomas J. Jezierny
President

September 16, 1991

Dear Maui Electric Customer,

I ask for your assistance regarding a situation that affects all Maui Electric Company (MECO) customers on Maui. As mentioned in recent newspaper articles, MECO has experienced a delay in the permitting of our next generating unit. This delay in the permitting, and therefore, the construction of the unit, will cause us to be very short in generation capacity during the upcoming winter peak period. This situation will result in the higher possibility of rolling blackouts. To counter this possibility, we have developed a strategy of maximizing generation, reducing load voluntarily among selected customers, and encouraging all customers to increase conservation and shift loads away from peak demand periods.

SITUATION

Our plans called for the addition of Maalaea Unit 14, a 20 megawatt combustion turbine, in June, 1991. Permit applications at the Federal, State, and County levels were submitted in the first half of 1990. All permits were received with the exception of the environmental permit, which is a joint permit of the State of Hawaii Department of Health and the U.S. Environmental Protection Agency. This permit is necessary for construction of the unit to begin. At this time, we are hopeful that the final permit will be received by November, 1991. This would allow construction to commence and the unit to be operational about five months later, by March, 1992.

IMPACT

Unfortunately, this situation results in the new generating unit operation to be delayed past the winter peak period of 1991. For this winter peak period, MECO will have a total generation capability of 159 megawatts and a system forecasted load of 151 megawatts, thereby providing a slim reserve margin of only 8 megawatts. If we experience problems in our generation capacity or if the system loads are higher than forecast, the reserve margin will decrease and/or become a deficit, thereby raising the possibility of rolling blackouts.

STRATEGY

To counter the higher possibility of rolling blackouts, MECO has developed a strategy to:

- 1) Maximize generating capability through having all MECO generating units operational (not on overhaul) and increasing purchase power from HC&S and Pioneer Mill Company,
- 2) Reduce load increments voluntarily among selected customers, e.g., County facilities, hotels, etc., and
- 3) Appeal to the public to shift energy use away from the times of highest risk and to reduce energy consumption.

Should these actions not reduce load sufficiently, we may have to employ rolling blackouts, the involuntary reduction of incremental customer loads for temporary periods.

As a "large power" Rate Schedule P customer or a "commercial" Rate Schedule G or J customer, we urge you to employ the following load reduction steps as they may apply to your service:

- Reduce lighting load by turning off all possible lights and reducing lighting in working areas to the lowest level consistent with health and safety. Turn off or reduce decorative flood lighting, lanai and pool lighting, and electric signs. Reduce lighting in refrigerated areas and display cases as much as possible.
- Turn off water coolers, dispensing machines, pool heaters and other similar accessories that may not be directly essential to your business operation.
- Turn off or reduce air conditioning in locations where doors and windows can be opened to provide ventilation.
- Turn off fan coil units in unoccupied rooms.
- Raise thermostat temperature settings 3° to 5° F.
- Adjust air conditioning chillers for reduced air conditioning load.
- In food markets, reduce air conditioning load by taking maximum advantage of cooling from display cases. Cover all open freezer cabinets at night when the market is closed.
- Turn off all production equipment when not in use.



- For hotel and other tourist operations, request occupants to reduce energy consumption by using electricity only when necessary, turning off lights, using stairs instead of elevators, etc.
- Reduce or eliminate evening operations; the period of the highest load demand is 6 - 8 P.M.
- Turn off cooking equipment when not in use.

If we need to employ rolling blackouts, we will:

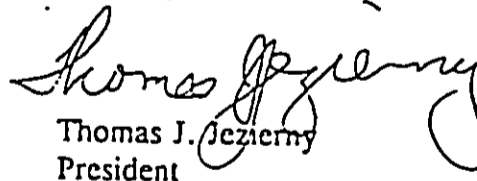
- 1) Provide as much advance notice as possible through recurring radio announcements made at predetermined times during the day. These announcements will include the locations and times of rolling blackouts for that day. Announcements will also request voluntary conservation efforts by the general public.
- 2) Limit rolling blackouts in affected areas to no more than a one hour time period.
- 3) Rotate the areas being rolled as equitably as possible.
- 4) Notify "key customers" who provide critical services such as fire, police, and ambulance.
- 5) Have MECO personnel available at phone stations to answer questions and provide information.

We regret that this situation has arisen. However, we are confident that, with the help of our customers, we can minimize the possibility and/or impact of rolling blackouts.

If you have any questions, I ask you to call Ken Kawaguchi (871-2397), Faith Nakamoto (871-2326), or Stephen Kealoha (871-2332) of our Customer Service Department.

Thank you!

