

HECO RT-11  
DOCKET NO. 05-0145

REBUTTAL TESTIMONY OF  
PETER C. YOUNG

DIRECTOR, PRICING DIVISION  
ENERGY SERVICES DEPARTMENT  
HAWAIIAN ELECTRIC COMPANY, INC.

Subject: Revenue Requirements and  
Customer Impact



1           The impact on revenue requirements is shown in HECO-R-1102.

2           Q.    What is the revised calculation of tax depreciation?

3           A.    In the revised revenue requirement estimate, transmission line costs are treated as  
4           15-year MACRS property. The revised treatment is discussed in HECO's  
5           response to CA-IR-77, filed July 27, 2006, in Docket No. 05-0146. The impact on  
6           revenue requirements is shown in HECO-R-1102.

7           Q.    What is the revised financing assumption?

8           A.    The revised assumption for long term debt financing is revenue bond financing at  
9           6.5% instead of taxable debt financing at 7.5%. The impact of this revision on the  
10          cost of capital is shown in HECO-R-1103.

11          Q.    What discount rates did HECO use to calculate the revised net present value of  
12          revenue requirements in rebuttal?

13          A.    HECO used the same 0%, 3%, and 12% discount rates as in direct testimony, but  
14          also used an 8.6% discount rate, which represents HECO's weighted average  
15          after-tax cost of capital based on the revised assumption for long-term debt  
16          financing.

17          Q.    What is the net present value of the annual revenue requirements for the  
18          community benefits package, in 2009 dollars and using an 8.6% discount rate?

19          A.    The net present value in 2009 dollars is approximately \$190.1 million (see  
20          HECO-1101).

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RATE IMPACT

23          Q.    Is there a revision to the method of estimating the potential rate impact of the CIP  
24          Generating Station project?

25          A.    No, the method of estimating the potential rate impact of the CIP Generating

1 Station project has not changed from direct testimony. Only the estimated total  
2 revenue requirement of the project has changed.

3 Q. What are the revisions to the estimated rate impacts for the different rate classes?

4 A. The revised estimated rate impacts by rate class are presented in HECO-R-1104.  
5 For purposes of determining the bill impact on the average residential customer,  
6 usage of 667 kWh per month is assumed. The bill increase for an average  
7 residential customer is about \$2.39 per month, as presented in HECO-R-1104.  
8 This is an increase of about \$0.01 per month (from \$2.38 per month) from the bill  
9 impact on the average residential customer that I estimated in my direct testimony,  
10 HECO T-11.

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SUMMARY

13 Q. Please summarize your testimony.

14 A. In terms of revenue requirements, the revised net present value (in 2009 dollars  
15 and assuming an 8.6% discount rate) of the revenue requirements for the CIP  
16 Generating Station project is approximately \$190.1 million. The potential  
17 incremental bill impact in 2010 for the average residential customer using 667  
18 kWh per month is approximately \$2.39 per month, assuming the CIP Generating  
19 Station project is placed in service in 2009.

20 Q. Does this conclude your direct testimony?

21 A. Yes, it does.

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**CIP Generation and Transmission Addition Project (REBUTTAL)**  
Revenue Requirements (\$'s)

Year	Revenue Requirements (\$'s)
2009	20,389,000
2010	24,514,000
2011	23,544,000
2012	22,618,000
2013	21,731,000
2014	20,879,000
2015	20,052,000
2016	19,234,000
2017	18,417,000
2018	17,599,000
2019	16,782,000
2020	15,955,000
2021	15,209,000
2022	14,484,000
2023	13,663,000
2024	12,910,000
2025	12,296,000
2026	11,751,000
2027	11,206,000
2028	10,661,000
2029	10,150,000
2030	9,706,000
2031	9,296,000
2032	8,873,000
2033	8,565,000
2034	8,287,000
2035	7,872,000
2036	7,457,000
2037	7,042,000
2038	6,626,000
Total over 30 years	427,768,000
NPV at 0.0%	427,768,000
NPV at 3.0%	306,221,000
NPV at 8.6%	190,063,000
NPV at 12.0%	151,748,000

See HECO-R-1102, HECO-R-1103.

