CA-IR-183

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3C, Page 8, Emission Fee Expense Estimates.

Please provide a copy of the most recent available emission fee report, calculations and paid invoice for HECO, as well as details regarding the history of HECO's fee payments and amounts waived for the past ten years, indicating how the 7/10 prorate was determined to support the Company's normalization adjustment.

HECO Response:

The most recent emission fee report and associated emission calculations are voluminous and therefore one copy each will be provided to the Commission, Consumer Advocate and the Department of Defense under separate transmittal. This report covers 2003 calendar year operations as the 2004 calculations are still in progress. Please note that as stated on pages 3-9, emission fees for 2003 operations were waived by the Department of Health, thus no emission fees were paid in 2004. Emission fees will NOT be waived for 2004, and as mentioned above, calculations are in progress and an amount will be paid in 2005.

Emission fees payments began in 1994 and were assessed for 1993 operations. These emission fee assessments were provided for under the legal authority of the Clean Air Act, Hawaii revised Statutes (HRS) Chapter 342B, and Hawaii Administrative Rules (HAR) Chapter 11-60.1.

The authority for granting emission fee waivers rests with the Department of Health and is provided for under HAR 11-60.1-112(h). HECO is typically notified by the Department of Health in January regarding waivers for the previous calendar year operations.

As advanced notice of an emission fee waiver is not possible, HECO includes emission fees in its forecasted expenses. The estimated emission fees are calculated based on forecasted fuel consumption and formulas for associated emissions from calculations done in previous

years. In addition to the consumer price index mentioned in HECO T-6, at line 15, emission fee estimates may be adjusted in the course of the year based on changes in actual fuel consumption or changes in fuel forecasts.

The basis for the 7/10 prorate calculations are provided in HECO T-6, page 21, lines 10-13. The calculation of the normalization adjustment of $246,000 was based on the annual emission fees paid in 7 of the past 10 years as summarized below.

Chronological Summary of Emission Fees for HECO Operations

Operating Year	Fees Payable	Amount Paid
1993	1994	$601,634.00
1994	1995	$624,424.00
1995	1996	$672,023.43
1996	1997	$676,770.10
1997	1998	$649,103.49
1998	1999	Waived
1999	2000	$677,127.47
2000	2001	$671,210.81
2001	2002	Waived
2002	2003	$747,540.99
2003	2004	Waived
2004	2005	No Waiver – Calculations in progress.

RECEIVED

JAN 14 2004

POWER SUPPLY
HAWAIIAN ELECTRIC CO., INC.

HECO
KAHE
HNL
WAIAU

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File:

January 9, 2004

04-021E CAB

TO: Owners or Operators of Covered Sources

FROM: Chiyome Leinaala Fukino, M.D.
Director of Health

SUBJECT: 2004 Annual Fee Waiver for Covered Sources
(For Operation in Calendar Year 2003)

The Department of Health (Department) is pleased to inform you that a **fee waiver for this calendar year has been granted** to all owners or operators of covered sources. The waiver is provided in accordance with Hawaii Administrative Rules, §11-60.1-112(h) and, as a result, **no annual fee payment is required** for calendar year 2004. Any annual fee payment received for this year will be returned to the owner or operator, or will be refunded if the payment was processed.

Please note that although the 2004 annual fees are waived, annual emissions reports are still due by **March 1, 2004**. The Department requests that each covered source complete the enclosed Form F-1 and Form F-2 (if necessary) to summarize the facility's total emissions, and submit these forms with the supporting documentation and required annual emissions reports. If you need additional time for reporting your annual emissions, please submit a written request for extension as provided in your air permit.

FOR MAJOR SOURCES and SOURCES EMITTING 5 TONS PER YEAR OR MORE OF LEAD OR LEAD COMPOUNDS:

Please note that annual emissions reporting requirements have changed for major sources emitting 100 tons per year (tpy) or more of SOx, NOx, VOC, PM10, PM2.5, or NH3; or 1,000 tpy or more of CO; or for sources emitting 5 tpy or more of lead or lead compounds. Reporting requirements changed due to each state's obligation to report more detailed emissions information to the Environmental Protection Agency in accordance with Title 40 of the Code of Federal Regulations Part 51, Consolidated Emissions Reporting Rule (CERR). As a result, the Department will be requesting the resubmittal of the 2002 annual emissions from all sources who reported emissions at the indicated emission levels above. These sources will be receiving instructions by the end of January on the new reporting requirements and will be provided new dates for submitting 2002 and 2003 annual emissions.

RC: BRUCE
UM

All other sources that did not emit pollutants at the CERR thresholds in calendar year 2002, should report emissions as usual by March 1, 2004, unless an extension is granted. Should your facility's emissions increase and meet CERR reporting thresholds based on 2003 emissions, please contact the Department for further information.

Although annual emissions reporting requirements have changed for some sources, we hope the 2004 annual fee waiver will offer some relief for the additional effort initially required in fulfilling the new reporting requirements.

If you have any questions regarding the annual fee waiver or emissions reporting, please contact Messrs. Scott Takamoto or Kevin Kihara of the Clean Air Branch at (808) 586-4200.

ST:lk

Enclosures

1) General Instructions, Form F-1, 2004 Annual Fee Summary for Covered Sources
2) General Instructions, Form F-2, Supplemental Form, 2004 Annual Fee Summary for Covered Sources
3) Form F-1, 2004 Annual Fee Summary for Covered Sources
   Note: Calendar year 2004 annual fees would have included a consumer price index (CPI) adjustment of 1.8% (increase from 2001 to 2002) above the 2003 annual fee dollar per ton charge (for 2002 emissions). The change is noted on Form F-1.
4) Form F-2, Supplement _, 2004 Annual Fee Summary for Covered Sources

If any of the information provided on the fee form(s) needs to be revised, please provide the necessary revisions.

c: CAB Enforcement Section

GENERAL INSTRUCTIONS, FORM F-1
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

1. Facility Information.

   a. Please print/type requested information, except for signature block 1.N.

   b. When possible and applicable, be consistent with the information presented in your Covered Source Permit Application, Standard Permit Application, Form S-1.

2. Calculated Emissions.

   a. Correspond Equipment Unit Number on Form F-1, with the Equipment I.D. or Number on the Equipment Data Sheets.

   b. Calculate actual emissions in tons/year for all regulated air pollutants (toxic and nontoxic). Emissions shall be calculated in accordance with HAR, Section 11-60.1-115. Report all hazardous air pollutant emissions greater than one ton per year. All calculated emissions for each equipment shall be reported to the nearest tenth of a ton on Forms F-1, and F-2 (if needed), and the sum of each pollutant (nearest tenth of a ton) entered on line **2.B. "Total Report Emissions."**

   c. For "each" regulated air pollutant subject to fees, any fraction of a ton calculated on line 2.B. shall be dropped, and the total less the fraction of a ton entered on line **2.C. "Total Emissions, Subject to Fees."** If total emissions for any one air pollutant exceed 4,000 tons/yr., enter "4,000" on line 2.C. for that pollutant.

   d. PM_{10} emissions are accounted for under TSP. Do not include in line 2.C. for fee calculation. Any reported lead (Pb) emissions should be included with TSP emissions. Do not double count lead emissions for fee purposes.

   e. The resulting whole tons (drop the fractions of a ton) entered in line 2.C. shall be summed, and the resulting total entered in block **2.D.**

3. 2004 Annual Fee Calculation (2004 FEES WAIVED, DO NOT INCLUDE PAYMENT FOR THIS YEAR)

   a. The fee summary sheet is complete. Do not proceed to Section 3 on Form F-1.
   b. Mail 2004 annual fee Form F-1, Form F-2 (if applicable), equipment data sheets and supporting documentation to:

Clean Air Branch
Hawaii Department of Health
P. O. Box 3378
Honolulu, HI 96801-3378

GENERAL INSTRUCTIONS, FORM F-2
SUPPLEMENT FORM
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

Form F-2 should be used when a covered source needs additional space to itemize all emission units and their respective pollutant emissions.

If Form F-2 is used, the first Form F-2 should be identified at the top of the form as Supplement "A," the second form as Supplement "B," the third form as Supplement "C," and so forth.

1. Facility Information.

   a. Please print requested information, except for signature block 1.G.

   b. When possible, be consistent with the information presented in your Covered Source Permit Application, Standard Permit Application, Form S-1.

2. Calculated Emissions.

   a. Correspond Equipment Unit Number on Form F-1, with the Equipment I.D. or Number on the Equipment Data Sheets.

   b. Calculate emissions in tons/year for all regulated air pollutants (toxic and nontoxic). Emissions shall be calculated [illegible]

2) If two Form F-2's are needed to report air pollutant emissions:

* The forms should be identified as Supplement **"A" and "B."**

* The calculated totals in Supplement "A," **Total Report Emissions**, should be transferred to Supplement "B" at the bottom of the page, on the supplement line. Mark this supplement line as Supplement "A" to identify the supplement for which the totals were derived.

* All calculated totals in Supplement "B," **Total Report Emissions** (includes the totals of Supplement "A"), should be transferred to line **2.A.** in *Form F-1*.

* Supplement "B" should be annotated on line **2.A.** of *Form F-1*.

* Complete *Form F-1* as instructed, treating the totals listed in line **2.A.** of *Form F-1* as one emission unit.

3) If three or more Form F-2's are needed to report air pollutant emissions:

* Each form should be identified with successive letters, e.g., Supplement **"A,"** Supplement **"B,"** Supplement **"C,"** and so forth.

* The calculated totals in Supplement "A," **Total Report Emissions**, should be transferred to Supplement "B" at the bottom of the page, on the supplement line. Mark this supplement line as Supplement "A" to identify the supplement for which the totals were derived.

* The calculated totals in Supplement "B," **Total Report Emissions** (includes the totals of Supplement "A"), should be transferred to Supplement "C" at the bottom of the page, on the supplement line. Mark this supplement line as Supplement "B" to identify the supplement for which the totals were derived.

* If Supplement "C" is the last Form F-2, the calculated totals in Supplement "C," **Total Report Emissions** (includes totals of Supplements "A" and "B"), should be transferred to line **2.A.** in *Form F-1*.

* Supplement "C" should be annotated on line **2.A.** of *Form F-1*.

* Complete *Form F-1* as instructed, treating the totals listed in line **2.A.** of *Form F-1* as one emission unit.

Remember to submit the Form(s) F-2, with Form F-1, Equipment Data Sheets, the applicable emissions documentation, and the appropriate annual fees.

FORM F-1
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES
(FOR AIR POLLUTANTS EMITTED DURING CALENDAR YEAR 2003)

File .0238
Date Received

MATION (PLEASE PRINT)

Electric Co., Inc. - Honolulu Generating Station	B. Location:		C. Island:
x 2750	E. City: Honolulu	F. State: Hawai'i	G. Zip Code: 96840-0001
	I. Title:		J. Telephone No.:
	L. Title:		M. Telephone No.:

Date:

belief formed after reasonable inquiry, the statements and information in this document are true.

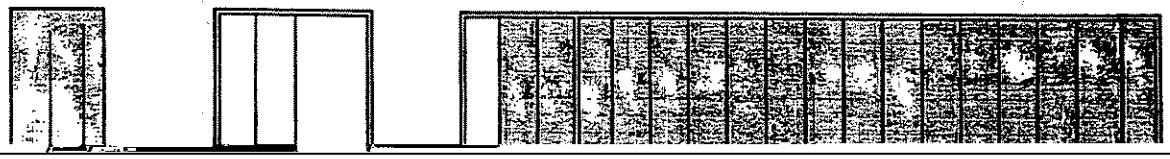
ISIONS (CALCULATE AND REPORT EMISSIONS TO THE NEAREST TENTH OF A TON (Line 2.B.) AND TOTAL ANNUAL EMISSIONS (Line 2.C.) SUBJECT TO FEES WITHOUT THE FRACTION(S) OF A TON)

	Air Pollutant Emissions (tons/yr)												
	Other Regulated Air Pollutants Including Hazardous Air Pollutants (Please specify)												Annual Total
r	TSP	PM_{10}	SO_2	CO	NO_x	VOC	Pb						
s													D.

:ALCULATION (USE THE TOTAL ANNUAL EMISSIONS SUBJECT TO FEES CALCULATED IN BLOCK 2.D.)

	Total Annual Emissions Subject to Fees		Times	2003 $/ton	Times	Consumer Price Index Adjustment (1.8% increase from '01 to '02)	Equal		Total
ir Special Fund - COV	A.	_____	X	$40.05	X	1.018	=	B.	$ WAIVED
ir Special Fund - NON	C.	_____	X	$9.76	X	1.018	=	D.	$ WAIVED
							Total	E.	$ WAIVED

ates that would have been assessed for 2004 if the fee waiver was not granted. The indicated rates were established in accordance with HAR, §11-60.1-114, and will be adjusted annually.
o Clean Air Special Fund-COV = $40.05 x 1.018 = $40.77/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES AS FEES HAVE BEEN WAIVED).
o Clean Air Special Fund-NON = $9.76 x 1.018 = $9.94/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES AS FEES HAVE BEEN WAIVED).



Due to the voluminous nature of the information, one copy (pages 10 - 116) will be provided to the Consumer Advocate, the Department of Defense and the Public Utilities Commission under separate transmittal.

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

January 12, 2005

Sherri-Ann Loo, Esq.
Manager
Environmental Department

Mr. Wilfred K. Nagamine
Manager, Clean Air Branch
Hawaii State Department of Health
P.O. Box 3378
Honolulu, HI 96801

Subject: Covered Source Permits (CSP)
2003 Hawaii Emissions Inventory Reports
Hawaiian Electric Company, Inc. (HECO)

1. Honolulu Generating Station: 8 and 9 (CSP No. 0238-01-C)
2. Kahe Power Plant: K1-K6, A and B (CSP No. 0240-01-C)
3. Waiau Power Plant: 3-10 (CSP No. 0239-01-C)

Dear Mr. Nagamine:

In accordance with the Department of Health's written request dated November 4, 2004, please find the enclosed "2003 Hawaii Emissions Inventory Reports" for the subject facilities listed above.

Please call Nathan Yuen at 543-4522 if you should have any questions.

Sincerely,

FOR Sherri-Ann Loo, Esq.

Enclosures

c (w/o encl.): Tom Simons - HECO

Electronic distribution:
bc (w/encl.): B. Nakamoto
G. Murata
B. Schlieman
N. Yuen

Bc(w/o encl.): A. Fujinaka
J. Clary

2003 HAWAII EMISSIONS INVENTORY REPORT
FACILITY GENERAL INFORMATION FORM

FIPS State-County-Facility ID: 1500300500

DATA REPRESENTATIVE OF JANUARY 1, 2003 - DECEMBER 31, 2003
(Form instructions are located on the Facility General Information Form Instructions)

1) Facility Name: HECO - Honolulu Generating Station

2) Permit No(s).: 0238-01-C

3) Physical Facility Address:

Street: 170 Ala Moana Blvd.

City: Honolulu Zip Code: 96813

4) Emissions Inventory Contact Person Information:

Contact Name:	Phone # + ext:	Fax #	Internet (E-mail) Address:
Mr. Bruce Schlieman	808-543-4516	808-543-4511	bruce.schlieman@heco.com
Mailing Address:	**Mailing City:**	**State:**	**Zip Code:**
P.O. Box 2750	Honolulu	HI	96840

5) Identify CERR source type (CERR thresholds found on the first page of the General Instructions):
(select one) Type A: _____ Type B: X Neither: _____

6) SIC Code (Primary / Secondary): 4911 / _____ 7) NAICS Code: 221112

8) Principal Product: Electrical Generation

9) Facility UTM coordinates (m): Horizontal (x): 617550 (Easting (m)) Vertical (y): 2356600 (Northing (m))

Zone: 4 (Zone 4 or 5) Datum: Old Hawaiian (e.g., NAD 83, NAD 27, or Old Hawaiian)

10) When the 2003 Hawaii Emissions Inventory Report has been completed, please sign and date below.

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Department of Health as public record.

Signature: Thomas C. Simmons

Name: Thomas C. Simmons
Responsible Official

Date: 1/12/05

Title: VP, Power Supply Operations & Maint.

F8	1	Boiler 8	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.369		56.0	589.0	E6BTU	HR	0000	24	7	52	58	0	2	40	1,402.867	3.8	E3GAL
F8	2	Boiler 8	No. 2 Fuel Oil	58	10100501	140.000	E6BTU	E3GAL	0.133		56.0	589.0	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				4.247	NA* < 5% of Total Fuel	E3GAL
F8	3	Boiler 8	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.146		56.0	180.0	E6BTU	HR	0000	24	7	52					0.000		E3GAL
F8	4	Boiler 8	Propane	255	10101002	91.300	E6BTU	E3GAL	0.004		56.0	589.0	E6BTU	HR	0000	24	7	52					0.432		E3GAL
F9	1	Boiler 9	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.369		57.0	631.5	E6BTU	HR	0000	24	7	52	17	30	41	12	5,159.571	14.1	E3GAL
F9	2	Boiler 9	No. 2 Fuel Oil	58	10100501	140.000	E6BTU	E3GAL	0.133		57.0	631.5	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				15.619	NA* < 5% of Total Fuel	E3GAL
F9	3	Boiler 9	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.146		57.0	180.0	E6BTU	HR	0000	24	7	52					0.250		E3GAL
F9	4	Boiler 9	Propane	255	10101002	91.300	E6BTU	E3GAL	0.004		57.0	631.5	E6BTU	HR	0000	24	7	52					1.589		E3GAL

* Not Applicable - Less than 5% of Total Fuel - Due to the small percentage of fuel used compared to the primary fuel seasonal breakdown is Not Applicable.

Deviation in Operating Schedules for Calendar Year 2003:

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand, from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☑ Yes ☐ No

If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

F8 - Boiler 8 was being overhauled from 04/12/2003 through 12/02/2003.
F9 - Boiler 9 was being overhauled from 11/30/2002 through 03/23/2003.

al operating schedule for more than a one
breakdown; or deviate due to low demand
s/yr to a low demand schedule of 8

ason for the deviation; and deviation

Deviation in Operating Schedules for Calendar Year 2003:

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand, from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☐ Yes ☐ No

If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

	617,550	2,356,600	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,550	2,356,600	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,550	2,356,600	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,550	2,356,600	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,540	2,356,617	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,540	2,356,617	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,540	2,356,617	4	Old Hawaiian	161.4	9.0	48.4	325	3,073
	617,540	2,356,617	4	Old Hawaiian	161.4	9.0	48.4	325	3,073

41.4
33.2
3.5
0.5
5.7
4.6
1.1
4.4
3.3
3.5
2.4
1.07E-03
0.0398
0.0508
0.0106
0.0004
0.0070
0.0043
0.0028
0.0049
0.0021
0.0033
0.0005
3.21E-06
0.0000
0.0000
0.0000
0.0000
0.0000

Emissions

Annual Process Thruput Units	Pollutant	Emission Factor (EF)	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency % (ex. use 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
3GAL	PM-FIL	4.6	LB	E3GAL	08		U	9/98	C	0.0000
3GAL	PM-CON	1.5	LB	E3GAL	08		U	9/98	D	0.0000
3GAL	PM10-PRI	4.7	LB	E3GAL	08		U	9/98	C	0.0000
3GAL	PM10-FIL	3.2	LB	E3GAL	08		U	9/98	C	0.0000
3GAL	PM25-PRI	3.9	LB	E3GAL	08		U	9/98	C	0.0000
3GAL	PM25-FIL	2.4	LB	E3GAL	08		U	9/98	C	0.0000
3GAL	7439921	0.550	LB	E3GAL	08		U	10/96	D	0.00E+00
6BTU	SO2	0.00424	LB	E6BTU	03		U			0.0001
6BTU	NOX	0.208	LB	E6BTU	08		U	10/96	E	0.0041
6BTU	CO	0.0350	LB	E6BTU	08		U	10/96	E	0.0007
6BTU	VOC	0.00546	LB	E6BTU	08		U	10/96	E	0.0001
6BTU	PM-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0002
6BTU	PM-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0001
6BTU	PM-CON	0.00559	LB	E6BTU	08		U	7/98	D	0.0001
6BTU	PM10-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0002
6BTU	PM10-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0001
6BTU	PM25-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0002
6BTU	PM25-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0001
6BTU	SO2	0.391	LB	E6BTU	03		U			152.3
6BTU	NOX	0.313	LB	E6BTU	08		U	9/98	A	121.9
6BTU	CO	0.0333	LB	E6BTU	08		U	9/98	A	13.0
6BTU	VOC	0.00507	LB	E6BTU	08		U	9/98	A	2.0
6BTU	PM-PRI	0.0538	LB	E6BTU	08		U	9/98	A	21.0
6BTU	PM-FIL	0.0438	LB	E6BTU	08		U	9/98	C	17.1
6BTU	PM-CON	0.0100	LB	E6BTU	08		U	9/98	D	3.9
6BTU	PM10-PRI	0.0411	LB	E6BTU	08		U	9/98	C	16.0
6BTU	PM10-FIL	0.0311	LB	E6BTU	08		U	9/98	C	12.1
6BTU	PM25-PRI	0.0328	LB	E6BTU	08		U	9/98	C	12.8
6BTU	PM25-FIL	0.0228	LB	E6BTU	08		U	9/98	C	8.9

	779,095	E6BTU	7439921	1.01E-05	LB	E6BTU	08		U	9/98	C	3.92E-03
	2,187	E6BTU	SO2	0.134	LB	E6BTU	03		U			0.1465
	2,187	E6BTU	NOX	0.171	LB	E6BTU	08		U	9/98	D	0.1870
	2,187	E6BTU	CO	0.0357	LB	E6BTU	08		U	9/98	A	0.0390
	2,187	E6BTU	VOC	0.00143	LB	E6BTU	08		U	9/98	A	0.0016
	2,187	E6BTU	PM-PRI	0.0236	LB	E6BTU	08		U	9/98	A	0.0258
	2,187	E6BTU	PM-FIL	0.01430	LB	E6BTU	08		U	9/98	E	0.0156
	2,187	E6BTU	PM-CON	0.00929	LB	E6BTU	08		U	9/98	D	0.0102
	2,187	E6BTU	PM10-PRI	0.01640	LB	E6BTU	08		U	9/98	E	0.0179
	2,187	E6BTU	PM10-FIL	0.00714	LB	E6BTU	08		U	9/98	E	0.0078
	2,187	E6BTU	PM25-PRI	0.01110	LB	E6BTU	08		U	9/98	E	0.0121
	2,187	E6BTU	PM25-FIL	0.00179	LB	E6BTU	08		U	9/98	E	0.0020
	2,187	E6BTU	7439921	1.08E-05	LB	E6BTU	08		U	9/98	C	1.18E-05
	0.250	E3GAL	SO2	22.9	LB	E3GAL	03		U			0.0029
	0.250	E3GAL	NOX	47.0	LB	E3GAL	08		U	9/98	A	0.0059
	0.250	E3GAL	CO	5.0	LB	E3GAL	08		U	9/98	A	0.0006
	0.250	E3GAL	VOC	0.76	LB	E3GAL	08		U	9/98	A	0.0001
	0.250	E3GAL	PM-PRI	6.1	LB	E3GAL	08		U	9/98	A	0.0008
	0.250	E3GAL	PM-FIL	4.6	LB	E3GAL	08		U	9/98	C	0.0006
	0.250	E3GAL	PM-CON	1.5	LB	E3GAL	08		U	9/98	D	0.0002
	0.250	E3GAL	PM10-PRI	4.7	LB	E3GAL	08		U	9/98	C	0.0006
	0.250	E3GAL	PM10-FIL	3.2	LB	E3GAL	08		U	9/98	C	0.0004
	0.250	E3GAL	PM25-PRI	3.9	LB	E3GAL	08		U	9/98	C	0.0005
	0.250	E3GAL	PM25-FIL	2.4	LB	E3GAL	08		U	9/98	C	0.0003
	0.250	E3GAL	7439921	0.550	LB	E3GAL	08		U	10/96	D	6.88E-05
	145	E6BTU	SO2	0.00424	LB	E6BTU	03		U			0.0003
	145	E6BTU	NOX	0.208	LB	E6BTU	08		U	10/96	E	0.0151
	145	E6BTU	CO	0.0350	LB	E6BTU	08		U	10/96	E	0.0025
	145	E6BTU	VOC	0.00546	LB	E6BTU	08		U	10/96	E	0.0004

Pollutant	Emission Factor (EF)	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency % (ex. Use 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Data (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
PM-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0009
PM-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0005
M-CON	0.00559	LB	E6BTU	08		U	7/98	D	0.0004
M10-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0009
M10-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0005
M25-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0009
M25-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0005

Permit No.:	0238-01-C
Date Rec'd:	

FORM F-1

2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

(FOR AIR POLLUTANTS EMITTED DURING CALENDAR YEAR 2003)

INPUT DATA IN YELLOW COLORED CELLS

1. FACILITY INFORMATION (Signature box to be signed by Responsible Official)

A. Facility Name:	HECO - Honolulu Generating Station	B. Location:	170 Ala Moana Blvd.	C. Island:	Oahu
D. Mailing Address:	P.O. Box 2750	E. City: Honolulu	F. State: HI	G. Zip Code:	96840
H. Contact Person:	Mr. Bruce Schlieman	I. Title:	Senior Environmental Scientist	J. Telephone No.:	808-543-4516
K. Responsible Official:	Thomas C. Simmons	L. Title:	VP, Power Supply Operations & Maint.	M. Telephone No.	808-543-4301
N. Signature:	Thomas C. Simmons	Date:	1/12/05		

Based on the information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete

2. CALCULATED EMISSIONS [Report emissions to the nearest tenth of a ton (Line 2.B.) and total annual emis. (Line 2.C.) subject to fees without the fraction(s) of a ton]

Equipment: Unit No. or Activity No.	Air Pollutant Emissions (tons/yr)												
	Other Regulated Air Pollutants Including Hazardous Air Pollutants (please specify)												Annual Total
	TSP	PM_{10}	$PM_{2.5}$	SO_2	CO	NOx	VOC	Pb	HAPs	NH_3			
8	5.7	4.4	3.5	41.4	3.5	33.3	0.5	0.0	0.1	--			
9	21.0	16.0	12.8	152.4	13.0	122.1	2.0	0.0	0.5	--			
A. Supplement (if appl.) _____													
B. Total Report Emissions	26.7	20.4	16.3	193.8	16.5	155.4	2.5	0	0.6	--			
C. Total Emissions Subject to Fees	26			193		155	2						D. 376

3 ANNUAL FEE CALCULATION (Use the total annual emissions subject to fees calculated in Block 2.D.)

		Total Annual Emissions Subject to Fees (enter 2.D. value below)	Multiply	2003 $/TON	Multiply	CPI Index Adjustmn (1.8% incr. '01 to '02)	Equal		Total
Fee payable to:	"Clean Air Special Fund - COV"	A. N/A	x	40.05	x	1.018	=	B.	$ WAIVED
	"Clean Air Special Fund - NON"	C. N/A	x	9.76	x	1.018	=	D.	$ WAIVED
						Total	=	E.	$ WAIVED

Note: The $/ton charges are the rates that would have been assessed for 2004 if the fee waiver was not granted. The indicated rates were established in accordance with HAR, §11-60.1-114, and will be adjusted annually.

2004 $/ton charge payable to "Clean Air Special Fund-COV"= $40.05 x 1.018 = $40.77/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES, SINCE WAIVED).

2004 $/ton charge payable to "Clean Air Special Fund-NON" = $9.76 x 1.018 = $9.94/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES, SINCE WAIVED).

Honolulu 8 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	1,402,887	151,000	211,836	0.391	M	41.4
NOX	1,402,887	151,000	211,836	0.313	A	33.2
CO	1,402,887	151,000	211,836	0.0333	A	3.5
VOC	1,402,887	151,000	211,836	0.00507	A	0.5
PM-PRI	1,402,887	151,000	211,836	0.0538	A	5.7
PM-FIL	1,402,887	151,000	211,836	0.0438	A	4.6
PM-CON	1,402,887	151,000	211,836	0.0100	A	1.1
PM10-PRI	1,402,887	151,000	211,836	0.0411	A	4.4
PM10-FIL	1,402,887	151,000	211,836	0.0311	A	3.3
PM25-PRI	1,402,887	151,000	211,836	0.0328	A	3.5
PM25-FIL	1,402,887	151,000	211,836	0.0228	A	2.4
Acetaldehyde	1,402,887	151,000	211,836		A	
Acrolein	1,402,887	151,000	211,836		A	
Antimony Compounds	1,402,887	151,000	211,836	3.50E-05	A	3.71E-03
Arsenic Compounds	1,402,887	151,000	211,836	8.80E-06	A	9.32E-04
Benzene	1,402,887	151,000	211,836	1.43E-06	A	1.51E-04
Beryllium Compounds	1,402,887	151,000	211,836	1.85E-07	A	1.96E-05
1,3-Butadiene	1,402,887	151,000	211,836		A	
Cadmium Compounds	1,402,887	151,000	211,836	2.65E-06	A	2.81E-04
Chromium Compounds	1,402,887	151,000	211,836	5.63E-06	A	5.97E-04
Cobalt Compounds	1,402,887	151,000	211,836	4.01E-05	A	4.25E-03
Ethylbenzene	1,402,887	151,000	211,836	4.24E-07	A	4.49E-05
Formaldehyde	1,402,887	151,000	211,836	4.07E-04	A	4.31E-02
Hydrochloric Acid	1,402,887	151,000	211,836		A	
Lead Compounds	1,402,887	151,000	211,836	1.01E-05	A	1.07E-03
Manganese Compounds	1,402,887	151,000	211,836	2.00E-05	A	2.12E-03
Mercury Compounds	1,402,887	151,000	211,836	7.53E-07	A	7.98E-05
Nickel Compounds	1,402,887	151,000	211,836	5.63E-04	A	5.97E-02
Naphthalene	1,402,887	151,000	211,836	7.53E-06	A	7.98E-04
Phosphorus	1,402,887	151,000	211,836	6.31E-05	A	6.68E-03
POM	1,402,887	151,000	211,836	8.67E-06	A	9.18E-04
Selenium Compounds	1,402,887	151,000	211,836	4.55E-06	A	4.82E-04
Toluene	1,402,887	151,000	211,836	4.13E-05	A	4.38E-03
Xylene	1,402,887	151,000	211,836		A	
o-Xylene	1,402,887	151,000	211,836	7.27E-07	A	7.70E-05

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 8 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	4,247	140,000	595	0.134	M	0.0398
NOX	4,247	140,000	595	0.171	A	0.0508
CO	4,247	140,000	595	0.0357	A	0.0106
VOC	4,247	140,000	595	0.00143	A	0.0004
PM-PRI	4,247	140,000	595	0.0236	A	0.0070
PM-FIL	4,247	140,000	595	0.0143	A	0.0043
PM-CON	4,247	140,000	595	0.00929	A	0.0028
PM10-PRI	4,247	140,000	595	0.0164	A	0.0049
PM10-FIL	4,247	140,000	595	0.00714	A	0.0021
PM25-PRI	4,247	140,000	595	0.0111	A	0.0033
PM25-FIL	4,247	140,000	595	0.00179	A	0.0005
Acetaldehyde	4,247	140,000	595		A	
Acrolein	4,247	140,000	595		A	
Antimony Compounds	4,247	140,000	595	3.75E-05	A	1.11E-05
Arsenic Compounds	4,247	140,000	595	9.43E-06	A	2.80E-06
Benzene	4,247	140,000	595	1.53E-06	A	4.54E-07
Beryllium Compounds	4,247	140,000	595	1.99E-07	A	5.90E-08
1,3-Butadiene	4,247	140,000	595		A	
Cadmium Compounds	4,247	140,000	595	2.84E-06	A	8.45E-07
Chromium Compounds	4,247	140,000	595	6.04E-06	A	1.79E-06
Cobalt Compounds	4,247	140,000	595	4.30E-05	A	1.28E-05
Ethylbenzene	4,247	140,000	595	4.54E-07	A	1.35E-07
Formaldehyde	4,247	140,000	595	4.36E-04	A	1.30E-04
Hydrochloric Acid	4,247	140,000	595		A	
Lead Compounds	4,247	140,000	595	1.08E-05	A	3.21E-06
Manganese Compounds	4,247	140,000	595	2.14E-05	A	6.37E-06
Mercury Compounds	4,247	140,000	595	8.07E-07	A	2.40E-07
Nickel Compounds	4,247	140,000	595	6.04E-04	A	1.79E-04
Naphthalene	4,247	140,000	595	8.07E-06	A	2.40E-06
Phosphorus	4,247	140,000	595	6.76E-05	A	2.01E-05
POM	4,247	140,000	595	9.29E-06	A	2.76E-06
Selenium Compounds	4,247	140,000	595	4.88E-06	A	1.45E-06
Toluene	4,247	140,000	595	4.43E-05	A	1.32E-05
Xylene	4,247	140,000	595		A	
o-Xylene	4,247	140,000	595	7.79E-07	A	2.31E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 8 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10³ gal)	EF Ref	Annual Emissions (tons/yr)
SO2		22.9	A	
NOX		47	A	
CO		5.0	A	
VOC		0.76	A	
PM-PRI		6.06	A	
PM-FIL		4.56	A	
PM-CON		1.50	A	
PM10-PRI		4.74	A	
PM10-FIL		3.24	A	
PM25-PRI		3.87	A	
PM25-FIL		2.37	A	
Acetaldehyde			A	
Acrolein			A	
Antimony Compounds			A	
Arsenic Compounds		1.10E-01	A	
Benzene			A	
Beryllium Compounds			A	
1,3-Butadiene			A	
Cadmium Compounds		9.30E-03	A	
Chromium Compounds		2.00E-02	A	
Cobalt Compounds		2.10E-04	A	
Ethylbenzene			A	
Formaldehyde			A	
Hydrochloric Acid		3.30E-02	A	
Lead Compounds		5.50E-01	A	
Manganese Compounds		6.80E-02	A	
Mercury Compounds			A	
Nickel Compounds		1.10E-02	A	
Naphthalene			A	
Phosphorus			A	
POM			A	
Selenium Compounds				
Toluene			A	
Xylene			A	
o-Xylene			A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 8 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	432	91,300	39	0.00424	M	0.00008
NOX	432	91,300	39	0.208	A	0.00410
CO	432	91,300	39	0.035	A	0.00069
VOC	432	91,300	39	0.00546	A	0.00011
PM-PRI	432	91,300	39	0.0121	A	0.00024
PM-FIL	432	91,300	39	0.00656	A	0.00013
PM-CON	432	91,300	39	0.00558824	A	0.00011
PM10-PRI	432	91,300	39	0.0121	A	0.00024
PM10-FIL	432	91,300	39	0.00656	A	0.00013
PM25-PRI	432	91,300	39	0.0121	A	0.00024
PM25-FIL	432	91,300	39	0.00656	A	0.00013
Acetaldehyde	432	91,300	39		A	
Acrolein	432	91,300	39		A	
Antimony Compounds	432	91,300	39		A	
Arsenic Compounds	432	91,300	39		A	
Benzene	432	91,300	39		A	
Beryllium Compounds	432	91,300	39		A	
1,3-Butadiene	432	91,300	39		A	
Cadmium Compounds	432	91,300	39		A	
Chromium Compounds	432	91,300	39		A	
Cobalt Compounds	432	91,300	39		A	
Ethylbenzene	432	91,300	39		A	
Formaldehyde	432	91,300	39		A	
Hydrochloric Acid	432	91,300	39		A	
Lead Compounds	432	91,300	39		A	
Manganese Compounds	432	91,300	39		A	
Mercury Compounds	432	91,300	39		A	
Nickel Compounds	432	91,300	39		A	
Naphthalene	432	91,300	39		A	
Phosphorus	432	91,300	39		A	
POM	432	91,300	39		A	
Selenium Compounds	432	91,300	39		A	
Toluene	432	91,300	39		A	
Xylene	432	91,300	39		A	
o-Xylene	432	91,300	39		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 8 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	41.4	0.0398		0.0001	41.4
NOX	33.2	0.0508		0.0041	33.3
CO	3.5	0.0106		0.0007	3.5
VOC	0.5	0.0004		0.0001	0.5
PM-PRI	5.7	0.0070		0.0002	5.7
PM-FIL	4.6	0.0043		0.0001	4.6
PM-CON	1.1	0.0028		0.0001	1.1
PM10-PRI	4.4	0.0049		0.0002	4.4
PM10-FIL	3.3	0.0021		0.0001	3.3
PM25-PRI	3.5	0.0033		0.0002	3.5
PM25-FIL	2.4	0.0005		0.0001	2.4
Acetaldehyde					
Acrolein					
Antimony Compounds	3.71E-03	1.11E-05			3.72E-03
Arsenic Compounds	9.32E-04	2.80E-06			9.35E-04
Benzene	1.51E-04	4.54E-07			1.52E-04
Beryllium Compounds	1.96E-05	5.90E-08			1.97E-05
1,3-Butadiene					
Cadmium Compounds	2.81E-04	8.45E-07			2.82E-04
Chromium Compounds	5.97E-04	1.79E-06			5.98E-04
Cobalt Compounds	4.25E-03	1.28E-05			4.26E-03
Ethylbenzene	4.49E-05	1.35E-07			4.50E-05
Formaldehyde	4.31E-02	1.30E-04			4.32E-02
Hydrochloric Acid					
Lead Compounds	1.07E-03	3.21E-06			1.07E-03
Manganese Compounds	2.12E-03	6.37E-06			2.12E-03
Mercury Compounds	7.98E-05	2.40E-07			8.00E-05
Nickel Compounds	5.97E-02	1.79E-04			5.98E-02
Naphthalene	7.98E-04	2.40E-06			8.00E-04
Phosphorus	6.68E-03	2.01E-05			6.70E-03
POM	9.18E-04	2.76E-06			9.21E-04
Selenium Compounds	4.82E-04	1.45E-06			4.84E-04
Toluene	4.38E-03	1.32E-05			4.39E-03
Xylene					
o-Xylene	7.70E-05	2.31E-07			7.72E-05
Total HAPs					1.30E-01