Sincerely,


Thomas J. Jezierny
President





As you may have heard, Maui Electric Company, Limited, has experienced a delay in the permitting of our next generating unit. This delay in the permitting, and therefore, the construction of the unit, will cause us to be very short in generation capacity during the upcoming winter peak period. This situation will result in the higher possibility of rolling blackouts.

MECO is receiving good cooperation from its purchase power sources, Hawaiian Commercial and Sugar Company and Pioneer Mill.

We also have asked Maui County's agencies and large hotel operators to voluntarily lower their demand during peak load periods.

In the past, our residential customers have been very responsible about using energy efficiently. But you can contribute to an even lower demand for electricity, especially during the peak demand period of 6:00 to 8:00pm, by implementing some of the following tips to reduce your electricity bill and to conserve energy.

CLIP AND SAVE

Reschedule your cooking, washing, air-conditioning, and water heating usage to before 6:00pm or after 8:00pm. This can help minimize demands during that period.

WATER HEATING:

- *Lower the temperature in your water heater by turning off the circuit to your tank. Then adjust the temperature setting to 130 degrees F. If you have a dishwasher, check your owner's manual for the required temperature. Remember to turn your circuit back on.
- *Use dishwashers and washing machines only with full loads. In the case of your dishwasher, use the shortest cycle that gets your dishes clean.
- *Take short, cool showers.

REFRIGERATION:

- *Unnecessarily opening and closing your refrigerator wastes energy. Begin by arranging the contents in your refrigerator so that you and members of your family know exactly where things are. Try not to keep the doors open longer than necessary.
- *Replace worn-out door seals.

AIR-CONDITIONING:

- *Air conditioners consume large amounts of electricity. You can help keep the room cool and contribute to the working efficiency of your air conditioners by keeping drapes or blinds drawn to keep out the sun. Cool only what you need.
- *Dirty filters cause air conditioners to work harder to keep a room cool. Clean filters and baffles regularly, and replace filters whenever necessary.

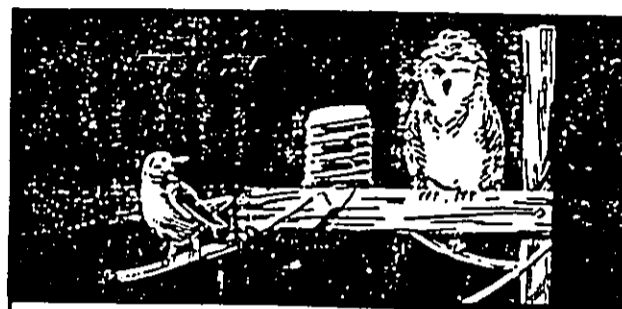
TELEVISION, RADIOS, LIGHTING:

- *Switch off television and radios when not in use.
- *Fluorescent lamps are more efficient than incandescent lamps.
- *Don't leave lights on in rooms that are not occupied.



Maui Electric Company
An HECI Company

MN 10/13/20/1991



ROLLING BLACKOUTS

Our recent ads in this space discussed "Save the Power", how our next generating unit has been delayed, how our large customers are voluntarily reducing load, and how all customers are urged to conserve their energy consumption.

The demand for electricity on Maui continues to increase, making it more likely that we could be in a rolling blackout situation in the upcoming weeks.

MECO continues to ask all Maui customers to voluntarily conserve, using electricity wisely and to shift energy use away from the peak period 6-8pm, Monday-Thursday.

If rolling blackouts become necessary, the following plan will be implemented:

- Advance notice will be given, as possible, via recurring radio announcements on stations KMVI, KNUI, KAOI, and KLHI. These announcements will include the locations and times of the rolling blackouts for the day.
- Larger commercial customers will be individually notified and asked to cut energy consumption.
- Rolling blackouts will normally be limited to no more than one hour in any area. Areas being rolled will be rotated as equitably as possible.
- "Key customers" who provide critical services, such as fire, police and hospital, will be individually notified of the rolling blackout schedule. The Maui Police Department, Maui Memorial Hospital and the airport are excluded from the rolling blackout sequence.
- MECO personnel will be available to answer questions about the rolling blackouts. Numbers to call prior to or during rolling blackouts are 871-7777 and 871-9777.

DURING A ROLLING BLACKOUT, MECO URGES YOU TO FOLLOW THESE CONSERVATION EQUIPMENT PROTECTION GUIDELINES:

1. Keep refrigerator or freezer doors closed. If you need to open your refrigerator, do it as quickly as possible to minimize loss of cold air.
2. Turn off air conditioners, fans, clothes dryers, electric ranges and other appliances so they will not all start up the instant the power comes back on.
3. When power is restored, turn your appliances back on, one at a time, to help reduce the possibility of circuit overload.
4. Sensitive electronic equipment including computers, TVs, VCRs, and microwave ovens should be unplugged.
5. Conserve water during a rolling blackout, as county water pumps in the blackout area will not be operating.



