

INTEROFFICE CORRESPONDENCE



Hawaiian Electric Co., Inc.

July 22, 2004

To: K. J. Wong
From: E. F. Oshiro
Subject: East Oahu Transmission Project – Phase 1 & 2
Revised Project Costs

The estimated initial installation cost for the East Oahu Transmission Project alternative (“46kV Phased Project”) in the Application filed on December 18, 2003 was approximately \$55,424,000. The net present value of the annual revenue requirements in 2003 at an 8.4% discount rate for this original proposal was approximately \$59.9 million. (See HECO-901, page 13 filed on December 18, 2003.) The incremental rate impact per month on the typical residential customer would be an increase of \$0.72 in 2007 after Phase 1 is installed. After Phase 2 is installed, the rate impact on a typical residential customer’s bill would be an increase of \$0.90 in 2009.

This memo describes the potential cost impacts to the 46kV Phased Project from each of the three factors described below:

1. Two changes are proposed to Phase 1. Change #1 proposes to utilize existing ductlines instead of constructing a new ductline for a significant portion of the route for the two new 46kV underground circuits proposed between Makaloa and McCully Substations. Change #2 proposes to connect existing 46kV circuits near Pumehana Street in an alternative manner than originally proposed.
2. The overall project schedule will be revised to take into account the schedule assumptions that have changed since the Application was filed.
3. The City’s new directive requiring roadways that have been trenched for utility installations to be repaved curb-to-curb.

Attachment 1 shows how the cost estimates for each of the above factors relate to the cost in the Application and among each other.

Changes #1 and #2¹

The estimated total initial installation cost of the 46kV Phased Project with Changes #1 and #2 implemented is approximately \$54,290,000. (See Attachment 2, page 2.) Change #1 decreased the total initial installation cost by approximately \$1,390,000. Change #2 increased the total initial installation cost by approximately \$258,000. Therefore, the implementation of Change #1 and Change #2 would result in a net decrease of approximately \$1,133,000² from the original proposal.

Updated Schedule

The estimated total initial installation cost of the 46kV Phased Project with the revised schedule with Changes #1 and #2 were implemented is approximately \$55,644,000 (See Attachment 2, page 3), an increase of \$220,000 from the original proposal. The estimated Allowance for Funds Used During Construction (AFUDC) for the 46kV Phased Project in the Application is approximately \$14,753,000. As shown in Attachment 1, the estimated AFUDC of the 46kV Phased Project with the revised schedule and assuming Changes #1 and #2 were implemented is approximately \$15,978,000. This results in an increase of approximately \$1,269,000 in AFUDC.

The impact of the updated schedule alone (i.e., without considering Change #1 and #2) is an increase of approximately \$1,354,000 to the total initial installation cost. AFUDC accounts for approximately 94% of the \$1,354,000 total project increase due to the revised schedule. The effects of inflation contributed to the project cost increase as certain costs for labor and materials were shifted into later years as a result of the revised schedule. This accounted for approximately 6% of the increase in total initial installation cost.

Attachment 4 shows the annual revenue requirements calculated for the 50-year study period as done in the Application for the original proposal. Revenue requirements are an estimate of all the costs associated with an investment and includes capital costs, removal and new cycle costs, O&M costs and the costs associated with transmission line losses. The net present value of the annual revenue requirements for the 46kV Phased Project assuming the revised schedule, Change #1 and Change #2, and using an 8.4% discount rate was approximately \$55.5 million.

In the year following the project installation (Phase 1 - 2008 and Phase 2 - 2010), the incremental rate impact per month on the typical residential customer for the 46kV Phased Project assuming the revised schedule, and Change #1 and Change #2, would be an increase of \$0.73 and \$0.93 after Phases 1 and 2 are installed, respectively. (See Attachment 5). Therefore, there would be an increase of approximately \$0.01 for Phase 1 and \$0.03 for Phase 2 from the original proposal.

Curb to Curb Paving

The estimated total initial installation cost of the 46kV Phased Project if the City's directive on curb-to-curb repaving is enforced, including the implementation of Changes #1 and #2 with the

¹ Since the PUC application filing for EOTP, engineers were able to obtain more detailed information on some of the routes proposed in the application. On certain routes, the detailed information indicates that the previous cost estimate should be revised to better account for the actual field conditions. The engineering and construction costs developed for the proposed changes account for the actual field conditions. If the actual field conditions were not accounted for, the cost estimates for the project would be understated.

² Differences in the values presented result from rounding.

revised schedule, is approximately \$60,910,000. (See Attachment 2, page 3.) Therefore, if the City's directive were enforced, there would be an increase of approximately \$5,486,000 to the estimated total project initial installation cost.