Honolulu 9 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	5,159,571	151,000	779,095	0.391	M	152.3
NOX	5,159,571	151,000	779,095	0.313	A	121.9
CO	5,159,571	151,000	779,095	0.0333	A	13.0
VOC	5,159,571	151,000	779,095	0.00507	A	2.0
PM-PRI	5,159,571	151,000	779,095	0.0538	A	21.0
PM-FIL	5,159,571	151,000	779,095	0.0438	A	17.1
PM-CON	5,159,571	151,000	779,095	0.0100	A	3.9
PM10-PRI	5,159,571	151,000	779,095	0.0411	A	16.0
PM10-FIL	5,159,571	151,000	779,095	0.0311	A	12.1
PM25-PRI	5,159,571	151,000	779,095	0.0328	A	12.8
PM25-FIL	5,159,571	151,000	779,095	0.0228	A	8.9
Acetaldehyde	5,159,571	151,000	779,095		A	
Acrolein	5,159,571	151,000	779,095		A	
Antimony Compounds	5,159,571	151,000	779,095	3.50E-05	A	1.36E-02
Arsenic Compounds	5,159,571	151,000	779,095	8.80E-06	A	3.43E-03
Benzene	5,159,571	151,000	779,095	1.43E-06	A	5.56E-04
Beryllium Compounds	5,159,571	151,000	779,095	1.85E-07	A	7.22E-05
1,3-Butadiene	5,159,571	151,000	779,095		A	
Cadmium Compounds	5,159,571	151,000	779,095	2.65E-06	A	1.03E-03
Chromium Compounds	5,159,571	151,000	779,095	5.63E-06	A	2.19E-03
Cobalt Compounds	5,159,571	151,000	779,095	4.01E-05	A	1.56E-02
Ethylbenzene	5,159,571	151,000	779,095	4.24E-07	A	1.65E-04
Formaldehyde	5,159,571	151,000	779,095	4.07E-04	A	1.58E-01
Hydrochloric Acid	5,159,571	151,000	779,095		A	
Lead Compounds	5,159,571	151,000	779,095	1.01E-05	A	3.92E-03
Manganese Compounds	5,159,571	151,000	779,095	2.00E-05	A	7.79E-03
Mercury Compounds	5,159,571	151,000	779,095	7.53E-07	A	2.93E-04
Nickel Compounds	5,159,571	151,000	779,095	5.63E-04	A	2.19E-01
Naphthalene	5,159,571	151,000	779,095	7.53E-06	A	2.93E-03
Phosphorus	5,159,571	151,000	779,095	6.31E-05	A	2.46E-02
POM	5,159,571	151,000	779,095	8.67E-06	A	3.38E-03
Selenium Compounds	5,159,571	151,000	779,095	4.55E-06	A	1.77E-03
Toluene	5,159,571	151,000	779,095	4.13E-05	A	1.61E-02
Xylene	5,159,571	151,000	779,095		A	
o-Xylene	5,159,571	151,000	779,095	7.27E-07	A	2.83E-04

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 9 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	15,619	140,000	2,187	0.134	M	0.1465
NOX	15,619	140,000	2,187	0.171	A	0.1870
CO	15,619	140,000	2,187	0.0357	A	0.0390
VOC	15,619	140,000	2,187	0.00143	A	0.0016
PM-PRI	15,619	140,000	2,187	0.0236	A	0.0258
PM-FIL	15,619	140,000	2,187	0.0143	A	0.0156
PM-CON	15,619	140,000	2,187	0.00929	A	0.0102
PM10-PRI	15,619	140,000	2,187	0.0164	A	0.0179
PM10-FIL	15,619	140,000	2,187	0.00714	A	0.0078
PM25-PRI	15,619	140,000	2,187	0.0111	A	0.0121
PM25-FIL	15,619	140,000	2,187	0.00179	A	0.0020
Acetaldehyde	15,619	140,000	2,187		A	
Acrolein	15,619	140,000	2,187		A	
Antimony Compounds	15,619	140,000	2,187	3.75E-05	A	4.10E-05
Arsenic Compounds	15,619	140,000	2,187	9.43E-06	A	1.03E-05
Benzene	15,619	140,000	2,187	1.53E-06	A	1.67E-06
Beryllium Compounds	15,619	140,000	2,187	1.99E-07	A	2.17E-07
1,3-Butadiene	15,619	140,000	2,187		A	
Cadmium Compounds	15,619	140,000	2,187	2.84E-06	A	3.11E-06
Chromium Compounds	15,619	140,000	2,187	6.04E-06	A	6.60E-06
Cobalt Compounds	15,619	140,000	2,187	4.30E-05	A	4.70E-05
Ethylbenzene	15,619	140,000	2,187	4.54E-07	A	4.97E-07
Formaldehyde	15,619	140,000	2,187	4.36E-04	A	4.76E-04
Hydrochloric Acid	15,619	140,000	2,187		A	
Lead Compounds	15,619	140,000	2,187	1.08E-05	A	1.18E-05
Manganese Compounds	15,619	140,000	2,187	2.14E-05	A	2.34E-05
Mercury Compounds	15,619	140,000	2,187	8.07E-07	A	8.82E-07
Nickel Compounds	15,619	140,000	2,187	6.04E-04	A	6.60E-04
Naphthalene	15,619	140,000	2,187	8.07E-06	A	8.82E-06
Phosphorus	15,619	140,000	2,187	6.76E-05	A	7.39E-05
POM	15,619	140,000	2,187	9.29E-06	A	1.02E-05
Selenium Compounds	15,619	140,000	2,187	4.88E-06	A	5.33E-06
Toluene	15,619	140,000	2,187	4.43E-05	A	4.84E-05
Xylene	15,619	140,000	2,187		A	
o-Xylene	15,619	140,000	2,187	7.79E-07	A	8.51E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 9 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10^ gal)	EF Ref	Annual Emissions (tons/yr)
SO2	250	22.9	A	0.00286
NOX	250	47	A	0.00588
CO	250	5.0	A	0.00063
VOC	250	0.76	A	0.00010
PM-PRI	250	6.06	A	0.00076
PM-FIL	250	4.56	A	0.00057
PM-CON	250	1.5	A	0.00019
PM10-PRI	250	4.74	A	0.00059
PM10-FIL	250	3.24	A	0.00041
PM25-PRI	250	3.87	A	0.00048
PM25-FIL	250	2.37	A	0.00030
Acetaldehyde	250		A	
Acrolein	250		A	
Antimony Compounds	250		A	
Arsenic Compounds	250	1.10E-01	A	1.38E-05
Benzene	250		A	
Beryllium Compounds	250		A	
1,3-Butadiene	250		A	
Cadmium Compounds	250	9.30E-03	A	1.16E-06
Chromium Compounds	250	2.00E-02	A	2.50E-06
Cobalt Compounds	250	2.10E-04	A	2.63E-08
Ethylbenzene	250		A	
Formaldehyde	250		A	
Hydrochloric Acid	250	3.30E-02	A	4.13E-06
Lead Compounds	250	5.50E-01	A	6.88E-05
Manganese Compounds	250	6.80E-02	A	8.50E-06
Mercury Compounds	250		A	
Nickel Compounds	250	1.10E-02	A	1.38E-06
Naphthalene	250		A	
Phosphorus	250		A	
POM	250		A	
Selenium Compounds	250		A	
Toluene	250		A	
Xylene	250		A	
o-Xylene	250		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 9 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	1,589	91,300	145	0.00424	M	0.00031
NOX	1,589	91,300	145	0.208	A	0.01509
CO	1,589	91,300	145	0.035	A	0.00254
VOC	1,589	91,300	145	0.00546	A	0.00040
PM-PRI	1,589	91,300	145	0.0121	A	0.00088
PM-FIL	1,589	91,300	145	0.00656	A	0.00048
PM-CON	1,589	91,300	145	0.00558824	A	0.00041
PM10-PRI	1,589	91,300	145	0.0121	A	0.00088
PM10-FIL	1,589	91,300	145	0.00656	A	0.00048
PM25-PRI	1,589	91,300	145	0.0121	A	0.00088
PM25-FIL	1,589	91,300	145	0.00656	A	0.00048
Acetaldehyde	1,589	91,300	145		A	
Acrolein	1,589	91,300	145		A	
Antimony Compounds	1,589	91,300	145		A	
Arsenic Compounds	1,589	91,300	145		A	
Benzene	1,589	91,300	145		A	
Beryllium Compounds	1,589	91,300	145		A	
1,3-Butadiene	1,589	91,300	145		A	
Cadmium Compounds	1,589	91,300	145		A	
Chromium Compounds	1,589	91,300	145		A	
Cobalt Compounds	1,589	91,300	145		A	
Ethylbenzene	1,589	91,300	145		A	
Formaldehyde	1,589	91,300	145		A	
Hydrochloric Acid	1,589	91,300	145		A	
Lead Compounds	1,589	91,300	145		A	
Manganese Compounds	1,589	91,300	145		A	
Mercury Compounds	1,589	91,300	145		A	
Nickel Compounds	1,589	91,300	145		A	
Naphthalene	1,589	91,300	145		A	
Phosphorus	1,589	91,300	145		A	
POM	1,589	91,300	145		A	
Selenium Compounds	1,589	91,300	145		A	
Toluene	1,589	91,300	145		A	
Xylene	1,589	91,300	145		A	
o-Xylene	1,589	91,300	145		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Honolulu 9 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	152.3	0.1465	0.0029	0.0003	152.4
NOX	121.9	0.1870	0.0059	0.0151	122.1
CO	13.0	0.0390	0.0006	0.0025	13.0
VOC	2	0.0016	0.0001	0.0004	2.0
PM-PRI	21	0.0258	0.0008	0.0009	21.0
PM-FIL	17.1	0.0156	0.0006	0.0005	17.1
PM-CON	3.9	0.0102	0.0002	0.0004	3.9
PM10-PRI	16	0.0179	0.0006	0.0009	16.0
PM10-FIL	12.1	0.0078	0.0004	0.0005	12.1
PM25-PRI	12.8	0.0121	0.0005	0.0009	12.8
PM25-FIL	8.9	0.0020	0.0003	0.0005	8.9
Acetaldehyde					
Acrolein					
Antimony Compounds	1.36E-02	4.10E-05			1.37E-02
Arsenic Compounds	3.43E-03	1.03E-05	1.38E-05		3.45E-03
Benzene	5.56E-04	1.67E-06			5.57E-04
Beryllium Compounds	7.22E-05	2.17E-07			7.24E-05
1,3-Butadiene					
Cadmium Compounds	1.03E-03	3.11E-06	1.16E-06		1.04E-03
Chromium Compounds	2.19E-03	6.60E-06	2.50E-06		2.20E-03
Cobalt Compounds	1.56E-02	4.70E-05	2.63E-08		1.57E-02
Ethylbenzene	1.65E-04	4.97E-07			1.66E-04
Formaldehyde	1.58E-01	4.76E-04			1.59E-01
Hydrochloric Acid			4.13E-06		4.13E-06
Lead Compounds	3.92E-03	1.18E-05	6.88E-05		4.00E-03
Manganese Compounds	7.79E-03	2.34E-05	8.50E-06		7.82E-03
Mercury Compounds	2.93E-04	8.82E-07			2.94E-04
Nickel Compounds	2.19E-01	6.60E-04	1.38E-06		2.20E-01
Naphthalene	2.93E-03	8.82E-06			2.94E-03
Phosphorus	2.46E-02	7.39E-05			2.46E-02
POM	3.38E-03	1.02E-05			3.39E-03
Selenium Compounds	1.77E-03	5.33E-06			1.78E-03
Toluene	1.61E-02	4.84E-05			1.61E-02
Xylene					
o-Xylene	2.83E-04	8.51E-07			2.84E-04
Total HAPs					4.77E-01

Summary

Pollutant	Annual Emissions		
	Honolulu 8	Honolulu 9	Total
SO2	41.4	152.4	193.8
NOX	33.3	122.1	155.4
CO	3.5	13.0	16.5
VOC	0.5	2.0	2.5
PM-PRI	5.7	21.0	26.7
PM-FIL	4.6	17.1	21.7
PM-CON	1.1	3.9	5.0
PM10-PRI	4.4	16.0	20.4
PM10-FIL	3.3	12.1	15.4
PM25-PRI	3.5	12.8	16.3
PM25-FIL	2.4	8.9	11.3
Acetaldehyde			
Acrolein			
Antimony Compounds	3.72E-03	1.37E-02	1.74E-02
Arsenic Compounds	9.35E-04	3.45E-03	4.39E-03
Benzene	1.52E-04	5.57E-04	7.09E-04
Beryllium Compounds	1.97E-05	7.24E-05	9.21E-05
1,3-Butadiene			
Cadmium Compounds	2.82E-04	1.04E-03	1.32E-03
Chromium Compounds	5.98E-04	2.20E-03	2.80E-03
Cobalt Compounds	4.26E-03	1.57E-02	1.99E-02
Ethylbenzene	4.50E-05	1.66E-04	2.11E-04
Formaldehyde	4.32E-02	1.59E-01	2.02E-01
Hydrochloric Acid		4.13E-06	4.13E-06
Lead Compounds	1.07E-03	4.00E-03	5.07E-03
Manganese Compounds	2.12E-03	7.82E-03	9.95E-03
Mercury Compounds	8.00E-05	2.94E-04	3.74E-04
Nickel Compounds	5.98E-02	2.20E-01	2.80E-01
Naphthalene	8.00E-04	2.94E-03	3.74E-03
Phosphorus	6.70E-03	2.46E-02	3.13E-02
POM	9.21E-04	3.39E-03	4.31E-03
Selenium Compounds	4.84E-04	1.78E-03	2.26E-03
Toluene	4.39E-03	1.61E-02	2.05E-02
Xylene			
o-Xylene	7.72E-05	2.84E-04	3.61E-04
Total HAPS	1.30E-01	4.77E-01	6.07E-01

32.844	84	E3GAL
.786	NA* < 5% of Total Fuel	E3GAL
439		E3GAL
29.312	84	E3GAL
.670	NA* < 5% of Total Fuel	E3GAL
425		E3GAL
34.341	85	E3GAL
970	NA* < 5% of Total Fuel	E3GAL
870		E3GAL
11.971	90	E3GAL
333	NA* < 5% of Total Fuel	E3GAL
592		E3GAL
8.060	147	E3GAL
787	NA* < 5% of Total Fuel	E3GAL
0.332	134	E3GAL
289	NA* < 5% of Total Fuel	E3GAL
596	0.0293	E3GAL
52	0.0259	E3GAL

Fuel Burning

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Emission Unit ID	Process ID No. (Stored Product ID No.)	Tank Description (Tank characters/max)	Stored Product Type	Product Material Code	SCC	Permitted Design Capacity	Permitted Design Capacity Unit Numerator	Permitted Design Capacity Unit Denominator (applicable)	Start Time (HHMM)	Hr/Day	Day/Wk	Wk/Yr	Seasonal Thruput Mar (May)	Seasonal Thruput Aug (Sep)	Seasonal Thruput Nov (Dec)	Seasonal Thruput Feb (Mar)	Annual Process Thruput	Daily Process Thruput	Process Thruput Units

Deviation in Operating Schedules for Calendar Year 2003

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☐ Yes ☐ No

If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

Emission Unit ID	Process ID No. (Product/Material ID No.)	Emission Unit or Activity Description (78 characters max.)	Product Name	Material Code	SCC	Permitted Design Capacity	Permitted Design Capacity Unit	Numerator	Permitted Design Capacity Unit	Denominator	Start Time (Minutes)	H/Day	Day/Wk	Wk/Yr	Seasonal Throughput (Max/Min)	Seasonal Throughput (Jun-Aug)	Seasonal Throughput (Sep-Nov)	Seasonal Throughput (Dec-Feb)	Seasonal Throughput (Mar-May)	Seasonal Throughput (Jun-Aug)	Seasonal Throughput (Sep-Nov)	Seasonal Throughput (Dec-Feb)

Deviation in Operating Schedules for Calendar Year 2003:

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand, from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☐ Yes ☐ No

If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

Emission Release Code	If single process exhausts to multiple stacks, list % routed to each stack	UTM Easting (m) Horizontal	UTM Northing (m) Vertical	Zone (4 or 5)	Datum (Old Hwn, NAD 27, or NAD-83)	Stack Ht (ft)	Stack Diameter (ft)	Stack Velocity (ft/sec)	Stack Temperature (deg. F)	Stack Flow (ACF
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	52.5	424	4,544
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	52.5	424	4,544
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	52.5	424	4,544
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	50.2	404	4,345
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	50.2	404	4,345
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	50.2	404	4,345
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	54.1	423	4,686
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	54.1	423	4,686
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	54.1	423	4,686
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	53.1	413	4,601
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	53.1	413	4,601
02		590,070	2,362,250	4	Old Hawaiian	300	10.5	53.1	413	4,601
02		590,080	2,365,130	4	Old Hawaiian	304	16.1	36.1	430	7,325
02		590,080	2,365,130	4	Old Hawaiian	304	16.1	36.1	430	7,325
02		590,100	2,362,050	4	Old Hawaiian	450	16.1	33.1	418	6,726
02		590,100	2,362,050	4	Old Hawaiian	450	16.1	33.1	418	6,726
02		590,190	2,362,340	4	Old Hawaiian	20	2.6	76.8	677	415
02		590,190	2,362,340	4	Old Hawaiian	20	2.6	76.8	677	415

Process Thruput (from process info form)	Annual Process Thruput Units	Pollutant	Emissions	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency % (excluding 80% for 80%)	EF Controlled = EF Uncontrolled * (1 - Capture Eff)	AP-42 Section Ref. (if applicable)	AP-42 Emission Factor Reliability (A-E) (if applicable)	Annual Emissions (TON/YR)
55,759	E6BTU	SO2	0.444	LB	E6BTU	03		U			1033.6
55,759	E6BTU	NOX	0.313	LB	E6BTU	08		U	9/98	A	728.6
55,759	E6BTU	CO	0.0333	LB	E6BTU	08		U	9/98	A	77.5
55,759	E6BTU	VOC	0.00507	LB	E6BTU	08		U	9/98	A	11.8
55,759	E6BTU	PM-PRI	0.0569	LB	E6BTU	08		U	9/98	A	132.5
55,759	E6BTU	PM-FIL	0.0469	LB	E6BTU	08		U	9/98	C	109.2
55,759	E6BTU	PM-CON	0.0100	LB	E6BTU	08		U	9/98	D	23.3
55,759	E6BTU	PM10-PRI	0.0433	LB	E6BTU	08		U	9/98	C	100.8
55,759	E6BTU	PM10-FIL	0.0333	LB	E6BTU	08		U	9/98	C	77.5
55,759	E6BTU	PM25-PRI	0.0344	LB	E6BTU	08		U	9/98	C	80.1
55,759	E6BTU	PM25-FIL	0.0244	LB	E6BTU	08		U	9/98	C	56.8
55,759	E6BTU	7439921	1.01E-05	LB	E6BTU	08		U	9/98	C	2.34E-02
.786	E3GAL	SO2	8.4	LB	E3GAL	03		U			0.050
.786	E3GAL	NOX	47.0	LB	E3GAL	08		U	9/98	A	0.277
.786	E3GAL	CO	5.0	LB	E3GAL	08		U	9/98	A	0.029
.786	E3GAL	VOC	0.76	LB	E3GAL	08		U	9/98	A	0.004
.786	E3GAL	PM-PRI	5.2	LB	E3GAL	08		U	9/98	A	0.031
.786	E3GAL	PM-FIL	3.7	LB	E3GAL	08		U	9/98	C	0.022
.786	E3GAL	PM-CON	1.5	LB	E3GAL	08		U	9/98	D	0.009
.786	E3GAL	PM10-PRI	4.2	LB	E3GAL	08		U	9/98	C	0.025
.786	E3GAL	PM10-FIL	2.7	LB	E3GAL	08		U	9/98	C	0.016
.786	E3GAL	PM25-PRI	3.4	LB	E3GAL	08		U	9/98	C	0.020
.786	E3GAL	PM25-FIL	1.9	LB	E3GAL	08		U	9/98	C	0.011
.786	E3GAL	7439921	5.50E-01	LB	E3GAL	08		U	10/96	D	3.24E-03
31	E6BTU	SO2	0.00424	LB	E6BTU	03		U			0.0003
31	E6BTU	NOX	0.208	LB	E6BTU	08		U	10/96	E	0.0137
31	E6BTU	CO	0.0350	LB	E6BTU	08		U	10/96	E	0.0023
31	E6BTU	VOC	0.00546	LB	E6BTU	08		U	10/96	E	0.0004
31	E6BTU	PM-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0008
31	E6BTU	PM-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0004
31	E6BTU	PM-CON	0.00559	LB	E6BTU	08		U	7/98	D	0.0004

Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
, D	0.0008
E	0.0004
, D	0.0008
E	0.0004
	1023.4
A	721.5
A	76.8
A	11.7
A	131.2
C	108.1
D	23
C	99.8
C	76.8
C	79.3
C	56.2
C	2.32E-02
	0.049
A	0.274
A	0.029
A	0.004
A	0.031
C	0.022
D	0.009
C	0.024
C	0.016
C	0.020
C	0.011
D	3.21E-03
	0.0003
	0.0135
	0.0023

Emissions

Emission Unit ID	Process ID No. (Fuel/Product/Material ID No.)	Annual Process Thruput (from process info forms)	Annual Process Thruput Units	Pollutant	Emission Factor	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency (Excludes 80%)	EF Controlled + "C" or Uncontrolled + "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emission (TON/YR)
FK2	4	130	E6BTU	VOC	0.00546	LB	E6BTU	08		U	10/96	E	0.0004
FK2	4	130	E6BTU	PM-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0008
FK2	4	130	E6BTU	PM-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0004
FK2	4	130	E6BTU	PM-CON	0.00559	LB	E6BTU	08		U	7/98	D	0.0004
FK2	4	130	E6BTU	PM10-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0008
FK2	4	130	E6BTU	PM10-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0004
FK2	4	130	E6BTU	PM25-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.0008
FK2	4	130	E6BTU	PM25-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.0004
FK3	1	4,689,205	E6BTU	SO2	0.444	LB	E6BTU	03		U			1041
FK3	1	4,689,205	E6BTU	NOX	0.313	LB	E6BTU	08		U	9/98	A	733.9
FK3	1	4,689,205	E6BTU	CO	0.0333	LB	E6BTU	08		U	9/98	A	78.1
FK3	1	4,689,205	E6BTU	VOC	0.00507	LB	E6BTU	08		U	9/98	A	11.9
FK3	1	4,689,205	E6BTU	PM-PRI	0.0569	LB	E6BTU	08		U	9/98	A	133.4
FK3	1	4,689,205	E6BTU	PM-FIL	0.0469	LB	E6BTU	08		U	9/98	C	110
FK3	1	4,689,205	E6BTU	PM-CON	0.0100	LB	E6BTU	08		U	9/98	D	23.4
FK3	1	4,689,205	E6BTU	PM10-PRI	0.0433	LB	E6BTU	08		U	9/98	C	101.5
FK3	1	4,689,205	E6BTU	PM10-FIL	0.0333	LB	E6BTU	08		U	9/98	C	78.1
FK3	1	4,689,205	E6BTU	PM25-PRI	0.0325	LB	E6BTU	08		U	9/98	C	76.2
FK3	1	4,689,205	E6BTU	PM25-FIL	0.0225	LB	E6BTU	08		U	9/98	C	52.8
FK3	1	4,689,205	E6BTU	7439921	1.01E-05	LB	E6BTU	08		U	9/98	C	2.36E-02
FK3	2	836	E6BTU	SO2	0.125	LB	E6BTU	03		U			0.052
FK3	2	836	E6BTU	NOX	0.171	LB	E6BTU	08		U	9/98	D	0.071
FK3	2	836	E6BTU	CO	0.0357	LB	E6BTU	08		U	9/98	A	0.015
FK3	2	836	E6BTU	VOC	0.00143	LB	E6BTU	08		U	9/98	A	0.001
FK3	2	836	E6BTU	PM-PRI	0.0236	LB	E6BTU	08		U	9/98	A	0.010
FK3	2	836	E6BTU	PM-FIL	0.01430	LB	E6BTU	08		U	9/98	E	0.006
FK3	2	836	E6BTU	PM-CON	0.00929	LB	E6BTU	08		U	9/98	D	0.004
FK3	2	836	E6BTU	PM10-PRI	0.01640	LB	E6BTU	08		U	9/98	E	0.007
FK3	2	836	E6BTU	PM10-FIL	0.00714	LB	E6BTU	08		U	9/98	E	0.003
FK3	2	836	E6BTU	PM25-PRI	0.01110	LB	E6BTU	08		U	9/98	E	0.005
FK3	2	836	E6BTU	PM25-FIL	0.00179	LB	E6BTU	08		U	9/98	E	0.001

...0 for ...lled = "C" or ...ontrolled = "U"	AP-42 Section Data (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
	9/98	C	4.51E-06
			0.050
	9/98	A	0.279
	9/98	A	0.030
	9/98	A	0.005
	9/98	A	0.031
	9/98	C	0.022
	9/98	D	0.009
	9/98	C	0.025
	9/98	C	0.016
	9/98	C	0.020
	9/98	C	0.012
	10/96	D	3.26E-03
			1104.3
	9/98	A	778.5
	9/98	A	82.8
	9/98	A	12.6
	9/98	A	141.5
	9/98	C	116.6
	9/98	D	24.9
	9/98	C	107.7
	9/98	C	82.8
	9/98	C	85.6
	9/98	C	60.7
	9/98	C	2.50E-02
			0.055
	9/98	D	0.076
	9/98	A	0.016
	9/98	A	0.001
	9/98	A	0.010
	9/98	E	0.006

...ethod Code	Total Capture Control Efficiency % (ex. use 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
)8		U	9/98	D	0.004
)8		U	9/98	E	0.007
)8		U	9/98	E	0.003
)8		U	9/98	E	0.005
)8		U	9/98	E	0.001
)8		U	9/98	C	4.78E-06
)3		U			0.053
)8		U	9/98	A	0.296
8		U	9/98	A	0.031
8		U	9/98	A	0.005
8		U	9/98	A	0.033
8		U	9/98	C	0.024
8		U	9/98	D	0.009
8		U	9/98	C	0.026
8		U	9/98	C	0.017
8		U	9/98	C	0.022
8		U	9/98	C	0.012
8		U	10/96	D	3.46E-03
3		U			1794.7
3		U	9/98	A	1265.2
3		U	9/98	A	134.6
3		U	9/98	A	20.5
3		U	9/98	A	230
3		U	9/98	C	189.6
3		U	9/98	D	40.4
3		U	9/98	C	175
3		U	9/98	C	134.6
3		U	9/98	C	139
3		U	9/98	C	98.6
3		U	9/98	C	4.07E-02
3		U			0.156

...od Code	Total Capture Control Efficiency % (ex. gas 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
		U	9/98	D	0.213
		U	9/98	A	0.044
		U	9/98	A	0.002
		U	9/98	A	0.029
		U	9/98	E	0.018
		U	9/98	D	0.012
		U	9/98	E	0.020
		U	9/98	E	0.009
		U	9/98	E	0.014
		U	9/98	E	0.002
		U	9/98	C	1.34E-05
		U			1643.6
		U			821.8
		U	9/98	A	123.3
		U	9/98	A	18.8
		U			577.5
		U			277.6
		U			299.8
		U			496
		U			197.3
		U			444.2
		U			144.4
		U	9/98	C	3.73E-02
		U			0.143
		U			0.253
		U	9/98	A	0.041
		U	9/98	A	0.002
		U			0.178
		U			0.086
		U			0.092
		U			0.153

Emission Unit ID	Process ID No. (Fuel/Product/Material ID No.)	Annual Process Thruput (from process info forms)	Annual Process Thruput Units	Pollutant	Emission Factor EF	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency % (ex. use 80% for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
FK6	2	2,280	E6BTU	PM10-FIL	0.0533	LB	E6BTU	04		U			0.061
FK6	2	2,280	E6BTU	PM25-PRI	0.1200	LB	E6BTU	04		U			0.137
FK6	2	2,280	E6BTU	PM25-FIL	0.0390	LB	E6BTU	04		U			0.044
FK6	2	2,280	E6BTU	7439921	1.08E-05	LB	E6BTU	08		U	9/98	C	1.23E-05
FA	2	1,497	E6BTU	SO2	0.125	LB	E6BTU	03		U			0.094
FA	2	1,497	E6BTU	NOX	3.20	LB	E6BTU	08		U	10/96	B	2.396
FA	2	1,497	E6BTU	CO	0.850	LB	E6BTU	08		U	10/96	C	0.636
FA	2	1,497	E6BTU	VOC	0.0819	LB	E6BTU	08		U	10/96	E	0.061
FA	2	1,497	E6BTU	PM-PRI	0.0697	LB	E6BTU	08		U	10/96	E	0.052
FA	2	1,497	E6BTU	PM-FIL	0.0620	LB	E6BTU	08		U	10/96	E	0.046
FA	2	1,497	E6BTU	PM-CON	0.0077	LB	E6BTU	08		U	10/96	E	0.006
FA	2	1,497	E6BTU	PM10-PRI	0.0573	LB	E6BTU	08		U	10/96	E	0.043
FA	2	1,497	E6BTU	PM10-FIL	0.0496	LB	E6BTU	08		U	10/96	E	0.037
FA	2	1,497	E6BTU	PM25-PRI	0.0556	LB	E6BTU	08		U	10/96	E	0.042
FA	2	1,497	E6BTU	PM25-FIL	0.0479	LB	E6BTU	08		U	10/96	E	0.036
FA	2	1,497	E6BTU	7439921	1.40E-05	LB	E6BTU	08		U	4/00	D	1.05E-05
FB	2	1,325	E6BTU	SO2	0.125	LB	E6BTU	03		U			0.083
FB	2	1,325	E6BTU	NOX	3.20	LB	E6BTU	08		U	10/96	B	2.119
FB	2	1,325	E6BTU	CO	0.850	LB	E6BTU	08		U	10/96	C	0.563
FB	2	1,325	E6BTU	VOC	0.0819	LB	E6BTU	08		U	10/96	E	0.054
FB	2	1,325	E6BTU	PM-PRI	0.0697	LB	E6BTU	08		U	10/96	E	0.046
FB	2	1,325	E6BTU	PM-FIL	0.0620	LB	E6BTU	08		U	10/96	E	0.041
FB	2	1,325	E6BTU	PM-CON	0.0077	LB	E6BTU	08		U	10/96	E	0.005
FB	2	1,325	E6BTU	PM10-PRI	0.0573	LB	E6BTU	08		U	10/96	E	0.038
FB	2	1,325	E6BTU	PM10-FIL	0.0496	LB	E6BTU	08		U	10/96	E	0.033
FB	2	1,325	E6BTU	PM25-PRI	0.0556	LB	E6BTU	08		U	10/96	E	0.037
FB	2	1,325	E6BTU	PM25-FIL	0.0479	LB	E6BTU	08		U	10/96	E	0.032
FB	2	1,325	E6BTU	7439921	1.40E-05	LB	E6BTU	08		U	4/00	D	9.27E-06

FORM F-1

2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

(FOR AIR POLLUTANTS EMITTED DURING CALENDAR YEAR 2003)

INPUT DATA IN YELLOW COLORED CELLS

Permit No.:	0240-01-C
Date Rec'd:	

ON (Signature box to be signed by Responsible Official)

CO - Kahe Power Plant	B. Location:	92-200 Farrington Highway		C. Island:	Oahu
). Box 2750	E. City:	Honolulu	F. State: HI	G. Zip Code:	96840
Bruce Schlieman	I. Title:	Senior Environmental Scientist		J. Telephone No.:	808-543-4516
omas C. Simmons	L. Title:	VP, Power Supply Operations & Maint.		M. Telephone No.	808-543-4301
TC Simmons	Date:	1/12/05			

nd belief formed after reasonable inquiry, the statements and information in this document
plete

NS (Report emissions to the nearest tenth of a ton (Line 2.B.) and total annual emis. (Line 2.C.) subject to fees without the fraction(s) of a ton)

	Air Pollutant Emissions (tons/yr)												
	Other Regulated Air Pollutants Including Hazardous Air Pollutants (please specify)												Annual Total
	TSP	PM_{10}	$PM_{2.5}$	SO_2	CO	NOx	VOC	Pb	HAPs	NH_3			
	132.5	100.8	80.1	1033.6	77.5	728.9	11.8	0.0	2.8	--			
	131.2	99.8	79.3	1023.4	76.8	721.8	11.7	0.0	2.8	--			
	133.4	101.5	76.2	1041.1	78.1	734.3	11.9	0.0	2.9	--			
	141.5	107.7	85.6	1104.4	82.8	778.9	12.6	0.0	3.0	--			
A	807.8	671.2	619.3	3438.8	259.1	2092.0	39.5	0.0	9.4	--			
	1346.4	1081.0	940.5	7641.3	574.3	5055.9	87.5	0.0	20.9	--			
ees	1,346			4,000		4,000	87						D. 9,433

ATION (Use the total annual emissions subject to fees calculated in Block 2.D.)

	Total Annual Emissions Subject to Fees (enter 2.D. value below)		Multiply	2003 $/TON	Multiply	CPI Index Adjustmn (1.8% incr. '01 to '02)	Equal		Total
n Air Special Fund - COV'	A.	N/A	x	40.05	x	1.018	=	B.	$ WAIVED
n Air Special Fund - NON'	C.	N/A	x	9.76	x	1.018	=	D.	$ WAIVED
						Total	=	E.	$ WAIVED

he rates that would have been assessed for 2004 If the fee waiver was not granted. The indicated rates were established in accordance with
d will be adjusted annually.
able to "Clean Air Special Fund-COV"= $40.05 x 1.018 = $40.77/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES, SINCE WAIVED).
able to "Clean Air Special Fund-NON" = $9.76 x 1.018 = $9.94/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES, SINCE WAIVED).