Maui Electric Company
An HECI Company

e/n pue #2/01 MN



Thomas J. Jezierny
President

January 31, 1991

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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, Ltd.

JAN 31 4 26 PM '91
PUBLIC UTILITIES
COMMISSION
FILED

In accordance with paragraph 5.3a of G.O. No. 7, the following information is respectfully submitted.

Maui's 1990 instantaneous system peak occurred on Wednesday, November 7 and was 139,800 KW. Lanai's 1990 instantaneous system peak occurred on Tuesday, December 18 and was 3,220 KW. Molokai's 1990 instantaneous system peak occurred on Monday, February 12 and was 5,900 KW. The total system generation capability of Maui had a reserve margin of approximately 14% over the 1990 instantaneous system peak. Lanai had a 1990 reserve margin of approximately 202%. Molokai had a 1990 reserve margin of approximately 31%.

Maui's 1990 total generating capability of 159,310 KW includes firm purchased power of 16,000 KW from HC&S. Molokai's 1990 total generating capability of 7,710 KW includes firm purchased power of 2,910 KW from Cummins.

The attached table shows the expected reserve margin over the next three years, based on the Forecast Planning Committee peak forecast dated August 10, 1990.

The following method is used to determine the timing of an additional generation unit.

The Honorable Chairman and Members
of the Hawaii Public Utilities Commission
January 31, 1991
Page Two

The total capability of our system must at all times be equal to or greater than the load to be supplied by the summation of the following:

For Day and Evening Peaks:

1. Normal rating of all available units.
2. With no unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

For Day Peak Only:

With a unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

For Evening Peak Only:

With a unit on maintenance, the reserve ratings of all available units.

Very truly yours,



Attachment

cc: C. W. Tutto



ADEQUACY OF SUPPLY

Maui Electric Company, Limited

January 31, 1991

Maui Division

<u>Year</u>	<u>Unit Additions KW</u>	<u>Year-End System Capability KW (1)</u>	<u>Instantaneous System Peak KW (2)</u>	<u>Reserve Margin %</u>
Recorded 1990	+4,000 (3)	159,310	139,800	14
Forecasted 1991	+20,000 (4)	179,310	153,500	17
1992	0	179,310	163,700	10
1993	+36,000 (5)	215,310	174,000	24

Lanai Division

Recorded 1990	+6,000 (6)	9,710 (6)	3,220	202
Forecasted 1991	0	9,710 (6)	5,040	93
1992	0	9,710 (6)	5,680	71
1993	0	9,710 (6)	5,680	71

Molokai Division

Recorded 1990	-4,000 (7)	7,710 (9)	5,900	31
Forecasted 1991	+1,000 (8)	8,710	5,690	53
1992	0	8,710	5,840	49
1993	0	8,710	6,000	45

Notes:

- (1) Units at reserve ratings. For the Maui Division, includes 16,000 KW firm power from HC&S (Including 4,000 KW added in 1990). Does not include nominal 8,000 KW standby power from Pioneer Mill Company. For the Molokai Division, includes 2,910 KW firm power from Cummins.

- (2) The forecasted 1991-1993 System Peaks are Evening Peaks, based on the Forecast Planning Committee's August 10, 1990 forecast.
- (3) Addition of 4,000 KW of system protection capacity from HC&S.
- (4) Maalaea Unit #14; 20,000 KW combustion turbine (Phase I of 56,000 KW Combined Cycle Unit).
- (5) Maalaea Units #16 and #15; 20,000 KW combustion turbine and 16,000 KW steam turbine generator (Phases II and III of 56,000 KW Combined Cycle Unit).
- (6) Retirement of Lanai City generating units under investigation and proceeding in accordance with terms of January 20, 1988 purchase agreement between MECO and Castle and Cooke.
- (7) Termination of 4,000 KW from ONSITE.
- (8) Addition of 1000 KW diesel unit.
- (9) Based on Reserve Ratings as per Molokai Division Unit Type and Size Study dated November 1990.



Arden G. Henderson
President

February 9, 1990

file
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PUBLIC UTILITIES
COMMISSION
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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, Ltd.

In accordance with paragraph 5.3a of G.O. No. 7, the following information is respectfully submitted.