The City's directive would increase the total initial installation cost by approximately \$5,266,000. The estimated total initial installation cost for Phase 2 would increase by \$4,661,000, while Phase 1 would increase by \$604,000. The majority of repaving work for Phase 2 would occur on King Street, which is a five to six lane roadway. The total lineal length of roadway to repave is approximately 9,900 lineal feet. A majority of the roadways in Phase 1 are two lane roadways, which total approximately 2,500 lineal feet.

As shown in Attachment 4, the net present value of the annual revenue requirements for the 46kV Phased Project if the City's directive enforced including the revised schedule and Change #1 and Change #2, in 2003 and using an 8.4% discount rate is \$60.1 million.

In the year following the project installation (Phase 1 - 2008 and Phase 2 - 2010), the incremental rate impact per month on the typical residential customer for the 46kV Phased Project assuming the revised schedule, Changes #1 and #2, and curb to curb repaving would be an increase of \$0.74 and \$1.02 after Phases 1 and 2 are installed, respectively. (See Attachment 5.) Therefore, there would be an increase of approximately \$0.02 for Phase 1 and \$0.12 for Phase 2.

Summary

The potential cost impacts of the proposed Changes #1 & #2, the revised project schedule, and the City's directive on curb-to-curb repaving were estimated for the 46kV Phased Project.

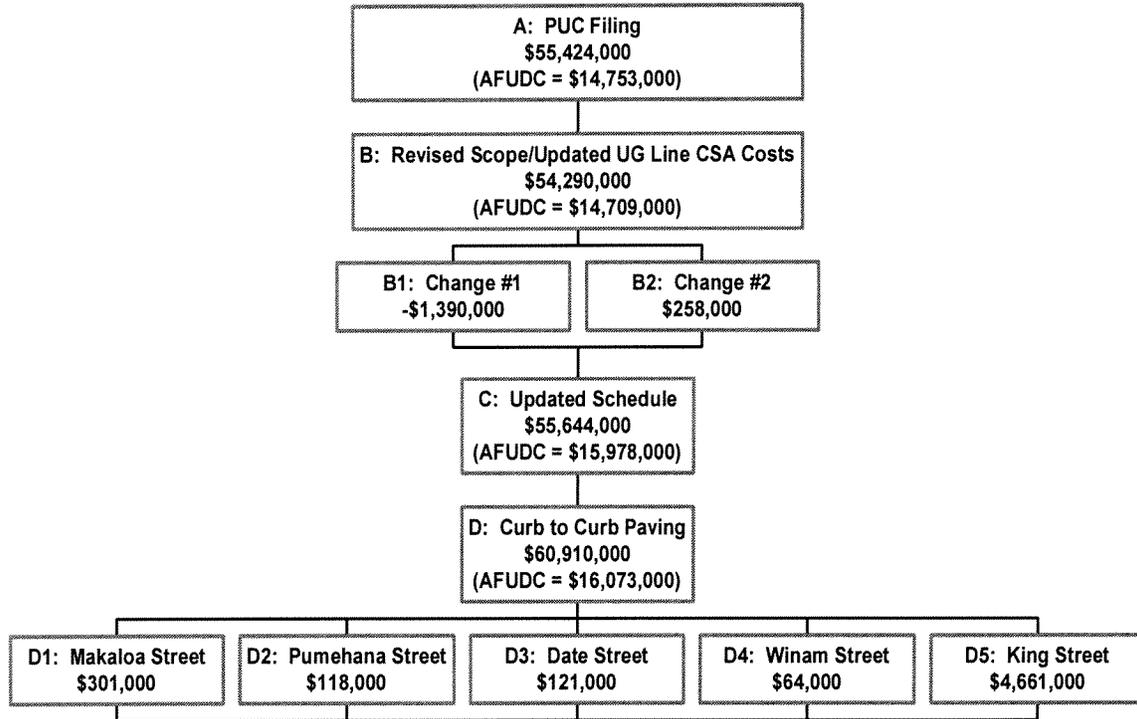
Changes #1 and #2 combined, decreases the estimated total initial cost by \$1,133,000 from the original proposal. The revised schedule increases the initial installation cost by \$1,353,000, of which 94% of this increase is AFUDC. If the City's directive on curb-to-curb paving were enforced, the project cost would increase by an additional \$5,266,000.

The net present value of the annual revenue requirements in 2003 using an 8.4% discount rate, the revised schedule and with Changes #1 and #2, was estimated at \$55.5 million. If the City's directive were enforced, the net present value of the annual revenue requirements in 2003 is estimated at \$60.1 million.