Permit No.:	0240-01-C
Date Rec'd:	

FORM F-2
SUPPLEMENT A
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES
(FOR AIR POLLUTANTS EMITTED DURING CALENDAR YEAR 2003)

INPUT DATA IN YELLOW COLORED CELLS

RMATION (Signature box to be signed by Responsible Official)

HECO - Kahe Power Plant	B. Location: 92-200 Farrington Highway	C. Island:
cial: Thomas C. Simmons	E. Title: VP, Power Supply Operations & Maint.	F. Telephone No.: 808-543-4516
Thomas C. Simmons	Date: 1/12/05	

nation and belief formed after reasonable inquiry, the statements and information in this document and complete

MISSIONS (Report emissions to the nearest tenth of a ton)

t:	Air Pollutant Emissions (tons/yr)											
	Other Regulated Air Pollutants Including Hazardous Air Pollutants (please specify)											
ity No.	TSP	PM_{10}	$PM_{2.5}$	SO_2	CO	NOx	VOC	Pb	HAPs	NH_3		
	230	175.0	175.0	1794.9	134.6	1265.4	20.5	0.0	4.9	--		
	577.7	496.2	444.3	1643.7	123.3	822.1	18.8	0.0	4.5	--		
	0.1	0.0	0.0	0.1	0.6	2.4	0.1	0.0	0.0	--		
	0.0	0.0	0.0	0.1	0.6	2.1	0.1	0.0	0.0	--		
nt												
ns	807.8	671.2	619.3	3438.8	259.1	2092.0	39.5	0.0	9.4	--		

Kahe 1 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	30,832,844	151,000	4,655,759	0.444	M	1033.6
NOX	30,832,844	151,000	4,655,759	0.313	A	728.6
CO	30,832,844	151,000	4,655,759	0.0333	A	77.5
VOC	30,832,844	151,000	4,655,759	0.00507	A	11.8
PM-PRI	30,832,844	151,000	4,655,759	0.0569	A	132.5
PM-FIL	30,832,844	151,000	4,655,759	0.0469	A	109.2
PM-CON	30,832,844	151,000	4,655,759	0.0100	A	23.3
PM10-PRI	30,832,844	151,000	4,655,759	0.0433	A	100.8
PM10-FIL	30,832,844	151,000	4,655,759	0.0333	A	77.5
PM25-PRI	30,832,844	151,000	4,655,759	0.0344	A	80.1
PM25-FIL	30,832,844	151,000	4,655,759	0.0244	A	56.8
Acetaldehyde	30,832,844	151,000	4,655,759		A	
Acrolein	30,832,844	151,000	4,655,759		A	
Antimony Compounds	30,832,844	151,000	4,655,759	3.50E-05	A	8.15E-02
Arsenic Compounds	30,832,844	151,000	4,655,759	8.80E-06	A	2.05E-02
Benzene	30,832,844	151,000	4,655,759	1.43E-06	A	3.32E-03
Beryllium Compounds	30,832,844	151,000	4,655,759	1.85E-07	A	4.31E-04
1,3-Butadiene	30,832,844	151,000	4,655,759		A	
Cadmium Compounds	30,832,844	151,000	4,655,759	2.65E-06	A	6.18E-03
Chromium Compounds	30,832,844	151,000	4,655,759	5.63E-06	A	1.31E-02
Cobalt Compounds	30,832,844	151,000	4,655,759	4.01E-05	A	9.34E-02
Ethylbenzene	30,832,844	151,000	4,655,759	4.24E-07	A	9.87E-04
Formaldehyde	30,832,844	151,000	4,655,759	4.07E-04	A	9.47E-01
Hydrochloric Acid	30,832,844	151,000	4,655,759		A	
Lead Compounds	30,832,844	151,000	4,655,759	1.01E-05	A	2.34E-02
Manganese Compounds	30,832,844	151,000	4,655,759	2.00E-05	A	4.66E-02
Mercury Compounds	30,832,844	151,000	4,655,759	7.53E-07	A	1.75E-03
Nickel Compounds	30,832,844	151,000	4,655,759	5.63E-04	A	1.31E+00
Naphthalene	30,832,844	151,000	4,655,759	7.53E-06	A	1.75E-02
Phosphorus	30,832,844	151,000	4,655,759	6.31E-05	A	1.47E-01
POM	30,832,844	151,000	4,655,759	8.67E-06	A	2.02E-02
Selenium Compounds	30,832,844	151,000	4,655,759	4.55E-06	A	1.06E-02
Toluene	30,832,844	151,000	4,655,759	4.13E-05	A	9.62E-02
Xylene	30,832,844	151,000	4,655,759		A	
o-Xylene	30,832,844	151,000	4,655,759	7.27E-07	A	1.69E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 1 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	11,786	8.4	A	0.050
NOX	11,786	47.0	A	0.277
CO	11,786	5.0	A	0.029
VOC	11,786	0.76	A	0.004
PM-PRI	11,786	5.24	A	0.031
PM-FIL	11,786	3.74	A	0.022
PM-CON	11,786	1.50	A	0.009
PM10-PRI	11,786	4.16	A	0.025
PM10-FIL	11,786	2.66	A	0.016
PM25-PRI	11,786	3.44	A	0.020
PM25-FIL	11,786	1.94	A	0.011
Acetaldehyde	11,786		A	
Acrolein	11,786		A	
Antimony Compounds	11,786		A	
Arsenic Compounds	11,786	1.10E-01	A	6.48E-04
Benzene	11,786		A	
Beryllium Compounds	11,786		A	
1,3-Butadiene	11,786		A	
Cadmium Compounds	11,786	9.30E-03	A	5.48E-05
Chromium Compounds	11,786	2.00E-02	A	1.18E-04
Cobalt Compounds	11,786	2.10E-04	A	1.24E-06
Ethylbenzene	11,786		A	
Formaldehyde	11,786		A	
Hydrochloric Acid	11,786	3.30E-02	A	1.94E-04
Lead Compounds	11,786	5.50E-01	A	3.24E-03
Manganese Compounds	11,786	6.80E-02	A	4.01E-04
Mercury Compounds	11,786		A	
Nickel Compounds	11,786	1.10E-02	A	6.48E-05
Naphthalene	11,786		A	
Phosphorus	11,786		A	
POM	11,786		A	
Selenium Compounds	11,786		A	
Toluene	11,786		A	
Xylene	11,786		A	
o-Xylene	11,786		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 1 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	1,439	91,300	131	0.00424	M	0.0003
NOX	1,439	91,300	131	0.208	A	0.0137
CO	1,439	91,300	131	0.035	A	0.0023
VOC	1,439	91,300	131	0.00546	A	0.0004
PM-PRI	1,439	91,300	131	0.0121	A	0.0008
PM-FIL	1,439	91,300	131	0.00656	A	0.0004
PM-CON	1,439	91,300	131	0.00558824	A	0.0004
PM10-PRI	1,439	91,300	131	0.0121	A	0.0008
PM10-FIL	1,439	91,300	131	0.00656	A	0.0004
PM25-PRI	1,439	91,300	131	0.0121	A	0.0008
PM25-FIL	1,439	91,300	131	0.00656	A	0.0004
Acetaldehyde	1,439	91,300	131		A	
Acrolein	1,439	91,300	131		A	
Antimony Compounds	1,439	91,300	131		A	
Arsenic Compounds	1,439	91,300	131		A	
Benzene	1,439	91,300	131		A	
Beryllium Compounds	1,439	91,300	131		A	
1,3-Butadiene	1,439	91,300	131		A	
Cadmium Compounds	1,439	91,300	131		A	
Chromium Compounds	1,439	91,300	131		A	
Cobalt Compounds	1,439	91,300	131		A	
Ethylbenzene	1,439	91,300	131		A	
Formaldehyde	1,439	91,300	131		A	
Hydrochloric Acid	1,439	91,300	131		A	
Lead Compounds	1,439	91,300	131		A	
Manganese Compounds	1,439	91,300	131		A	
Mercury Compounds	1,439	91,300	131		A	
Nickel Compounds	1,439	91,300	131		A	
Naphthalene	1,439	91,300	131		A	
Phosphorus	1,439	91,300	131		A	
POM	1,439	91,300	131		A	
Selenium Compounds	1,439	91,300	131		A	
Toluene	1,439	91,300	131		A	
Xylene	1,439	91,300	131		A	
o-Xylene	1,439	91,300	131		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 1 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	1033.6	0.050	0.0003	1033.6
NOX	728.6	0.277	0.0137	728.9
CO	77.5	0.029	0.0023	77.5
VOC	11.8	0.004	0.0004	11.8
PM-PRI	132.5	0.031	0.0008	132.5
PM-FIL	109.2	0.022	0.0004	109.2
PM-CON	23.3	0.009	0.0004	23.3
PM10-PRI	100.8	0.025	0.0008	100.8
PM10-FIL	77.5	0.016	0.0004	77.5
PM25-PRI	80.1	0.020	0.0008	80.1
PM25-FIL	56.8	0.011	0.0004	56.8
Acetaldehyde				
Acrolein				
Antimony Compounds	8.15E-02			8.15E-02
Arsenic Compounds	2.05E-02	6.48E-04		2.11E-02
Benzene	3.32E-03			3.32E-03
Beryllium Compounds	4.31E-04			4.31E-04
1,3-Butadiene				
Cadmium Compounds	6.18E-03	5.48E-05		6.23E-03
Chromium Compounds	1.31E-02	1.18E-04		1.32E-02
Cobalt Compounds	9.34E-02	1.24E-06		9.34E-02
Ethylbenzene	9.87E-04			9.87E-04
Formaldehyde	9.47E-01			9.47E-01
Hydrochloric Acid		1.94E-04		1.94E-04
Lead Compounds	2.34E-02	3.24E-03		2.67E-02
Manganese Compounds	4.66E-02	4.01E-04		4.70E-02
Mercury Compounds	1.75E-03			1.75E-03
Nickel Compounds	1.31E+00	6.48E-05		1.31E+00
Naphthalene	1.75E-02			1.75E-02
Phosphorus	1.47E-01			1.47E-01
POM	2.02E-02			2.02E-02
Selenium Compounds	1.06E-02			1.06E-02
Toluene	9.62E-02			9.62E-02
Xylene				
o-Xylene	1.69E-03			1.69E-03
Total HAPs				2.85E+00

Kahe 2 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	30,529,312	151,000	4,609,926	0.444	M	1023.4
NOX	30,529,312	151,000	4,609,926	0.313	A	721.5
CO	30,529,312	151,000	4,609,926	0.0333	A	76.8
VOC	30,529,312	151,000	4,609,926	0.00507	A	11.7
PM-PRI	30,529,312	151,000	4,609,926	0.0569	A	131.2
PM-FIL	30,529,312	151,000	4,609,926	0.0469	A	108.1
PM-CON	30,529,312	151,000	4,609,926	0.0100	A	23.0
PM10-PRI	30,529,312	151,000	4,609,926	0.0433	A	99.8
PM10-FIL	30,529,312	151,000	4,609,926	0.0333	A	76.8
PM25-PRI	30,529,312	151,000	4,609,926	0.0344	A	79.3
PM25-FIL	30,529,312	151,000	4,609,926	0.0244	A	56.2
Acetaldehyde	30,529,312	151,000	4,609,926		A	
Acrolein	30,529,312	151,000	4,609,926		A	
Antimony Compounds	30,529,312	151,000	4,609,926	3.50E-05	A	8.07E-02
Arsenic Compounds	30,529,312	151,000	4,609,926	8.80E-06	A	2.03E-02
Benzene	30,529,312	151,000	4,609,926	1.43E-06	A	3.29E-03
Beryllium Compounds	30,529,312	151,000	4,609,926	1.85E-07	A	4.27E-04
1,3-Butadiene	30,529,312	151,000	4,609,926		A	
Cadmium Compounds	30,529,312	151,000	4,609,926	2.65E-06	A	6.12E-03
Chromium Compounds	30,529,312	151,000	4,609,926	5.63E-06	A	1.30E-02
Cobalt Compounds	30,529,312	151,000	4,609,926	4.01E-05	A	9.25E-02
Ethylbenzene	30,529,312	151,000	4,609,926	4.24E-07	A	9.77E-04
Formaldehyde	30,529,312	151,000	4,609,926	4.07E-04	A	9.37E-01
Hydrochloric Acid	30,529,312	151,000	4,609,926		A	
Lead Compounds	30,529,312	151,000	4,609,926	1.01E-05	A	2.32E-02
Manganese Compounds	30,529,312	151,000	4,609,926	2.00E-05	A	4.61E-02
Mercury Compounds	30,529,312	151,000	4,609,926	7.53E-07	A	1.74E-03
Nickel Compounds	30,529,312	151,000	4,609,926	5.63E-04	A	1.30E+00
Naphthalene	30,529,312	151,000	4,609,926	7.53E-06	A	1.74E-02
Phosphorus	30,529,312	151,000	4,609,926	6.31E-05	A	1.45E-01
POM	30,529,312	151,000	4,609,926	8.67E-06	A	2.00E-02
Selenium Compounds	30,529,312	151,000	4,609,926	4.55E-06	A	1.05E-02
Toluene	30,529,312	151,000	4,609,926	4.13E-05	A	9.53E-02
Xylene	30,529,312	151,000	4,609,926		A	
o-Xylene	30,529,312	151,000	4,609,926	7.27E-07	A	1.67E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 2 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	11,670	8.4	A	0.049
NOX	11,670	47.0	A	0.274
CO	11,670	5.0	A	0.029
VOC	11,670	0.76	A	0.004
PM-PRI	11,670	5.24	A	0.031
PM-FIL	11,670	3.74	A	0.022
PM-CON	11,670	1.50	A	0.009
PM10-PRI	11,670	4.16	A	0.024
PM10-FIL	11,670	2.66	A	0.016
PM25-PRI	11,670	3.44	A	0.020
PM25-FIL	11,670	1.94	A	0.011
Acetaldehyde	11,670		A	
Acrolein	11,670		A	
Antimony Compounds	11,670		A	
Arsenic Compounds	11,670	1.10E-01	A	6.42E-04
Benzene	11,670		A	
Beryllium Compounds	11,670		A	
1,3-Butadiene	11,670		A	
Cadmium Compounds	11,670	9.30E-03	A	5.43E-05
Chromium Compounds	11,670	2.00E-02	A	1.17E-04
Cobalt Compounds	11,670	2.10E-04	A	1.23E-06
Ethylbenzene	11,670		A	
Formaldehyde	11,670		A	
Hydrochloric Acid	11,670	3.30E-02	A	1.93E-04
Lead Compounds	11,670	5.50E-01	A	3.21E-03
Manganese Compounds	11,670	6.80E-02	A	3.97E-04
Mercury Compounds	11,670		A	
Nickel Compounds	11,670	1.10E-02	A	6.42E-05
Naphthalene	11,670		A	
Phosphorus	11,670		A	
POM	11,670		A	
Selenium Compounds	11,670		A	
Toluene	11,670		A	
Xylene	11,670		A	
o-Xylene	11,670		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 2 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	1,425	91,300	130	0.00424	M	0.0003
NOX	1,425	91,300	130	0.208	A	0.0135
CO	1,425	91,300	130	0.035	A	0.0023
VOC	1,425	91,300	130	0.00546	A	0.0004
PM-PRI	1,425	91,300	130	0.0121	A	0.0008
PM-FIL	1,425	91,300	130	0.00656	A	0.0004
PM-CON	1,425	91,300	130	0.00558824	A	0.0004
PM10-PRI	1,425	91,300	130	0.0121	A	0.0008
PM10-FIL	1,425	91,300	130	0.00656	A	0.0004
PM25-PRI	1,425	91,300	130	0.0121	A	0.0008
PM25-FIL	1,425	91,300	130	0.00656	A	0.0004
Acetaldehyde	1,425	91,300	130		A	
Acrolein	1,425	91,300	130		A	
Antimony Compounds	1,425	91,300	130		A	
Arsenic Compounds	1,425	91,300	130		A	
Benzene	1,425	91,300	130		A	
Beryllium Compounds	1,425	91,300	130		A	
1,3-Butadiene	1,425	91,300	130		A	
Cadmium Compounds	1,425	91,300	130		A	
Chromium Compounds	1,425	91,300	130		A	
Cobalt Compounds	1,425	91,300	130		A	
Ethylbenzene	1,425	91,300	130		A	
Formaldehyde	1,425	91,300	130		A	
Hydrochloric Acid	1,425	91,300	130		A	
Lead Compounds	1,425	91,300	130		A	
Manganese Compounds	1,425	91,300	130		A	
Mercury Compounds	1,425	91,300	130		A	
Nickel Compounds	1,425	91,300	130		A	
Naphthalene	1,425	91,300	130		A	
Phosphorus	1,425	91,300	130		A	
POM	1,425	91,300	130		A	
Selenium Compounds	1,425	91,300	130		A	
Toluene	1,425	91,300	130		A	
Xylene	1,425	91,300	130		A	
o-Xylene	1,425	91,300	130		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 2 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	1023.4	0.049	0.0003	1023.4
NOX	721.5	0.274	0.0135	721.8
CO	76.8	0.029	0.0023	76.8
VOC	11.7	0.004	0.0004	11.7
PM-PRI	131.2	0.031	0.0008	131.2
PM-FIL	108.1	0.022	0.0004	108.1
PM-CON	23	0.009	0.0004	23
PM10-PRI	99.8	0.024	0.0008	99.8
PM10-FIL	76.8	0.016	0.0004	76.8
PM25-PRI	79.3	0.020	0.0008	79.3
PM25-FIL	56.2	0.011	0.0004	56.2
Acetaldehyde				
Acrolein				
Antimony Compounds	8.07E-02			8.07E-02
Arsenic Compounds	2.03E-02	6.42E-04		2.09E-02
Benzene	3.29E-03			3.29E-03
Beryllium Compounds	4.27E-04			4.27E-04
1,3-Butadiene				
Cadmium Compounds	6.12E-03	5.43E-05		6.17E-03
Chromium Compounds	1.30E-02	1.17E-04		1.31E-02
Cobalt Compounds	9.25E-02	1.23E-06		9.25E-02
Ethylbenzene	9.77E-04			9.77E-04
Formaldehyde	9.37E-01			9.37E-01
Hydrochloric Acid		1.93E-04		1.93E-04
Lead Compounds	2.32E-02	3.21E-03		2.64E-02
Manganese Compounds	4.61E-02	3.97E-04		4.65E-02
Mercury Compounds	1.74E-03			1.74E-03
Nickel Compounds	1.30E+00	6.42E-05		1.30E+00
Naphthalene	1.74E-02			1.74E-02
Phosphorus	1.45E-01			1.45E-01
POM	2.00E-02			2.00E-02
Selenium Compounds	1.05E-02			1.05E-02
Toluene	9.53E-02			9.53E-02
Xylene				
o-Xylene	1.67E-03			1.67E-03
Total HAPs				2.82E+00

Kahe 3 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	31,054,341	151,000	4,689,205	0.444	M	1041.0
NOX	31,054,341	151,000	4,689,205	0.313	A	733.9
CO	31,054,341	151,000	4,689,205	0.0333	A	78.1
VOC	31,054,341	151,000	4,689,205	0.00507	A	11.9
PM-PRI	31,054,341	151,000	4,689,205	0.0569	A	133.4
PM-FIL	31,054,341	151,000	4,689,205	0.0469	A	110.0
PM-CON	31,054,341	151,000	4,689,205	0.0100	A	23.4
PM10-PRI	31,054,341	151,000	4,689,205	0.0433	A	101.5
PM10-FIL	31,054,341	151,000	4,689,205	0.0333	A	78.1
PM25-PRI	31,054,341	151,000	4,689,205	0.0325	A	76.2
PM25-FIL	31,054,341	151,000	4,689,205	0.0225	A	52.8
Acetaldehyde	31,054,341	151,000	4,689,205		A	
Acrolein	31,054,341	151,000	4,689,205		A	
Antimony Compounds	31,054,341	151,000	4,689,205	3.50E-05	A	8.21E-02
Arsenic Compounds	31,054,341	151,000	4,689,205	8.80E-06	A	2.06E-02
Benzene	31,054,341	151,000	4,689,205	1.43E-06	A	3.34E-03
Beryllium Compounds	31,054,341	151,000	4,689,205	1.85E-07	A	4.35E-04
1,3-Butadiene	31,054,341	151,000	4,689,205		A	
Cadmium Compounds	31,054,341	151,000	4,689,205	2.65E-06	A	6.22E-03
Chromium Compounds	31,054,341	151,000	4,689,205	5.63E-06	A	1.32E-02
Cobalt Compounds	31,054,341	151,000	4,689,205	4.01E-05	A	9.41E-02
Ethylbenzene	31,054,341	151,000	4,689,205	4.24E-07	A	9.94E-04
Formaldehyde	31,054,341	151,000	4,689,205	4.07E-04	A	9.53E-01
Hydrochloric Acid	31,054,341	151,000	4,689,205		A	
Lead Compounds	31,054,341	151,000	4,689,205	1.01E-05	A	2.36E-02
Manganese Compounds	31,054,341	151,000	4,689,205	2.00E-05	A	4.69E-02
Mercury Compounds	31,054,341	151,000	4,689,205	7.53E-07	A	1.77E-03
Nickel Compounds	31,054,341	151,000	4,689,205	5.63E-04	A	1.32E+00
Naphthalene	31,054,341	151,000	4,689,205	7.53E-06	A	1.77E-02
Phosphorus	31,054,341	151,000	4,689,205	6.31E-05	A	1.48E-01
POM	31,054,341	151,000	4,689,205	8.67E-06	A	2.03E-02
Selenium Compounds	31,054,341	151,000	4,689,205	4.55E-06	A	1.07E-02
Toluene	31,054,341	151,000	4,689,205	4.13E-05	A	9.69E-02
Xylene	31,054,341	151,000	4,689,205		A	
o-Xylene	31,054,341	151,000	4,689,205	7.27E-07	A	1.70E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 3 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	5,970	140,000	836	0.125	M	0.052
NOX	5,970	140,000	836	0.171	A	0.071
CO	5,970	140,000	836	0.0357	A	0.015
VOC	5,970	140,000	836	0.00143	A	0.001
PM-PRI	5,970	140,000	836	0.0236	A	0.010
PM-FIL	5,970	140,000	836	0.0143	A	0.006
PM-CON	5,970	140,000	836	0.0093	A	0.004
PM10-PRI	5,970	140,000	836	0.0164	A	0.007
PM10-FIL	5,970	140,000	836	0.0071	A	0.003
PM25-PRI	5,970	140,000	836	0.0111	A	0.005
PM25-FIL	5,970	140,000	836	0.0018	A	0.001
Acetaldehyde	5,970	140,000	836		A	
Acrolein	5,970	140,000	836		A	
Antimony Compounds	5,970	140,000	836	3.75E-05	A	1.57E-05
Arsenic Compounds	5,970	140,000	836	9.43E-06	A	3.94E-06
Benzene	5,970	140,000	836	1.53E-06	A	6.39E-07
Beryllium Compounds	5,970	140,000	836	1.99E-07	A	8.30E-08
1,3-Butadiene	5,970	140,000	836		A	
Cadmium Compounds	5,970	140,000	836	2.84E-06	A	1.19E-06
Chromium Compounds	5,970	140,000	836	6.04E-06	A	2.52E-06
Cobalt Compounds	5,970	140,000	836	4.30E-05	A	1.80E-05
Ethylbenzene	5,970	140,000	836	4.54E-07	A	1.90E-07
Formaldehyde	5,970	140,000	836	4.36E-04	A	1.82E-04
Hydrochloric Acid	5,970	140,000	836		A	
Lead Compounds	5,970	140,000	836	1.08E-05	A	4.51E-06
Manganese Compounds	5,970	140,000	836	2.14E-05	A	8.96E-06
Mercury Compounds	5,970	140,000	836	8.07E-07	A	3.37E-07
Nickel Compounds	5,970	140,000	836	6.04E-04	A	2.52E-04
Naphthalene	5,970	140,000	836	8.07E-06	A	3.37E-06
Phosphorus	5,970	140,000	836	6.76E-05	A	2.82E-05
POM	5,970	140,000	836	9.29E-06	A	3.88E-06
Selenium Compounds	5,970	140,000	836	4.88E-06	A	2.04E-06
Toluene	5,970	140,000	836	4.43E-05	A	1.85E-05
Xylene	5,970	140,000	836		A	
o-Xylene	5,970	140,000	836	7.79E-07	A	3.25E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 3 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	11,870	8.4	A	0.050
NOX	11,870	47.0	A	0.279
CO	11,870	5.0	A	0.030
VOC	11,870	0.76	A	0.005
PM-PRI	11,870	5.24	A	0.031
PM-FIL	11,870	3.74	A	0.022
PM-CON	11,870	1.50	A	0.009
PM10-PRI	11,870	4.16	A	0.025
PM10-FIL	11,870	2.66	A	0.016
PM25-PRI	11,870	3.44	A	0.020
PM25-FIL	11,870	1.94	A	0.012
Acetaldehyde	11,870		A	
Acrolein	11,870		A	
Antimony Compounds	11,870		A	
Arsenic Compounds	11,870	1.10E-01	A	6.53E-04
Benzene	11,870		A	
Beryllium Compounds	11,870		A	
1,3-Butadiene	11,870		A	
Cadmium Compounds	11,870	9.30E-03	A	5.52E-05
Chromium Compounds	11,870	2.00E-02	A	1.19E-04
Cobalt Compounds	11,870	2.10E-04	A	1.25E-06
Ethylbenzene	11,870		A	
Formaldehyde	11,870		A	
Hydrochloric Acid	11,870	3.30E-02	A	1.96E-04
Lead Compounds	11,870	5.50E-01	A	3.26E-03
Manganese Compounds	11,870	6.80E-02	A	4.04E-04
Mercury Compounds	11,870		A	
Nickel Compounds	11,870	1.10E-02	A	6.53E-05
Naphthalene	11,870		A	
Phosphorus	11,870		A	
POM	11,870		A	
Selenium Compounds	11,870		A	
Toluene	11,870		A	
Xylene	11,870		A	
o-Xylene	11,870		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 3 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Total (tons/yr)
SO2	1041	0.052	0.050	1041.1
NOX	733.9	0.071	0.279	734.3
CO	78.1	0.015	0.030	78.1
VOC	11.9	0.001	0.005	11.9
PM-PRI	133.4	0.010	0.031	133.4
PM-FIL	110	0.006	0.022	110
PM-CON	23.4	0.004	0.009	23.4
PM10-PRI	101.5	0.007	0.025	101.5
PM10-FIL	78.1	0.003	0.016	78.1
PM25-PRI	76.2	0.005	0.020	76.2
PM25-FIL	52.8	0.001	0.012	52.8
Acetaldehyde				
Acrolein				
Antimony Compounds	8.21E-02	1.57E-05		8.21E-02
Arsenic Compounds	2.06E-02	3.94E-06	6.53E-04	2.13E-02
Benzene	3.34E-03	6.39E-07		3.35E-03
Beryllium Compounds	4.35E-04	8.30E-08		4.35E-04
1,3-Butadiene				
Cadmium Compounds	6.22E-03	1.19E-06	5.52E-05	6.28E-03
Chromium Compounds	1.32E-02	2.52E-06	1.19E-04	1.33E-02
Cobalt Compounds	9.41E-02	1.80E-05	1.25E-06	9.41E-02
Ethylbenzene	9.94E-04	1.90E-07		9.94E-04
Formaldehyde	9.53E-01	1.82E-04		9.54E-01
Hydrochloric Acid			1.96E-04	1.96E-04
Lead Compounds	2.36E-02	4.51E-06	3.26E-03	2.69E-02
Manganese Compounds	4.69E-02	8.96E-06	4.04E-04	4.73E-02
Mercury Compounds	1.77E-03	3.37E-07		1.77E-03
Nickel Compounds	1.32E+00	2.52E-04	6.53E-05	1.32E+00
Naphthalene	1.77E-02	3.37E-06		1.77E-02
Phosphorus	1.48E-01	2.82E-05		1.48E-01
POM	2.03E-02	3.88E-06		2.03E-02
Selenium Compounds	1.07E-02	2.04E-06		1.07E-02
Toluene	9.69E-02	1.85E-05		9.69E-02
Xylene				
o-Xylene	1.70E-03	3.25E-07		1.70E-03
Total HAPs				2.87E+00

Kahe 4 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	32,941,971	151,000	4,974,238	0.444	M	1104.3
NOX	32,941,971	151,000	4,974,238	0.313	A	778.5
CO	32,941,971	151,000	4,974,238	0.0333	A	82.8
VOC	32,941,971	151,000	4,974,238	0.00507	A	12.6
PM-PRI	32,941,971	151,000	4,974,238	0.0569	A	141.5
PM-FIL	32,941,971	151,000	4,974,238	0.0469	A	116.6
PM-CON	32,941,971	151,000	4,974,238	0.0100	A	24.9
PM10-PRI	32,941,971	151,000	4,974,238	0.0433	A	107.7
PM10-FIL	32,941,971	151,000	4,974,238	0.0333	A	82.8
PM25-PRI	32,941,971	151,000	4,974,238	0.0344	A	85.6
PM25-FIL	32,941,971	151,000	4,974,238	0.0244	A	60.7
Acetaldehyde	32,941,971	151,000	4,974,238		A	
Acrolein	32,941,971	151,000	4,974,238		A	
Antimony Compounds	32,941,971	151,000	4,974,238	3.50E-05	A	8.70E-02
Arsenic Compounds	32,941,971	151,000	4,974,238	8.80E-06	A	2.19E-02
Benzene	32,941,971	151,000	4,974,238	1.43E-06	A	3.55E-03
Beryllium Compounds	32,941,971	151,000	4,974,238	1.85E-07	A	4.61E-04
1,3-Butadiene	32,941,971	151,000	4,974,238		A	
Cadmium Compounds	32,941,971	151,000	4,974,238	2.65E-06	A	6.60E-03
Chromium Compounds	32,941,971	151,000	4,974,238	5.63E-06	A	1.40E-02
Cobalt Compounds	32,941,971	151,000	4,974,238	4.01E-05	A	9.98E-02
Ethylbenzene	32,941,971	151,000	4,974,238	4.24E-07	A	1.05E-03
Formaldehyde	32,941,971	151,000	4,974,238	4.07E-04	A	1.01E+00
Hydrochloric Acid	32,941,971	151,000	4,974,238		A	
Lead Compounds	32,941,971	151,000	4,974,238	1.01E-05	A	2.50E-02
Manganese Compounds	32,941,971	151,000	4,974,238	2.00E-05	A	4.97E-02
Mercury Compounds	32,941,971	151,000	4,974,238	7.53E-07	A	1.87E-03
Nickel Compounds	32,941,971	151,000	4,974,238	5.63E-04	A	1.40E+00
Naphthalene	32,941,971	151,000	4,974,238	7.53E-06	A	1.87E-02
Phosphorus	32,941,971	151,000	4,974,238	6.31E-05	A	1.57E-01
POM	32,941,971	151,000	4,974,238	8.67E-06	A	2.16E-02
Selenium Compounds	32,941,971	151,000	4,974,238	4.55E-06	A	1.13E-02
Toluene	32,941,971	151,000	4,974,238	4.13E-05	A	1.03E-01
Xylene	32,941,971	151,000	4,974,238		A	
o-Xylene	32,941,971	151,000	4,974,238	7.27E-07	A	1.81E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 4 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	6,333	140,000	887	0.125	M	0.055
NOX	6,333	140,000	887	0.171	A	0.076
CO	6,333	140,000	887	0.0357	A	0.016
VOC	6,333	140,000	887	0.00143	A	0.001
PM-PRI	6,333	140,000	887	0.0236	A	0.010
PM-FIL	6,333	140,000	887	0.0143	A	0.006
PM-CON	6,333	140,000	887	0.00929	A	0.004
PM10-PRI	6,333	140,000	887	0.0164	A	0.007
PM10-FIL	6,333	140,000	887	0.00714	A	0.003
PM25-PRI	6,333	140,000	887	0.0111	A	0.005
PM25-FIL	6,333	140,000	887	0.00179	A	0.001
Acetaldehyde	6,333	140,000	887		A	
Acrolein	6,333	140,000	887		A	
Antimony Compounds	6,333	140,000	887	3.75E-05	A	1.66E-05
Arsenic Compounds	6,333	140,000	887	9.43E-06	A	4.18E-06
Benzene	6,333	140,000	887	1.53E-06	A	6.78E-07
Beryllium Compounds	6,333	140,000	887	1.99E-07	A	8.80E-08
1,3-Butadiene	6,333	140,000	887		A	
Cadmium Compounds	6,333	140,000	887	2.84E-06	A	1.26E-06
Chromium Compounds	6,333	140,000	887	6.04E-06	A	2.68E-06
Cobalt Compounds	6,333	140,000	887	4.30E-05	A	1.91E-05
Ethylbenzene	6,333	140,000	887	4.54E-07	A	2.01E-07
Formaldehyde	6,333	140,000	887	4.36E-04	A	1.93E-04
Hydrochloric Acid	6,333	140,000	887		A	
Lead Compounds	6,333	140,000	887	1.08E-05	A	4.78E-06
Manganese Compounds	6,333	140,000	887	2.14E-05	A	9.50E-06
Mercury Compounds	6,333	140,000	887	8.07E-07	A	3.58E-07
Nickel Compounds	6,333	140,000	887	6.04E-04	A	2.68E-04
Naphthalene	6,333	140,000	887	8.07E-06	A	3.58E-06
Phosphorus	6,333	140,000	887	6.76E-05	A	3.00E-05
POM	6,333	140,000	887	9.29E-06	A	4.12E-06
Selenium Compounds	6,333	140,000	887	4.88E-06	A	2.16E-06
Toluene	6,333	140,000	887	4.43E-05	A	1.96E-05
Xylene	6,333	140,000	887		A	
o-Xylene	6,333	140,000	887	7.79E-07	A	3.45E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 4 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	12,592	8.4	A	0.053
NOX	12,592	47.0	A	0.296
CO	12,592	5.0	A	0.031
VOC	12,592	0.76	A	0.005
PM-PRI	12,592	5.24	A	0.033
PM-FIL	12,592	3.74	A	0.024
PM-CON	12,592	1.50	A	0.009
PM10-PRI	12,592	4.16	A	0.026
PM10-FIL	12,592	2.66	A	0.017
PM25-PRI	12,592	3.44	A	0.022
PM25-FIL	12,592	1.94	A	0.012
Acetaldehyde	12,592		A	
Acrolein	12,592		A	
Antimony Compounds	12,592		A	
Arsenic Compounds	12,592	1.10E-01	A	6.93E-04
Benzene	12,592		A	
Beryllium Compounds	12,592		A	
1,3-Butadiene	12,592		A	
Cadmium Compounds	12,592	9.30E-03	A	5.86E-05
Chromium Compounds	12,592	2.00E-02	A	1.26E-04
Cobalt Compounds	12,592	2.10E-04	A	1.32E-06
Ethylbenzene	12,592		A	
Formaldehyde	12,592		A	
Hydrochloric Acid	12,592	3.30E-02	A	2.08E-04
Lead Compounds	12,592	5.50E-01	A	3.46E-03
Manganese Compounds	12,592	6.80E-02	A	4.28E-04
Mercury Compounds	12,592		A	
Nickel Compounds	12,592	1.10E-02	A	6.93E-05
Naphthalene	12,592		A	
Phosphorus	12,592		A	
POM	12,592		A	
Selenium Compounds	12,592		A	
Toluene	12,592		A	
Xylene	12,592		A	
o-Xylene	12,592		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 4 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Total (tons/yr)
SO2	1104.3	0.055	0.053	1104.4
NOX	778.5	0.076	0.296	778.9
CO	82.8	0.016	0.031	82.8
VOC	12.6	0.001	0.005	12.6
PM-PRI	141.5	0.010	0.033	141.5
PM-FIL	116.6	0.006	0.024	116.6
PM-CON	24.9	0.004	0.009	24.9
PM10-PRI	107.7	0.007	0.026	107.7
PM10-FIL	82.8	0.003	0.017	82.8
PM25-PRI	85.6	0.005	0.022	85.6
PM25-FIL	60.7	0.001	0.012	60.7
Acetaldehyde				
Acrolein				
Antimony Compounds	8.70E-02	1.66E-05		8.71E-02
Arsenic Compounds	2.19E-02	4.18E-06	6.93E-04	2.26E-02
Benzene	3.55E-03	6.78E-07		3.55E-03
Beryllium Compounds	4.61E-04	8.80E-08		4.61E-04
1,3-Butadiene				
Chromium Compounds	1.40E-02	2.68E-06	1.26E-04	1.41E-02
Cobalt Compounds	9.98E-02	1.91E-05	1.32E-06	9.98E-02
Ethylbenzene	1.05E-03	2.01E-07		1.05E-03
Formaldehyde	1.01E+00	1.93E-04		1.01E+00
Hydrochloric Acid			2.08E-04	2.08E-04
Lead Compounds	2.50E-02	4.78E-06	3.46E-03	2.85E-02