**Revenue Requirements  
CIP Generation and Transmission Addition Project (REBUTTAL)**

	A	B	C	D	E	F
Serv Life - MACRS - Class Life	30-15-20	35-15-30	48-15-30	30-20-30	12-20-30	
	Gen Station CAPITAL Rev Req Factors (30 yr Service Life)	OH Conductors & Devices CAPITAL Rev Req Factors (35 yr Service Life)	OH Poles & Fixtures CAPITAL Rev Req Factors (48 yr Service Life)	Substation Rev Req Factors (30 yr Service Life)	Communications Equip Rev Req Factors (12 yr Service Life)	Escalation Factor
	0.1479	0.1481	0.1481	0.1486	0.1486	1.00
	0.1803	0.1756	0.1674	0.1816	0.2385	1.03
	0.1727	0.1687	0.1613	0.1751	0.2269	1.06
	0.1653	0.1622	0.1555	0.1688	0.2155	1.09
	0.1583	0.1560	0.1500	0.1627	0.2043	1.13
	0.1516	0.1501	0.1449	0.1567	0.1932	1.16
	0.1451	0.1444	0.1399	0.1509	0.1823	1.19
	0.1386	0.1388	0.1350	0.1453	0.1716	1.23
	0.1322	0.1331	0.1301	0.1397	0.1609	1.27
	0.1257	0.1275	0.1252	0.1342	0.1503	1.30
	0.1192	0.1219	0.1203	0.1286	0.1396	1.34
	0.1128	0.1162	0.1154	0.1231	0.1150	1.38
	0.1063	0.1106	0.1104	0.1175		1.43
	0.0999	0.1049	0.1055	0.1120		1.47
	0.0934	0.0993	0.1006	0.1064		1.51
	0.0875	0.0942	0.0963	0.1009		1.56
	0.0827	0.0902	0.0931	0.0953		1.60
	0.0785	0.0869	0.0904	0.0898		1.65
	0.0743	0.0835	0.0878	0.0842		1.70
	0.0701	0.0801	0.0851	0.0787		1.75
	0.0662	0.0767	0.0825	0.0736		1.81
	0.0628	0.0734	0.0799	0.0693		1.86
	0.0597	0.0700	0.0772	0.0655		1.92
	0.0566	0.0666	0.0746	0.0616		1.97
	0.0535	0.0632	0.0719	0.0578		2.03
	0.0504	0.0598	0.0693	0.0540		2.09
	0.0472	0.0565	0.0666	0.0501		2.16
	0.0441	0.0531	0.0640	0.0463		2.22
	0.0410	0.0497	0.0614	0.0424		2.29
	0.0379	0.0463	0.0587	0.0384		2.36
Total	2.9620	3.1077	3.1684	3.1592	2.1467	

G	H	I	J	K	L	M	N
= A x \$ Cap Inv	= B x \$ Cap Inv	= C x \$ Cap Inv	= D x \$ Cap Inv	= D x \$ Cap Inv	= D x \$ Cap Inv	= E x \$ Cap Inv	= E x \$ Cap Inv