The incremental rate impact per month in the year following the project installation (Phase 1 - 2008 and Phase 1 - 2010), with the revised schedule and with Changes #1 and #2, are estimated at \$0.73 and \$0.93 after Phases 1 and 2 are installed, respectively. That would be a \$0.01 and \$0.03 increase from the original proposal. If the City's directive on curb-to-curb paving were enforced, the impacts are estimated to be \$0.74 and \$1.02 after Phases 1 and 2 are installed, respectively. That would be a \$0.02 and \$0.12 increase from the original proposal.

ATTACHMENT 1

Initial Installation Cost



Impact of Revised Scope and Updated UG Line Costs:

$B - A = \$54,290,000 - \$55,424,000 = (-\$1,133,000)^3$

Impact of Updated Schedule, Revised Scope and Updated UG Line Costs:

$C - A = \$55,644,000 - \$55,424,000 = \$220,000$

Impact of Updated Schedule Alone:

$C - B = \$55,644,000 - \$54,290,000 = \$1,354,000$

Change in AFUDC Due to Updated Schedule:

$(\text{AFUDC of C}) - (\text{AFUDC of B}) = \$15,978,000 - \$14,709,000 = \$1,269,000$

Impact of Curb-to-Curb Paving, Updated Schedule, Revised Scope and Updated UG Line Costs:

$D - A = \$60,910,000 - \$55,424,000 = \$5,486,000$

Impact of Curb-to-Curb Paving:

$D - C = \$60,910,000 - \$55,644,000 = \$5,266,000$

$D1 + D2 + D3 + D4 + D5 = \$604,000 + \$4,661,000 = \$5,266,000^3$

Phase 1 Repaving Costs:

$D1 + D2 + D3 + D4 = \$301,000 + \$118,000 + \$121,000 + \$64,000 = \$604,000$

³ Differences in the values presented result from rounding.

ATTACHMENT 2

COST INPUT DATA
(\$ in 000's)

SERVICE DATE ==>	PUC Application		Revised Estimate		Curb to Curb Paving	
	2006	2008	2007	2009	2007	2009
INITIAL INSTALLATION COSTS						
Planning Costs	\$25,269	\$0	\$26,396	\$0	\$26,396	\$0
Estimated	\$12,836	N/A	\$12,836	N/A	\$12,836	N/A
AFUDC	\$12,433	N/A	\$13,560	N/A	\$13,560	N/A
Permitting & Approval Costs	\$1,456	\$579	\$1,491	\$590	\$1,491	\$590
Estimated	\$1,159	\$415	\$1,172	\$420	\$1,172	\$420
AFUDC	\$297	\$164	\$319	\$170	\$319	\$170
Subtransmission Line Costs	\$5,196	\$9,709	\$3,399	\$9,529	\$4,004	\$14,190
Estimated	\$4,916	\$8,969	\$3,208	\$8,987	\$3,785	\$13,581
AFUDC	\$280	\$740	\$191	\$541	\$219	\$609
Transmission Substation Costs	\$8,408	\$3,549	\$8,604	\$3,632	\$8,604	\$3,632
Estimated	\$7,821	\$3,322	\$7,830	\$3,326	\$7,830	\$3,326
AFUDC	\$587	\$227	\$774	\$306	\$774	\$306
Distribution Substation Costs	\$1,258	\$0	\$2,003	\$0	\$2,003	\$0
Estimated	\$1,233	N/A	\$1,886	N/A	\$1,886	N/A
AFUDC	\$25	N/A	\$117	N/A	\$117	N/A
TOTAL	\$41,587	\$13,837	\$41,893	\$13,751	\$42,498	\$18,412
REMOVAL COSTS						
Subtransmission Line Costs	\$232 Note 1	\$339 Note 1	\$239 Note 1	\$349 Note 1	\$239 Note 1	\$349 Note 1
Transmission Substation Costs	\$95 2036	\$17 2023	\$98 2037	\$17 2024	\$98 2037	\$17 2024
	\$120 2052	\$127 2038	\$123 2053	\$131 2039	\$123 2053	\$131 2039
		\$41 2053		\$42 2054		\$42 2054
		\$127 2054		\$131 2055		\$131 2055
Distribution Substation Costs	\$201 2021		\$207 2022		\$207 2022	
	\$313 2036		\$322 2037		\$322 2037	
	\$487 2051		\$502 2052		\$502 2052	
			\$108 2044		\$108 2044	
NEW CYCLE COSTS						
Subtransmission Line Costs	\$3,549 Note 1	\$6,890 Note 1	\$3,656 Note 1	\$7,097 Note 1	\$3,656 Note 1	\$7,097 Note 1
Transmission Substation Costs	\$585 2036	\$195 2023	\$603 2037	\$201 2024	\$603 2037	\$201 2024
	\$4,782 2052	\$1,073 2038	\$4,926 2053	\$1,105 2039	\$4,926 2053	\$1,105 2039
		\$474 2053		\$489 2054		\$489 2054
		\$4,604 2054		\$4,742 2055		\$4,742 2055
Distribution Substation Costs	\$920 2021		\$948 2022		\$948 2022	
	\$1,433 2036		\$1,476 2037		\$1,476 2037	
	\$2,233 2051		\$2,300 2052		\$2,300 2052	
			\$1,841 2044		\$1,841 2044	
O&M COSTS (ANNUAL)						
Subtransmission Line Costs	\$11 Note 2	\$44 Note 3	\$11 Note 4	\$44 Note 5	\$11 Note 4	\$44 Note 5
Transmission Substation Costs	\$54 Note 2	\$108 Note 3	\$54 Note 4	\$108 Note 5	\$54 Note 4	\$108 Note 5
Distribution Substation Costs	\$15 Note 2	\$15 Note 3	\$15 Note 4	\$15 Note 5, 6	\$15 Note 4	\$15 Note 5, 6