Kahe 5 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	53,538,060	151,000	8,084,247	0.444	M	1794.7
NOX	53,538,060	151,000	8,084,247	0.313	A	1265.2
CO	53,538,060	151,000	8,084,247	0.0333	A	134.6
VOC	53,538,060	151,000	8,084,247	0.00507	A	20.5
PM-PRI	53,538,060	151,000	8,084,247	0.0569	A	230.0
PM-FIL	53,538,060	151,000	8,084,247	0.0469	A	189.6
PM-CON	53,538,060	151,000	8,084,247	0.0100	A	40.4
PM10-PRI	53,538,060	151,000	8,084,247	0.0433	A	175.0
PM10-FIL	53,538,060	151,000	8,084,247	0.0333	A	134.6
PM25-PRI	53,538,060	151,000	8,084,247	0.0344	A	139.0
PM25-FIL	53,538,060	151,000	8,084,247	0.0244	A	98.6
Acetaldehyde	53,538,060	151,000	8,084,247		A	
Acrolein	53,538,060	151,000	8,084,247		A	
Antimony Compounds	53,538,060	151,000	8,084,247	3.50E-05	A	1.41E-01
Arsenic Compounds	53,538,060	151,000	8,084,247	8.80E-06	A	3.56E-02
Benzene	53,538,060	151,000	8,084,247	1.43E-06	A	5.77E-03
Beryllium Compounds	53,538,060	151,000	8,084,247	1.85E-07	A	7.49E-04
1,3-Butadiene	53,538,060	151,000	8,084,247		A	
Cadmium Compounds	53,538,060	151,000	8,084,247	2.65E-06	A	1.07E-02
Chromium Compounds	53,538,060	151,000	8,084,247	5.63E-06	A	2.28E-02
Cobalt Compounds	53,538,060	151,000	8,084,247	4.01E-05	A	1.62E-01
Ethylbenzene	53,538,060	151,000	8,084,247	4.24E-07	A	1.71E-03
Formaldehyde	53,538,060	151,000	8,084,247	4.07E-04	A	1.64E+00
Hydrochloric Acid	53,538,060	151,000	8,084,247		A	
Lead Compounds	53,538,060	151,000	8,084,247	1.01E-05	A	4.07E-02
Manganese Compounds	53,538,060	151,000	8,084,247	2.00E-05	A	8.08E-02
Mercury Compounds	53,538,060	151,000	8,084,247	7.53E-07	A	3.05E-03
Nickel Compounds	53,538,060	151,000	8,084,247	5.63E-04	A	2.28E+00
Naphthalene	53,538,060	151,000	8,084,247	7.53E-06	A	3.05E-02
Phosphorus	53,538,060	151,000	8,084,247	6.31E-05	A	2.55E-01
POM	53,538,060	151,000	8,084,247	8.67E-06	A	3.50E-02
Selenium Compounds	53,538,060	151,000	8,084,247	4.55E-06	A	1.84E-02
Toluene	53,538,060	151,000	8,084,247	4.13E-05	A	1.67E-01
Xylene	53,538,060	151,000	8,084,247		A	
o-Xylene	53,538,060	151,000	8,084,247	7.27E-07	A	2.94E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 5 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	17,787	140,000	2,490	0.125	M	0.156
NOX	17,787	140,000	2,490	0.171	A	0.213
CO	17,787	140,000	2,490	0.0357	A	0.044
VOC	17,787	140,000	2,490	0.00143	A	0.002
PM-PRI	17,787	140,000	2,490	0.0236	A	0.029
PM-FIL	17,787	140,000	2,490	0.0143	A	0.018
PM-CON	17,787	140,000	2,490	0.00929	A	0.012
PM10-PRI	17,787	140,000	2,490	0.0164	A	0.020
PM10-FIL	17,787	140,000	2,490	0.00714	A	0.009
PM25-PRI	17,787	140,000	2,490	0.0111	A	0.014
PM25-FIL	17,787	140,000	2,490	0.00179	A	0.002
Acetaldehyde	17,787	140,000	2,490		A	
Acrolein	17,787	140,000	2,490		A	
Antimony Compounds	17,787	140,000	2,490	3.75E-05	A	4.67E-05
Arsenic Compounds	17,787	140,000	2,490	9.43E-06	A	1.17E-05
Benzene	17,787	140,000	2,490	1.53E-06	A	1.90E-06
Beryllium Compounds	17,787	140,000	2,490	1.99E-07	A	2.47E-07
1,3-Butadiene	17,787	140,000	2,490		A	
Cadmium Compounds	17,787	140,000	2,490	2.84E-06	A	3.54E-06
Chromium Compounds	17,787	140,000	2,490	6.04E-06	A	7.52E-06
Cobalt Compounds	17,787	140,000	2,490	4.30E-05	A	5.35E-05
Ethylbenzene	17,787	140,000	2,490	4.54E-07	A	5.66E-07
Formaldehyde	17,787	140,000	2,490	4.36E-04	A	5.43E-04
Hydrochloric Acid	17,787	140,000	2,490		A	
Lead Compounds	17,787	140,000	2,490	1.08E-05	A	1.34E-05
Manganese Compounds	17,787	140,000	2,490	2.14E-05	A	2.67E-05
Mercury Compounds	17,787	140,000	2,490	8.07E-07	A	1.00E-06
Nickel Compounds	17,787	140,000	2,490	6.04E-04	A	7.52E-04
Naphthalene	17,787	140,000	2,490	8.07E-06	A	1.00E-05
Phosphorus	17,787	140,000	2,490	6.76E-05	A	8.41E-05
POM	17,787	140,000	2,490	9.29E-06	A	1.16E-05
Selenium Compounds	17,787	140,000	2,490	4.88E-06	A	6.07E-06
Toluene	17,787	140,000	2,490	4.43E-05	A	5.51E-05
Xylene	17,787	140,000	2,490		A	
o-Xylene	17,787	140,000	2,490	7.79E-07	A	9.69E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 5 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Total (tons/yr)
SO2	1794.7	0.156	1794.9
NOX	1265.2	0.213	1265.4
CO	134.6	0.044	134.6
VOC	20.5	0.002	20.5
PM-PRI	230	0.029	230
PM-FIL	189.6	0.018	189.6
PM-CON	40.4	0.012	40.4
PM10-PRI	175	0.020	175
PM10-FIL	134.6	0.009	134.6
PM25-PRI	139	0.014	139
PM25-FIL	98.6	0.002	98.6
Acetaldehyde			
Acrolein			
Antimony Compounds	1.41E-01	4.67E-05	1.42E-01
Arsenic Compounds	3.56E-02	1.17E-05	3.56E-02
Benzene	5.77E-03	1.90E-06	5.77E-03
Beryllium Compounds	7.49E-04	2.47E-07	7.49E-04
1,3-Butadiene			
Cadmium Compounds	1.07E-02	3.54E-06	1.07E-02
Chromium Compounds	2.28E-02	7.52E-06	2.28E-02
Cobalt Compounds	1.62E-01	5.35E-05	1.62E-01
Ethylbenzene	1.71E-03	5.66E-07	1.71E-03
Formaldehyde	1.64E+00	5.43E-04	1.64E+00
Hydrochloric Acid			
Lead Compounds	4.07E-02	1.34E-05	4.07E-02
Manganese Compounds	8.08E-02	2.67E-05	8.09E-02
Mercury Compounds	3.05E-03	1.00E-06	3.05E-03
Nickel Compounds	2.28E+00	7.52E-04	2.28E+00
Naphthalene	3.05E-02	1.00E-05	3.05E-02
Phosphorus	2.55E-01	8.41E-05	2.55E-01
POM	3.50E-02	1.16E-05	3.50E-02
Selenium Compounds	1.84E-02	6.07E-06	1.84E-02
Toluene	1.67E-01	5.51E-05	1.67E-01
Xylene			
o-Xylene	2.94E-03	9.69E-07	2.94E-03
Total HAPs			4.94E+00

Kahe 6 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	49,030,332	151,000	7,403,580	0.444	M	1643.6
NOX	49,030,332	151,000	7,403,580	0.222	S	821.8
CO	49,030,332	151,000	7,403,580	0.0333	A	123.3
VOC	49,030,332	151,000	7,403,580	0.00507	A	18.8
PM-PRI	49,030,332	151,000	7,403,580	0.156	S	577.5
PM-FIL	49,030,332	151,000	7,403,580	0.075	S	277.6
PM-CON	49,030,332	151,000	7,403,580	0.0810	S	299.8
PM10-PRI	49,030,332	151,000	7,403,580	0.1340	S	496.0
PM10-FIL	49,030,332	151,000	7,403,580	0.0533	S	197.3
PM25-PRI	49,030,332	151,000	7,403,580	0.1200	S	444.2
PM25-FIL	49,030,332	151,000	7,403,580	0.0390	S	144.4
Acetaldehyde	49,030,332	151,000	7,403,580		A	
Acrolein	49,030,332	151,000	7,403,580		A	
Antimony Compounds	49,030,332	151,000	7,403,580	3.50E-05	A	1.30E-01
Arsenic Compounds	49,030,332	151,000	7,403,580	8.80E-06	A	3.26E-02
Benzene	49,030,332	151,000	7,403,580	1.43E-06	A	5.28E-03
Beryllium Compounds	49,030,332	151,000	7,403,580	1.85E-07	A	6.86E-04
1,3-Butadiene	49,030,332	151,000	7,403,580		A	
Cadmium Compounds	49,030,332	151,000	7,403,580	2.65E-06	A	9.82E-03
Chromium Compounds	49,030,332	151,000	7,403,580	5.63E-06	A	2.09E-02
Cobalt Compounds	49,030,332	151,000	7,403,580	4.01E-05	A	1.49E-01
Ethylbenzene	49,030,332	151,000	7,403,580	4.24E-07	A	1.57E-03
Formaldehyde	49,030,332	151,000	7,403,580	4.07E-04	A	1.51E+00
Hydrochloric Acid	49,030,332	151,000	7,403,580		A	
Lead Compounds	49,030,332	151,000	7,403,580	1.01E-05	A	3.73E-02
Manganese Compounds	49,030,332	151,000	7,403,580	2.00E-05	A	7.40E-02
Mercury Compounds	49,030,332	151,000	7,403,580	7.53E-07	A	2.79E-03
Nickel Compounds	49,030,332	151,000	7,403,580	5.63E-04	A	2.09E+00
Naphthalene	49,030,332	151,000	7,403,580	7.53E-06	A	2.79E-02
Phosphorus	49,030,332	151,000	7,403,580	6.31E-05	A	2.33E-01
POM	49,030,332	151,000	7,403,580	8.67E-06	A	3.21E-02
Selenium Compounds	49,030,332	151,000	7,403,580	4.55E-06	A	1.69E-02
Toluene	49,030,332	151,000	7,403,580	4.13E-05	A	1.53E-01
Xylene	49,030,332	151,000	7,403,580		A	
o-Xylene	49,030,332	151,000	7,403,580	7.27E-07	A	2.69E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe 6 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	16,289	140,000	2,280	0.125	M	0.143
NOX	16,289	140,000	2,280	0.222	S	0.253
CO	16,289	140,000	2,280	0.0357	A	0.041
VOC	16,289	140,000	2,280	0.00143	A	0.002
PM-PRI	16,289	140,000	2,280	0.156	S	0.178
PM-FIL	16,289	140,000	2,280	0.075	S	0.086
PM-CON	16,289	140,000	2,280	0.081	S	0.092
PM10-PRI	16,289	140,000	2,280	0.134	S	0.153
PM10-FIL	16,289	140,000	2,280	0.0533	S	0.061
PM25-PRI	16,289	140,000	2,280	0.12	S	0.137
PM25-FIL	16,289	140,000	2,280	0.039	S	0.044
Acetaldehyde	16,289	140,000	2,280		A	
Acrolein	16,289	140,000	2,280		A	
Antimony Compounds	16,289	140,000	2,280	3.75E-05	A	4.28E-05
Arsenic Compounds	16,289	140,000	2,280	9.43E-06	A	1.08E-05
Benzene	16,289	140,000	2,280	1.53E-06	A	1.74E-06
Beryllium Compounds	16,289	140,000	2,280	1.99E-07	A	2.26E-07
1,3-Butadiene	16,289	140,000	2,280		A	
Cadmium Compounds	16,289	140,000	2,280	2.84E-06	A	3.24E-06

Kahe 6 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Total (tons/yr)
SO2	1643.6	0.143	1643.7
NOX	821.8	0.253	822.1
CO	123.3	0.041	123.3
VOC	18.8	0.002	18.8
PM-PRI	577.5	0.178	577.7
PM-FIL	277.6	0.086	277.7
PM-CON	299.8	0.092	299.9
PM10-PRI	496	0.153	496.2
PM10-FIL	197.3	0.061	197.4
PM25-PRI	444.2	0.137	444.3
PM25-FIL	144.4	0.044	144.4
Acetaldehyde			
Acrolein			
Antimony Compounds	1.30E-01	4.28E-05	1.30E-01
Arsenic Compounds	3.26E-02	1.08E-05	3.26E-02
Benzene	5.28E-03	1.74E-06	5.28E-03
Beryllium Compounds	6.86E-04	2.26E-07	6.86E-04
1,3-Butadiene			
Cadmium Compounds	9.82E-03	3.24E-06	9.83E-03
Chromium Compounds	2.09E-02	6.88E-06	2.09E-02
Cobalt Compounds	1.49E-01	4.90E-05	1.49E-01
Ethylbenzene	1.57E-03	5.18E-07	1.57E-03
Formaldehyde	1.51E+00	4.97E-04	1.51E+00
Hydrochloric Acid			
Lead Compounds	3.73E-02	1.23E-05	3.73E-02
Manganese Compounds	7.40E-02	2.44E-05	7.41E-02
Mercury Compounds	2.79E-03	9.20E-07	2.79E-03
Nickel Compounds	2.09E+00	6.88E-04	2.09E+00
Naphthalene	2.79E-02	9.20E-06	2.79E-02
Phosphorus	2.33E-01	7.70E-05	2.34E-01
POM	3.21E-02	1.06E-05	3.21E-02
Selenium Compounds	1.69E-02	5.56E-06	1.69E-02
Toluene	1.53E-01	5.05E-05	1.53E-01
Xylene			
o-Xylene	2.69E-03	8.88E-07	2.69E-03
Total HAPs			4.52E+00

Kahe A

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	10,696	140,000	1,497	0.125	M	0.094
NOX	10,696	140,000	1,497	3.2	A	2.40
CO	10,696	140,000	1,497	0.85	A	0.636
VOC	10,696	140,000	1,497	0.0819	A	0.0613
PM-PRI	10,696	140,000	1,497	0.0697	A	0.0522
PM-FIL	10,696	140,000	1,497	0.062	A	0.0464
PM-CON	10,696	140,000	1,497	0.0077	A	0.0058
PM10-PRI	10,696	140,000	1,497	0.0573	A	0.0429
PM10-FIL	10,696	140,000	1,497	0.0496	A	0.0371
PM25-PRI	10,696	140,000	1,497	0.0556	A	0.0416
PM25-FIL	10,696	140,000	1,497	0.0479	A	0.0359
Acetaldehyde	10,696	140,000	1,497	2.52E-05	A	1.89E-05
Acrolein	10,696	140,000	1,497	7.88E-06	A	5.90E-06
Antimony Compounds	10,696	140,000	1,497		A	
Arsenic Compounds	10,696	140,000	1,497	1.10E-05	A	8.24E-06
Benzene	10,696	140,000	1,497	7.76E-04	A	5.81E-04
Beryllium Compounds	10,696	140,000	1,497	3.10E-07	A	2.32E-07
1,3-Butadiene	10,696	140,000	1,497	1.60E-05	A	1.20E-05
Cadmium Compounds	10,696	140,000	1,497	4.80E-06	A	3.59E-06
Chromium Compounds	10,696	140,000	1,497	1.10E-05	A	8.24E-06
Cobalt Compounds	10,696	140,000	1,497		A	
Ethylbenzene	10,696	140,000	1,497		A	
Formaldehyde	10,696	140,000	1,497	7.89E-05	A	5.91E-05
Hydrochloric Acid	10,696	140,000	1,497		A	
Lead Compounds	10,696	140,000	1,497	1.40E-05	A	1.05E-05
Manganese Compounds	10,696	140,000	1,497	7.90E-04	A	5.91E-04
Mercury Compounds	10,696	140,000	1,497	1.20E-06	A	8.98E-07
Nickel Compounds	10,696	140,000	1,497	4.60E-06	A	3.44E-06
Naphthalene	10,696	140,000	1,497	1.30E-04	A	9.73E-05
Phosphorus	10,696	140,000	1,497		A	
POM	10,696	140,000	1,497	2.12E-04	A	1.59E-04
Selenium Compounds	10,696	140,000	1,497	2.50E-05	A	1.87E-05
Toluene	10,696	140,000	1,497	2.81E-04	A	2.10E-04
Xylene	10,696	140,000	1,497	1.93E-04	A	1.45E-04
o-Xylene	10,696	140,000	1,497		A	
Total HAPs						1.93E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Kahe B

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	9,462	140,000	1,325	0.125	M	0.083
NOX	9,462	140,000	1,325	3.2	A	2.12
CO	9,462	140,000	1,325	0.85	A	0.563
VOC	9,462	140,000	1,325	0.0819	A	0.0542
PM-PRI	9,462	140,000	1,325	0.0697	A	0.0462
PM-FIL	9,462	140,000	1,325	0.062	A	0.0411
PM-CON	9,462	140,000	1,325	0.0077	A	0.0051
PM10-PRI	9,462	140,000	1,325	0.0573	A	0.0380
PM10-FIL	9,462	140,000	1,325	0.0496	A	0.0329
PM25-PRI	9,462	140,000	1,325	0.0556	A	0.0368
PM25-FIL	9,462	140,000	1,325	0.0479	A	0.0317
Acetaldehyde	9,462	140,000	1,325	2.52E-05	A	1.67E-05
Acrolein	9,462	140,000	1,325	7.88E-06	A	5.22E-06
Antimony Compounds	9,462	140,000	1,325		A	
Arsenic Compounds	9,462	140,000	1,325	1.10E-05	A	7.29E-06
Benzene	9,462	140,000	1,325	7.76E-04	A	5.14E-04
Beryllium Compounds	9,462	140,000	1,325	3.10E-07	A	2.05E-07
1,3-Butadiene	9,462	140,000	1,325	1.60E-05	A	1.06E-05
Cadmium Compounds	9,462	140,000	1,325	4.80E-06	A	3.18E-06
Chromium Compounds	9,462	140,000	1,325	1.10E-05	A	7.29E-06
Cobalt Compounds	9,462	140,000	1,325		A	
Ethylbenzene	9,462	140,000	1,325		A	
Formaldehyde	9,462	140,000	1,325	7.89E-05	A	5.23E-05
Hydrochloric Acid	9,462	140,000	1,325		A	
Lead Compounds	9,462	140,000	1,325	1.40E-05	A	9.27E-06
Manganese Compounds	9,462	140,000	1,325	7.90E-04	A	5.23E-04
Mercury Compounds	9,462	140,000	1,325	1.20E-06	A	7.95E-07
Nickel Compounds	9,462	140,000	1,325	4.60E-06	A	3.05E-06
Naphthalene	9,462	140,000	1,325	1.30E-04	A	8.61E-05
Phosphorus	9,462	140,000	1,325		A	
POM	9,462	140,000	1,325	2.12E-04	A	1.40E-04
Selenium Compounds	9,462	140,000	1,325	2.50E-05	A	1.66E-05
Toluene	9,462	140,000	1,325	2.81E-04	A	1.86E-04
Xylene	9,462	140,000	1,325	1.93E-04	A	1.28E-04
o-Xylene	9,462	140,000	1,325		A	
Total HAPs						1.71E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Summary

Pollutant	Annual Emissions (tons/year)								
	Kahe 1	Kahe 2	Kahe 3	Kahe 4	Kahe 5	Kahe 6	Kahe A	Kahe B	Total
SO2	1033.6	1023.4	1041.1	1104.4	1794.9	1643.7	0.09	0.08	7,641.3
NOX	728.9	721.8	734.3	778.9	1265.4	822.1	2.40	2.12	5,055.9
CO	77.5	76.8	78.1	82.8	134.6	123.3	0.64	0.56	574.3
VOC	11.8	11.7	11.9	12.6	20.5	18.8	0.06	0.05	87.4
PM-PRI	132.5	131.2	133.4	141.5	230.0	577.7	0.05	0.05	1,346.4
PM-FIL	109.2	108.1	110.0	116.6	189.6	277.7	0.05	0.04	911.3
PM-CON	23.3	23.0	23.4	24.9	40.4	299.9	0.01	0.01	434.9
PM10-PRI	100.8	99.8	101.5	107.7	175.0	496.2	0.04	0.04	1,081.1
PM10-FIL	77.5	76.8	78.1	82.8	134.6	197.4	0.04	0.03	647.3
PM25-PRI	80.1	79.3	76.2	85.6	139.0	444.3	0.04	0.04	904.6
PM25-FIL	56.8	56.2	52.8	60.7	98.6	144.4	0.04	0.03	469.6
Acetaldehyde							1.89E-05	1.67E-05	0.00004
Acrolein							5.90E-06	5.22E-06	0.00001
Antimony Compounds	8.15E-02	8.07E-02	8.21E-02	8.71E-02	1.42E-01	1.30E-01			0.6024
Arsenic Compounds	2.11E-02	2.09E-02	2.13E-02	2.26E-02	3.56E-02	3.26E-02	8.24E-06	7.29E-06	0.1541
Benzene	3.32E-03	3.29E-03	3.35E-03	3.55E-03	5.77E-03	5.28E-03	5.81E-04	5.14E-04	0.0257
Beryllium Compounds	4.31E-04	4.27E-04	4.35E-04	4.61E-04	7.49E-04	6.86E-04	2.32E-07	2.05E-07	0.0032
1,3-Butadiene							1.20E-05	1.06E-05	0.0000
Cadmium Compounds	6.23E-03	6.17E-03	6.28E-03	6.66E-03	1.07E-02	9.83E-03	3.59E-06	3.18E-06	0.0459
Chromium Compounds	1.32E-02	1.31E-02	1.33E-02	1.41E-02	2.28E-02	2.09E-02	8.24E-06	7.29E-06	0.0975
Cobalt Compounds	9.34E-02	9.25E-02	9.41E-02	9.98E-02	1.62E-01	1.49E-01			0.6908
Ethylbenzene	9.87E-04	9.77E-04	9.94E-04	1.05E-03	1.71E-03	1.57E-03			0.0073
Formaldehyde	9.47E-01	9.37E-01	9.54E-01	1.01E+00	1.64E+00	1.51E+00	5.91E-05	5.23E-05	6.9996
Hydrochloric Acid	1.94E-04	1.93E-04	1.96E-04	2.08E-04					0.0008
Lead Compounds	2.67E-02	2.64E-02	2.69E-02	2.85E-02	4.07E-02	3.73E-02	1.05E-05	9.27E-06	0.1865
Manganese Compounds	4.70E-02	4.65E-02	4.73E-02	5.02E-02	8.09E-02	7.41E-02	5.91E-04	5.23E-04	0.3470
Mercury Compounds	1.75E-03	1.74E-03	1.77E-03	1.87E-03	3.05E-03	2.79E-03	8.98E-07	7.95E-07	0.0130
Nickel Compounds	1.31E+00	1.30E+00	1.32E+00	1.40E+00	2.28E+00	2.09E+00	3.44E-06	3.05E-06	9.6963
Naphthalene	1.75E-02	1.74E-02	1.77E-02	1.87E-02	3.05E-02	2.79E-02	9.73E-05	8.61E-05	0.1298
Phosphorus	1.47E-01	1.45E-01	1.48E-01	1.57E-01	2.55E-01	2.34E-01			1.0855
POM	2.02E-02	2.00E-02	2.03E-02	2.16E-02	3.50E-02	3.21E-02	1.59E-04	1.40E-04	0.1495
Selenium Compounds	1.06E-02	1.05E-02	1.07E-02	1.13E-02	1.84E-02	1.69E-02	1.87E-05	1.66E-05	0.0784
Toluene	9.62E-02	9.53E-02	9.69E-02	1.03E-01	1.67E-01	1.53E-01	2.10E-04	1.86E-04	0.7118
Xylene							1.45E-04	1.28E-04	0.0003
o-Xylene	1.69E-03	1.67E-03	1.70E-03	1.81E-03	2.94E-03	2.69E-03			0.0125
Total HAPS	2.85E+00	2.82E+00	2.87E+00	3.04E+00	4.94E+00	4.52E+00	1.93E-03	1.71E-03	21.0

2003 HAWAII EMISSIONS INVENTORY REPORT
FACILITY GENERAL INFORMATION FORM

FIPS State-County-Facility ID: 1500300502

DATA REPRESENTATIVE OF JANUARY 1, 2003 - DECEMBER 31, 2003
(Form instructions are located on the Facility General Information Form Instructions)

1) Facility Name: HECO - Waiau Power Plant

2) Permit No(s).: 0239-01-C

3) Physical Facility Address:

Street: 475 Kamehameha Hwy.

City: Pearl City Zip Code: 96782

4) Emissions Inventory Contact Person Information:

Contact Name:	Phone # + ext:	Fax #	Internet (E-mail) Address:
Mr. Bruce Schlieman	808-543-4516	808-543-4511	bruce.schlieman@heco.com
Mailing Address:	Mailing City:	State:	Zip Code:
P.O. Box 2750	Honolulu	HI	96840

5) Identify CERR source type (CERR thresholds found on the first page of the General Instructions):
(select one) Type A: ____ Type B: X Neither: ____

6) SIC Code (Primary / Secondary): 4911 / ____ 7) NAICS Code: 221112

8) Principal Product: Electrical Generation

9) Facility UTM coordinates (m): Horizontal (x): 607337 (Easting (m)) Vertical (y): 2356837 (Northing (m))

Zone: 4 (Zone 4 or 5) Datum: Old Hawaiian (e.g., NAD 83, NAD 27, or Old Hawaiian)

10) When the 2003 Hawaii Emissions Inventory Report has been completed, please sign and date below.

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Department of Health as public record.

Signature: Thomas C. Simmons

Name: Thomas C. Simmons
Responsible Official

Date: 1/12/05

Title: VP, Power Supply Operations & Maint.

F3	1	Boiler 3	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.340		49.0	576.0	E6BTU	HR	0000	24	7	52	27	32	34	7	4,367.203	11.96	E3GAL
F3	2	Boiler 3	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.105		49.0	180.0	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				0.113	NA* < 5% of Total Fuel	E3GAL
F3	3	Boiler 3	Propane	255	10101002	91.300	E6BTU	E3GAL	0.004		49.0	576.0	E6BTU	HR	0000	24	7	52					1.490		E3GAL
F4	1	Boiler 4	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.340		49.0	585.2	E6BTU	HR	0000	24	7	52	34	21	34	11	5,929.609	16.2	E3GAL
F4	2	Boiler 4	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.105		49.0	180.0	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				0.153	NA* < 5% of Total Fuel	E3GAL
F4	3	Boiler 4	Propane	255	10101002	91.300	E6BTU	E3GAL	0.004		49.0	585.2	E6BTU	HR	0000	24	7	52					2.023		E3GAL
F5	1	Boiler 5	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.340		57.0	633.0	E6BTU	HR	0000	24	7	52	21	32	35	12	8,022.367	22.0	E3GAL
F5	2	Boiler 5	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.105		57.0	180.0	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				0.207	NA* < 5% of Total Fuel	E3GAL
F5	3	Boiler 5	Propane	255	10101002	91.300	E6BTU	E3GAL	0.004		57.0	633.0	E6BTU	HR	0000	24	7	52					2.737		E3GAL
F6	1	Boiler 6	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.340		58.0	637.4	E6BTU	HR	0000	24	7	52	26	26	28	20	9,859.242	27.0	E3GAL
F6	2	Boiler 6	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.105		58.0	180.0	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				0.254	NA* < 5% of Total Fuel	E3GAL
F6	3	Boiler 6	Propane	255	10101002	91.300	E6BTU	E3GAL	0.004		58.0	637.4	E6BTU	HR	0000	24	7	52					3.364		E3GAL
F7	1	Boiler 7	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.340		92.0	921.6	E6BTU	HR	0000	24	7	52	32	27	12	29	28,324.097	77.6	E3GAL
F7	4	Boiler 7	No. 2 Fuel Oil	58	10100501	140.000	E6BTU	E3GAL	0.081		92.0	921.6	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				4.098	NA* < 5% of Total Fuel	E3GAL
F7	2	Boiler 7	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.105		92.0	180.0	E6BTU	HR	0000	24	7	52					0.731		E3GAL
F8	1	Boiler 8	No. 6 Fuel Oil	923	10100401	151.000	E6BTU	E3GAL	0.340		92.0	923.2	E6BTU	HR	0000	24	7	52	26	25	26	23	30,533.788	83.7	E3GAL
F8	4	Boiler 8	No. 2 Fuel Oil	58	10100501	140.000	E6BTU	E3GAL	0.081		92.0	923.2	E6BTU	HR	0000	24	7	52	Not Applicable* - Less Than 5% of Total Fuel				4.418	NA* < 5% of Total Fuel	E3GAL
F8	2	Boiler 8	Spec Used Oil	2	10101302	150.000	E6BTU	E3GAL	0.105		92.0	180.0	E6BTU	HR	0000	24	7	52					0.788		E3GAL
F9	4	CT 9	No. 2 Fuel Oil	58	20100101	140.000	E6BTU	E3GAL	0.158		52.0	690.5	E6BTU	HR	0000	24	7	52	23	22	44	11	1,678.254	4.60	E3GAL
F10	4	CT 10	No. 2 Fuel Oil	58	20100101	140.000	E6BTU	E3GAL	0.158		50.0	681.5	E6BTU	HR	0000	24	7	52	12	17	50	21	922.050	2.53	E3GAL

* Not Applicable - Less than 5% of Total Fuel - Due to the small percentage of fuel used compared to the primary fuel seasonal breakdown is Not Applicable.

Deviation in Operating Schedules for Calendar Year 2003:

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand, from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☑ Yes ☐ No

If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

F5 - Boiler 5 was being overhauled from 09/14/2002 through 03/24/2003.
F7 - Boiler 7 was being overhauled from 09/10/2003 through 11/03/2003.

Emission Unit ID	Process ID No. (Stored Product ID No.)	Tank Description (78 characters max)	Stored Product Type	Product Material Code	SCC	Permitted Design Capacity	Permitted Design Capacity Unit Numerator	Permitted Design Capacity Unit Denominator (if applicable)	Start Time (HHMM)	Hr/Day	Day/Wk	Wk/Yr	Seasonal Thruput % (Mar-May) (ex. use 25 for 25%)	Seasonal Thruput % (Jun-Aug) (ex. use 25 for 25%)	Seasonal Thruput % (Sep-Nov) (ex. use 25 for 25%)	Seasonal Thruput % (Dec-Feb) (ex. use 25 for 25%)	Annual Process Thruput	Daily Process Thruput	Process Thruput Units

Deviation in Operating Schedules for Calendar Year 2003

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☐ Yes ☐ No

If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

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Emission Unit ID	Process ID No. (Product/Material ID No.)	Emission Unit or Activity Description (75 characters max.)	Product Name	Material Code	SCC	Permitted Design Capacity	Permitted Design Capacity Unit Numerator	Permitted Design Capacity Unit Denominator	Start Time (Hr/Min)	Hr/Day	Day/Wk	Wk/Yr	Seasonal Throughput (Mar-May)	Seasonal Throughput (Jun-Aug)	Seasonal Throughput (Sep-Nov)	Seasonal Throughput (Dec-Feb)	Annual Process Throughput	Daily Process Throughput	Process Throughput Units

Deviation in Operating Schedules for Calendar Year 2003:

Did any emissions unit significantly deviate from the normal operating schedule for more than a one month period (e.g., downtime for maintenance, equipment breakdown; or deviate due to low demand, from a normal schedule of 24 hrs/day, 7 days/wk, & 52 wks/yr to a low demand schedule of 8 hrs/day, 5 days/wk) for more than one month?

☐ Yes ☐ No

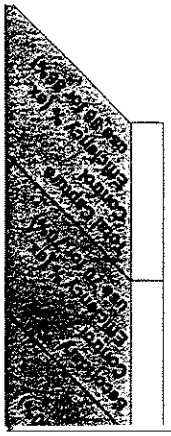
If YES, list on a separate attachment the emission unit; reason for the deviation; and deviation period, schedule, and month(s).

2004_01_12 Waiau 2003 EI (Submit to DoH).xls 4 Misc

85	3,157
85	3,157
85	3,157
85	3,157
85	3,157
85	3,157
86	2,551
86	2,551
86	2,551
86	2,551
86	2,551
86	2,551
16	3,820
16	3,820
16	3,820
16	3,820
16	3,820
16	3,820
90	19,218
90	19,218

Stack Info

Controls



AP-42 Section Data If applicable	AP-42 Efficiency Factor Reliability (A-F) If applicable	Annual Emissions (TON/YR)
		118.7
9/98	A	103.2
9/98	A	11
9/98	A	1.7
9/98	A	17.1
9/98	C	13.8
9/98	D	3.3
9/98	C	13.1
9/98	C	9.8
9/98	C	10.5
9/98	C	7.2
9/98	C	3.32E-03
9/98	A	0.00093
9/98	A	0.00266
9/98	A	0.00028
9/98	A	0.00004
9/98	A	0.00032
9/98	C	0.00024
9/98	D	0.00008
9/98	C	0.00025
9/98	C	0.00017
9/98	C	0.00021
9/98	C	0.00012
10/96	D	3.11E-05
		0.00029
10/96	E	0.01415
10/96	E	0.00238
10/96	E	0.00037
10/96, 7/98	E, D	0.00082
10/96	E	0.00045
7/98	D	0.00038

Emission Unit ID	Process ID No. (Fuel/Product/Material ID No.)	Annual Process Thruput (from process info. forms)	Annual Process Thruput Units	Pollutant	Emission Factor (EF)	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency % (ex. use 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
F3	3	136	E6BTU	PM10-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.00082
F3	3	136	E6BTU	PM10-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.00045
F3	3	136	E6BTU	PM25-PRI	0.01210	LB	E6BTU	08		U	10/96, 7/98	E, D	0.00082
F3	3	136	E6BTU	PM25-FIL	0.00656	LB	E6BTU	08		U	10/96	E	0.00045
F4	1	895,371	E6BTU	SO2	0.360	LB	E6BTU	03		U			161.2
F4	1	895,371	E6BTU	NOX	0.313	LB	E6BTU	08		U	9/98	A	140.1
F4	1	895,371	E6BTU	CO	0.0333	LB	E6BTU	08		U	9/98	A	14.9
F4	1	895,371	E6BTU	VOC	0.00507	LB	E6BTU	08		U	9/98	A	2.3
F4	1	895,371	E6BTU	PM-PRI	0.0520	LB	E6BTU	08		U	9/98	A	23.3
F4	1	895,371	E6BTU	PM-FIL	0.0420	LB	E6BTU	08		U	9/98	C	18.8
F4	1	895,371	E6BTU	PM-CON	0.0100	LB	E6BTU	08		U	9/98	D	4.5
F4	1	895,371	E6BTU	PM10-PRI	0.0398	LB	E6BTU	08		U	9/98	C	17.8
F4	1	895,371	E6BTU	PM10-FIL	0.0298	LB	E6BTU	08		U	9/98	C	13.3
F4	1	895,371	E6BTU	PM25-PRI	0.03180	LB	E6BTU	08		U	9/98	C	14.2
F4	1	895,371	E6BTU	PM25-FIL	0.02180	LB	E6BTU	08		U	9/98	C	9.8
F4	1	895,371	E6BTU	7439921	1.01E-05	LB	E6BTU	08		U	9/98	C	4.51E-03
F4	2	0.153	E3GAL	SO2	16.5	LB	E3GAL	08		U	9/98	A	0.00126
F4	2	0.153	E3GAL	NOX	47.0	LB	E3GAL	08		U	9/98	A	0.00360
F4	2	0.153	E3GAL	CO	5.00	LB	E3GAL	08		U	9/98	A	0.00038
F4	2	0.153	E3GAL	VOC	0.760	LB	E3GAL	08		U	9/98	A	0.00006
F4	2	0.153	E3GAL	PM-PRI	5.68	LB	E3GAL	08		U	9/98	A	0.00043
F4	2	0.153	E3GAL	PM-FIL	4.18	LB	E3GAL	08		U	9/98	C	0.00032
F4	2	0.153	E3GAL	PM-CON	1.50	LB	E3GAL	08		U	9/98	D	0.00011
F4	2	0.153	E3GAL	PM10-PRI	4.47	LB	E3GAL	08		U	9/98	C	0.00034
F4	2	0.153	E3GAL	PM10-FIL	2.97	LB	E3GAL	08		U	9/98	C	0.00023
F4	2	0.153	E3GAL	PM25-PRI	3.67	LB	E3GAL	08		U	9/98	C	0.00028
F4	2	0.153	E3GAL	PM25-FIL	2.17	LB	E3GAL	08		U	9/98	C	0.00017
F4	2	0.153	E3GAL	7439921	5.50E-01	LB	E3GAL	08		U	10/96	D	4.21E-05
F4	3	185	E6BTU	SO2	0.00424	LB	E6BTU	03		U			0.00039
F4	3	185	E6BTU	NOX	0.208	LB	E6BTU	08		U	10/96	E	0.01921
F4	3	185	E6BTU	CO	0.0350	LB	E6BTU	08		U	10/96	E	0.00323

EF Unit Denominator	Method Code	Total Capture Control Efficiency % (ex. use 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
E6BTU	08		U	10/96	E	0.00050
E6BTU	08		U	10/96, 7/98	E, D	0.00112
E6BTU	08		U	10/96	E	0.00061
E6BTU	08		U	7/98	D	0.00052
E6BTU	08		U	10/96, 7/98	E, D	0.00112
E6BTU	08		U	10/96	E	0.00061
E6BTU	08		U	10/96, 7/98	E, D	0.00112
E6BTU	08		U	10/96	E	0.00061
E6BTU	03		U			218.0
E6BTU	08		U	9/98	A	189.6
E6BTU	08		U	9/98	A	20.2
E6BTU	08		U	9/98	A	3.1
E6BTU	08		U	9/98	A	31.5
E6BTU	08		U	9/98	C	25.4
E6BTU	08		U	9/98	D	6.1
E6BTU	08		U	9/98	C	24.1
E6BTU	08		U	9/98	C	18.0
E6BTU	08		U	9/98	C	19.3
E6BTU	08		U	9/98	C	13.2
E6BTU	08		U	9/98	C	6.10E-03
E3GAL	08		U	9/98	A	0.00171
E3GAL	08		U	9/98	A	0.00486
E3GAL	08		U	9/98	A	0.00052
E3GAL	08		U	9/98	A	0.00008
E3GAL	08		U	9/98	A	0.00059
E3GAL	08		U	9/98	C	0.00043
E3GAL	08		U	9/98	D	0.00016
E3GAL	08		U	9/98	C	0.00046
E3GAL	08		U	9/98	C	0.00031
E3GAL	08		U	9/98	C	0.00038
E3GAL	08		U	9/98	C	0.00022