**INITIAL Capital Investment**

Year	GEN STATION Rev Req	OH Conductors & Devices Rev Req	OH Poles & Fixtures Rev Req	AES Substation Rev Req	CEIP Substation Rev Req	Fiber Communications Rev Req	Microwave Communications Rev Req
1	115,399,225	436,843	5,770,670	2,837,146	686,611	245,903	421,880
2	17,068,569	64,692	854,572	421,511	102,009	36,533	62,678
3	20,808,661	76,694	965,788	515,215	124,686	58,647	100,617
4	19,924,631	73,705	930,546	496,764	120,221	55,794	95,722
5	19,080,464	70,867	897,298	478,879	115,892	52,989	90,911
6	18,272,176	68,165	865,844	461,520	111,691	50,231	86,177
7	17,496,443	65,586	836,018	444,646	107,608	47,514	81,516
8	16,743,522	63,093	807,332	428,222	103,633	44,836	76,922
9	15,997,909	60,628	779,012	412,213	99,759	42,194	72,390
10	15,252,074	58,162	750,681	396,436	95,940	39,573	67,892
11	14,506,240	55,696	722,350	380,692	92,130	36,954	63,399
12	13,760,405	53,230	694,020	364,948	88,320	34,335	58,906
13	13,014,571	50,764	665,689	349,204	84,510	28,289	48,534
14	12,268,736	48,298	637,358	333,460	80,700	0	0
15	11,522,902	45,832	609,027	317,717	76,890	0	0
16	10,777,067	43,367	580,696	301,973	73,080	0	0
17	10,096,566	41,148	555,632	286,229	69,270	0	0
18	9,546,952	39,425	537,113	270,485	65,459	0	0
19	9,062,671	37,949	521,861	254,741	61,649	0	0
20	8,578,390	36,473	506,610	238,997	57,839	0	0
21	8,094,109	34,997	491,358	223,254	54,029	0	0
22	7,640,972	33,522	476,106	208,724	50,513	0	0
23	7,250,123	32,046	460,855	196,624	47,585	0	0
24	6,890,417	30,570	445,603	185,739	44,950	0	0
25	6,530,712	29,094	430,351	174,854	42,316	0	0
26	6,171,007	27,618	415,099	163,968	39,682	0	0
27	5,811,301	26,143	399,848	153,083	37,047	0	0
28	5,451,596	24,667	384,596	142,197	34,413	0	0
29	5,091,891	23,191	369,344	131,312	31,779	0	0
30	4,732,185	21,715	354,093	120,427	29,144	0	0
	4,372,480	20,239	338,841	109,031	26,386	0	0
	341,815,742	1,357,577	18,283,539	8,963,065	2,169,130	527,889	905,665

G O P Q R S T U

= D x \$ Cap Inv	= D x \$ Cap Inv	= E x \$ Cap Inv	= E x \$ Cap Inv	= E x \$ Cap Inv	= E x \$ Cap Inv	= E x \$ Cap Inv	= sum of H thru T
REPLACEMENT Capital Investment							

Year	Kahe Breakers Rev Req	Kalaeloa Relays Rev Req	Fiber Comm Replacement in Yr. 13	Microwave Comm Replacement in Yr. 13	Fiber Comm Replacement in Yr. 25	Microwave Comm Replacement in Yr. 25	Total Capital Rev Req
1	2,269,731	292,251	350,599	601,500	499,870	857,595	18,991,193
2	337,211	43,419					23,115,555
3	412,175	53,072					22,145,966
4	397,413	51,171					21,219,736
5	383,106	49,329					20,332,563
6	369,218	47,541					19,480,853
7	355,719	45,802					18,654,251
8	342,580	44,111					17,836,339
9	329,772	42,462					17,018,746
10	317,151	40,836					16,201,232
11	304,555	39,215					15,383,718
12	291,960	37,593					14,556,898
13	279,365	35,971					13,811,124
14	266,770	34,349	52,088	89,364			13,086,343
15	254,175	32,728	83,617	143,456			12,264,893
16	241,580	31,106	79,549	136,476			11,512,480
17	228,985	29,484	75,550	129,617			10,898,171
18	216,389	27,862	71,617	122,868			10,352,873
19	203,794	26,241	67,743	116,223			9,807,725
20	191,199	24,619	63,925	109,673			9,262,717
21	178,604	22,997	60,159	103,211			8,751,537
22	166,981	21,500	56,421	96,798			8,307,865
23	157,300	20,254	52,687	90,392			7,897,944
24	148,592	19,133	48,953	83,986			7,474,754
25	139,884	18,011	40,334	69,198			7,167,116
26	131,175	16,890	0	0	74,265	127,412	6,889,410
27	122,467	15,769			119,218	204,534	6,473,875
28	113,759	14,648			113,417	194,583	6,058,612
29	105,050	13,526			107,717	184,802	5,643,600
30	96,342	12,405			102,108	175,181	5,227,726
	87,225	11,231			96,586	165,706	
	7,170,497	923,275	752,643	1,291,262	613,311	1,052,218	385,825,814

G                    V                    W  
= \$ Land x Cost of  
Capital Gross-up  
for Income &  
Revenue Taxes                    = U + V