Notes:

1. Year in which removal and replacement occurs.
2. O&M costs applicable for 2007 and 2008.
3. O&M costs applicable for years 2009 and beyond.
4. O&M costs applicable for 2008 and 2009.
5. O&M costs applicable for years 2010 and beyond.
6. O&M costs does not include maintenance on the transformer installed at Makaloa Substation as a transformer at McCully Substation is removed. Therefore, the net effect on distribution substation O&M is no change.

ATTACHMENT 3				
East Oahu Transmission Project				
Revenue Requirement (\$)				
\$'s Rounded to Hundred Thousands				
Period	Year	PUC APPLICATION	REVISED ESTIMATE	CURB TO CURB PAVING
1	2003	0	0	0
2	2004	0	0	0
3	2005	0	0	0
4	2006	2,900,000	0	0
5	2007	7,100,000	2,800,000	2,900,000
6	2008	8,000,000	7,300,000	7,400,000
7	2009	9,100,000	7,900,000	8,300,000
8	2010	9,100,000	9,500,000	10,400,000
9	2011	8,800,000	9,100,000	10,000,000
10	2012	8,400,000	8,700,000	9,600,000
11	2013	8,100,000	8,400,000	9,300,000
12	2014	7,900,000	8,200,000	9,000,000
13	2015	7,600,000	7,900,000	8,700,000
14	2016	7,400,000	7,700,000	8,400,000
15	2017	7,100,000	7,400,000	8,100,000
16	2018	6,900,000	7,200,000	7,800,000
17	2019	6,600,000	6,900,000	7,600,000
18	2020	6,300,000	6,600,000	7,300,000
19	2021	5,900,000	6,300,000	6,900,000
20	2022	5,800,000	5,900,000	6,500,000
21	2023	5,600,000	5,800,000	6,400,000
22	2024	5,300,000	5,600,000	6,100,000
23	2025	5,100,000	5,400,000	5,900,000
24	2026	4,900,000	5,100,000	5,600,000
25	2027	4,700,000	4,900,000	5,400,000
26	2028	4,500,000	4,700,000	5,100,000
27	2029	4,400,000	4,500,000	5,000,000
28	2030	4,200,000	4,400,000	4,800,000
29	2031	4,100,000	4,200,000	4,600,000
30	2032	3,900,000	4,100,000	4,400,000
31	2033	3,800,000	3,900,000	4,300,000
32	2034	3,600,000	3,800,000	4,100,000
33	2035	3,500,000	3,600,000	3,900,000
34	2036	3,400,000	3,500,000	3,800,000
35	2037	3,600,000	3,400,000	3,700,000
36	2038	3,500,000	3,600,000	3,900,000
37	2039	3,500,000	3,500,000	3,800,000
38	2040	3,400,000	3,600,000	3,800,000
39	2041	3,300,000	3,500,000	3,700,000
40	2042	3,200,000	3,300,000	3,500,000
41	2043	2,900,000	3,200,000	3,400,000
42	2044	3,200,000	3,200,000	3,300,000
43	2045	3,300,000	3,700,000	3,800,000
44	2046	4,000,000	3,800,000	3,800,000
45	2047	3,900,000	4,400,000	4,400,000
46	2048	3,800,000	4,300,000	4,300,000
47	2049	3,600,000	4,200,000	4,200,000
48	2050	3,500,000	4,100,000	4,000,000
49	2051	3,500,000	3,900,000	3,900,000
50	2052	4,000,000	3,900,000	3,800,000
Total		240,200,000	240,900,000	258,900,000
Discount Rate	0.0%	240,200,000	240,900,000	258,900,000
Discount Rate	3.0%	131,400,000	128,200,000	138,600,000
Discount Rate	8.4%	59,900,000	55,500,000	60,100,000
Discount Rate	12.0%	40,400,000	36,300,000	39,200,000