Emissions

Annual Emissions (TON/YR)	0.00057	0.00038	0.00047	0.00028	6.99E-05	0.00065	0.03194	0.00537	0.00084	0.00186	0.00101	0.00086	0.00186	0.00101	0.00186	0.00101	769.8	669.3	71.2	10.8	111.2	89.8	21.4	85.1	63.7	68.0	46.6	2.15E-02	0.02295	0.04905	0.01024

Emission Unit ID	Process ID No. (Fuel/Product/Material ID No.)	Annual Process Thruput (from process info. forms)	Annual Process Thruput Units	Pollutant	Emission Factor (EF)	EF Unit Numerator	EF Unit Denominator	Method Code	Total Capture Control Efficiency % (ex. use 80 for 80%)	EF Controlled = "C" or Uncontrolled = "U"	AP-42 Section Date (if applicable)	AP-42 Efficiency Factor Reliability (A-F) (if applicable)	Annual Emissions (TON/YR)
F9	4	234,956	E6BTU	PM-FIL	0.00430	LB	E6BTU	08		U	4/00	C	0.5
F9	4	234,956	E6BTU	PM-CON	0.00720	LB	E6BTU	08		U	4/00	C	0.8
F9	4	234,956	E6BTU	PM10-PRI	0.0113	LB	E6BTU	08		U	1/95	E	1.3
F9	4	234,956	E6BTU	PM10-FIL	0.00413	LB	E6BTU	08		U	1/95	E	0.5
F9	4	234,956	E6BTU	PM25-PRI	0.0111	LB	E6BTU	08		U	1/95	E	1.3
F9	4	234,956	E6BTU	PM25-FIL	0.00387	LB	E6BTU	08		U	1/95	E	0.5
F9	4	234,956	E6BTU	7439921	1.40E-05	LB	E6BTU	08		U	4/00	D	1.64E-03
F10	4	129,087	E6BTU	SO2	0.158	LB	E6BTU	03		U			10.2
F10	4	129,087	E6BTU	NOX	0.880	LB	E6BTU	08		U	4/00	C	56.8
F10	4	129,087	E6BTU	CO	0.00330	LB	E6BTU	08		U	4/00	C	0.2
F10	4	129,087	E6BTU	VOC	0.000410	LB	E6BTU	08		U	4/00	E	0.03
F10	4	129,087	E6BTU	PM-PRI	0.0120	LB	E6BTU	08		U	4/00	C	0.8
F10	4	129,087	E6BTU	PM-FIL	0.00430	LB	E6BTU	08		U	4/00	C	0.3
F10	4	129,087	E6BTU	PM-CON	0.00720	LB	E6BTU	08		U	4/00	C	0.5
F10	4	129,087	E6BTU	PM10-PRI	0.0113	LB	E6BTU	08		U	1/95	E	0.7
F10	4	129,087	E6BTU	PM10-FIL	0.00413	LB	E6BTU	08		U	1/95	E	0.3
F10	4	129,087	E6BTU	PM25-PRI	0.0111	LB	E6BTU	08		U	1/95	E	0.7
F10	4	129,087	E6BTU	PM25-FIL	0.00387	LB	E6BTU	08		U	1/95	E	0.2
F10	4	129,087	E6BTU	7439921	1.40E-05	LB	E6BTU	08		U	4/00	D	9.04E-04

Permit No.:	0239-01-C
Date Rec'd:	

FORM F-1

2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

(FOR AIR POLLUTANTS EMITTED DURING CALENDAR YEAR 2003)

INPUT DATA IN YELLOW COLORED CELLS

1. FACILITY INFORMATION (Signature box to be signed by Responsible Official)

A. Facility Name:	HECO - Waiau Power Plant	B. Location:	475 Kamehameha Hwy.	C. Island:	Oahu
D. Mailing Address:	P.O. Box 2750	E. City: Honolulu	F. State: HI	G. Zip Code:	96840
H. Contact Person:	Mr. Bruce Schlieman	I. Title:	Senior Environmental Scientist	J. Telephone No.:	808-543-4516
K. Responsible Official:	Thomas C. Simmons	L. Title:	VP, Power Supply Operations & Maint.	M. Telephone No.	(808) 543-4301
N. Signature:	Thomas C. Simmons	Date:	1/12/05		

Based on the information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete

2. CALCULATED EMISSIONS (Report emissions to the nearest tenth of a ton (Line 2.B.) and total annual emis. (Line 2.C.) subject to fees without the fraction(s) of a ton)

Equipment: Unit No. or Activity No.	Air Pollutant Emissions (tons/yr)												
	Other Regulated Air Pollutants Including Hazardous Air Pollutants (please specify)												Annual Total
	TSP	PM_{10}	$PM_{2.5}$	SO_2	CO	NOx	VOC	Pb	HAPs	NH_3			
3	17.1	13.1	10.5	118.7	11.0	103.2	1.7	0.0	0.4	--			
4	23.3	17.8	14.2	161.2	14.9	140.1	2.3	0.0	0.5	--			
5	31.5	24.1	19.3	218.0	20.2	189.6	3.1	0.0	0.7	--			
6	38.7	31.3	23.7	268.0	24.8	233.0	3.8	0.0	0.9	--			
A. Supplement (if appl.) A	233.3	178.9	143.3	1628.5	148.2	1551.3	22.6	0.0	5.7	--			
B. Total Report Emissions	343.9	265.2	211.0	2394.4	219.1	2217.2	33.5	0.0	8.2	--			
C. Total Emissions Subject to Fees	343			2,394		2,217	33						D. 4,987

3 ANNUAL FEE CALCULATION (Use the total annual emissions subject to fees calculated in Block 2.D.)

		Total Annual Emissions Subject to Fees (enter 2.D. value below)		Multiply	2003 $/TON	Multiply	CPI Index Adjustmn (1.8% incr. '01 to '02)	Equal		Total
Fee payable to:	"Clean Air Special Fund - COV"	A.	N/A	x	40.05	x	1.018	=	B.	$ WAIVED
	"Clean Air Special Fund - NON"	C.	N/A	x	9.76	x	1.018	=	D.	$ WAIVED
							Total	=	E.	$ WAIVED

Note: The $/ton charges are the rates that would have been assessed for 2004 if the fee waiver was not granted. The indicated rates were established in accordance with HAR, §11-60.1-114, and will be adjusted annually.
2004 $/ton charge payable to "Clean Air Special Fund-COV"= $40.05 x 1.018 = $40.77/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES, SINCE WAIVED).
2004 $/ton charge payable to "Clean Air Special Fund-NON" = $9.76 x 1.018 = $9.94/ton (NO FEE REQUIRED FOR 2004 ANNUAL FEES, SINCE WAIVED).

F-2

39-01-C

4516

Waiau 3 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	4,367,203	151,000	659,448	0.360	M	118.7
NOX	4,367,203	151,000	659,448	0.313	A	103.2
CO	4,367,203	151,000	659,448	0.0333	A	11.0
VOC	4,367,203	151,000	659,448	0.00507	A	1.7
PM-PRI	4,367,203	151,000	659,448	0.0520	A	17.1
PM-FIL	4,367,203	151,000	659,448	0.0420	A	13.8
PM-CON	4,367,203	151,000	659,448	0.0100	A	3.3
PM10-PRI	4,367,203	151,000	659,448	0.0398	A	13.1
PM10-FIL	4,367,203	151,000	659,448	0.0298	A	9.8
PM25-PRI	4,367,203	151,000	659,448	0.0318	A	10.5
PM25-FIL	4,367,203	151,000	659,448	0.0218	A	7.2
Acetaldehyde	4,367,203	151,000	659,448		A	
Acrolein	4,367,203	151,000	659,448		A	
Antimony Compounds	4,367,203	151,000	659,448	3.50E-05	A	1.15E-02
Arsenic Compounds	4,367,203	151,000	659,448	8.80E-06	A	2.90E-03
Benzene	4,367,203	151,000	659,448	1.43E-06	A	4.70E-04
Beryllium Compounds	4,367,203	151,000	659,448	1.85E-07	A	6.11E-05
1,3-Butadiene	4,367,203	151,000	659,448		A	
Cadmium Compounds	4,367,203	151,000	659,448	2.65E-06	A	8.75E-04
Chromium Compounds	4,367,203	151,000	659,448	5.63E-06	A	1.86E-03
Cobalt Compounds	4,367,203	151,000	659,448	4.01E-05	A	1.32E-02
Ethylbenzene	4,367,203	151,000	659,448	4.24E-07	A	1.40E-04
Formaldehyde	4,367,203	151,000	659,448	4.07E-04	A	1.34E-01
Hydrochloric Acid	4,367,203	151,000	659,448		A	
Lead Compounds	4,367,203	151,000	659,448	1.01E-05	A	3.32E-03
Manganese Compounds	4,367,203	151,000	659,448	2.00E-05	A	6.59E-03
Mercury Compounds	4,367,203	151,000	659,448	7.53E-07	A	2.48E-04
Nickel Compounds	4,367,203	151,000	659,448	5.63E-04	A	1.86E-01
Naphthalene	4,367,203	151,000	659,448	7.53E-06	A	2.48E-03
Phosphorus	4,367,203	151,000	659,448	6.31E-05	A	2.08E-02
POM	4,367,203	151,000	659,448	8.67E-06	A	2.86E-03
Selenium Compounds	4,367,203	151,000	659,448	4.55E-06	A	1.50E-03
Toluene	4,367,203	151,000	659,448	4.13E-05	A	1.36E-02
Xylene	4,367,203	151,000	659,448		A	
o-Xylene	4,367,203	151,000	659,448	7.27E-07	A	2.40E-04

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 3 Spec Used Oil

Pollutant	Annual Fuel Use (gal/yr)	Emission Factor (lb/10³ gal)	EF Ref	Annual Emissions (tons/yr)
SO2	113	16.5	A	0.00093
NOX	113	47	A	0.00266
CO	113	5.0	A	0.00028
VOC	113	0.76	A	0.00004
PM-PRI	113	5.68	A	0.00032
PM-FIL	113	4.18	A	0.00024
PM-CON	113	1.50	A	0.00008
PM10-PRI	113	4.47	A	0.00025
PM10-FIL	113	2.97	A	0.00017
PM25-PRI	113	3.67	A	0.00021
PM25-FIL	113	2.17	A	0.00012
Acetaldehyde	113		A	
Acrolein	113		A	
Antimony Compounds	113		A	
Arsenic Compounds	113	1.10E-01	A	6.22E-06
Benzene	113		A	
Beryllium Compounds	113		A	
1,3-Butadiene	113		A	
Cadmium Compounds	113	9.30E-03	A	5.25E-07
Chromium Compounds	113	2.00E-02	A	1.13E-06
Cobalt Compounds	113	2.10E-04	A	1.19E-08
Ethylbenzene	113		A	
Formaldehyde	113		A	
Hydrochloric Acid	113	3.30E-02	A	1.86E-06
Lead Compounds	113	5.50E-01	A	3.11E-05
Manganese Compounds	113	6.80E-02	A	3.84E-06
Mercury Compounds	113		A	
Nickel Compounds	113	1.10E-02	A	6.22E-07
Naphthalene	113		A	
Phosphorus	113		A	
POM	113		A	
Selenium Compounds	113		A	
Toluene	113		A	
Xylene	113		A	
o-Xylene	113		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 3 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	1,490	91,300	136	0.00424	M	0.00029
NOX	1,490	91,300	136	0.208	A	0.01415
CO	1,490	91,300	136	0.035	A	0.00238
VOC	1,490	91,300	136	0.00546	A	0.00037
PM-PRI	1,490	91,300	136	0.0121	A	0.00082
PM-FIL	1,490	91,300	136	0.00656	A	0.00045
PM-CON	1,490	91,300	136	0.00558824	A	0.00038
PM10-PRI	1,490	91,300	136	0.0121	A	0.00082
PM10-FIL	1,490	91,300	136	0.00656	A	0.00045
PM25-PRI	1,490	91,300	136	0.0121	A	0.00082
PM25-FIL	1,490	91,300	136	0.00656	A	0.00045
Acetaldehyde	1,490	91,300	136		A	
Acrolein	1,490	91,300	136		A	
Antimony Compounds	1,490	91,300	136		A	
Arsenic Compounds	1,490	91,300	136		A	
Benzene	1,490	91,300	136		A	
Beryllium Compounds	1,490	91,300	136		A	
1,3-Butadiene	1,490	91,300	136		A	
Cadmium Compounds	1,490	91,300	136		A	
Chromium Compounds	1,490	91,300	136		A	
Cobalt Compounds	1,490	91,300	136		A	
Ethylbenzene	1,490	91,300	136		A	
Formaldehyde	1,490	91,300	136		A	
Hydrochloric Acid	1,490	91,300	136		A	
Lead Compounds	1,490	91,300	136		A	
Manganese Compounds	1,490	91,300	136		A	
Mercury Compounds	1,490	91,300	136		A	
Nickel Compounds	1,490	91,300	136		A	
Naphthalene	1,490	91,300	136		A	
Phosphorus	1,490	91,300	136		A	
POM	1,490	91,300	136		A	
Selenium Compounds	1,490	91,300	136		A	
Toluene	1,490	91,300	136		A	
Xylene	1,490	91,300	136		A	
o-Xylene	1,490	91,300	136		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 3 Total

Pollutant	Annual Emissions Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	118.7	0.0009	0.0003	118.7
NOX	103.2	0.0027	0.0141	103.2
CO	11.0	0.0003	0.0024	11.0
VOC	1.7	0.0000	0.0004	1.7
PM-PRI	17.1	0.0003	0.0008	17.1
PM-FIL	13.8	0.0002	0.0004	13.8
PM-CON	3.3	0.0001	0.0004	3.3
PM10-PRI	13.1	0.0003	0.0008	13.1
PM10-FIL	9.8	0.0002	0.0004	9.8
PM25-PRI	10.5	0.0002	0.0008	10.5
PM25-FIL	7.2	0.0001	0.0004	7.2
Acetaldehyde				
Acrolein				
Antimony Compounds	1.15E-02			1.15E-02
Arsenic Compounds	2.90E-03	6.22E-06		2.91E-03
Benzene	4.70E-04			4.70E-04
Beryllium Compounds	6.11E-05			6.11E-05
1,3-Butadiene				
Cadmium Compounds	8.75E-04	5.25E-07		8.75E-04
Chromium Compounds	1.86E-03	1.13E-06		1.86E-03
Cobalt Compounds	1.32E-02	1.19E-08		1.32E-02
Ethylbenzene	1.40E-04			1.40E-04
Formaldehyde	1.34E-01			1.34E-01
Hydrochloric Acid		1.86E-06		1.86E-06
Lead Compounds	3.32E-03	3.11E-05		3.35E-03
Manganese Compounds	6.59E-03	3.84E-06		6.60E-03
Mercury Compounds	2.48E-04			2.48E-04
Nickel Compounds	1.86E-01	6.22E-07		1.86E-01
Naphthalene	2.48E-03			2.48E-03
Phosphorus	2.08E-02			2.08E-02
POM	2.86E-03			2.86E-03
Selenium Compounds	1.50E-03			1.50E-03
Toluene	1.36E-02			1.36E-02
Xylene				
o-Xylene	2.40E-04			2.40E-04
Total HAPs				4.03E-01

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 4 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	5,929,609	151,000	895,371	0.360	M	161.2
NOX	5,929,609	151,000	895,371	0.313	A	140.1
CO	5,929,609	151,000	895,371	0.0333	A	14.9
VOC	5,929,609	151,000	895,371	0.00507	A	2.3
PM-PRI	5,929,609	151,000	895,371	0.0520	A	23.3
PM-FIL	5,929,609	151,000	895,371	0.0420	A	18.8
PM-CON	5,929,609	151,000	895,371	0.0100	A	4.5
PM10-PRI	5,929,609	151,000	895,371	0.0398	A	17.8
PM10-FIL	5,929,609	151,000	895,371	0.0298	A	13.3
PM25-PRI	5,929,609	151,000	895,371	0.0318	A	14.2
PM25-FIL	5,929,609	151,000	895,371	0.0218	A	9.8
Acetaldehyde	5,929,609	151,000	895,371		A	
Acrolein	5,929,609	151,000	895,371		A	
Antimony Compounds	5,929,609	151,000	895,371	3.50E-05	A	1.57E-02
Arsenic Compounds	5,929,609	151,000	895,371	8.80E-06	A	3.94E-03
Benzene	5,929,609	151,000	895,371	1.43E-06	A	6.39E-04
Beryllium Compounds	5,929,609	151,000	895,371	1.85E-07	A	8.30E-05
1,3-Butadiene	5,929,609	151,000	895,371		A	
Cadmium Compounds	5,929,609	151,000	895,371	2.65E-06	A	1.19E-03
Chromium Compounds	5,929,609	151,000	895,371	5.63E-06	A	2.52E-03
Cobalt Compounds	5,929,609	151,000	895,371	4.01E-05	A	1.80E-02
Ethylbenzene	5,929,609	151,000	895,371	4.24E-07	A	1.90E-04
Formaldehyde	5,929,609	151,000	895,371	4.07E-04	A	1.82E-01
Hydrochloric Acid	5,929,609	151,000	895,371		A	
Lead Compounds	5,929,609	151,000	895,371	1.01E-05	A	4.51E-03
Manganese Compounds	5,929,609	151,000	895,371	2.00E-05	A	8.95E-03
Mercury Compounds	5,929,609	151,000	895,371	7.53E-07	A	3.37E-04
Nickel Compounds	5,929,609	151,000	895,371	5.63E-04	A	2.52E-01
Naphthalene	5,929,609	151,000	895,371	7.53E-06	A	3.37E-03
Phosphorus	5,929,609	151,000	895,371	6.31E-05	A	2.82E-02
POM	5,929,609	151,000	895,371	8.67E-06	A	3.88E-03
Selenium Compounds	5,929,609	151,000	895,371	4.55E-06	A	2.04E-03
Toluene	5,929,609	151,000	895,371	4.13E-05	A	1.85E-02
Xylene	5,929,609	151,000	895,371		A	
o-Xylene	5,929,609	151,000	895,371	7.27E-07	A	3.25E-04

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 4 Spec Used Oil

Pollutant	Annual Spec Oil Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	153	16.5	A	0.00126
NOX	153	47	A	0.00360
CO	153	5.0	A	0.00038
VOC	153	0.76	A	0.00006
PM-PRI	153	5.68	A	0.00043
PM-FIL	153	4.18	A	0.00032
PM-CON	153	1.50	A	0.00011
PM10-PRI	153	4.47	A	0.00034
PM10-FIL	153	2.97	A	0.00023
PM25-PRI	153	3.67	A	0.00028
PM25-FIL	153	2.17	A	0.00017
Acetaldehyde	153		A	
Acrolein	153		A	
Antimony Compounds	153		A	
Arsenic Compounds	153	1.10E-01	A	8.42E-06
Benzene	153		A	
Beryllium Compounds	153		A	
1,3-Butadiene	153		A	
Cadmium Compounds	153	9.30E-03	A	7.11E-07
Chromium Compounds	153	2.00E-02	A	1.53E-06
Cobalt Compounds	153	2.10E-04	A	1.61E-08
Ethylbenzene	153		A	
Formaldehyde	153		A	
Hydrochloric Acid	153	3.30E-02	A	2.52E-06
Lead Compounds	153	5.50E-01	A	4.21E-05
Manganese Compounds	153	6.80E-02	A	5.20E-06
Mercury Compounds	153		A	
Nickel Compounds	153	1.10E-02	A	8.42E-07
Naphthalene	153		A	
Phosphorus	153		A	
POM	153		A	
Selenium Compounds	153		A	
Toluene	153		A	
Xylene	153		A	
o-Xylene	153		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 4 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	2,023	91,300	185	0.00424	M	0.00039
NOX	2,023	91,300	185	0.208	A	0.01921
CO	2,023	91,300	185	0.035	A	0.00323
VOC	2,023	91,300	185	0.00546	A	0.00050
PM-PRI	2,023	91,300	185	0.0121	A	0.00112
PM-FIL	2,023	91,300	185	0.00656	A	0.00061
PM-CON	2,023	91,300	185	0.00558824	A	0.00052
PM10-PRI	2,023	91,300	185	0.0121	A	0.00112
PM10-FIL	2,023	91,300	185	0.00656	A	0.00061
PM25-PRI	2,023	91,300	185	0.0121	A	0.00112
PM25-FIL	2,023	91,300	185	0.00656	A	0.00061
Acetaldehyde	2,023	91,300	185		A	
Acrolein	2,023	91,300	185		A	
Antimony Compounds	2,023	91,300	185		A	
Arsenic Compounds	2,023	91,300	185		A	
Benzene	2,023	91,300	185		A	
Beryllium Compounds	2,023	91,300	185		A	
1,3-Butadiene	2,023	91,300	185		A	
Cadmium Compounds	2,023	91,300	185		A	
Chromium Compounds	2,023	91,300	185		A	
Cobalt Compounds	2,023	91,300	185		A	
Ethylbenzene	2,023	91,300	185		A	
Formaldehyde	2,023	91,300	185		A	
Hydrochloric Acid	2,023	91,300	185		A	
Lead Compounds	2,023	91,300	185		A	
Manganese Compounds	2,023	91,300	185		A	
Mercury Compounds	2,023	91,300	185		A	
Nickel Compounds	2,023	91,300	185		A	
Naphthalene	2,023	91,300	185		A	
Phosphorus	2,023	91,300	185		A	
POM	2,023	91,300	185		A	
Selenium Compounds	2,023	91,300	185		A	
Toluene	2,023	91,300	185		A	
Xylene	2,023	91,300	185		A	
o-Xylene	2,023	91,300	185		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 4 Total

Pollutant	Annual Emissions Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	161.2	0.0013	0.0004	161.2
NOX	140.1	0.0036	0.0192	140.1
CO	14.9	0.0004	0.0032	14.9
VOC	2.3	0.0001	0.0005	2.3
PM-PRI	23.3	0.0004	0.0011	23.3
PM-FIL	18.8	0.0003	0.0006	18.8
PM-CON	4.5	0.0001	0.0005	4.5
PM10-PRI	17.8	0.0003	0.0011	17.8
PM10-FIL	13.3	0.0002	0.0006	13.3
PM25-PRI	14.2	0.0003	0.0011	14.2
PM25-FIL	9.8	0.0002	0.0006	9.8
Acetaldehyde				
Acrolein				
Antimony Compounds	1.57E-02			1.57E-02
Arsenic Compounds	3.94E-03	8.42E-06		3.95E-03
Benzene	6.39E-04			6.39E-04
Beryllium Compounds	8.30E-05			8.30E-05
1,3-Butadiene				
Cadmium Compounds	1.19E-03	7.11E-07		1.19E-03
Chromium Compounds	2.52E-03	1.53E-06		2.52E-03
Cobalt Compounds	1.80E-02	1.61E-08		1.80E-02
Ethylbenzene	1.90E-04			1.90E-04
Formaldehyde	1.82E-01			1.82E-01
Hydrochloric Acid		2.52E-06		2.52E-06
Lead Compounds	4.51E-03	4.21E-05		4.55E-03
Manganese Compounds	8.95E-03	5.20E-06		8.96E-03
Mercury Compounds	3.37E-04			3.37E-04
Nickel Compounds	2.52E-01	8.42E-07		2.52E-01
Naphthalene	3.37E-03			3.37E-03
Phosphorus	2.82E-02			2.82E-02
POM	3.88E-03			3.88E-03
Selenium Compounds	2.04E-03			2.04E-03
Toluene	1.85E-02			1.85E-02
Xylene				
o-Xylene	3.25E-04			3.25E-04
Total HAPs				5.47E-01

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 5 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	8,022,367	151,000	1,211,377	0.360	M	218.0
NOX	8,022,367	151,000	1,211,377	0.313	A	189.6
CO	8,022,367	151,000	1,211,377	0.0333	A	20.2
VOC	8,022,367	151,000	1,211,377	0.00507	A	3.1
PM-PRI	8,022,367	151,000	1,211,377	0.0520	A	31.5
PM-FIL	8,022,367	151,000	1,211,377	0.0420	A	25.4
PM-CON	8,022,367	151,000	1,211,377	0.0100	A	6.1
PM10-PRI	8,022,367	151,000	1,211,377	0.0398	A	24.1
PM10-FIL	8,022,367	151,000	1,211,377	0.0298	A	18.0
PM25-PRI	8,022,367	151,000	1,211,377	0.0318	A	19.3
PM25-FIL	8,022,367	151,000	1,211,377	0.0218	A	13.2
Acetaldehyde	8,022,367	151,000	1,211,377		A	
Acrolein	8,022,367	151,000	1,211,377		A	
Antimony Compounds	8,022,367	151,000	1,211,377	3.50E-05	A	2.12E-02
Arsenic Compounds	8,022,367	151,000	1,211,377	8.80E-06	A	5.33E-03
Benzene	8,022,367	151,000	1,211,377	1.43E-06	A	8.64E-04
Beryllium Compounds	8,022,367	151,000	1,211,377	1.85E-07	A	1.12E-04
1,3-Butadiene	8,022,367	151,000	1,211,377		A	
Cadmium Compounds	8,022,367	151,000	1,211,377	2.65E-06	A	1.61E-03
Chromium Compounds	8,022,367	151,000	1,211,377	5.63E-06	A	3.41E-03
Cobalt Compounds	8,022,367	151,000	1,211,377	4.01E-05	A	2.43E-02
Ethylbenzene	8,022,367	151,000	1,211,377	4.24E-07	A	2.57E-04
Formaldehyde	8,022,367	151,000	1,211,377	4.07E-04	A	2.46E-01
Hydrochloric Acid	8,022,367	151,000	1,211,377		A	
Lead Compounds	8,022,367	151,000	1,211,377	1.01E-05	A	6.10E-03
Manganese Compounds	8,022,367	151,000	1,211,377	2.00E-05	A	1.21E-02
Mercury Compounds	8,022,367	151,000	1,211,377	7.53E-07	A	4.56E-04
Nickel Compounds	8,022,367	151,000	1,211,377	5.63E-04	A	3.41E-01
Naphthalene	8,022,367	151,000	1,211,377	7.53E-06	A	4.56E-03
Phosphorus	8,022,367	151,000	1,211,377	6.31E-05	A	3.82E-02
POM	8,022,367	151,000	1,211,377	8.67E-06	A	5.25E-03
Selenium Compounds	8,022,367	151,000	1,211,377	4.55E-06	A	2.76E-03
Toluene	8,022,367	151,000	1,211,377	4.13E-05	A	2.50E-02
Xylene	8,022,367	151,000	1,211,377		A	
o-Xylene	8,022,367	151,000	1,211,377	7.27E-07	A	4.40E-04

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 5 Spec Used Oil

Pollutant	Annual Spec Oil Use (gal/yr)	Emission Factor (lb/10³ gal)	EF Ref	Annual Emissions (tons/yr)
SO2	207	16.5	A	0.0017
NOX	207	47	A	0.0049
CO	207	5.0	A	0.0005
VOC	207	0.76	A	0.0001
PM-PRI	207	5.68	A	0.00059
PM-FIL	207	4.18	A	0.00043
PM-CON	207	1.50	A	0.00016
PM10-PRI	207	4.47	A	0.00046
PM10-FIL	207	2.97	A	0.00031
PM25-PRI	207	3.67	A	0.00038
PM25-FIL	207	2.17	A	0.00022
Acetaldehyde	207		A	
Acrolein	207		A	
Antimony Compounds	207		A	
Arsenic Compounds	207	1.10E-01	A	1.14E-05
Benzene	207		A	
Beryllium Compounds	207		A	
1,3-Butadiene	207		A	
Cadmium Compounds	207	9.30E-03	A	9.63E-07
Chromium Compounds	207	2.00E-02	A	2.07E-06
Cobalt Compounds	207	2.10E-04	A	2.17E-08
Ethylbenzene	207		A	
Formaldehyde	207		A	
Hydrochloric Acid	207	3.30E-02	A	3.42E-06
Lead Compounds	207	5.50E-01	A	5.69E-05
Manganese Compounds	207	6.80E-02	A	7.04E-06
Mercury Compounds	207		A	
Nickel Compounds	207	1.10E-02	A	1.14E-06
Naphthalene	207		A	
Phosphorus	207		A	
POM	207		A	
Selenium Compounds	207		A	
Toluene	207		A	
Xylene	207		A	
o-Xylene	207		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 5 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	2,737	91,300	250	0.00424	M	0.00053
NOX	2,737	91,300	250	0.208	A	0.02599
CO	2,737	91,300	250	0.035	A	0.00437
VOC	2,737	91,300	250	0.00546	A	0.00068
PM-PRI	2,737	91,300	250	0.0121	A	0.00151
PM-FIL	2,737	91,300	250	0.00656	A	0.00082
PM-CON	2,737	91,300	250	0.00558824	A	0.00070
PM10-PRI	2,737	91,300	250	0.0121	A	0.00151
PM10-FIL	2,737	91,300	250	0.00656	A	0.00082
PM25-PRI	2,737	91,300	250	0.0121	A	0.00151
PM25-FIL	2,737	91,300	250	0.00656	A	0.00082
Acetaldehyde	2,737	91,300	250		A	
Acrolein	2,737	91,300	250		A	
Antimony Compounds	2,737	91,300	250		A	
Arsenic Compounds	2,737	91,300	250		A	
Benzene	2,737	91,300	250		A	
Beryllium Compounds	2,737	91,300	250		A	
1,3-Butadiene	2,737	91,300	250		A	
Cadmium Compounds	2,737	91,300	250		A	
Chromium Compounds	2,737	91,300	250		A	
Cobalt Compounds	2,737	91,300	250		A	
Ethylbenzene	2,737	91,300	250		A	
Formaldehyde	2,737	91,300	250		A	
Hydrochloric Acid	2,737	91,300	250		A	
Lead Compounds	2,737	91,300	250		A	
Manganese Compounds	2,737	91,300	250		A	
Mercury Compounds	2,737	91,300	250		A	
Nickel Compounds	2,737	91,300	250		A	
Naphthalene	2,737	91,300	250		A	
Phosphorus	2,737	91,300	250		A	
POM	2,737	91,300	250		A	
Selenium Compounds	2,737	91,300	250		A	
Toluene	2,737	91,300	250		A	
Xylene	2,737	91,300	250		A	
o-Xylene	2,737	91,300	250		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 5 Total

Pollutant	Annual Emissions Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	218	0.0017	0.0005	218.0
NOX	189.6	0.0049	0.0260	189.6
CO	20.2	0.0005	0.0044	20.2
VOC	3.1	0.0001	0.0007	3.1
PM-PRI	31.5	0.0006	0.0015	31.5
PM-FIL	25.4	0.0004	0.0008	25.4
PM-CON	6.1	0.0002	0.0007	6.1
PM10-PRI	24.1	0.0005	0.0015	24.1
PM10-FIL	18	0.0003	0.0008	18.0
PM25-PRI	19.3	0.0004	0.0015	19.3
PM25-FIL	13.2	0.0002	0.0008	13.2
Acetaldehyde				
Acrolein				
Antimony Compounds	2.12E-02			2.12E-02
Arsenic Compounds	5.33E-03	1.14E-05		5.34E-03
Benzene	8.64E-04			8.64E-04
Beryllium Compounds	1.12E-04			1.12E-04
1,3-Butadiene				
Cadmium Compounds	1.61E-03	9.63E-07		1.61E-03
Chromium Compounds	3.41E-03	2.07E-06		3.41E-03
Cobalt Compounds	2.43E-02	2.17E-08		2.43E-02
Ethylbenzene	2.57E-04			2.57E-04
Formaldehyde	2.46E-01			2.46E-01
Hydrochloric Acid		3.42E-06		3.42E-06
Lead Compounds	6.10E-03	5.69E-05		6.15E-03
Manganese Compounds	1.21E-02	7.04E-06		1.21E-02
Mercury Compounds	4.56E-04			4.56E-04
Nickel Compounds	3.41E-01	1.14E-06		3.41E-01
Naphthalene	4.56E-03			4.56E-03
Phosphorus	3.82E-02			3.82E-02
POM	5.25E-03			5.25E-03
Selenium Compounds	2.76E-03			2.76E-03
Toluene	2.50E-02			2.50E-02
Xylene				
o-Xylene	4.40E-04			4.40E-04
Total HAPs				7.40E-01

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 6 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	9,859,242	151,000	1,488,746	0.360	M	268.0
NOX	9,859,242	151,000	1,488,746	0.313	A	233.0
CO	9,859,242	151,000	1,488,746	0.0333	A	24.8
VOC	9,859,242	151,000	1,488,746	0.00507	A	3.8
PM-PRI	9,859,242	151,000	1,488,746	0.0520	A	38.7
PM-FIL	9,859,242	151,000	1,488,746	0.0420	A	31.3
PM-CON	9,859,242	151,000	1,488,746	0.0100	A	7.4
PM10-PRI	9,859,242	151,000	1,488,746	0.0398	A	29.6
PM10-FIL	9,859,242	151,000	1,488,746	0.0298	A	22.2
PM25-PRI	9,859,242	151,000	1,488,746	0.0318	A	23.7
PM25-FIL	9,859,242	151,000	1,488,746	0.0218	A	16.2
Acetaldehyde	9,859,242	151,000	1,488,746		A	
Acrolein	9,859,242	151,000	1,488,746		A	
Antimony Compounds	9,859,242	151,000	1,488,746	3.50E-05	A	2.61E-02
Arsenic Compounds	9,859,242	151,000	1,488,746	8.80E-06	A	6.55E-03
Benzene	9,859,242	151,000	1,488,746	1.43E-06	A	1.06E-03
Beryllium Compounds	9,859,242	151,000	1,488,746	1.85E-07	A	1.38E-04
1,3-Butadiene	9,859,242	151,000	1,488,746		A	
Cadmium Compounds	9,859,242	151,000	1,488,746	2.65E-06	A	1.98E-03
Chromium Compounds	9,859,242	151,000	1,488,746	5.63E-06	A	4.19E-03
Cobalt Compounds	9,859,242	151,000	1,488,746	4.01E-05	A	2.99E-02
Ethylbenzene	9,859,242	151,000	1,488,746	4.24E-07	A	3.16E-04
Formaldehyde	9,859,242	151,000	1,488,746	4.07E-04	A	3.03E-01
Hydrochloric Acid	9,859,242	151,000	1,488,746		A	
Lead Compounds	9,859,242	151,000	1,488,746	1.01E-05	A	7.49E-03
Manganese Compounds	9,859,242	151,000	1,488,746	2.00E-05	A	1.49E-02
Mercury Compounds	9,859,242	151,000	1,488,746	7.53E-07	A	5.61E-04
Nickel Compounds	9,859,242	151,000	1,488,746	5.63E-04	A	4.19E-01
Naphthalene	9,859,242	151,000	1,488,746	7.53E-06	A	5.61E-03
Phosphorus	9,859,242	151,000	1,488,746	6.31E-05	A	4.69E-02
POM	9,859,242	151,000	1,488,746	8.67E-06	A	6.45E-03
Selenium Compounds	9,859,242	151,000	1,488,746	4.55E-06	A	3.39E-03
Toluene	9,859,242	151,000	1,488,746	4.13E-05	A	3.08E-02
Xylene	9,859,242	151,000	1,488,746		A	
o-Xylene	9,859,242	151,000	1,488,746	7.27E-07	A	5.41E-04