Maui's 1989 instantaneous system peak was 130,700 KW and occurred on November 13. Lanai's 1989 instantaneous system peak was 2,430 KW. Molokai's 1989 instantaneous system peak was 5,650 KW. Maui's 1989 total generating capability had a reserve margin of approximately 19% over the 1989 instantaneous system peak. Lanai had a 1989 reserve margin of approximately 53%. Molokai had a 1989 reserve margin of approximately 98%.

Maui's 1989 total generating capability of 155,310 KW included 12,000 KW of firm purchased power from HC&S, and the addition of a 13,750 KW medium speed diesel unit installed at the Maalaea Plant in 1989.

The attached table shows the expected system reserve margin for the next three years, based on the peak prediction of the Forecast Planning Committee dated August 28, 1989.

The following method is used to determine the timing for an additional generating unit on Maui:

The total capability of the MECO system must at all times be equal to or greater than the load to be supplied by the summation of the following:

The Honorable Chairman and Members
of the Hawaii Public Utilities Commission
Page Two
February 9, 1990

FOR DAY AND EVENING PEAKS:

1. Normal rating of all available units.
2. With no unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

FOR DAY PEAK ONLY:

With a unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

FOR EVENING PEAK ONLY:

With a unit on maintenance, the reserve ratings of all available units.

Sincerely,

Arden Henderson

Attachment

cc: C. W. Tutto, Esq.



ADEQUACY OF SUPPLY

Maui Electric Company, Limited

February 9, 1990

Maui Division

<u>Year</u>	<u>Scheduled Unit Additions KW</u>	<u>System Capability (1) KW</u>	<u>Instantaneous System Peak (4) KW</u>	<u>Reserve Margin %</u>
Recorded 1988				
1989	+13,750 (2)	155,310	130,700	19
Forecasted 1990	0	155,310	144,500	7
1991	+28,000 (3)	183,310	153,900	19
1992	0	183,310	160,200	14

Lanai Division

Recorded 1989	0	3,710 (6)	2,430	53
Forecasted 1990	+ 6,000 (5)	9,710 (6)	4,740	105
1991	0	9,710 (6)	5,120	90
1992	0	9,710 (6)	5,120	90

Molokai Division

Recorded 1989	0	11,200 (7)	5,650	98
Forecast 1990	0	11,200 (7)	5,990	87
1991	0	11,200 (7)	6,140	82
1992	0	11,200 (7)	6,290	78

Notes:

- (1) Units at reserve ratings. Includes 12 MW firm power from HC&S. Does not include 8 MW standby power from Pioneer Mill Company.
- (2) Maalaea Unit #13; 13,750 KW medium speed diesel.
- (3) Maalaea Units 14 and 15, 28 MW (total) Combined Cycle Unit.
- (4) The forecasted 1989-1994 System Peaks are Evening Peaks.
- (5) Addition of six 1,000 KW EMD high speed diesels at Miki basin site.

- (6) Retirement of Lanai City generating units under investigation and proceeding in accordance with terms of January 20, 1988 purchase agreement between MECO and Castle & Cooke.
- (7) Includes 4 MW from On-site.

Note: MECO plans to adopt a more stringent generation addition criteria to increase generation reliability.

File



Arden G. Henderson
President

January 31, 1990

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JAN 31 4 12 PM '90
PUBLIC UTILITIES
COMMISSION
*CO. W. TOTTO
C. W. TOTTO
R/*

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

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Inc.

We would appreciate an additional week in which to prepare
MECO's annual statement indicating its adequacy of capacity. We
will be able to file this report by next Friday, February 9.
Thank you.

Very truly yours,

Arden G. Henderson

cc: C. W. Tutto, Esq.

File Copy



January 31, 1989

cc YW
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Arden G. Henderson
President

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

RECEIVED
HAWAII PUBLIC UTILITIES
COMMISSION
JAN 31 1989

Dear Commissioners:

Subject: Adequacy of Supply
Maui Electric Company, Inc.

In accordance with paragraph 5.3a of G.O. No. 7, the following information is respectfully submitted.

Maui's 1988 instantaneous system peak was 124,700 KW and occurred on December 27. Lanai's 1988 instantaneous system peak was 2,400 KW. Maui's 1988 total generating capability had a reserve margin of approximately 14% over the 1988 instantaneous system peak. Lanai had a 1988 reserve margin of approximately 55%.

Maui's 1988 total generating capability of 141,560 KW included 12,000 KW of firm purchased power from HC&S, and the addition of a 13,750 KW medium speed diesel unit installed at the Maalaea Plant in April 1988.

The attached table shows the expected system reserve margin for the next three years, based on the peak prediction of the Forecast Planning Committee dated October 6, 1988.