Hawaiian Electric Company, Inc.
East Oahu Transmission Line Project
Estimated Bill Impact

Kamoku 46kV UG-Expanded (Phased Installation)
Revised Estimate

Customer	Average Monthly Use (kWh/mo.) ¹	Year 2006		Year 2007		Year 2008		Year 2009	
		¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.
Residential	667	0	\$0.00	0.0426	\$0.28	0.1098	\$0.73	0.1176	\$0.78
Retail Use (Schedule G)									
<i>Supermarket</i>	1,781	0	\$0.00	0.0329	\$0.59	0.0852	\$1.52	0.0916	\$1.63
<i>Non-Food Related</i>	1,467	0	\$0.00	0.0329	\$0.48	0.0852	\$1.25	0.0916	\$1.34
Hotel (Schedule G)	1,782	0	\$0.00	0.0329	\$0.59	0.0852	\$1.52	0.0916	\$1.63
Industrial Use (Schedule G)	1,156	0	\$0.00	0.0329	\$0.38	0.0852	\$0.98	0.0916	\$1.06
Average Agricultural Use									
<i>Schedule G</i>	866	0	\$0.00	0.0329	\$0.28	0.0852	\$0.74	0.0916	\$0.79
<i>Schedule J</i>	20,478	0	\$0.00	0.0222	\$4.55	0.0569	\$11.65	0.0604	\$12.37
County of Honolulu									
<i>Schedule F</i>	12,338	0	\$0.00	0.054	\$6.66	0.1401	\$17.29	0.1508	\$18.61
<i>Schedule G</i>	758	0	\$0.00	0.0329	\$0.25	0.0852	\$0.65	0.0916	\$0.69
<i>Schedule H</i>	3,782	0	\$0.00	0.2241	\$8.48	0.5786	\$21.88	0.6199	\$23.45
<i>Schedule J</i>	26,551	0	\$0.00	0.0222	\$5.89	0.0569	\$15.11	0.0604	\$16.04
<i>Schedule P</i>	397,060	0	\$0.00	0.0346	\$137.38	0.0905	\$359.34	0.0981	\$389.52
<i>Total Cost to County</i>									
State of Hawaii									
<i>Schedule F</i>	11,920	0	\$0.00	0.054	\$6.44	0.1401	\$16.70	0.1508	\$17.98
<i>Schedule G</i>	1,131	0	\$0.00	0.0329	\$0.37	0.0852	\$0.96	0.0916	\$1.04
<i>Schedule H</i>	3,519	0	\$0.00	0.2241	\$7.89	0.5786	\$20.36	0.6199	\$21.81
<i>Schedule J</i>	33,836	0	\$0.00	0.0222	\$7.51	0.0569	\$19.25	0.0604	\$20.44
<i>Schedule P</i>	888,118	0	\$0.00	0.0346	\$307.29	0.0905	\$803.75	0.0981	\$871.24
<i>Total Cost to State</i>									
U.S. Military									
<i>Schedule F</i>	1,274	0	\$0.00	0.054	\$0.69	0.1401	\$1.79	0.1508	\$1.92
<i>Schedule G</i>	1,280	0	\$0.00	0.0329	\$0.42	0.0852	\$1.09	0.0916	\$1.17
<i>Schedule H</i>		0	\$0.00	0.2241	\$0.00	0.5786	\$0.00	0.6199	\$0.00
<i>Schedule J</i>	72,038	0	\$0.00	0.0222	\$15.99	0.0569	\$40.99	0.0604	\$43.51
<i>Schedule P</i>	4,082,105	0	\$0.00	0.0346	\$1,412.41	0.0905	\$3,694.30	0.0981	\$4,004.54
U.S. Non-Military									
<i>Schedule F</i>		0	\$0.00	0.054	\$0.00	0.1401	\$0.00	0.1508	\$0.00
<i>Schedule G</i>	1,461	0	\$0.00	0.0329	\$0.48	0.0852	\$1.24	0.0916	\$1.34
<i>Schedule H</i>		0	\$0.00	0.2241	\$0.00	0.5786	\$0.00	0.6199	\$0.00
<i>Schedule J</i>	41,716	0	\$0.00	0.0222	\$9.26	0.0569	\$23.74	0.0604	\$25.20
<i>Schedule P</i>	715,613	0	\$0.00	0.0346	\$247.60	0.0905	\$647.63	0.0981	\$702.02
<i>Total Cost to Federal</i>									