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 6 Spec Used Oil

Pollutant	Annual Spec Oil Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	254	16.5	A	0.0021
NOX	254	47	A	0.0060
CO	254	5.0	A	0.0006
VOC	254	0.76	A	0.0001
PM-PRI	254	5.68	A	0.00072
PM-FIL	254	4.18	A	0.00053
PM-CON	254	1.50	A	0.00019
PM10-PRI	254	4.47	A	0.00057
PM10-FIL	254	2.97	A	0.00038
PM25-PRI	254	3.67	A	0.00047
PM25-FIL	254	2.17	A	0.00028
Acetaldehyde	254		A	
Acrolein	254		A	
Antimony Compounds	254		A	
Arsenic Compounds	254	1.10E-01	A	1.40E-05
Benzene	254		A	
Beryllium Compounds	254		A	
1,3-Butadiene	254		A	
Cadmium Compounds	254	9.30E-03	A	1.18E-06
Chromium Compounds	254	2.00E-02	A	2.54E-06
Cobalt Compounds	254	2.10E-04	A	2.67E-08
Ethylbenzene	254		A	
Formaldehyde	254		A	
Hydrochloric Acid	254	3.30E-02	A	4.19E-06
Lead Compounds	254	5.50E-01	A	6.99E-05
Manganese Compounds	254	6.80E-02	A	8.64E-06
Mercury Compounds	254	.	A	
Nickel Compounds	254	1.10E-02	A	1.40E-06
Naphthalene	254		A	
Phosphorus	254		A	
POM	254		A	
Selenium Compounds	254		A	
Toluene	254		A	
Xylene	254		A	
o-Xylene	254		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 6 Propane

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	3,364	91,300	307	0.00424	M	0.00065
NOX	3,364	91,300	307	0.208	A	0.03194
CO	3,364	91,300	307	0.035	A	0.00537
VOC	3,364	91,300	307	0.00546	A	0.00084
PM-PRI	3,364	91,300	307	0.0121	A	0.00186
PM-FIL	3,364	91,300	307	0.00656	A	0.00101
PM-CON	3,364	91,300	307	0.00558824	A	0.00086
PM10-PRI	3,364	91,300	307	0.0121	A	0.00186
PM10-FIL	3,364	91,300	307	0.00656	A	0.00101
PM25-PRI	3,364	91,300	307	0.0121	A	0.00186
PM25-FIL	3,364	91,300	307	0.00656	A	0.00101
Acetaldehyde	3,364	91,300	307		A	
Acrolein	3,364	91,300	307		A	
Antimony Compounds	3,364	91,300	307		A	
Arsenic Compounds	3,364	91,300	307		A	
Benzene	3,364	91,300	307		A	
Beryllium Compounds	3,364	91,300	307		A	
1,3-Butadiene	3,364	91,300	307		A	
Cadmium Compounds	3,364	91,300	307		A	
Chromium Compounds	3,364	91,300	307		A	
Cobalt Compounds	3,364	91,300	307		A	
Ethylbenzene	3,364	91,300	307		A	
Formaldehyde	3,364	91,300	307		A	
Hydrochloric Acid	3,364	91,300	307		A	
Lead Compounds	3,364	91,300	307		A	
Manganese Compounds	3,364	91,300	307		A	
Mercury Compounds	3,364	91,300	307		A	
Nickel Compounds	3,364	91,300	307		A	
Naphthalene	3,364	91,300	307		A	
Phosphorus	3,364	91,300	307		A	
PCM	[illegible]	[illegible]	[illegible]			

Waiau 6 Total

Pollutant	Annual Emissions Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Propane (tons/yr)	Total (tons/yr)
SO2	268	0.0021	0.0007	268.0
NOX	233	0.0060	0.0319	233.0
CO	24.8	0.0006	0.0054	24.8
VOC	3.8	0.0001	0.0008	3.8
PM-PRI	38.7	0.0007	0.0019	38.7
PM-FIL	31.3	0.0005	0.0010	31.3
PM-CON	7.4	0.0002	0.0009	7.4
PM10-PRI	29.6	0.0006	0.0019	29.6
PM10-FIL	22.2	0.0004	0.0010	22.2
PM25-PRI	23.7	0.0005	0.0019	23.7
PM25-FIL	16.2	0.0003	0.0010	16.2
Acetaldehyde				
Acrolein				
Antimony Compounds	2.61E-02			2.61E-02
Arsenic Compounds	6.55E-03	1.40E-05		6.56E-03
Benzene	1.06E-03			1.06E-03
Beryllium Compounds	1.38E-04			1.38E-04
1,3-Butadiene				
Cadmium Compounds	1.98E-03	1.18E-06		1.98E-03
Chromium Compounds	4.19E-03	2.54E-06		4.20E-03
Cobalt Compounds	2.99E-02	2.67E-08		2.99E-02
Ethylbenzene	3.16E-04			3.16E-04
Formaldehyde	3.03E-01			3.03E-01
Hydrochloric Acid		4.19E-06		4.19E-06
Lead Compounds	7.49E-03	6.99E-05		7.56E-03
Manganese Compounds	1.49E-02	8.64E-06		1.49E-02
Mercury Compounds	5.61E-04			5.61E-04
Nickel Compounds	4.19E-01	1.40E-06		4.19E-01
Naphthalene	5.61E-03			5.61E-03
Phosphorus	4.69E-02			4.69E-02
POM	6.45E-03			6.45E-03
Selenium Compounds	3.39E-03			3.39E-03
Toluene	3.08E-02			3.08E-02
Xylene				
o-Xylene	5.41E-04			5.41E-04
Total HAPs				9.09E-01

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 7 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	28,324,097	151,000	4,276,939	0.360	M	769.8
NOX	28,324,097	151,000	4,276,939	0.313	A	669.3
CO	28,324,097	151,000	4,276,939	0.0333	A	71.2
VOC	28,324,097	151,000	4,276,939	0.00507	A	10.8
PM-PRI	28,324,097	151,000	4,276,939	0.0520	A	111.2
PM-FIL	28,324,097	151,000	4,276,939	0.0420	A	89.8
PM-CON	28,324,097	151,000	4,276,939	0.0100	A	21.4
PM10-PRI	28,324,097	151,000	4,276,939	0.0398	A	85.1
PM10-FIL	28,324,097	151,000	4,276,939	0.0298	A	63.7
PM25-PRI	28,324,097	151,000	4,276,939	0.0318	A	68.0
PM25-FIL	28,324,097	151,000	4,276,939	0.0218	A	46.6
Acetaldehyde	28,324,097	151,000	4,276,939		A	
Acrolein	28,324,097	151,000	4,276,939		A	
Antimony Compounds	28,324,097	151,000	4,276,939	3.50E-05	A	7.48E-02
Arsenic Compounds	28,324,097	151,000	4,276,939	8.80E-06	A	1.88E-02
Benzene	28,324,097	151,000	4,276,939	1.43E-06	A	3.05E-03
Beryllium Compounds	28,324,097	151,000	4,276,939	1.85E-07	A	3.96E-04
1,3-Butadiene	28,324,097	151,000	4,276,939		A	
Cadmium Compounds	28,324,097	151,000	4,276,939	2.65E-06	A	5.67E-03
Chromium Compounds	28,324,097	151,000	4,276,939	5.63E-06	A	1.20E-02
Cobalt Compounds	28,324,097	151,000	4,276,939	4.01E-05	A	8.58E-02
Ethylbenzene	28,324,097	151,000	4,276,939	4.24E-07	A	9.07E-04
Formaldehyde	28,324,097	151,000	4,276,939	4.07E-04	A	8.70E-01
Hydrochloric Acid	28,324,097	151,000	4,276,939		A	
Lead Compounds	28,324,097	151,000	4,276,939	1.01E-05	A	2.15E-02
Manganese Compounds	28,324,097	151,000	4,276,939	2.00E-05	A	4.28E-02
Mercury Compounds	28,324,097	151,000	4,276,939	7.53E-07	A	1.61E-03
Nickel Compounds	28,324,097	151,000	4,276,939	5.63E-04	A	1.20E+00
Naphthalene	28,324,097	151,000	4,276,939	7.53E-06	A	1.61E-02
Phosphorus	28,324,097	151,000	4,276,939	6.31E-05	A	1.35E-01
POM	28,324,097	151,000	4,276,939	8.67E-06	A	1.85E-02
Selenium Compounds	28,324,097	151,000	4,276,939	4.55E-06	A	9.74E-03
Toluene	28,324,097	151,000	4,276,939	4.13E-05	A	8.84E-02
Xylene	28,324,097	151,000	4,276,939		A	
o-Xylene	28,324,097	151,000	4,276,939	7.27E-07	A	1.55E-03

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 7 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	4,098	140,000	574	0.080	M	0.0229
NOX	4,098	140,000	574	0.171	A	0.0491
CO	4,098	140,000	574	0.0357	A	0.0102
VOC	4,098	140,000	574	0.00143	A	0.0004
PM-PRI	4,098	140,000	574	0.0236	A	0.0068
PM-FIL	4,098	140,000	574	0.0143	A	0.0041
PM-CON	4,098	140,000	574	0.0093	A	0.0027
PM10-PRI	4,098	140,000	574	0.0164	A	0.0047
PM10-FIL	4,098	140,000	574	0.0071	A	0.0020
PM25-PRI	4,098	140,000	574	0.0111	A	0.0032
PM25-FIL	4,098	140,000	574	0.0018	A	0.0005
Acetaldehyde	4,098	140,000	574		A	
Acrolein	4,098	140,000	574		A	
Antimony Compounds	4,098	140,000	574	3.75E-05	A	1.08E-05
Arsenic Compounds	4,098	140,000	574	9.43E-06	A	2.70E-06
Benzene	4,098	140,000	574	1.53E-06	A	4.38E-07
Beryllium Compounds	4,098	140,000	574	1.99E-07	A	5.70E-08
1,3-Butadiene	4,098	140,000	574		A	
Cadmium Compounds	4,098	140,000	574	2.84E-06	A	8.16E-07
Chromium Compounds	4,098	140,000	574	6.04E-06	A	1.73E-06
Cobalt Compounds	4,098	140,000	574	4.30E-05	A	1.23E-05
Ethylbenzene	4,098	140,000	574	4.54E-07	A	1.30E-07
Formaldehyde	4,098	140,000	574	4.36E-04	A	1.25E-04
Hydrochloric Acid	4,098	140,000	574		A	
Lead Compounds	4,098	140,000	574	1.08E-05	A	3.09E-06
Manganese Compounds	4,098	140,000	574	2.14E-05	A	6.15E-06
Mercury Compounds	4,098	140,000	574	8.07E-07	A	2.32E-07
Nickel Compounds	4,098	140,000	574	6.04E-04	A	1.73E-04
Naphthalene	4,098	140,000	574	8.07E-06	A	2.32E-06
Phosphorus	4,098	140,000	574	6.76E-05	A	1.94E-05
POM	4,098	140,000	574	9.29E-06	A	2.66E-06
Selenium Compounds	4,098	140,000	574	4.88E-06	A	1.40E-06
Toluene	4,098	140,000	574	4.43E-05	A	1.27E-05
Xylene	4,098	140,000	574		A	
o-Xylene	4,098	140,000	574	7.79E-07	A	2.23E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 7 Spec Used Oil

Pollutant	Annual Spec Oil Use (gal/yr)	Emission Factor (lb/10^ gal)	EF Ref	Annual Emissions (tons/yr)
SO2	731	16.5	A	0.0060
NOX	731	47	A	0.0172
CO	731	5.0	A	0.0018
VOC	731	0.76	A	0.0003
PM-PRI	731	5.68	A	0.00208
PM-FIL	731	4.18	A	0.00153
PM-CON	731	1.50	A	0.00055
PM10-PRI	731	4.47	A	0.00163
PM10-FIL	731	2.97	A	0.00109
PM25-PRI	731	3.67	A	0.00134
PM25-FIL	731	2.17	A	0.00079
Acetaldehyde	731		A	
Acrolein	731		A	
Antimony Compounds	731		A	
Arsenic Compounds	731	1.10E-01	A	4.02E-05
Benzene	731		A	
Beryllium Compounds	731		A	
1,3-Butadiene	731		A	
Cadmium Compounds	731	9.30E-03	A	3.40E-06
Chromium Compounds	731	2.00E-02	A	7.31E-06
Cobalt Compounds	731	2.10E-04	A	7.68E-08
Ethylbenzene	731		A	
Formaldehyde	731		A	
Hydrochloric Acid	731	3.30E-02	A	1.21E-05
Lead Compounds	731	5.50E-01	A	2.01E-04
Mercury Compounds	731		A	
Nickel Compounds	731	1.10E-02	A	4.02E-06
Naphthalene	731		A	
Phosphorus	731		A	
POM	731		A	
Selenium Compounds	731		A	
Toluene	731		A	
Xylene	731		A	
o-Xylene	731		A	

Notes:
M - Mass Balance
P - Permit Limit

Waiau 7 Total

Pollutant	Annual Emissions No 6 Fuel Oil (tons/yr)	No 2 Fuel Oil (tons/yr)	Spec Used Oil (tons/yr)	Total (tons/yr)
SO2	769.8	0.0229	0.0060	769.8
NOX	669.3	0.0491	0.0172	669.4
CO	71.2	0.0102	0.0018	71.2
VOC	10.8	0.0004	0.0003	10.8
PM-PRI	111.2	0.0068	0.0021	111.2
PM-FIL	89.8	0.0041	0.0015	89.8
PM-CON	21.4	0.0027	0.0005	21.4
PM10-PRI	85.1	0.0047	0.0016	85.1
PM10-FIL	63.7	0.0020	0.0011	63.7
PM25-PRI	68	0.0032	0.0013	68.0
PM25-FIL	46.6	0.0005	0.0008	46.6
Acetaldehyde				
Acrolein				
Antimony Compounds	7.48E-02	1.08E-05		7.49E-02
Arsenic Compounds	1.88E-02	2.70E-06	4.02E-05	1.89E-02
Benzene	3.05E-03	4.38E-07		3.05E-03
Beryllium Compounds	3.96E-04	5.70E-08		3.96E-04
1,3-Butadiene				
Cadmium Compounds	5.67E-03	8.16E-07	3.40E-06	5.68E-03
Chromium Compounds	1.20E-02	1.73E-06	7.31E-06	1.21E-02
Cobalt Compounds	8.58E-02	1.23E-05	7.68E-08	8.58E-02
Ethylbenzene	9.07E-04	1.30E-07		9.07E-04
Formaldehyde	8.70E-01	1.25E-04		8.70E-01
Hydrochloric Acid			1.21E-05	1.21E-05
Lead Compounds	2.15E-02	3.09E-06	2.01E-04	2.17E-02
Manganese Compounds	4.28E-02	6.15E-06	2.49E-05	4.28E-02
Mercury Compounds	1.61E-03	2.32E-07		1.61E-03
Nickel Compounds	1.20E+00	1.73E-04	4.02E-06	1.20E+00
Naphthalene	1.61E-02	2.32E-06		1.61E-02
Phosphorus	1.35E-01	1.94E-05		1.35E-01
POM	1.85E-02	2.66E-06		1.85E-02
Selenium Compounds	9.74E-03	1.40E-06		9.74E-03
Toluene	8.84E-02	1.27E-05		8.84E-02
Xylene				
o-Xylene	1.55E-03	2.23E-07		1.55E-03
Total HAPs				2.61E+00

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 8 No 6 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	30,533,788	151,000	4,610,602	0.360	M	829.9
NOX	30,533,788	151,000	4,610,602	0.313	A	721.6
CO	30,533,788	151,000	4,610,602	0.0333	A	76.8
VOC	30,533,788	151,000	4,610,602	0.00507	A	11.7
PM-PRI	30,533,788	151,000	4,610,602	0.0520	A	119.9
PM-FIL	30,533,788	151,000	4,610,602	0.0420	A	96.8
PM-CON	30,533,788	151,000	4,610,602	0.0100	A	23.1
PM10-PRI	30,533,788	151,000	4,610,602	0.0398	A	91.8
PM10-FIL	30,533,788	151,000	4,610,602	0.0298	A	68.7
PM25-PRI	30,533,788	151,000	4,610,602	0.0318	A	73.3
PM25-FIL	30,533,788	151,000	4,610,602	0.0218	A	50.3
Acetaldehyde	30,533,788	151,000	4,610,602		A	
Acrolein	30,533,788	151,000	4,610,602		A	
Antimony Compounds	30,533,788	151,000	4,610,602	3.50E-05	A	8.07E-02
Arsenic Compounds	30,533,788	151,000	4,610,602	8.80E-06	A	2.03E-02
Benzene	30,533,788	151,000	4,610,602	1.43E-06	A	3.29E-03
Beryllium Compounds	30,533,788	151,000	4,610,602	1.85E-07	A	4.27E-04
1,3-Butadiene	30,533,788	151,000	4,610,602		A	
Cadmium Compounds	30,533,788	151,000	4,610,602	2.65E-06	A	6.12E-03
Chromium Compounds	30,533,788	151,000	4,610,602	5.63E-06	A	1.30E-02
Cobalt Compounds	30,533,788	151,000	4,610,602	4.01E-05	A	9.25E-02
Ethylbenzene	30,533,788	151,000	4,610,602	4.24E-07	A	9.77E-04
Formaldehyde	30,533,788	151,000	4,610,602	4.07E-04	A	9.37E-01
Hydrochloric Acid	30,533,788	151,000	4,610,602		A	
Lead Compounds	30,533,788	151,000	4,610,602	1.01E-05	A	2.32E-02
Manganese Compounds	30,533,788	151,000	4,610,602	2.00E-05	A	4.61E-02
Mercury Compounds	30,533,788	151,000	4,610,602	7.53E-07	A	1.74E-03
Nickel Compounds	30,533,788	151,000	4,610,602	5.63E-04	A	1.30E+00
Naphthalene	30,533,788	151,000	4,610,602	7.53E-06	A	1.74E-02
Phosphorus	30,533,788	151,000	4,610,602	6.31E-05	A	1.45E-01
POM	30,533,788	151,000	4,610,602	8.67E-06	A	2.00E-02
Selenium Compounds	[illegible]	[illegible]	[illegible]	[illegible]		

Waiau 8 No 2 FO

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	4,418	140,000	619	0.080	M	0.0247
NOX	4,418	140,000	619	0.171	A	0.0529
CO	4,418	140,000	619	0.0357	A	0.0110
VOC	4,418	140,000	619	0.00143	A	0.0004
PM-PRI	4,418	140,000	619	0.0236	A	0.0073
PM-FIL	4,418	140,000	619	0.0143	A	0.0044
PM-CON	4,418	140,000	619	0.00929	A	0.0029
PM10-PRI	4,418	140,000	619	0.0164	A	0.0051
PM10-FIL	4,418	140,000	619	0.00714	A	0.0022
PM25-PRI	4,418	140,000	619	0.0111	A	0.0034
PM25-FIL	4,418	140,000	619	0.00179	A	0.0006
Acetaldehyde	4,418	140,000	619		A	
Acrolein	4,418	140,000	619		A	
Antimony Compounds	4,418	140,000	619	3.75E-05	A	1.16E-05
Arsenic Compounds	4,418	140,000	619	9.43E-06	A	2.92E-06
Benzene	4,418	140,000	619	1.53E-06	A	4.73E-07
Beryllium Compounds	4,418	140,000	619	1.99E-07	A	6.14E-08
1,3-Butadiene	4,418	140,000	619		A	
Cadmium Compounds	4,418	140,000	619	2.84E-06	A	8.79E-07
Chromium Compounds	4,418	140,000	619	6.04E-06	A	1.87E-06
Cobalt Compounds	4,418	140,000	619	4.30E-05	A	1.33E-05
Ethylbenzene	4,418	140,000	619	4.54E-07	A	1.40E-07
Formaldehyde	4,418	140,000	619	4.36E-04	A	1.35E-04
Hydrochloric Acid	4,418	140,000	619		A	
Lead Compounds	4,418	140,000	619	1.08E-05	A	3.34E-06
Manganese Compounds	4,418	140,000	619	2.14E-05	A	6.63E-06
Mercury Compounds	4,418	140,000	619	8.07E-07	A	2.50E-07
Nickel Compounds	4,418	140,000	619	6.04E-04	A	1.87E-04
Naphthalene	4,418	140,000	619	8.07E-06	A	2.50E-06
Phosphorus	4,418	140,000	619	6.76E-05	A	2.09E-05
POM	4,418	140,000	619	9.29E-06	A	2.87E-06
Selenium Compounds	4,418	140,000	619	4.88E-06	A	1.51E-06
Toluene	4,418	140,000	619	4.43E-05	A	1.37E-05
Xylene	4,418	140,000	619		A	
o-Xylene	4,418	140,000	619	7.79E-07	A	2.41E-07

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 8 Spec Used Oil

Pollutant	Annual Spec Oil Use (gal/yr)	Emission Factor (lb/10^3 gal)	EF Ref	Annual Emissions (tons/yr)
SO2	788	16.5	A	0.0065
NOX	788	47	A	0.0185
CO	788	5.0	A	0.0020
VOC	788	0.76	A	0.0003
PM-PRI	788	5.68	A	0.00224
PM-FIL	788	4.18	A	0.00165
PM-CON	788	1.50	A	0.00059
PM10-PRI	788	4.47	A	0.00176
PM10-FIL	788	2.97	A	0.00117
PM25-PRI	788	3.67	A	0.00145
PM25-FIL	788	2.17	A	0.00085
Acetaldehyde	788		A	
Acrolein	788		A	
Antimony Compounds	788		A	
Arsenic Compounds	788	1.10E-01	A	4.33E-05
Benzene	788		A	
Beryllium Compounds	788		A	
1,3-Butadiene	788		A	
Cadmium Compounds	788	9.30E-03	A	3.66E-06
Chromium Compounds	788	2.00E-02	A	7.88E-06
Cobalt Compounds	788	2.10E-04	A	8.27E-08
Ethylbenzene	788		A	
Formaldehyde	788		A	
Hydrochloric Acid	788	3.30E-02	A	1.30E-05
Lead Compounds	788	5.50E-01	A	2.17E-04
Manganese Compounds	788	6.80E-02	A	2.68E-05
Mercury Compounds	788		A	
Nickel Compounds	788	1.10E-02	A	4.33E-06
Naphthalene	788		A	
Phosphorus	788		A	
POM	788		A	
Selenium Compounds	788		A	
Toluene	788		A	
Xylene	788		A	
o-Xylene	788		A	

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 8 Total

Pollutant	Annual Emissions No. 6 Fuel Oil (tons/yr)	No. 2 Fuel Oil (tons/yr)	Spec Oil (tons/yr)	Total (tons/yr)
SO2	829.9	0.0247	0.0065	829.9
NOX	721.6	0.0529	0.0185	721.7
CO	76.8	0.0110	0.0020	76.8
VOC	11.7	0.0004	0.0003	11.7
PM-PRI	119.9	0.0073	0.0022	119.9
PM-FIL	96.8	0.0044	0.0016	96.8
PM-CON	23.1	0.0029	0.0006	23.1
PM10-PRI	91.8	0.0051	0.0018	91.8
PM10-FIL	68.7	0.0022	0.0012	68.7
PM25-PRI	73.3	0.0034	0.0014	73.3
PM25-FIL	50.3	0.0006	0.0009	50.3
Acetaldehyde				
Acrolein				
Antimony Compounds	8.07E-02	1.16E-05		8.07E-02
Arsenic Compounds	2.03E-02	2.92E-06	4.33E-05	2.03E-02
Benzene	3.29E-03	4.73E-07		3.29E-03
Beryllium Compounds	4.27E-04	6.14E-08		4.27E-04
1,3-Butadiene				
Cadmium Compounds	6.12E-03	8.79E-07	3.66E-06	6.12E-03
Chromium Compounds	1.30E-02	1.87E-06	7.88E-06	1.30E-02
Cobalt Compounds	9.25E-02	1.33E-05	8.27E-08	9.25E-02
Ethylbenzene	9.77E-04	1.40E-07		9.78E-04
Formaldehyde	9.37E-01	1.35E-04		9.38E-01
Hydrochloric Acid			1.30E-05	1.30E-05
Lead Compounds	2.32E-02	3.34E-06	2.17E-04	2.34E-02
Manganese Compounds	4.61E-02	6.63E-06	2.68E-05	4.61E-02
Mercury Compounds	1.74E-03	2.50E-07		1.74E-03
Nickel Compounds	1.30E+00	1.87E-04	4.33E-06	1.30E+00
Naphthalene	1.74E-02	2.50E-06		1.74E-02
Phosphorus	1.45E-01	2.09E-05		1.45E-01
POM	2.00E-02	2.87E-06		2.00E-02
Selenium Compounds	1.05E-02	1.51E-06		1.05E-02
Toluene	9.53E-02	1.37E-05		9.53E-02
Xylene				
o-Xylene	1.68E-03	2.41E-07		1.68E-03
Total HAPs				2.82E+00

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 9

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	1,678,254	140,000	234,956	0.158	M	18.6
NOX	1,678,254	140,000	234,956	0.88	A	103.4
CO	1,678,254	140,000	234,956	0.0033	A	0.4
VOC	1,678,254	140,000	234,956	0.00041	A	0.05
PM-PRI	1,678,254	140,000	234,956	0.012	A	1.4
PM-FIL	1,678,254	140,000	234,956	0.0043	A	0.5
PM-CON	1,678,254	140,000	234,956	0.0072	A	0.8
PM10-PRI	1,678,254	140,000	234,956	0.01133	A	1.3
PM10-FIL	1,678,254	140,000	234,956	0.00413	A	0.5
PM25-PRI	1,678,254	140,000	234,956	0.01107	A	1.3
PM25-FIL	1,678,254	140,000	234,956	0.00387	A	0.5
Acetaldehyde	1,678,254	140,000	234,956	2.52E-05	A	2.96E-03
Acrolein	1,678,254	140,000	234,956	7.88E-06	A	9.26E-04
Antimony Compounds	1,678,254	140,000	234,956		A	
Arsenic Compounds	1,678,254	140,000	234,956	1.10E-05	A	1.29E-03
Benzene	1,678,254	140,000	234,956	5.50E-05	A	6.46E-03
Beryllium Compounds	1,678,254	140,000	234,956	3.10E-07	A	3.64E-05
1,3-Butadiene	1,678,254	140,000	234,956	1.60E-05	A	1.88E-03
Cadmium Compounds	1,678,254	140,000	234,956	4.80E-06	A	5.64E-04
Chromium Compounds	1,678,254	140,000	234,956	1.10E-05	A	1.29E-03
Cobalt Compounds	1,678,254	140,000	234,956		A	
Ethylbenzene	1,678,254	140,000	234,956		A	
Formaldehyde	1,678,254	140,000	234,956	2.80E-04	A	3.29E-02
Hydrochloric Acid	1,678,254	140,000	234,956		A	
Lead Compounds	1,678,254	140,000	234,956	1.40E-05	A	1.64E-03
Manganese Compounds	1,678,254	140,000	234,956	7.90E-04	A	9.28E-02
Mercury Compounds	1,678,254	140,000	234,956	1.20E-06	A	1.41E-04
Nickel Compounds	1,678,254	140,000	234,956	4.60E-06	A	5.40E-04
Naphthalene	1,678,254	140,000	234,956	3.50E-05	A	4.11E-03
Phosphorus	1,678,254	140,000	234,956		A	
POM	1,678,254	140,000	234,956	4.00E-05	A	4.70E-03
Selenium Compounds	1,678,254	140,000	234,956	2.50E-05	A	2.94E-03
Toluene	1,678,254	140,000	234,956	2.81E-04	A	3.30E-02
Xylene	1,678,254	140,000	234,956	1.93E-04	A	2.27E-02
o-Xylene	1,678,254	140,000	234,956		A	
Total HAPs						2.11E-01

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Waiau 10

Pollutant	Annual Fuel Use (gal/yr)	Fuel Heat Content (Btu/gal)	Annual Fuel Use (MMBtu/yr)	Emission Factor (lb/MMBtu)	EF Ref	Annual Emissions (tons/yr)
SO2	922,050	140,000	129,087	0.158	M	10.2
NOX	922,050	140,000	129,087	0.88	A	56.8
CO	922,050	140,000	129,087	0.0033	A	0.2
VOC	922,050	140,000	129,087	0.00041	A	0.03
PM-PRI	922,050	140,000	129,087	0.012	A	0.8
PM-FIL	922,050	140,000	129,087	0.0043	A	0.3
PM-CON	922,050	140,000	129,087	0.0072	A	0.5
PM10-PRI	922,050	140,000	129,087	0.01133	A	0.7
PM10-FIL	922,050	140,000	129,087	0.00413	A	0.3
PM25-PRI	922,050	140,000	129,087	0.01107	A	0.7
PM25-FIL	922,050	140,000	129,087	0.00387	A	0.2
Acetaldehyde	922,050	140,000	129,087	2.52E-05	A	1.63E-03
Acrolein	922,050	140,000	129,087	7.88E-06	A	5.09E-04
Antimony Compounds	922,050	140,000	129,087		A	
Arsenic Compounds	922,050	140,000	129,087	1.10E-05	A	7.10E-04
Benzene	922,050	140,000	129,087	5.50E-05	A	3.55E-03
Beryllium Compounds	922,050	140,000	129,087	3.10E-07	A	2.00E-05
1,3-Butadiene	922,050	140,000	129,087	1.60E-05	A	1.03E-03
Cadmium Compounds	922,050	140,000	129,087	4.80E-06	A	3.10E-04
Chromium Compounds	922,050	140,000	129,087	1.10E-05	A	7.10E-04
Cobalt Compounds	922,050	140,000	129,087		A	
Ethylbenzene	922,050	140,000	129,087		A	
Formaldehyde	922,050	140,000	129,087	2.80E-04	A	1.81E-02
Hydrochloric Acid	922,050	140,000	129,087		A	
Lead Compounds	922,050	140,000	129,087	1.40E-05	A	9.04E-04
Manganese Compounds	922,050	140,000	129,087	7.90E-04	A	5.10E-02
Mercury Compounds	922,050	140,000	129,087	1.20E-06	A	7.75E-05
Nickel Compounds	922,050	140,000	129,087	4.60E-06	A	2.97E-04
Naphthalene	922,050	140,000	129,087	3.50E-05	A	2.26E-03
Phosphorus	922,050	140,000	129,087		A	
POM	922,050	140,000	129,087	4.00E-05	A	2.58E-03
Selenium Compounds	922,050	140,000	129,087	2.50E-05	A	1.61E-03
Toluene	922,050	140,000	129,087	2.81E-04	A	1.81E-02
Xylene	922,050	140,000	129,087	1.93E-04	A	1.25E-02
o-Xylene	922,050	140,000	129,087		A	
Total HAPs						1.16E-01

Notes:
M - Mass Balance
P - Permit Limit
A - AP-42 Emission Factor
S - Stack Test Data

Summary

Pollutant	Annual Emissions (tons/year)								
	Waiau 3	Waiau 4	Waiau 5	Waiau 6	Waiau 7	Waiau 8	Waiau 9	Waiau 10	Total
SO2	118.7	161.2	218.0	268.0	769.8	829.9	18.6	10.2	2,394
NOX	103.2	140.1	189.6	233.0	669.4	721.7	103.4	56.8	2,217
CO	11.0	14.9	20.2	24.8	71.2	76.8	0.4	0.2	219.5
VOC	1.7	2.3	3.1	3.8	10.8	11.7	0.0	0.0	33.5
PM-PRI	17.1	23.3	31.5	38.7	111.2	119.9	1.4	0.8	343.9
PM-FIL	13.8	18.8	25.4	31.3	89.8	96.8	0.5	0.3	276.7
PM-CON	3.3	4.5	6.1	7.4	21.4	23.1	0.8	0.5	67.1
PM10-PRI	13.1	17.8	24.1	29.6	85.1	91.8	1.3	0.7	263.5
PM10-FIL	9.8	13.3	18.0	22.2	63.7	68.7	0.5	0.3	196.5
PM25-PRI	10.5	14.2	19.3	23.7	68.0	73.3	1.3	0.7	211.0
PM25-FIL	7.2	9.8	13.2	16.2	46.6	50.3	0.5	0.2	144.0
Acetaldehyde							2.96E-03	1.63E-03	0.0046
Acrolein							9.26E-04	5.09E-04	0.0014
Antimony Compounds	1.15E-02	1.57E-02	2.12E-02	2.61E-02	7.49E-02	8.07E-02			0.2300
Arsenic Compounds	2.91E-03	3.95E-03	5.34E-03	6.56E-03	1.89E-02	2.03E-02	1.29E-03	7.10E-04	0.0600
Benzene	4.70E-04	6.39E-04	8.64E-04	1.06E-03	3.05E-03	3.29E-03	6.46E-03	3.55E-03	0.0194
Beryllium Compounds	6.11E-05	8.30E-05	1.12E-04	1.38E-04	3.96E-04	4.27E-04	3.64E-05	2.00E-05	0.0013
1,3-Butadiene							1.88E-03	1.03E-03	0.0029
Cadmium Compounds	8.75E-04	1.19E-03	1.61E-03	1.98E-03	5.68E-03	6.12E-03	5.64E-04	3.10E-04	0.0183
Chromium Compounds	1.86E-03	2.52E-03	3.41E-03	4.20E-03	1.21E-02	1.30E-02	1.29E-03	7.10E-04	0.0390
Cobalt Compounds	1.32E-02	1.80E-02	2.43E-02	2.99E-02	8.58E-02	9.25E-02			0.2638
Ethylbenzene	1.40E-04	1.90E-04	2.57E-04	3.16E-04	9.07E-04	9.78E-04			0.0028
Formaldehyde	1.34E-01	1.82E-01	2.46E-01	3.03E-01	8.70E-01	9.38E-01	3.29E-02	1.81E-02	2.7235
Hydrochloric Acid	1.86E-06	2.52E-06	3.42E-06	4.19E-06	1.21E-05	1.30E-05			0.0000
Lead Compounds	3.35E-03	4.55E-03	6.15E-03	7.56E-03	2.17E-02	2.34E-02	1.64E-03	9.04E-04	0.0693
Manganese Compounds	6.60E-03	8.96E-03	1.21E-02	1.49E-02	4.28E-02	4.61E-02	9.28E-02	5.10E-02	0.2753
Mercury Compounds	2.48E-04	3.37E-04	4.56E-04	5.61E-04	1.61E-03	1.74E-03	1.41E-04	7.75E-05	0.0052
Nickel Compounds	1.86E-01	2.52E-01	3.41E-01	4.19E-01	1.20E+00	1.30E+00	5.40E-04	2.97E-04	3.7030
Naphthalene	2.48E-03	3.37E-03	4.56E-03	5.61E-03	1.61E-02	1.74E-02	4.11E-03	2.26E-03	0.0559
Phosphorus	2.08E-02	2.82E-02	3.82E-02	4.69E-02	1.35E-01	1.45E-01			0.4145
POM	2.86E-03	3.88E-03	5.25E-03	6.45E-03	1.85E-02	2.00E-02	4.70E-03	2.58E-03	0.0642
Selenium Compounds	1.50E-03	2.04E-03	2.76E-03	3.39E-03	9.74E-03	1.05E-02	2.94E-03	1.61E-03	0.0345
Toluene	1.36E-02	1.85E-02	2.50E-02	3.08E-02	8.84E-02	9.53E-02	3.30E-02	1.81E-02	0.3228
Xylene							2.27E-02	1.25E-02	0.0351
o-Xylene	2.40E-04	3.25E-04	4.40E-04	5.41E-04	1.55E-03	1.68E-03			0.0048
Total HAPS	4.03E-01	5.47E-01	7.40E-01	9.09E-01	2.61E+00	2.82E+00	2.11E-01	1.16E-01	8.3516

CA-IR-203

Ref: Capital Budgeting.

Please provide a copy of the capital budget variance reports prepared for March 2004, June 2004, October 2004 and December 2004.

HECO Response:

Due to the voluminous nature of the information, one copy (pages 2 through 167) will be provided to the Consumer Advocate and the Public Utilities Commission under separate transmittal.