Year	Total Rev Req on Land	TOTAL Rev Req
	9,070,000	
1	1,397,997	20,389,190
2	1,397,997	24,513,552
3	1,397,997	23,543,963
4	1,397,997	22,617,733
5	1,397,997	21,730,560
6	1,397,997	20,878,850
7	1,397,997	20,052,248
8	1,397,997	19,234,336
9	1,397,997	18,416,743
10	1,397,997	17,599,229
11	1,397,997	16,781,715
12	1,397,997	15,954,895
13	1,397,997	15,209,121
14	1,397,997	14,484,340
15	1,397,997	13,662,890
16	1,397,997	12,910,477
17	1,397,997	12,296,168
18	1,397,997	11,750,870
19	1,397,997	11,205,723
20	1,397,997	10,660,715
21	1,397,997	10,149,534
22	1,397,997	9,705,863
23	1,397,997	9,295,941
24	1,397,997	8,872,751
25	1,397,997	8,565,114
26	1,397,997	8,287,407
27	1,397,997	7,871,873
28	1,397,997	7,456,609
29	1,397,997	7,041,598
30	1,397,997	6,625,723
	41,939,918	427,765,732

CIP Generation and Transmission Addition Project (REBUTTAL)  
**ASSUMPTIONS**

<u>Initial Capital Cost:</u>	Cost (\$'s)	Est. Svc Life (Yrs)	MACRS Life (Yrs)	Tax Class Life (Yrs)
Generating Station	115,399,225	30	15	20
Transmission Line:				
OH Conductors & Devices	436,843	35	15	30
OH Poles & Fixtures	5,770,670	48	15	30
	<u>6,207,513</u>			
AES Substation	2,837,146	30	20	30
CEIP Substation	686,611	30	20	30
Fiber Communications	245,903	12	20	30
Microwave Communications	421,880	12	20	30
Kahe Breakers	2,269,731	30	20	30
Kalaeloa Relays	292,251	30	20	30
CIP Land	9,070,000			
<b>TOTAL Initial Capital</b>	<b>\$ <u>137,430,260</u></b>			

Replacement Capital:

of Fiber Communications in Yr. 13	\$ 350,599
of Microwave Communications in Yr. 13	601,500
of Fiber Communications in Yr. 25	499,870
of Microwave Communications in Yr. 25	857,595

(Based on Initial Capital, escalated at 3%/yr till year of replacement)

**Other Assumptions:**

<u>Taxes:</u>		Effective Rate
Federal Tax	35.000%	32.895%
State Tax	6.400%	6.015%
Composite Tax Rate		<u>38.910%</u>

PSC Tax	5.885%
Franchise Tax	2.500%
PUC Fee	0.500%
Revenue taxes	<u>8.885%</u>

Capital Goods Credit 4.00%

Escalation Rate 3.00%

<u>Long-Term Forecast</u>	Annual Rate	Weight	Weighted Average Capital Cost	Weighted After Tax Cost	Cost of Capital Gross-up for Inc & Rev Taxes
<u>Target Cost of Capital:</u>					
Short-term Debt	6.00%	3.00%	0.18%	0.11%	0.20%
Long-term Debt	6.50%	36.00%	2.34%	1.43%	2.57%
Preferred Stock	8.00%	7.00%	0.56%	0.56%	1.01%
Common Stock	12.00%	54.00%	6.48%	6.48%	11.64%
		100%	9.56%	8.58%	15.41%

HAWAIIAN ELECTRIC COMPANY, INC.  
CIP GENERATION AND TRANSMISSION ADDITION PROJECT  
ESTIMATED RATE IMPACT BY RATE SCHEDULE

	<u>Rate Impact</u>
PEAK REVENUE REQUIREMENT (2010)	\$24,514,000
RATE IMPACT, Cents per kWh	
Schedule R	0.3584
Schedule G	0.3618
Schedule J	0.2953
Schedule H	0.3349
Schedule P (PS,PP,PT)	0.2290
Schedule F	<u>0.5281</u>
Average per kWh	0.2880

ESTIMATED BILL IMPACT, per Month

Residential @ 667 kWh	\$2.39
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Reference: See Exhibit HECO-R-1101 for Revenue Requirements.  
Sales forecast for 2010.  
Allocation factors per HECO-R-2211, Docket No. 04-0113.