Hawaiian Electric Company, Inc.
East Oahu Transmission Line Project
Estimated Bill Impact

Kamoku 46kV UG-Expanded (Phased Installation)
Revised Estimate

Customer	Average Monthly Use (kWh/mo.) ¹	Year 2010		Year 2011		Year 2012		Year 2013	
		¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.
Residential	667	0.1399	\$0.93	0.1322	\$0.88	0.1246	\$0.83	0.1187	\$0.79
Retail Use (Schedule G)									
<i>Supermarket</i>	1,781	0.1094	\$1.95	0.1041	\$1.85	0.099	\$1.76	0.095	\$1.69
<i>Non-Food Related</i>	1,467	0.1094	\$1.61	0.1041	\$1.53	0.099	\$1.45	0.095	\$1.39
Hotel (Schedule G)	1,782	0.1094	\$1.95	0.1041	\$1.85	0.099	\$1.76	0.095	\$1.69
Industrial Use (Schedule G)	1,156	0.1094	\$1.26	0.1041	\$1.20	0.099	\$1.14	0.095	\$1.10
Average Agricultural Use									
<i>Schedule G</i>	866	0.1094	\$0.95	0.1041	\$0.90	0.099	\$0.86	0.095	\$0.82
<i>Schedule J</i>	20,478	0.0713	\$14.60	0.067	\$13.72	0.0629	\$12.88	0.0596	\$12.20
County of Honolulu									
<i>Schedule F</i>	12,338	0.1804	\$22.26	0.1719	\$21.21	0.1635	\$20.17	0.1571	\$19.38
<i>Schedule G</i>	758	0.1094	\$0.83	0.1041	\$0.79	0.099	\$0.75	0.095	\$0.72
<i>Schedule H</i>	3,782	0.7388	\$27.94	0.7007	\$26.50	0.6633	\$25.09	0.6341	\$23.98
<i>Schedule J</i>	26,551	0.0713	\$18.93	0.067	\$17.79	0.0629	\$16.70	0.0596	\$15.82
<i>Schedule P</i>	397,060	0.1180	\$468.53	0.1132	\$449.47	0.1083	\$430.02	0.1047	\$415.72
<i>Total Cost to County</i>									
State of Hawaii									
<i>Schedule F</i>	11,920	0.1804	\$21.50	0.1719	\$20.49	0.1635	\$19.49	0.1571	\$18.73
<i>Schedule G</i>	1,131	0.1094	\$1.24	0.1041	\$1.18	0.099	\$1.12	0.095	\$1.07
<i>Schedule H</i>	3,519	0.7388	\$26.00	0.7007	\$24.66	0.6633	\$23.34	0.6341	\$22.31
<i>Schedule J</i>	33,836	0.0713	\$24.13	0.067	\$22.67	0.0629	\$21.28	0.0596	\$20.17
<i>Schedule P</i>	888,118	0.1180	\$1,047.98	0.1132	\$1,005.35	0.1083	\$961.83	0.1047	\$929.86
<i>Total Cost to State</i>									
U.S. Military									
<i>Schedule F</i>	1,274	0.1804	\$2.30	0.1719	\$2.19	0.1635	\$2.08	0.1571	\$2.00
<i>Schedule G</i>	1,280	0.1094	\$1.40	0.1041	\$1.33	0.099	\$1.27	0.095	\$1.22
<i>Schedule H</i>		0.7388	\$0.00	0.7007	\$0.00	0.6633	\$0.00	0.6341	\$0.00
<i>Schedule J</i>	72,038	0.0713	\$51.36	0.067	\$48.27	0.0629	\$45.31	0.0596	\$42.93
<i>Schedule P</i>	4,082,105	0.1180	\$4,816.88	0.1132	\$4,620.94	0.1083	\$4,420.92	0.1047	\$4,273.96
U.S. Non-Military									
<i>Schedule F</i>		0.1804	\$0.00	0.1719	\$0.00	0.1635	\$0.00	0.1571	\$0.00
<i>Schedule G</i>	1,461	0.1094	\$1.60	0.1041	\$1.52	0.099	\$1.45	0.095	\$1.39
<i>Schedule H</i>		0.7388	\$0.00	0.7007	\$0.00	0.6633	\$0.00	0.6341	\$0.00
<i>Schedule J</i>	41,716	0.0713	\$29.74	0.067	\$27.95	0.0629	\$26.24	0.0596	\$24.86
<i>Schedule P</i>	715,613	0.1180	\$844.42	0.1132	\$810.07	0.1083	\$775.01	0.1047	\$749.25
<i>Total Cost to Federal</i>									