Capital Expenditures

Project and Program

Year-to-Date March 2004

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Cor_Exc	SSF	Y00023	P0000499	Ward A/C Imprv Phase II	Ishii, A	2,302	107	2,195	2051%
Cor_Exc	SSF	Y00023	P0000506	Ward A/C Equip Repl	Ishii, A	5,455	0	5,455	100%
		Y00023 Total				7,757	107	7,650	
Cor_Exc	SSF		P0000500	Misc Office Furniture	Nakano, W	11,623	28,598	-16,975	-59%
Cor_Exc	SSF		P0000502	Waiau Minor Gen Addns	Nakano, W	0	17,722	-17,722	-100%
Cor_Exc	SSF		P0000503	Ward Ave Minor Addns	Nakano, W	13,438	47,675	-34,237	-72%
Cor_Exc	SSF		P0000504	King St Minor Addns	Nakano, W	444	18,905	-18,461	-98%
Cor_Exc	SSF		P0000505	Other Minor Gen Plt Addns	Nakano, W	2,675	9,937	-7,262	-73%
Cor_Exc	SSF		P0000543	Ward Fire Sprinkler Sys	Ishii, A	0	2,612	-2,612	-100%
Cor_Exc	SSF		P0000551	Waiau Guard House	Ishii, A	0	10,278	-10,278	-100%
Cor_Exc	SSF		P0000586	King St Attic	Ishii, A	722	740	-18	-2%
Cor_Exc	SSF		P0000594	Ward I Bldg access upgrade	Uemura, E	1,981	0	1,981	100%
Cor_Exc	SSF		P0000613	Fuel Cell Test Facility	Ishii, A	19	0	19	100%
Cor_Exc	SSF		P0000712	Archer Entry Gate	Ishii, A	16,020	0	16,020	100%
Cor_Exc	SSF		P0000722	Tsf Oil Spill Containment	Ishii, A	35	0	35	100%
Cor_Exc	SSF		P0000826	ITS Renovation	Nakano, W	0	143,227	-143,227	-100%
Cor_Exc	SSF		P0000840	Security/Campbell Station	Cardoza, A	0	93,000	-93,000	-100%
Cor_Exc	SSF		P0000841	Security/School Street Sub	Cardoza, A	0	102,205	-102,205	-100%
Cor_Exc	SSF		P0000842	Security/Wahiawa Sub	Cardoza, A	0	102,205	-102,205	-100%
Cor_Exc	SSF		P0000843	Security/Iwilei Sub	Cardoza, A	0	93,000	-93,000	-100%
Cor_Exc	SSF		P0000851	Purchasing Warehouse Renov	Nakano, W	0	246,849	-246,849	-100%
Cor_Exc	SSF		P0000865	King St Chillwater Pipe	HFEng	0	66,355	-66,355	-100%
Cor_Exc	SSF		P0000866	King Downspout Replcmt	HFEng	0	11,282	-11,282	-100%
Cor_Exc	SSF		P0000867	King St Window Project	HFEng	0	3,391	-3,391	-100%
Cor_Exc Total						54,714	998,088	-943,374	

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Cust_Gen	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	21,627	791	20,836	2634%
Cust_Gen	Land		P1370000	Distr R/W Purch (Blanket)	Fujiwara, C	2,613	0	2,613	100%
Cust_Gen	Land		P1373000	46kv R/W Purch (blanket)	Fujiwara, C	101	0	101	100%
Cust_Gen Total						24,341	791	23,550	

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
En_Del	C&M	Y00005	P0000120	Corr (Inc Emg) OH Trsf Rpl	Kumatak, D	169,377	60,806	108,571	179%
En_Del	C&M	Y00005	P0000121	Corr (Inc Emg) UG Trsf Rpl	Kumatak, D	97,257	32,518	64,739	199%
En_Del	C&M	Y00005	P0000122	Cor (Inc Emg) Mis Cable Rpl	Kumatak, D	1,557,744	63,291	1,494,453	2361%
En_Del	C&M	Y00005	P0000123	Corr (Inc Emg) OH Dist Rpl	Kumatak, D	1,469,349	164,049	1,305,300	796%
En_Del	C&M	Y00005	P0000124	Cor (Inc Emg) OH Subtrn Rpl	Kumatak, D	17,566	158,261	-140,695	-89%
		Y00005 Total				3,311,293	478,925	2,832,368	
En_Del	C&M	Y00006	P0000127	Test & Treat Wood Poles	Kumatak, D	0	41,869	-41,869	-100%
En_Del	C&M	Y00006	P1260000	C&M Recon UG Dist Cable	Kumatak, D	140,349	0	140,349	100%
En_Del	C&M	Y00006	P1789000	Preventive OH Transf Repl	Kumatak, D	15,670	142,947	-127,277	-89%
En_Del	C&M	Y00006	P1793000	Preventive UG Transf Repl	Kumatak, D	83,433	193,610	-110,177	-57%
En_Del	C&M	Y00006	P1810000	Prev Misc Cable Failure Rpl	Kumatak, D	295,956	1,124,334	-828,378	-74%
En_Del	C&M	Y00006	P3400000	Prev OH Dist Repl	Kumatak, D	288,513	355,258	-66,745	-19%
En_Del	C&M	Y00006	P3401000	Prev OH Subtrans Repl	Kumatak, D	287,180	649,854	-362,674	-56%
En_Del	C&M	Y00006	P3402000	Prev OH Trans Repl	Kumatak, D	6,371	386,971	-380,600	-98%
		Y00006 Total				1,117,472	2,894,843	-1,777,371	
En_Del	Engr	Y00004	P0000109	BP NAS Transition	Ho, M	-125	0	-125	100%
		Y00004 Total				-125	0	-125	
En_Del	Engr	Y00017	P0000190	Waikiki Rehab Project 1	Chang, C	2,301	199,284	-196,983	-99%
		Y00017 Total				2,301	199,284	-196,983	
En_Del	Engr	Y00031	P0000726	West Loch Sub	JangChe, L	-810	0	-810	100%
		Y00031 Total				-810	0	-810	
En_Del	Engr	Y00036	P0000766	McCully tsf #1 recircuiting	Chang, C	5,166	0	5,166	100%
En_Del	Engr	Y00036	P0000767	Ft Wvr SS Tsf #2 Install	Tamayo, R	4,111	0	4,111	100%
		Y00036 Total				9,277	0	9,277	
En_Del	Engr	Y00037	P0000775	HECO UF Load Shed Upd Trans	Chong, R	78,574	0	78,574	100%
En_Del	Engr	Y00037	P0000776	HECO UF Load Shed Distr	Chong, R	12,886	0	12,886	100%
		Y00037 Total				91,460	0	91,460	
En_Del	Engr	Y00038	P0000672	Kakaako Makai-Kewalo 25kV DL	Hiyama, R	13,144	53,521	-40,377	-75%
En_Del	Engr	Y00038	P0000783	Kakaako Makai-Iwilei 25KV DL	Hiyama, R	0	34,972	-34,972	-100%
		Y00038 Total				13,144	88,493	-75,349	
En_Del	Engr	Y00039	P0000833	Mamala Substation	Friel, C	19,174	0	19,174	100%
En_Del	Engr	Y00039	P0000834	46kV Fdrs to Mamala Sub	Panalal, T	6,773	0	6,773	100%
En_Del	Engr	Y00039	P0000835	Comm Links Mamala Sub	Oyadoma, M	1,077	172	905	526%
		Y00039 Total				27,024	172	26,852	

n 2004

	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
	Fukumot, G	32,857	150,876	-118,019	-78%
	Oyadoma, M	5,300	0	5,300	100%
		38,157	150,876	-112,719	
	Tamayo, R	27,434	0	27,434	100%
	Ikeda, L	48,319	0	48,319	100%
		75,753	0	75,753	
ns	Nakagaw, P	2,178	0	2,178	100%
		2,178	0	2,178	
	Arakaki, D	2,571	8,744	-6,173	-71%
	Lee, I	50,974	0	50,974	100%
	Lum, M	126,242	0	126,242	100%
3	Arakaki, D	477	0	477	100%
2	Arakaki, D	1,015	0	1,015	100%
l	Arakaki, D	28,568	48,277	-19,709	-41%
	Kaneshi, R	1,793	305,474	-303,681	-99%
	Lum, M	186,042	268,573	-82,531	-31%
	Kaneshi, R	272	32,291	-32,019	-99%
	Fukumot, G	18,733	158,844	-140,111	-88%
	Char, C	0	11,625	-11,625	-100%
Cr Ln	Lee, I	392,038	807,854	-415,816	-51%
e	Lau, D	0	15,400	-15,400	-100%
	Lau, D	0	15,400	-15,400	-100%
?	Lung, H	0	13,264	-13,264	-100%
91	Fukumot, G	55,129	69,401	-14,272	-21%
Imp	Panalal, T	608	47,446	-46,838	-99%
nv	Lee, I	4,481	62,934	-58,453	-93%
on	Hiyama, R	21,395	0	21,395	100%
ion	Ho, M	88,133	51,555	36,578	71%
ients	Lee, I	19,981	0	19,981	100%
DH	Hiyama, R	121,588	0	121,588	100%
ding	Oshiro, E	11,459	0	11,459	100%
es	Oyadoma, M	0	1,350	-1,350	-100%
gm	Friel, C	149,645	189,914	-40,269	-21%
	Oyadoma, M	2,147	1,612	535	33%

04	Var $	Var %
49	-47,154	-90%
71	-10,642	-12%
0	-824	100%
0	10,498	100%
0	2,824	100%
0	6,537	100%
0	7,719	100%
71	231,496	15737%
07	-199,426	-83%
0	85,530	100%
0	41,687	100%
0	5,304	100%
0	16,726	100%
0	17,349	100%
0	16,187	100%
0	44,662	100%
0	13,758	100%
01	-189,460	-98%
0	60,347	100%
0	326,362	100%
0	307,941	100%
0	277,359	100%
0	413	100%
0	296,130	100%
0	29,652	100%
0	6,523	100%
0	81,707	100%
0	13,303	100%
11	82,605	105%
11	552,352	355%
97	260,059	390%
14	-126,175	-97%
50	36,136	32%
39	40,842	41%

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
En_Del	Engr		P6740000	Iwilei Ntwk Bkr Failure	Arakaki, D	5,678	0	5,678	100%
En_Del	Engr		P6862000	Kahe Bus B Bkup Prot	Arakaki, D	80	0	80	100%
En_Del	Engr		P7270000	N Shore Automation Comm	Shin, D	15,696	12,315	3,381	27%
En_Del	Engr		P7430000	Kahe 1-4 Cntrl Hse Expnsn	Arakaki, D	196	0	196	100%
En_Del	Engr		P8290000	Tripler Wahiawa mwr replace	Arakaki, G	17,468	171,977	-154,509	-90%
En_Del	Engr		P8470000	Koolau/Tripler MWR Repl	Arakaki, G	14,762	165,349	-150,587	-91%
En_Del	Engr		P9028000	Mobile Radio F1/F2 Replace	Arakaki, G	0	5,179	-5,179	-100%
En_Del	Engr		P9243000	450MHZZ Radio Replacement	Oyadoma, M	0	43,443	-43,443	-100%
En_Del	Engr		P9497000	Honolulu Spur	Hayakaw, W	23,937	0	23,937	100%
En_Del	Engr		P9511000	Generation Hotline Upgrd	Lau, D	3,432	46,429	-42,997	-93%
En_Del	Engr		P9903000	Puuloa Road Widening	Panalal, T	596,793	265,365	331,428	125%
En_Del	ProjMgt	Y00021	P0000277	New Kuahua Substation	Wong, K	53,354	56,380	-3,026	-5%
En_Del	ProjMgt	Y00021	P0000278	Makalapa Substation Prot	Wong, K	557	1,515	-958	-63%
En_Del	ProjMgt	Y00021	P0000279	Puuloa Substation Prot	Wong, K	500	321	179	56%
En_Del	ProjMgt	Y00021	P0000280	Makalapa-Kuahua FO Line	Wong, K	20,070	1,540	18,530	1203%
En_Del	ProjMgt	Y00021	P0000281	Makalapa-Puuloa FO Line	Wong, K	594	29,582	-28,988	-98%
En_Del	ProjMgt	Y00021	P0000282	Kuahua 46kv Ln Reconnect	Wong, K	842	4,938	-4,096	-83%
		Y00021 Total				75,917	94,276	-18,359	
En_Del	ProjMgt	Y00030	P0000713	Dispatch Center Building	Naito, C	159,953	300,042	-140,089	-47%
En_Del	ProjMgt	Y00030	P0000714	Materials Storage Relocation	Naito, C	3,733	60,961	-57,228	-94%
En_Del	ProjMgt	Y00030	P0000715	Dispatch Boards	Naito, C	0	1,561	-1,561	-100%
En_Del	ProjMgt	Y00030	P0000716	Telecomm Extensions	Naito, C	3,204	8,977	-5,773	-64%
En_Del	ProjMgt	Y00030	P0000717	EMS Replacement	Naito, C	51,824	103,215	-51,391	-50%
En_Del	ProjMgt	Y00030	P0000718	Dispatch Training Simulator	Naito, C	0	1,800	-1,800	-100%
		Y00030 Total				218,714	476,556	-257,842	
En_Del	ProjMgt	Y00040	P0000836	Ford Island Substation	Chong, R	16,719	156	16,563	10617%
		Y00040 Total				16,719	156	16,563	
En_Del	ProjMgt	Y47600	P0000512	Kewalo-Kamoku 138kv UG Elec	Naito, C	1,710	0	1,710	100%
En_Del	ProjMgt	Y47600	P4762000	Kamoku Sub Kewalo Term	Naito, C	491	0	491	100%
En_Del	ProjMgt	Y47600	P4764000	Kamoku EMS	Naito, C	601	0	601	100%
		Y47600 Total				2,802	0	2,802	
En_Del	ProjMgt	Y48500	P0000922	Kamoku 46kV UG Alt Phase 1	Wong, K	618,130	222,820	395,310	177%
En_Del	ProjMgt	Y48500	P0000924	Kamoku 46kV UG Alt Phase 2	Wong, K	67,077	0	67,077	100%
En_Del	ProjMgt	Y48500	P4850000	Kamoku-Pukele 138KV OH Ln	Wong, K	-160	388,197	-388,357	-100%

4	YTD Mar 04		
	Budget	Var $	Var %
0	20,884	-20,884	-100%
0	19,359	-19,359	-100%
0	235	-235	-100%
7	651,495	33,552	
8	171,174	-132,346	-77%
6	136,896	-124,600	-91%
0	0	44,600	100%
9	202,735	37,784	19%
3	0	231,378	100%
9	0	539	100%
4	9,584,717	2,148,247	

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	82,552	336,798	-254,246	-75%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Chong, R	110,130	501,097	-390,967	-78%
		Y00027 Total				192,682	837,895	-645,213	
En_Sol	CustInst	Y16700	P1670000	P&I&Test Meters & Mtr Eq	Che, E	129,456	195,826	-66,370	-34%
		Y16700 Total				129,456	195,826	-66,370	
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	84,197	157,881	-73,684	-47%
En_Sol	CustInst		P1510000	Misc OH Svc & Extn (CID)	Che, E	521,949	591,268	-69,319	-12%
En_Sol	CustInst		P1580000	Minor OH Dist Addn (CID)	Che, E	171,946	181,162	-9,216	-5%
En_Sol	CustInst		P1680000	Tsf & Equip Pur/Svc (CID)	Che, E	816,444	1,044,951	-228,507	-22%
En_Sol	CustInst		P1700000	Misc UG Svc & Extn (CID)	Che, E	2,371,116	2,501,443	-130,327	-5%
En_Sol	CustInst		P1820000	Minor UG Addns (CID)	Che, E	267,070	302,547	-35,477	-12%
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	6,304	0	6,304	100%
En_Sol	EngyProj		P0000897	HECO CHP Program	Suehiro, D	0	128,616	-128,616	-100%
En_Sol	EngySvcs	Y00026	P0000531	HECO SWAT Team-Ohana	Waller, D	7,612	0	7,612	100%
En_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	51	1,376	-1,325	-96%
		Y00026 Total				7,663	1,376	6,287	
En_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	13,490	25,169	-11,679	-46%
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	93,754	-93,754	-100%
En_Sol Total						4,582,317	6,061,888	-1,479,571	

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Finance	ITS	Y00029	P0000710	King and Ward PBXs	Lee, J	80,081	837,725	-757,644	-90%
		Y00029 Total				80,081	837,725	-757,644	
Finance	ITS		P0000501	Misc Office Equipment	Young, P	2,103	18,312	-16,209	-89%
Finance	ITS		P0000652	Misc Mainframe Hardware	Stuller, R	9,680	63,840	-54,160	-85%
Finance	ITS		P0000653	Collaborative Communications	Stuller, R	340	0	340	100%
Finance	ITS		P1243000	Purchase PCs-ITS	Young, P	63,717	254,800	-191,083	-75%
Finance	ITS		P1244000	Copiers/Faxes/Printers	McCarter, L	1,949	50,960	-49,011	-96%
Finance	ITS		P1251000	Misc Tel Eqpt NT	Young, P	736	1,540	-804	-52%
Finance	MgtAcctg		P0000896	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
Finance Total						158,606	1,249,577	-1,090,971	

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Pwr_Sup	Engr		P0000451	Kahe Stormwater Berm	Tasaka, S	16,769	30,712	-13,943	-45%
Pwr_Sup	Engr		P0000616	Kahe Parking Lot Addition	Tasaka, S	67	0	67	100%
Pwr_Sup	Engr		P0000620	Kahe Fire Water Storage Tnk2	Yanagid, J	13,340	26,752	-13,412	-50%
Pwr_Sup	Engr		P0000661	W2 Maintenance Laydown Area	Yanagid, J	109	224	-115	-51%
Pwr_Sup	Engr		P0000667	Kahe Sewer System Upgrade	Tasaka, S	25,562	34,495	-8,933	-26%
Pwr_Sup	Engr		P0000719	Kahe Fire Line for Wtr Tank	Yanagid, J	1,309	1,000	309	31%
Pwr_Sup	Engr		P0000909	Kahe 13-14 FT Berm Upgrade	Yanagid, J	8,904	0	8,904	100%
Pwr_Sup	Engr		P0000910	Kahe 11-12 FT Berm Upgrade	Yanagid, J	7,139	0	7,139	100%
Pwr_Sup	Engr		P0000933	K2 to CW Basin Pipe Trench	Yanagid, J	6,795	0	6,795	100%
Pwr_Sup	Pln&Eng	Y00032	P0000064	Waiau Fuel Pipeline Project	Fong, K	6,033,313	9,062,289	-3,028,976	-33%
Pwr_Sup	Pln&Eng	Y00032	P0000746	Barbers Point TF 46kV TL	Fong, K	41,521	177,201	-135,680	-77%
Pwr_Sup	Pln&Eng	Y00032	P0000747	Valve Station Service	Fong, K	2,403	159,608	-157,205	-98%
Pwr_Sup	Pln&Eng	Y00032	P0000748	Barbers Point TF 46kV Substation	Fong, K	176,889	220,390	-43,501	-20%
		Y00032 Total				6,254,126	9,619,488	-3,365,362	
Pwr_Sup	Pln&Eng	Y14300	P9375000	Kahe Disc. Conc. Topping	Yanagid, J	0	11,566	-11,566	-100%
		Y14300 Total				0	11,566	-11,566	
Pwr_Sup	Pln&Eng	Y18700	P1870000	Power Station Misc	Yonamin, G	170,943	70,503	100,440	142%
Pwr_Sup	Pln&Eng	Y18700	P9544000	FO Tank Level Gauge Upgrade	Fukuda, P	1,927	0	1,927	100%
		Y18700 Total				172,870	70,503	102,367	
Pwr_Sup	Pln&Eng	Y49000	P4900000	Oahu Unit #1-Barbers Point	Isler, R	0	194,879	-194,879	-100%
		Y49000 Total				0	194,879	-194,879	
Pwr_Sup	Pln&Eng	Y70600	P7060000	Kahe Disc Struct Reinf	Noda, R	11,573	32,220	-20,647	-64%
		Y70600 Total				11,573	32,220	-20,647	
Pwr_Sup	Pln&Eng		P0000056	H8 Blr Elec Warm Sys	Pasco, G	32,116	0	32,116	100%
Pwr_Sup	Pln&Eng		P0000078	K5 Boiler Controls Upgrade	Fukuda, P	685,697	423,063	262,634	62%
Pwr_Sup	Pln&Eng		P0000079	K6 Boiler Controls Upgrade	Yoshida, A	17,051	0	17,051	100%
Pwr_Sup	Pln&Eng		P0000083	K4 Blr Wtr Chem Alyz Repl	Isler, R	54,086	0	54,086	100%
Pwr_Sup	Pln&Eng		P0000084	K5 Blr Wtr Chem Alyz Repl	Lum, D	76,624	224,648	-148,024	-66%
Pwr_Sup	Pln&Eng		P0000086	Waiau WW Oil Detectors	Economo, D	1,154	0	1,154	100%
Pwr_Sup	Pln&Eng		P0000091	H9 Attemperator Block Valve	Economo, D	905	0	905	100%
Pwr_Sup	Pln&Eng		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	309	0	309	100%
Pwr_Sup	Pln&Eng		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	2,876	101	2,775	2748%
Pwr_Sup	Pln&Eng		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	4,140	8,643	-4,503	-52%
Pwr_Sup	Pln&Eng		P0000172	Iwilei Fuel Oil Pump Rpl	Cummings, C	165	925	-760	-82%

	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
, D	799	0	799	100%
s, C	114,825	118,787	-3,962	-3%
s, C	0	1,096	-1,096	-100%
s, C	0	886	-886	-100%
s, C	0	2,014	-2,014	-100%
	5,908	10,617	-4,709	-44%
	4,428	1,195	3,233	271%
	9,243	0	9,243	100%
	0	418	-418	-100%
D	51,252	119,126	-67,874	-57%
D	5,176	0	5,176	100%
D	157	1,565	-1,408	-90%
D	697	1,836	-1,139	-62%
	2,728	118,502	-115,774	-98%
D	43,818	0	43,818	100%
I	5,126	9,748	-4,622	-47%
\	2,650	7,537	-4,887	-65%
\	1,202	0	1,202	100%
	145,481	144,710	771	1%
	0	2,777	-2,777	-100%
	62,559	2,325	60,234	2591%
K	30	0	30	100%
K	1,017	8,879	-7,862	-89%
K	1,073	5,164	-4,091	-79%
	3,539	37,987	-34,448	-91%
\	17,653	7,622	10,031	132%
	65,899	37,262	28,637	77%
	57,417	82,388	-24,971	-30%
	117	0	117	100%
K	189	0	189	100%
K	3,332	201,951	-198,619	-98%
M	490	0	490	100%
	34	0	34	100%
M	658	0	658	100%

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000453	Waiau Pond Sheetpiling	Tasaka, S	762	10,315	-9,553	-93%
Pwr_Sup	Pln&Eng		P0000454	K6 Fan Enclosure	Yanagid, J	2,205	7,983	-5,778	-72%
Pwr_Sup	Pln&Eng		P0000459	Waiau 3 ERV Replacement	Cummings, C	10,530	5,499	5,031	91%
Pwr_Sup	Pln&Eng		P0000463	Waiau 8 ERV Replacement	Cummings, C	408	6,717	-6,309	-94%
Pwr_Sup	Pln&Eng		P0000464	Waiau 5 Wastewater Sump Upgr	Yuen, M	1,500	0	1,500	100%
Pwr_Sup	Pln&Eng		P0000466	K3&4 Service Air Compressor	Arakaki, J	24,974	41,596	-16,622	-40%
Pwr_Sup	Pln&Eng		P0000485	WPP FWH #35 Replacement	Yamashi, K	3,622	1,514	2,108	139%
Pwr_Sup	Pln&Eng		P0000490	H8&9 Emergency Generator	Cummings, C	2,743	0	2,743	100%
Pwr_Sup	Pln&Eng		P0000492	K4 HP Turb Row 9-11 Blades	Yuen, M	146,809	273,268	-126,459	-46%
Pwr_Sup	Pln&Eng		P0000493	W6 HP Turbine Blades	Yuen, M	655	1,850	-1,195	-65%
Pwr_Sup	Pln&Eng		P0000497	Waiau WW Pond Closure	Tasaka, S	4,405	9,127	-4,722	-52%
Pwr_Sup	Pln&Eng		P0000510	Circ Water Temp Monitors	Kabutan, D	12,010	7,947	4,063	51%
Pwr_Sup	Pln&Eng		P0000511	BFP Automated Test	Yoshida, A	15,123	39,496	-24,373	-62%
Pwr_Sup	Pln&Eng		P0000564	W9 DCS Processor Upgrade	Yoshida, A	9	0	9	100%
Pwr_Sup	Pln&Eng		P0000565	W10 DCS Processor Upgrade	Yoshida, A	9	0	9	100%
Pwr_Sup	Pln&Eng		P0000590	PP Security Hardware Upgrade	Yonamin, G	8,064	28,247	-20,183	-71%
Pwr_Sup	Pln&Eng		P0000601	Gen Prot Relay Replacement	Dahlquist, L	45,068	71,606	-26,538	-37%
Pwr_Sup	Pln&Eng		P0000605	W3 and W4 Stack Drain	Lum, D	4,032	88,277	-84,245	-95%
Pwr_Sup	Pln&Eng		P0000624	Kahe Tank Farm Fire Main	Arakaki, J	3,364	313,460	-310,096	-99%
Pwr_Sup	Pln&Eng		P0000625	HPP Swyd Cable Tray Sprinkler	Arakaki, J	1,921	0	1,921	100%
Pwr_Sup	Pln&Eng		P0000626	W3-8 Cable Rm Smoke Detector	Arakaki, J	0	34,028	-34,028	-100%
Pwr_Sup	Pln&Eng		P0000627	W3-8 Swgr Rm Smoke Detector	Arakaki, J	0	35,074	-35,074	-100%
Pwr_Sup	Pln&Eng		P0000629	K1-6 Swgr Rm Smoke Detectors	Arakaki, J	682	0	682	100%
Pwr_Sup	Pln&Eng		P0000633	K4 Exciter/Regulator Upgrade	Dahlquist, L	129,850	223,278	-93,428	-42%
Pwr_Sup	Pln&Eng		P0000634	W7&8 Boiler Wash Sump Pump	Cummings, C	0	31,093	-31,093	-100%
Pwr_Sup	Pln&Eng		P0000637	Kahe Chlorine Dioxide System	Arakaki, J	0	10,225	-10,225	-100%
Pwr_Sup	Pln&Eng		P0000638	W3 Air Heater Tube Replmnt	Economo, D	1,083	125,277	-124,194	-99%
Pwr_Sup	Pln&Eng		P0000646	Kahe 24FWH Replacement	Economo, D	8,295	161,878	-153,583	-95%
Pwr_Sup	Pln&Eng		P0000651	K5 AEH Limit Switch Upgrd	Bechtel, M	15,276	15,000	276	2%
Pwr_Sup	Pln&Eng		P0000659	Kahe 25FWH Replacement	Economo, D	0	53,044	-53,044	-100%
Pwr_Sup	Pln&Eng		P0000664	W3 UPS Installation	Kabutan, D	1,671	2,215	-544	-25%
Pwr_Sup	Pln&Eng		P0000666	Waiau Maint Shop Office	Yanagid, J	34,368	178,455	-144,087	-81%
Pwr_Sup	Pln&Eng		P0000674	Waiau Start-Up SWGR Replace	Yoshida, A	12,496	328	12,168	3710%
Pwr_Sup	Pln&Eng		P0000682	W6 Annunciator Upgrade	Fukuda, P	0	7,727	-7,727	-100%

March Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000685	Waiau Start-Up Cable Replace	Yoshida, A	131,654	111,863	19,791	18%
Pwr_Sup	Pln&Eng		P0000690	W5 Annunciator Upgrade	Fukuda, P	4,156	8,138	-3,982	-49%
Pwr_Sup	Pln&Eng		P0000737	Chlorine Dioxide Systm	Yuen, M	1,173	0	1,173	100%
Pwr_Sup	Pln&Eng		P0000741	W5 Demin raw wtr piping	Arakaki, J	9,289	0	9,289	100%
Pwr_Sup	Pln&Eng		P0000750	K5 Reheater Element Replacements	Yamashi, K	465,461	233,329	232,132	99%
Pwr_Sup	Pln&Eng		P0000771	H81 TVL Screen Repl	Arakaki, J	471	1,003	-532	-53%
Pwr_Sup	Pln&Eng		P0000777	Waiau Tank 5 Roof Replace	Isler, R	9,198	0	9,198	100%
Pwr_Sup	Pln&Eng		P0000781	KPP FWH #41 Replacement	Yamashi, K	0	101	-101	-100%
Pwr_Sup	Pln&Eng		P0000782	KPP FWH #42 Replacement	Yamashi, K	0	3,610	-3,610	-100%
Pwr_Sup	Pln&Eng		P0000784	K22 TVL Screen Repl	Arakaki, J	2,232	4,682	-2,450	-52%
Pwr_Sup	Pln&Eng		P0000785	K41 TVL Screen Repl	Arakaki, J	26,488	2,327	24,161	1038%
Pwr_Sup	Pln&Eng		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	12,550	70,268	-57,718	-82%
Pwr_Sup	Pln&Eng		P0000787	K5/6 Lube water pump	Economo, D	0	582	-582	-100%
Pwr_Sup	Pln&Eng		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	0	9,436	-9,436	-100%
Pwr_Sup	Pln&Eng		P0000789	Kahe 3 BW Sump Upgrade	Economo, D	0	6,411	-6,411	-100%
Pwr_Sup	Pln&Eng		P0000798	W6 Svc Air Compr	Arakaki, J	0	5,207	-5,207	-100%
Pwr_Sup	Pln&Eng		P0000799	K2 Operator Console Upgrade	Kabutan, D	0	3,545	-3,545	-100%
Pwr_Sup	Pln&Eng		P0000803	W3 Operator Console Upgrade	Kabutan, D	16,815	135,498	-118,683	-88%
Pwr_Sup	Pln&Eng		P0000804	W6 Operator Console Upgrade	Kabutan, D	0	7,339	-7,339	-100%
Pwr_Sup	Pln&Eng		P0000805	Kahe Intake Lighting	Kabutan, D	0	219	-219	-100%
Pwr_Sup	Pln&Eng		P0000806	K06 CWP MOV Replacement	Economo, D	39,058	149,237	-110,179	-74%
Pwr_Sup	Pln&Eng		P0000811	W8 Annunciator Replacement	Bechtel, M	0	20,076	-20,076	-100%
Pwr_Sup	Pln&Eng		P0000817	W6 Exciter/Regulator Replace	Bechtel, M	0	11,647	-11,647	-100%
Pwr_Sup	Pln&Eng		P0000819	W8 Exciter/Regulator Repl	Bechtel, M	0	2,294	-2,294	-100%
Pwr_Sup	Pln&Eng		P0000820	K1 Main Xfmr Replacement	Yoshida, A	0	4,096	-4,096	-100%
Pwr_Sup	Pln&Eng		P0000821	K2 Battery Bank Replacement	Bechtel, M	0	10,703	-10,703	-100%
Pwr_Sup	Pln&Eng		P0000822	K4 Recorder Replacement	Yoshida, A	15,920	47,011	-31,091	-66%
Pwr_Sup	Pln&Eng		P0000830	K1 Aux Xfmr Replacement	Yoshida, A	0	4,096	-4,096	-100%
Pwr_Sup	Pln&Eng		P0000832	W3 Main Xfmr Replacement	Kabutan, D	7,034	2,954	4,080	138%
Pwr_Sup	Pln&Eng		P0000853	K2 Excitation System	Bechtel, M	0	5,640	-5,640	-100%
Pwr_Sup	Pln&Eng		P0000855	K6 Aux Transformer	Fukuda, P	665	263,270	-262,605	-100%
Pwr_Sup	Pln&Eng		P0000860	K2 Annunciator Replacement	Fukuda, P	0	6,237	-6,237	-100%
Pwr_Sup	Pln&Eng		P0000863	K4 Generator Rotor Rewind	Dahlquist, L	415,593	514,851	-99,258	-19%
Pwr_Sup	Pln&Eng		P0000870	H9 Generator Rotor Rewind	Bechtel, M	328	0	328	100%

March Recorded vs. Budget

ditures Project and Program Year-to-Date March 2004

t	Grand parent	Project #	Project Title	Project Manager	YTD Mar 04 Actuals	YTD Mar 04 Budget	Var $	Var %
Eng		P0000873	Kahe 2 Sootblower Controls	Economo, D	0	21,896	-21,896	-100%
Eng		P0000893	H8 Generator Rotor Rewind	Dahlquist, L	-2,843	0	-2,843	100%
Eng		P0000898	Kahe 42 Tvl Screen	Arakaki, J	11,576	0	11,576	100%
Eng		P0000901	Kahe Reclaimed Oil Transfer	Arakaki, J	16,923	0	16,923	100%
Eng		P0000912	Kahe 12 Traveling Screen	Arakaki, J	14,666	0	14,666	100%
Eng		P0000936	Waiau Turbine Drains	Arakaki, J	440	0	440	100%
Eng		P0000939	Waiau CT Separation	Fukuda, P	11,382	0	11,382	100%
Eng		P0000970	W5 Mixed Bed Polisher	Arakaki, J	8,257	0	8,257	100%
Eng		P8820000	W4 Exciter Upgrade	Kabutan, D	0	15,020	-15,020	-100%
Eng		P9401000	Kahe Fire Pump Inst	Arakaki, J	35,256	70,772	-35,516	-50%
Eng		P9453000	H9 Coriolis FO Flowmeter	Yamashi, K	30	0	30	100%
Eng		P9454000	K4 Boiler Control Upgrade	Yoshida, A	6,552	8,366	-1,814	-22%
Eng		P9492000	K6 A/H Acoustic Sootblower	Economo, D	26,802	117	26,685	22808%
Eng		P9539000	K3 Boiler Control Upgrade	Kabutan, D	0	2,518	-2,518	-100%
Eng		P9541000	K4 Data Acq and Monitor	Yoshida, A	1,760	623	1,137	183%
&M	Y14300	P1429000	Emergency Power Plant	Marzano, V	182,369	235,548	-53,179	-23%
	Y14300 Total				182,369	235,548	-53,179	
					9,964,372	15,388,665	-5,424,293	

vs. Budget

Capital Expenditures Project and Program Year-to-Date March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	'ar 04 ıals	YTD Mar 04 Budget	Var $	Var %
SVPOp	CustSvc		P0000349	Meter Reading System Replacement	Oishi, L	100	0	100	100%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	4,641	0	74,641	100%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thoma	0	389,217	-389,217	-100%
SVPOp	CustSvc		P0000692	CSD Technical Support Prgrm	Ejercito, A	0	12,000	-12,000	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	50,000	-50,000	-100%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima,	0,067	0	20,067	100%
SVPOp Total						4,808	451,217	-356,409	

March Recorded vs. Budget

Capital Expenditures

Project

Through March 2004

Var %
2106%
0%
-34%
0%
100%
100%
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-100%

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Cor_Exc	SSF		P0000865	King St Chillwater Pipe	HFEng	0	66,355	-66,355	-100%
Cor_Exc	SSF		P0000866	King Downspout Replcmt	HFEng	0	11,282	-11,282	-100%
Cor_Exc	SSF		P0000867	King St Window Project	HFEng	0	3,391	-3,391	-100%
Cor_Exc Total						5,864,694	6,095,557	-230,863	

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Cust_Gen	Land	Y66200	P1361000	Ko Olina Sub Land	Fujiwara, C	27,973	27,973	0	0%
		Y66200 Total				27,973	27,973	0	
Cust_Gen	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	199,633	87,268	112,365	129%
Cust_Gen	Land		P0000063	Conv Halawa School 138kv	Fujiwara, C	31,883	31,883	0	0%
Cust_Gen	Land		P1376000	Waiau-CEIP 138KV Pt 2 RW	Fujiwara, C	5,952,840	0	5,952,840	100%
Cust_Gen Total						6,212,329	147,124	6,065,205	

March Recorded vs. Budget

r %
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-71%
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100%
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-16%
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-3%
100%
100%
-62%
100%
100%
100%
87%
-68%
100%
100%
100%

to s	Project to Date Budget	Var $	Var %
154	0	518,154	
15	0	15	100%
15	0	15	
265	0	51,265	100%
265	0	51,265	
880	0	2,121,880	100%
880	0	2,121,880	
567	0	95,567	100%
567	0	95,567	
891	0	414,891	100%
891	0	414,891	
483	327,188	295	0%
494	222,494	0	0%
606	194,459	147	0%
583	744,141	442	
937	0	1,472,937	100%
937	0	1,472,937	
910	0	170,910	100%
911	0	151,911	100%
810	149,810	0	0%
059	0	488,059	100%
519	0	163,519	100%
253	0	323,253	100%
888	446,134	62,754	14%
120	0	130,120	100%
690	163,503	-5,813	-4%
290	246,370	-59,080	-24%
569	148,569	0	0%
188	388,869	-303,681	-78%
658	43,945	-6,287	-14%
337	540,598	23,739	4%
304	0	161,304	100%
319	0	216,619	100%