The following method is used to determine the timing for an additional generating unit:

The total capability of our system must at all times be equal to or greater than the load to be supplied by the summation of the following:

FOR DAY AND EVENING PEAKS:

1. Normal rating of all available units.
2. With no unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

Hawaii Public Utilities Commission
January 31, 1989
Page 2

FOR DAY PEAK ONLY:

With a unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

FOR EVENING PEAK ONLY:

With a unit on maintenance, the reserve ratings of all available units.

Sincerely,

Anden G Henderson

Attachment

cc: C. W. Tutto, Esq.



ADEQUACY OF SUPPLY

Maui Electric Company, Limited

January 31, 1989

Maui Division

<u>YEAR</u>	<u>Scheduled Unit Additions KW</u>	<u>System Capability (1) KW</u>	<u>Instantaneous System Peak (5) KW</u>	<u>Reserve Margin %</u>
Recorded 1988	+13,750 (2)	141,560	124,700	14
Forecasted 1989	+13,750 (3)	155,310	133,500	16
1990	+15,000 (4)	170,310	145,500	17
1991	0	170,310	150,700	13

Lanai Division

Recorded 1988	0	3,710 (7)	2,400	55
Forecasted 1989	+ 6,000 (6)	9,710 (7)	4,986	95
1990	0	9,710 (7)	4,996	94
1991	0	9,710 (7)	5,126	89

Notes:

- (1) Units at reserve ratings. Includes 12 MW firm power from HC&s. Does not include 8 MW standby power from Pioneer Mill Company.
- (2) Maalaea Unit #12; 13,750 KW medium speed diesel.
- (3) Maalaea Unit #13; 13,750 KW medium speed diesel.
- (4) Proposed Unit #14; 15,000 KW unit, size and timing dependent upon pending negotiations with HC&S.
- (5) The forecasted 1989-1991 System Peaks are Evening Peaks.
- (6) Addition of six 1,000 KW EMD high speed diesels at Miki Basin site.
- (7) Retirement of Lanai City generating units under investigation and proceeding in accordance with terms of January 20, 1988 purchase agreement between MECO and Castle & Cooke.

Note: MECO plans to adopt a more stringent generation addition criteria to increase generation reliability.



January 29, 1988

JAN 29 4 17 PM '88
PUBLIC UTILITIES
COMMISSION

FILED

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

Gentlemen:

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

In accordance with paragraph 5.3a of G.O. No. 7, the following information is respectfully submitted.

The 1987 instantaneous system peak occurred on December 28 and was 118,700 KW. The 1987 total generating capability of the system had a reserve margin of approximately 8% over the 1987 instantaneous system peak.

HELCO's 1987 total generating capability of 127,800 KW included 12,000 KW of firm power purchased from HC&S, and the addition of two (2) 2,750 KW high speed diesel units installed at the Maalaea Plant in March 1987.

The attached table shows the expected system reserve margin for the next three years, based on the peak load prediction of the Forecast Planning Committee dated December 2, 1987.

The following method is used to determine the timing of an additional generating unit:

The total capability of our system must at all times be equal to or greater than the load to be supplied by the summation of the following:

FOR MORNING AND DAY PEAKS:

1. Normal rating of all available units.
2. With no unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

An HEI Company

Hawaii Public Utilities Commission
January 29, 1988
Page 2

FOR DAY PEAK ONLY:

With a unit on maintenance, the reserve rating of all available units less the reserve rating of the largest available unit.

FOR EVENING PEAK ONLY:

With a unit on maintenance, the reserve ratings of all available units.

Sincerely,

Arden A Henderson

Attachment

cc: W. W. Milks, Esq.



ADEQUACY OF SUPPLY

Maui Electric Company, Limited
(Maui Division)

January 29, 1988

<u>Year</u>	<u>Scheduled Unit Additions KW</u>	<u>System Capability (1) KW</u>	<u>Instantaneous System Peak (5) KW</u>	<u>Reserve Margin %</u>
Recorded 1987	+ 5,500 (2)	127,810	118,700	8
Forecasted 1988	+13,750 (3)	141,560	124,100	14
1989	+13,750 (4)	155,310	129,700	20
1990	0	155,310	137,100	13

Notes:

- (1) Units at reserve rating. Includes 12 MW firm power from HC&S. Does not include 8 MW standby power from Pioneer Mill Company.
- (2) Maalaea Units #X1 and #X2; two 2,750 KW high speed diesels
- (3) Maalaea Unit #12; medium speed diesel
- (4) Maalaea Unit #13; medium speed diesel
- (5) The forecasted 1988-1990 System Peaks are Evening Peaks.