Hawaiian Electric Company, Inc.
East Oahu Transmission Line Project
Estimated Bill Impact

Kamoku 46kV UG-Expanded (Phased Installation)
Curb to Curb Paving

Customer	Average Monthly Use (kWh/mo.) ¹	Year 2006		Year 2007		Year 2008		Year 2009	
		¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.
Residential	667	0	\$0.00	0.0441	\$0.29	0.1113	\$0.74	0.1235	\$0.82
Retail Use (Schedule G)									
<i>Supermarket</i>	1,781	0	\$0.00	0.0341	\$0.61	0.0864	\$1.54	0.0962	\$1.71
<i>Non-Food Related</i>	1,467	0	\$0.00	0.0341	\$0.50	0.0864	\$1.27	0.0962	\$1.41
Hotel (Schedule G)	1,782	0	\$0.00	0.0341	\$0.61	0.0864	\$1.54	0.0962	\$1.71
Industrial Use (Schedule G)	1,156	0	\$0.00	0.0341	\$0.39	0.0864	\$1.00	0.0962	\$1.11
Average Agricultural Use									
<i>Schedule G</i>	866	0	\$0.00	0.0341	\$0.30	0.0864	\$0.75	0.0962	\$0.83
<i>Schedule J</i>	20,478	0	\$0.00	0.023	\$4.71	0.0577	\$11.82	0.0635	\$13.00
County of Honolulu									
<i>Schedule F</i>	12,338	0	\$0.00	0.0559	\$6.90	0.142	\$17.52	0.1585	\$19.56
<i>Schedule G</i>	758	0	\$0.00	0.0341	\$0.26	0.0864	\$0.65	0.0962	\$0.73
<i>Schedule H</i>	3,782	0	\$0.00	0.2321	\$8.78	0.5865	\$22.18	0.6513	\$24.63
<i>Schedule J</i>	26,551	0	\$0.00	0.023	\$6.11	0.0577	\$15.32	0.0635	\$16.86
<i>Schedule P</i>	397,060	0	\$0.00	0.0359	\$142.54	0.0917	\$364.10	0.103	\$408.97
<i>Total Cost to County</i>									
State of Hawaii									
<i>Schedule F</i>	11,920	0	\$0.00	0.0559	\$6.66	0.142	\$16.93	0.1585	\$18.89
<i>Schedule G</i>	1,131	0	\$0.00	0.0341	\$0.39	0.0864	\$0.98	0.0962	\$1.09
<i>Schedule H</i>	3,519	0	\$0.00	0.2321	\$8.17	0.5865	\$20.64	0.6513	\$22.92
<i>Schedule J</i>	33,836	0	\$0.00	0.023	\$7.78	0.0577	\$19.52	0.0635	\$21.49
<i>Schedule P</i>	888,118	0	\$0.00	0.0359	\$318.83	0.0917	\$814.40	0.103	\$914.76
<i>Total Cost to State</i>									
U.S. Military									
<i>Schedule F</i>	1,274	0	\$0.00	0.0559	\$0.71	0.142	\$1.81	0.1585	\$2.02
<i>Schedule G</i>	1,280	0	\$0.00	0.0341	\$0.44	0.0864	\$1.11	0.0962	\$1.23
<i>Schedule H</i>		0	\$0.00	0.2321	\$0.00	0.5865	\$0.00	0.6513	\$0.00
<i>Schedule J</i>	72,038	0	\$0.00	0.023	\$16.57	0.0577	\$41.57	0.0635	\$45.74
<i>Schedule P</i>	4,082,105	0	\$0.00	0.0359	\$1,465.48	0.0917	\$3,743.29	0.103	\$4,204.57
U.S. Non-Military									
<i>Schedule F</i>		0	\$0.00	0.0559	\$0.00	0.142	\$0.00	0.1585	\$0.00
<i>Schedule G</i>	1,461	0	\$0.00	0.0341	\$0.50	0.0864	\$1.26	0.0962	\$1.41
<i>Schedule H</i>		0	\$0.00	0.2321	\$0.00	0.5865	\$0.00	0.6513	\$0.00
<i>Schedule J</i>	41,716	0	\$0.00	0.023	\$9.59	0.0577	\$24.07	0.0635	\$26.49
<i>Schedule P</i>	715,613	0	\$0.00	0.0359	\$256.90	0.0917	\$656.22	0.103	\$737.08
<i>Total Cost to Federal</i>									

Hawaiian Electric Company, Inc.
East Oahu Transmission Line Project
Estimated Bill Impact

Kamoku 46kV UG-Expanded (Phased Installation)
Curb to Curb Paving

Customer	Average Monthly Use (kWh/mo.) ¹	Year 2010		Year 2011		Year 2012		Year 2013	
		¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.	¢/kWh	\$/Cust/Mo.
Residential	667	0.1532	\$1.02	0.1453	\$0.97	0.1375	\$0.92	0.1314	\$0.88
Retail Use (Schedule G)									
<i>Supermarket</i>	1,781	0.1197	\$2.13	0.1144	\$2.04	0.1092	\$1.94	0.1052	\$1.87
<i>Non-Food Related</i>	1,467	0.1197	\$1.76	0.1144	\$1.68	0.1092	\$1.60	0.1052	\$1.54
Hotel (Schedule G)	1,782	0.1197	\$2.13	0.1144	\$2.04	0.1092	\$1.95	0.1052	\$1.87
Industrial Use (Schedule G)	1,156	0.1197	\$1.38	0.1144	\$1.32	0.1092	\$1.26	0.1052	\$1.22
Average Agricultural Use									
<i>Schedule G</i>	866	0.1197	\$1.04	0.1144	\$0.99	0.1092	\$0.95	0.1052	\$0.91
<i>Schedule J</i>	20,478	0.078	\$15.97	0.0736	\$15.07	0.0694	\$14.21	0.0659	\$13.49
County of Honolulu									
<i>Schedule F</i>	12,338	0.1974	\$24.36	0.1889	\$23.31	0.1804	\$22.26	0.1739	\$21.46
<i>Schedule G</i>	758	0.1197	\$0.91	0.1144	\$0.87	0.1092	\$0.83	0.1052	\$0.80
<i>Schedule H</i>	3,782	0.8088	\$30.59	0.77	\$29.12	0.7319	\$27.68	0.702	\$26.55
<i>Schedule J</i>	26,551	0.078	\$20.71	0.0736	\$19.54	0.0694	\$18.43	0.0659	\$17.50
<i>Schedule P</i>	397,060	0.1292	\$513.00	0.1244	\$493.94	0.1195	\$474.49	0.1159	\$460.19
<i>Total Cost to County</i>									
State of Hawaii									
<i>Schedule F</i>	11,920	0.1974	\$23.53	0.1889	\$22.52	0.1804	\$21.50	0.1739	\$20.73
<i>Schedule G</i>	1,131	0.1197	\$1.35	0.1144	\$1.29	0.1092	\$1.23	0.1052	\$1.19
<i>Schedule H</i>	3,519	0.8088	\$28.46	0.77	\$27.09	0.7319	\$25.75	0.702	\$24.70
<i>Schedule J</i>	33,836	0.078	\$26.39	0.0736	\$24.90	0.0694	\$23.48	0.0659	\$22.30
<i>Schedule P</i>	888,118	0.1292	\$1,147.45	0.1244	\$1,104.82	0.1195	\$1,061.30	0.1159	\$1,029.33
<i>Total Cost to State</i>									
U.S. Military									
<i>Schedule F</i>	1,274	0.1974	\$2.52	0.1889	\$2.41	0.1804	\$2.30	0.1739	\$2.22
<i>Schedule G</i>	1,280	0.1197	\$1.53	0.1144	\$1.46	0.1092	\$1.40	0.1052	\$1.35
<i>Schedule H</i>		0.8088	\$0.00	0.77	\$0.00	0.7319	\$0.00	0.702	\$0.00
<i>Schedule J</i>	72,038	0.078	\$56.19	0.0736	\$53.02	0.0694	\$49.99	0.0659	\$47.47
<i>Schedule P</i>	4,082,105	0.1292	\$5,274.08	0.1244	\$5,078.14	0.1195	\$4,878.12	0.1159	\$4,731.16
U.S. Non-Military									
<i>Schedule F</i>		0.1974	\$0.00	0.1889	\$0.00	0.1804	\$0.00	0.1739	\$0.00
<i>Schedule G</i>	1,461	0.1197	\$1.75	0.1144	\$1.67	0.1092	\$1.59	0.1052	\$1.54
<i>Schedule H</i>		0.8088	\$0.00	0.77	\$0.00	0.7319	\$0.00	0.702	\$0.00
<i>Schedule J</i>	41,716	0.078	\$32.54	0.0736	\$30.70	0.0694	\$28.95	0.0659	\$27.49
<i>Schedule P</i>	715,613	0.1292	\$924.57	0.1244	\$890.22	0.1195	\$855.16	0.1159	\$829.39
<i>Total Cost to Federal</i>									