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr		P0000410	Waimalu #3 Ckt Improvement	Kaneshi, R	90,950	0	90,950	100%
En_Del	Engr		P0000421	East-West Ctr #3 Tsf Replace	Tamayo, R	357,959	0	357,959	100%
En_Del	Engr		P0000422	Museum 4kV Conversion	Kaneshi, R	186,966	0	186,966	100%
En_Del	Engr		P0000423	Kailua Rd UG Conversion	Lum, M	352,116	406,167	-54,051	-13%
En_Del	Engr		P0000436	Wahiawa Hts Tree Wire Inst	Kaneshi, R	197,324	0	197,324	100%
En_Del	Engr		P0000444	Pauoa 4kv Conversion	JangChe, L	291,161	0	291,161	100%
En_Del	Engr		P0000474	WSC Privatization	Fukumot, G	1,046,440	1,244,538	-198,098	-16%
En_Del	Engr		P0000491	K-H#2/Wai-Wah Str 86/25	Char, C	21,730	33,824	-12,094	-36%
En_Del	Engr		P0000496	Mauka Ckt Reliability Imprv	Kaneshi, R	144,614	0	144,614	100%
En_Del	Engr		P0000507	Kam Hy Resurf Waiahole-Cr Ln	Lee, I	1,124,801	1,553,930	-429,129	-28%
En_Del	Engr		P0000508	PM-Makalapa MW Replace	Lau, D	0	22,200	-22,200	-100%
En_Del	Engr		P0000509	PM-Ewa Nui MW Replace	Lau, D	0	22,208	-22,208	-100%
En_Del	Engr		P0000513	2100 Kalakaua	Chang, C	345,800	0	345,800	100%
En_Del	Engr		P0000515	Ko Olina Cable Installation	JangChe, L	351,259	351,259	0	0%
En_Del	Engr		P0000530	Ka Iwi 12kV UG, Ph 1 Inc 2	Lung, H	0	14,225	-14,225	-100%
En_Del	Engr		P0000575	Nimitz Hwy Rehab-UA #1691	Fukumot, G	187,741	265,774	-78,033	-29%
En_Del	Engr		P0000579	Spare 46-12kV, 12.5MVA Tsf	Tamayo, R	291,593	0	291,593	100%
En_Del	Engr		P0000581	HMR SS Tsf Replacement 5MVA	Chong, R	165,996	0	165,996	100%
En_Del	Engr		P0000585	Waialua-Kahuku 46kV Recond	Ikeda, L	200,258	0	200,258	100%
En_Del	Engr		P0000588	Mililani Mauka 46kV Reloc	Fukumot, G	295,150	0	295,150	100%
En_Del	Engr		P0000589	Spare 15kv Switchgear	Tamayo, R	228,850	224,990	3,860	2%
En_Del	Engr		P0000591	Waialua-Kahuku 46kV Recond 2	Ikeda, L	51,065	0	51,065	100%
En_Del	Engr		P0000597	Diamond Head Rd OH/UG Imp	Panalal, T	17,810	63,636	-45,826	-72%
En_Del	Engr		P0000598	Kahekili Hy Ltg OH/UG Conv	Lee, I	15,301	73,753	-58,452	-79%
En_Del	Engr		P0000599	EMS UPS Replacement	Arakaki, G	460,256	451,862	8,394	2%
En_Del	Engr		P0000603	Nanaikapono OH Relocation	Hiyama, R	231,335	209,757	21,578	10%
En_Del	Engr		P0000608	Sand Isle WWTP Disinfection	Ho, M	190,681	335,769	-145,088	-43%
En_Del	Engr		P0000611	Kaneohe Bay Dr Improvements	Lee, I	98,634	168,997	-70,363	-42%
En_Del	Engr		P0000614	City Hall Vlt 11	Kaneshi, R	339,900	347,009	-7,109	-2%
En_Del	Engr		P0000645	Wiliwili Ckt Reliability Impr	Chang, C	177,554	0	177,554	100%
En_Del	Engr		P0000720	Forrest Ave Realignment OH	Hiyama, R	286,660	165,604	121,056	73%
En_Del	Engr		P0000721	Archer Sub Basement Flooding	Oshiro, E	130,218	0	130,218	100%
En_Del	Engr		P0000732	Gen Ctrl Unit WAN Upgrades	Oyadoma, M	0	2,115	-2,115	-100%

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr		P0000734	RTU Wide Area Network	Oyadoma, M	44,324	74,800	-30,476	-41%
En_Del	Engr		P0000764	H-1 Widening Waimalu Reloc	Panalal, T	11,563	63,489	-51,926	-82%
En_Del	Engr		P0000769	2003 Spare 138-46kv Tsf	Hayakaw, W	956,890	1,025,050	-68,160	-7%
En_Del	Engr		P0000778	Waialua #2 12.5MVA Tsf Repl	Chong, R	487,835	0	487,835	100%
En_Del	Engr		P0000879	Kahe-Halawa #1 138kV SW Repl	Ikeda, L	142,058	0	142,058	100%
En_Del	Engr		P0000880	Kahe-Halawa #2 138kV SW Repl	Ikeda, L	90,975	0	90,975	100%
En_Del	Engr		P0000881	Kahe-Mikilua 46kV Reconduct	Chang, C	137,917	0	137,917	100%
En_Del	Engr		P0000883	Purch spare 8%, 46-12kV tsf	Tamayo, R	310,646	0	310,646	100%
En_Del	Engr		P0000884	Purch spare 10%, 46-12kV tsf	Tamayo, R	316,413	0	316,413	100%
En_Del	Engr		P0000885	Midweek Auto-Transfer Swgr	Chang, C	332,368	316,413	15,955	5%
En_Del	Engr		P0000886	Wal-Mart Sams Keeaumoku'	Hiyama, R	128,447	344,828	-216,381	-63%
En_Del	Engr		P0000888	Koolau-Pukele #1 Str. 18	Char, C	213,205	0	213,205	100%
En_Del	Engr		P0000889	Airport 12KV Ckts Install	Chang, C	527,943	0	527,943	100%
En_Del	Engr		P0000894	Spare 15kV Switchgear	Tamayo, R	170,859	0	170,859	100%
En_Del	Engr		P0000902	Fort Street #1 Tsf Replace	Tamayo, R	329,463	0	329,463	100%
En_Del	Engr		P0000903	Ena #2 Tsf Replace	Tamayo, R	375,796	0	375,796	100%
En_Del	Engr		P0000904	Purch 10% 46-12kV spare tsf	Tamayo, R	334,588	0	334,588	100%
En_Del	Engr		P0000905	Kaonohi #2 Tsf Replace	Tamayo, R	332,951	0	332,951	100%
En_Del	Engr		P0000911	Palehua East A 46kV Reloc	Lee, I	15,306	0	15,306	100%
En_Del	Engr		P0000913	Kona Makaloa 25kV UG	Hiyama, R	10,432	243,112	-232,680	-96%
En_Del	Engr		P0000918	Kewalo #2 Tsf Replace	Tamayo, R	360,508	0	360,508	100%
En_Del	Engr		P0000919	Pohakupu #2 Tsf Replace	Tamayo, R	326,362	0	326,362	100%
En_Del	Engr		P0000920	Waiawa #2 Tsf Replace	Tamayo, R	307,941	0	307,941	100%
En_Del	Engr		P0000921	Helemano #1 Tsf Replace	Tamayo, R	277,359	0	277,359	100%
En_Del	Engr		P0000923	Kahala #2 4KV Tsf Replace	Oshiro, E	413	0	413	100%
En_Del	Engr		P0000925	Purch 10% 46-12kV spare tsf	Oshiro, E	296,130	0	296,130	100%
En_Del	Engr		P0000926	Mililani Mauka North Gulley	Panalal, T	29,652	0	29,652	100%
En_Del	Engr		P0000927	Mililani Mauka Unit 134A	Panalal, T	6,523	0	6,523	100%
En_Del	Engr		P0000930	PMH-9 Control Upgrades	Kaneshi, R	81,707	0	81,707	100%
En_Del	Engr		P0001012	Sheridan St Raising OH Lines	Lung, H	13,303	0	13,303	100%
En_Del	Engr		P6740000	Iwilei Ntwk Bkr Failure	Arakaki, D	180,287	0	180,287	100%
En_Del	Engr		P6862000	Kahe Bus B Bkup Prot	Arakaki, D	933,444	894,937	38,507	4%
En_Del	Engr		P7270000	N Shore Automation Comm	Shin, D	498,663	540,443	-41,780	-8%

March Recorded vs. Budget

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr		P7430000	Kahe 1-4 Cntrl Hse Expnsn	Arakaki, D	681,725	672,681	9,044	1%
En_Del	Engr		P8290000	Tripler Wahiawa mwr replace	Arakaki, G	188,383	348,570	-160,187	-46%
En_Del	Engr		P8470000	Koolau/Tripler MWR Repl	Arakaki, G	168,386	306,460	-138,074	-45%
En_Del	Engr		P9028000	Mobile Radio F1/F2 Replace	Arakaki, G	0	6,862	-6,862	-100%
En_Del	Engr		P9243000	450MHZZ Radio Replacement	Oyadoma, M	0	43,443	-43,443	-100%
En_Del	Engr		P9497000	Honolulu Spur	Hayakaw, W	26,238	0	26,238	100%
En_Del	Engr		P9511000	Generation Hotline Upgrd	Lau, D	29,784	109,990	-80,206	-73%
En_Del	Engr		P9550000	Makaha 2-Mauka SCADA Comm	Shin, D	218,997	0	218,997	100%
En_Del	Engr		P9903000	Puuloa Road Widening	Panalal, T	1,320,461	760,988	559,473	74%
En_Del	Engr		P9904000	H1 WIDENING AIEA	Kaneshi, R	153,135	153,135	0	0%
En_Del	ProjMgt	Y00021	P0000277	New Kuahua Substation	Wong, K	321,289	313,762	7,527	2%
En_Del	ProjMgt	Y00021	P0000278	Makalapa Substation Prot	Wong, K	1,648	2,605	-957	-37%
En_Del	ProjMgt	Y00021	P0000279	Puuloa Substation Prot	Wong, K	1,571	1,392	179	13%
En_Del	ProjMgt	Y00021	P0000280	Makalapa-Kuahua FO Line	Wong, K	104,989	71,465	33,524	47%
En_Del	ProjMgt	Y00021	P0000281	Makalapa-Puuloa FO Line	Wong, K	20,528	49,516	-28,988	-59%
En_Del	ProjMgt	Y00021	P0000282	Kuahua 46kv Ln Reconnect	Wong, K	1,508	5,888	-4,380	-74%
		Y00021 Total				451,533	444,628	6,905	
En_Del	ProjMgt	Y00030	P0000713	Dispatch Center Building	Naito, C	961,768	953,879	7,889	1%
En_Del	ProjMgt	Y00030	P0000714	Materials Storage Relocation	Naito, C	98,511	146,363	-47,852	-33%
En_Del	ProjMgt	Y00030	P0000715	Dispatch Boards	Naito, C	0	3,073	-3,073	-100%
En_Del	ProjMgt	Y00030	P0000716	Telecomm Extensions	Naito, C	12,140	21,704	-9,564	-44%
En_Del	ProjMgt	Y00030	P0000717	EMS Replacement	Naito, C	372,410	517,043	-144,633	-28%
En_Del	ProjMgt	Y00030	P0000718	Dispatch Training Simulator	Naito, C	0	1,800	-1,800	-100%
		Y00030 Total				1,444,829	1,643,862	-199,033	
En_Del	ProjMgt	Y00040	P0000836	Ford Island Substation	Chong, R	29,332	7,252	22,080	304%
		Y00040 Total				29,332	7,252	22,080	
En_Del	ProjMgt	Y46700	P0000151	Archer Subst Term Line	Naito, C	2,505,229	0	2,505,229	100%
En_Del	ProjMgt	Y46700	P0000153	Archer-Kewalo 138KV Line #2	Naito, C	1,290,794	0	1,290,794	100%
En_Del	ProjMgt	Y46700	P0000154	Kewalo Substation Line #2	Naito, C	822,631	0	822,631	100%
En_Del	ProjMgt	Y46700	P4670000	Kewalo 3 & 4 30/50 MVA	Naito, C	8,980,947	0	8,980,947	100%
En_Del	ProjMgt	Y46700	P4671000	Archer-Kewalo 138KV UG Ln 1	Naito, C	12,064,512	0	12,064,512	100%
En_Del	ProjMgt	Y46700	P4672000	Kewalo A&B 25KV UG Piikoi	Naito, C	4,979,731	0	4,979,731	100%
En_Del	ProjMgt	Y46700	P4673000	Kewalo A&B 25KV UG Kamakee	Naito, C	2,704,406	0	2,704,406	100%

	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
	Naito, C	1,121,995	0	1,121,995	100%
Optic	Naito, C	436,256	0	436,256	100%
EMS	Naito, C	137,009	0	137,009	100%
sf	Naito, C	2,851,572	0	2,851,572	100%
		37,895,082	0	37,895,082	
ansformer	Naito, C	2,471,421	0	2,471,421	100%
kv UG Elec	Naito, C	3,591,922	0	3,591,922	100%
KV UG Ln	Naito, C	25,925,775	0	25,925,775	100%
Kamoku	Naito, C	1,200,893	0	1,200,893	100%
Term	Naito, C	13,460,531	0	13,460,531	100%
er Optic	Naito, C	2,180,351	0	2,180,351	100%
	Naito, C	201,452	0	201,452	100%
		49,032,345	0	49,032,345	
t Phase 1	Wong, K	20,342,920	459,655	19,883,265	4326%
t Phase 2	Wong, K	81,526	0	81,526	100%
KV OH Ln	Wong, K	594	18,009,626	-18,009,032	-100%
n	Wong, K	0	968,854	-968,854	-100%
	Wong, K	0	898,126	-898,126	-100%
r Optic	Wong, K	0	10,886	-10,886	-100%
		20,425,040	20,347,147	77,893	
ning Ph2	Naito, C	857,268	1,019,848	-162,580	-16%
	Naito, C	2,453,269	2,451,674	1,595	0%
ing	Naito, C	675,709	664,509	11,200	2%
	Naito, C	420,709	546,143	-125,434	-23%
ble Rpl	Liu, R	44,600	0	44,600	100%
ee St Conv	Naito, C	2,109,867	2,109,867	0	0%
onv.	Oyadoma, M	186,541	0	186,541	100%
MW Conv	Oyadoma, M	83,265	0	83,265	100%
	Oyadoma, M	187,041	0	187,041	100%
		456,847	0	456,847	
idios	Shin, D	401,360	0	401,360	100%
W Replace	Oyadoma, M	233,473	0	233,473	100%
CADA Comm	Shin, D	130,109	0	130,109	100%

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Telecom		P9548000	Kahe-Kahe SCADA Comm	Shin, D	166,689	0	166,689	100%
En_Del	Telecom		P9549000	Miki 1-Miki 1 SCADA Comm	Shin, D	192,433	0	192,433	100%
En_Del	Telecom		P9599000	Miki 2-Miki 3 SCADA Comm	Shin, D	136,846	0	136,846	100%
En_Del Total						147,738,971	45,657,895	102,081,076	

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	268,300	642,498	-374,198	-58%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Chong, R	620,557	1,111,411	-490,854	-44%
		Y00027 Total				888,857	1,753,909	-865,052	
En_Sol	CustInst	Y00028	P0000577	Camp Smith #2 Tsf 46KV Ln Ext	Lee, I	90,071	0	90,071	100%
En_Sol	CustInst	Y00028	P0000578	Camp Smith #2 6.25MVA Tsf	Chong, R	1,266,412	0	1,266,412	100%
En_Sol	CustInst	Y00028	P0000602	Camp Smith #2 12kv Ln & Pr Mg	Yasuda, L	79,075	0	79,075	100%
		Y00028 Total				1,435,558	0	1,435,558	
En_Sol	CustInst		P0000105	Manana Infrastructure Imprv	Aochi, A	756,976	0	756,976	100%
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	84,197	713,244	-629,047	-88%
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	15,209	0	15,209	100%
En_Sol	EngySvcs	Y00026	P0000531	HECO SWAT Team-Ohana	Waller, D	39,457	31,845	7,612	24%
En_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	149,873	151,149	-1,276	-1%
		Y00026 Total				189,330	182,994	6,336	
En_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	365,469	394,526	-29,057	-7%
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	93,754	-93,754	-100%
En_Sol Total						3,735,596	3,138,427	597,169	

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Finance	FinVP	Y00034	P0000749	Project Ellipse (hardware)	Noda, R	28,647	17,281	11,366	66%
		Y00034 Total				28,647	17,281	11,366	
Finance	GenAcctg		P0000340	Document Management System	Shiraki, E	58,160	0	58,160	100%
Finance	ITS	Y00029	P0000708	IVR/ACD/CTI Ph1	Lee, J	203,924	203,347	577	0%
Finance	ITS	Y00029	P0000709	IVR/ACD/CTI Ph2	Lee, J	1,520,891	1,631,194	-110,303	-7%
Finance	ITS	Y00029	P0000710	King and Ward PBXs	Lee, J	80,081	837,725	-757,644	-90%
		Y00029 Total				1,804,896	2,672,266	-867,370	
Finance	ITS		P0000342	ITS Replace UPS	Young, P	194,188	0	194,188	100%
Finance	ITS		P0000653	Collaborative Communications	Stuller, R	71,973	72,781	-808	-1%
Finance	MgtAcctg		P0000896	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
Finance Total						2,157,864	2,784,728	-626,864	

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Engr		P0000223	W3&W4 Control Rm Roof	Yanagid, J	75,718	71,228	4,490	6%
Pwr_Sup	Engr		P0000269	Waiau Gantry Crane Catwalks	Uechi, S	170,711	195,463	-24,752	-13%
Pwr_Sup	Engr		P0000274	W3&4 Boilder Bldg ReRoof	Yanagid, J	223,424	301,660	-78,236	-26%
Pwr_Sup	Engr		P0000451	Kahe Stormwater Berm	Tasaka, S	71,229	100,678	-29,449	-29%
Pwr_Sup	Engr		P0000600	Kahe Admin Building Reroof	Yanagid, J	157,453	0	157,453	100%
Pwr_Sup	Engr		P0000606	W8 Boiler Guardrail Upgrade	Yanagid, J	110,104	0	110,104	100%
Pwr_Sup	Engr		P0000607	W7 Boiler Str Railing Upgrad	Yanagid, J	102,224	0	102,224	100%
Pwr_Sup	Engr		P0000616	Kahe Parking Lot Addition	Tasaka, S	57,830	57,764	66	0%
Pwr_Sup	Engr		P0000620	Kahe Fire Water Storage Tnk2	Yanagid, J	28,135	37,827	-9,692	-26%
Pwr_Sup	Engr		P0000661	W2 Maintenance Laydown Area	Yanagid, J	5,729	354	5,375	1518%
Pwr_Sup	Engr		P0000662	Retaining Wall @ K1-4 Stack	Shimabu, M	174,630	0	174,630	100%
Pwr_Sup	Engr		P0000667	Kahe Sewer System Upgrade	Tasaka, S	103,942	114,898	-10,956	-10%
Pwr_Sup	Engr		P0000719	Kahe Fire Line for Wtr Tank	Yanagid, J	359,879	353,343	6,536	2%
Pwr_Sup	Engr		P0000882	Waiau WW Reline Cells 1 & 2	Yanagid, J	214,567	0	214,567	100%
Pwr_Sup	Engr		P0000909	Kahe 13-14 FT Berm Upgrade	Yanagid, J	8,904	0	8,904	100%
Pwr_Sup	Engr		P0000910	Kahe 11-12 FT Berm Upgrade	Yanagid, J	7,139	0	7,139	100%
Pwr_Sup	Engr		P0000933	K2 to CW Basin Pipe Trench	Yanagid, J	6,795	0	6,795	100%
Pwr_Sup	Pln&Eng	Y00032	P0000064	Waiau Fuel Pipeline Project	Fong, K	14,650,220	21,182,894	-6,532,674	-31%
Pwr_Sup	Pln&Eng	Y00032	P0000738	Waiau Pipeline SEC Lease	Fong, K	2,629,836	2,651,911	-22,075	-1%
Pwr_Sup	Pln&Eng	Y00032	P0000746	Barbers Point TF 46kV TL	Fong, K	134,173	325,433	-191,260	-59%
Pwr_Sup	Pln&Eng	Y00032	P0000747	Valve Station Service	Fong, K	3,497	173,866	-170,369	-98%
Pwr_Sup	Pln&Eng	Y00032	P0000748	Barbers Point TF 46kV Substation	Fong, K	629,849	976,302	-346,453	-35%
		Y00032 Total				18,047,575	25,310,406	-7,262,831	
Pwr_Sup	Pln&Eng	Y00035	P0000751	H9 LP L-1 Turb/End Blades	Yonamin, G	231,477	231,477	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000752	H9 LP L-1 Col/End Blades	Yonamin, G	218,131	218,131	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000753	H9 LP L-0 Turb/End Blades	Yonamin, G	362,308	362,308	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000754	H9 LP L-0 Col/End Blades	Yonamin, G	360,933	360,933	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000755	H9 HP Curtis R1 Blades	Yonamin, G	77,326	77,326	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000756	H9 HP Curtis R2 Blades	Yonamin, G	79,393	79,393	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000757	H9 HP Stg 2 Rotor Blades	Yonamin, G	52,671	52,671	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000758	H9 HP Stg 3 Rotor Blades	Yonamin, G	53,729	53,729	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000759	H9 HP Stat Rows C1-C4 Blades	Yonamin, G	223,918	223,918	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000760	H9 Curtis Stationary Blades	Yonamin, G	62,696	62,696	0	0%

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng	Y00035	P0000761	H9 LP Cyl Liner/Retainer	Yonamin, G	172,834	172,834	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000762	H9 L-2 Turb/End Blades	Yonamin, G	175,941	175,941	0	0%
Pwr_Sup	Pln&Eng	Y00035	P0000763	H9 L-2 Col/End Blades	Yonamin, G	179,845	179,845	0	0%
		Y00035 Total				2,251,202	2,251,202	0	
Pwr_Sup	Pln&Eng	Y14300	P0000263	W6 Data Acq & Monitoring	Arakawa, D	226,728	0	226,728	100%
Pwr_Sup	Pln&Eng	Y14300	P9083000	W7 Turbine Supv Instr	Arakawa, D	362,066	0	362,066	100%
Pwr_Sup	Pln&Eng	Y14300	P9375000	Kahe Disc. Conc. Topping	Yanagid, J	32,007	44,767	-12,760	-29%
Pwr_Sup	Pln&Eng	Y14300	P9449000	K5 Coriolis FO Flowmeter	Isler, R	79,814	0	79,814	100%
		Y14300 Total				700,615	44,767	655,848	
Pwr_Sup	Pln&Eng	Y18700	P9062000	Waiau Wastewater Upgrd	Isler, R	227,166	0	227,166	100%
		Y18700 Total				227,166	0	227,166	
Pwr_Sup	Pln&Eng	Y49000	P4900000	Oahu Unit #1-Barbers Point	Isler, R	0	633,414	-633,414	-100%
		Y49000 Total				0	633,414	-633,414	
Pwr_Sup	Pln&Eng	Y64500	P6450000	Waiau Wtr Treamtment Sys	Arakaki, J	2,322,825	2,350,046	-27,221	-1%
		Y64500 Total				2,322,825	2,350,046	-27,221	
Pwr_Sup	Pln&Eng	Y70600	P7060000	Kahe Disc Struct Reinf	Noda, R	386,800	417,750	-30,950	-7%
		Y70600 Total				386,800	417,750	-30,950	
Pwr_Sup	Pln&Eng		P0000052	Kahe Fire Wtr Storage Tank	Yanagid, J	485,130	0	485,130	100%
Pwr_Sup	Pln&Eng		P0000056	H8 Blr Elec Warm Sys	Pasco, G	575,016	511,351	63,665	12%
Pwr_Sup	Pln&Eng		P0000057	H9 Blr Elec Warm Sys	Economo, D	230,946	195,813	35,133	18%
Pwr_Sup	Pln&Eng		P0000058	W7 Data Acq and Monitor	Fukuda, P	473,307	0	473,307	100%
Pwr_Sup	Pln&Eng		P0000059	W8 Data Acq and Monitor	Fukuda, P	454,677	0	454,677	100%
Pwr_Sup	Pln&Eng		P0000078	K5 Boiler Controls Upgrade	Fukuda, P	2,220,190	2,175,897	44,293	2%
Pwr_Sup	Pln&Eng		P0000079	K6 Boiler Controls Upgrade	Yoshida, A	2,858,302	2,846,296	12,006	0%
Pwr_Sup	Pln&Eng		P0000080	K4 Recorder Replacement	Arakawa, D	56,465	0	56,465	100%
Pwr_Sup	Pln&Eng		P0000081	K5 Recorder Replacement	Arakawa, D	60,537	0	60,537	100%
Pwr_Sup	Pln&Eng		P0000082	K3 Blr Wtr Chem Alyz Repl	Isler, R	497,480	0	497,480	100%
Pwr_Sup	Pln&Eng		P0000083	K4 Blr Wtr Chem Alyz Repl	Isler, R	431,518	320,514	111,004	35%
Pwr_Sup	Pln&Eng		P0000084	K5 Blr Wtr Chem Alyz Repl	Lum, D	375,949	614,407	-238,458	-39%
Pwr_Sup	Pln&Eng		P0000085	K6 Blr Wtr Chem Alyz Repl	Isler, R	423,691	0	423,691	100%
Pwr_Sup	Pln&Eng		P0000086	Waiau WW Oil Detectors	Economo, D	54,825	53,841	984	2%
Pwr_Sup	Pln&Eng		P0000087	K3 Opacity Monitor Upgrade	Fukuda, P	87,161	0	87,161	100%
Pwr_Sup	Pln&Eng		P0000088	K4 Opacity Monitor Upgrade	Fukuda, P	105,302	0	105,302	100%

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000090	W7 FD Fan Instrumentation	Fukuda, P	146,107	0	146,107	100%
Pwr_Sup	Pln&Eng		P0000091	H9 Attemperator Block Valve	Economo, D	38,647	38,972	-325	-1%
Pwr_Sup	Pln&Eng		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	165,112	0	165,112	100%
Pwr_Sup	Pln&Eng		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	136,659	151,956	-15,297	-10%
Pwr_Sup	Pln&Eng		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	176,215	180,719	-4,504	-2%
Pwr_Sup	Pln&Eng		P0000136	K5&6 Reroof	Yanagid, J	82,011	0	82,011	100%
Pwr_Sup	Pln&Eng		P0000156	W8 Stack Relining	Yanagid, J	158,156	0	158,156	100%
Pwr_Sup	Pln&Eng		P0000172	Iwilei Fuel Oil Pump Rpl	Cummings, C	3,539	4,300	-761	-18%
Pwr_Sup	Pln&Eng		P0000195	H9 Boiler Safety Valve Upg	Yuen, M	56,513	56,513	0	0%
Pwr_Sup	Pln&Eng		P0000197	H9 Stack Life Extension	Yanagid, J	111,166	0	111,166	100%
Pwr_Sup	Pln&Eng		P0000199	Kahe FWH #34 Replacement	Yamashi, K	110	0	110	100%
Pwr_Sup	Pln&Eng		P0000204	W7 BFP Rec Ctrl Valves Upg	Economo, D	37,960	0	37,960	100%
Pwr_Sup	Pln&Eng		P0000206	Waiau Tk1 Roof	Isler, R	298,968	0	298,968	100%
Pwr_Sup	Pln&Eng		P0000208	W3 Cycle Chem Instr.	Cummings, C	149,017	159,096	-10,079	-6%
Pwr_Sup	Pln&Eng		P0000209	W4 Cycle Chem Instr.	Cummings, C	48,678	50,825	-2,147	-4%
Pwr_Sup	Pln&Eng		P0000210	W5 Cycle Chem Instr.	Cummings, C	39,364	41,101	-1,737	-4%
Pwr_Sup	Pln&Eng		P0000211	W6 Cycle Chem Instr.	Cummings, C	89,474	93,420	-3,946	-4%
Pwr_Sup	Pln&Eng		P0000212	W7 Cycle Chem Instr.	Isler, R	488,791	0	488,791	100%
Pwr_Sup	Pln&Eng		P0000213	W8 Cycle Chem Instr.	Lum, D	59,351	65,215	-5,864	-9%
Pwr_Sup	Pln&Eng		P0000214	K1 Cycle Chem Instr.	Isler, R	455,696	0	455,696	100%
Pwr_Sup	Pln&Eng		P0000215	K2 Cycle Chem Instr.	Lum, D	57,519	55,433	2,086	4%
Pwr_Sup	Pln&Eng		P0000216	H8 Cycle Chem Instr.	Isler, R	252,318	208,301	44,017	21%
Pwr_Sup	Pln&Eng		P0000217	H9 Cycle Chem Instr.	Lum, D	18,551	19,370	-819	-4%
Pwr_Sup	Pln&Eng		P0000220	W9&W10 Cardox Fire Prot	Yuen, M	366,605	366,605	0	0%
Pwr_Sup	Pln&Eng		P0000222	W3 Fuel Oil Heaters	Economo, D	83,701	0	83,701	100%
Pwr_Sup	Pln&Eng		P0000226	H8&9 Instrument Air Compr	Yuen, M	288,079	0	288,079	100%
Pwr_Sup	Pln&Eng		P0000227	W4 Fuel Oil Heaters	Economo, D	83,701	0	83,701	100%
Pwr_Sup	Pln&Eng		P0000228	K5 SH & RH Attemp Spray	Economo, D	129,158	175,402	-46,244	-26%
Pwr_Sup	Pln&Eng		P0000229	K6 SH & RH Attemp Spray	Economo, D	40,001	0	40,001	100%
Pwr_Sup	Pln&Eng		P0000230	W7 SH & RH Attemp Spray	Economo, D	91,259	0	91,259	100%
Pwr_Sup	Pln&Eng		P0000231	W8 BFP Rec Ctrl Valves Upg	Economo, D	7,457	7,813	-356	-5%
Pwr_Sup	Pln&Eng		P0000232	W8 SH & RH Attemp Spray	Economo, D	33,108	33,436	-328	-1%
Pwr_Sup	Pln&Eng		P0000233	W7&8 Service Air Compressor	Arakaki, J	122,719	326,469	-203,750	-62%

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Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000234	K1 BFP Rec Ctrl Valves Upg	Pasco, G	62,465	0	62,465	100%
Pwr_Sup	Pln&Eng		P0000235	K2 BFP Rec Ctrl Valves Upg	Pasco, G	38,503	0	38,503	100%
Pwr_Sup	Pln&Eng		P0000236	K3 BFP Rec Ctrl Valves Upg	Pasco, G	61,250	0	61,250	100%
Pwr_Sup	Pln&Eng		P0000239	K1 SH & RH Attemp Spray	Pasco, G	142,991	0	142,991	100%
Pwr_Sup	Pln&Eng		P0000240	K2 SH & RH Attemp Spray	Pasco, G	97,316	0	97,316	100%
Pwr_Sup	Pln&Eng		P0000241	K3 SH & RH Attemp Spray	Pasco, G	94,917	0	94,917	100%
Pwr_Sup	Pln&Eng		P0000242	K4 SH & RH Attemp Spray	Economo, D	124,383	6,839	117,544	1719%
Pwr_Sup	Pln&Eng		P0000254	W3 Stack & Breeching Rpl	Yanagid, J	5,126	9,748	-4,622	-47%
Pwr_Sup	Pln&Eng		P0000255	W4 Stack & Breeching Rpl	Yanagid, J	194,273	0	194,273	100%
Pwr_Sup	Pln&Eng		P0000260	W3 Data Acq & Monitoring	Yoshida, A	2,650	7,537	-4,887	-65%
Pwr_Sup	Pln&Eng		P0000261	W4 Data Acq & Monitoring	Arakawa, D	118,391	0	118,391	100%
Pwr_Sup	Pln&Eng		P0000262	W5 Data Acq & Monitoring	Fukuda, P	133,600	141,233	-7,633	-5%
Pwr_Sup	Pln&Eng		P0000264	H9 Data Acq & Monitoring	Yoshida, A	242,668	0	242,668	100%
Pwr_Sup	Pln&Eng		P0000265	H8 Data Acq & Monitoring	Yoshida, A	54,956	0	54,956	100%
Pwr_Sup	Pln&Eng		P0000266	K6 Data Acq & Monitoring	Yoshida, A	485,965	0	485,965	100%
Pwr_Sup	Pln&Eng		P0000267	K5 Data Acq & Monitoring	Fukuda, P	401,320	430,170	-28,850	-7%
Pwr_Sup	Pln&Eng		P0000268	W5 Curtis R1 Blades	Yuen, M	150,766	150,766	0	0%
Pwr_Sup	Pln&Eng		P0000272	K1-4 Stack Deck Coating	Yanagid, J	73,643	0	73,643	100%
Pwr_Sup	Pln&Eng		P0000273	Kahe Stormwater Erosion Ctrl	Tasaka, S	0	2,777	-2,777	-100%
Pwr_Sup	Pln&Eng		P0000297	W3 Condenser Refurbishment	Arakaki, J	149,757	29,072	120,685	415%
Pwr_Sup	Pln&Eng		P0000298	HPP WWTF Batch Tnk Mods	Yamashi, K	379,157	380,667	-1,510	0%
Pwr_Sup	Pln&Eng		P0000302	Waiau FWH #72 Replacement	Yamashi, K	4,703	17,654	-12,951	-73%
Pwr_Sup	Pln&Eng		P0000303	Waiau FWH #82 Replacement	Yamashi, K	4,938	8,976	-4,038	-45%
Pwr_Sup	Pln&Eng		P0000304	Waiau Emerg Tank Conversion	Economo, D	365,410	0	365,410	100%
Pwr_Sup	Pln&Eng		P0000312	K3 Recorders/Transmitters	Arakawa, D	142,051	0	142,051	100%
Pwr_Sup	Pln&Eng		P0000313	W8 APH Sootblower Upgrade	Arakaki, J	3,539	37,987	-34,448	-91%
Pwr_Sup	Pln&Eng		P0000326	K3 Flue Gas O2 Analyzer	Yuen, M	93,043	0	93,043	100%
Pwr_Sup	Pln&Eng		P0000327	K4 Flue Gas O2 Analyzer	Yoshida, A	97,863	121,528	-23,665	-19%
Pwr_Sup	Pln&Eng		P0000328	K5 Flue Gas O2 Analyzer	Fukuda, P	97,560	80,983	16,577	20%
Pwr_Sup	Pln&Eng		P0000329	K6 Flue Gas O2 Analyzer	Yoshida, A	61,837	0	61,837	100%
Pwr_Sup	Pln&Eng		P0000330	Waiau 3 Ignitor Replacement	Lum, D	67,600	87,624	-20,024	-23%
Pwr_Sup	Pln&Eng		P0000331	H8 Turbine Steam Gland Conv	Arakaki, J	259,912	0	259,912	100%
Pwr_Sup	Pln&Eng		P0000337	Waiau Technician Shop Add	Tasaka, S	143,825	0	143,825	100%

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Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000365	W5&6 Chem Rm Reloc	Yonamin, G	343,918	0	343,918	100%
Pwr_Sup	Pln&Eng		P0000374	W42 Traveling Screen Repl	Yonamin, G	137,812	0	137,812	100%
Pwr_Sup	Pln&Eng		P0000375	W31 Traveling Screen Replace	Yonamin, G	141,789	0	141,789	100%
Pwr_Sup	Pln&Eng		P0000392	W8 Heater Drip Pump Replace	Yonamin, G	47,642	0	47,642	100%
Pwr_Sup	Pln&Eng		P0000413	W4 Hydrogen Purity Meter	Yoshida, A	60,229	60,229	0	0%
Pwr_Sup	Pln&Eng		P0000414	W71 Service Water Pump	Yonamin, G	48,812	0	48,812	100%
Pwr_Sup	Pln&Eng		P0000416	W5 Hydrogen Purity Meter	Yoshida, A	64,576	64,576	0	0%
Pwr_Sup	Pln&Eng		P0000417	K6 Hydrogen Purity Meter	Yoshida, A	66,802	0	66,802	100%
Pwr_Sup	Pln&Eng		P0000437	Waiau FWH #64 Replacement	Yamashi, K	404,628	405,265	-637	0%
Pwr_Sup	Pln&Eng		P0000438	Waiau FWH #74 Replacement	Yamashi, K	362,738	362,738	0	0%
Pwr_Sup	Pln&Eng		P0000439	Waiau FWH #63 Replacement	Yamashi, K	259,586	260,335	-749	0%
Pwr_Sup	Pln&Eng		P0000440	W41 Trvl Scrn Rpl	Yuen, M	132,452	128,934	3,518	3%
Pwr_Sup	Pln&Eng		P0000441	W3 Soot Blower Upgrade	Yamashi, K	3,332	384,111	-380,779	-99%
Pwr_Sup	Pln&Eng		P0000443	W32 Trvl Scrn Rpl	Yuen, M	142,064	135,907	6,157	5%
Pwr_Sup	Pln&Eng		P0000449	Kahe Electronic Parts Store	Shimabu, M	7,603	0	7,603	100%
Pwr_Sup	Pln&Eng		P0000450	Kahe Motor Part Wash Enclose	Uechi, S	16,657	16,742	-85	-1%
Pwr_Sup	Pln&Eng		P0000452	Waiau Electric Parts Store	Shimabu, M	6,979	0	6,979	100%
Pwr_Sup	Pln&Eng		P0000453	Waiau Pond Sheetpiling	Tasaka, S	219,885	230,866	-10,981	-5%
Pwr_Sup	Pln&Eng		P0000454	K6 Fan Enclosure	Yanagid, J	17,934	15,596	2,338	15%
Pwr_Sup	Pln&Eng		P0000457	H9 Stack Lining	Yanagid, J	209,347	0	209,347	100%
Pwr_Sup	Pln&Eng		P0000459	Waiau 3 ERV Replacement	Cummings, C	10,659	5,499	5,160	94%
Pwr_Sup	Pln&Eng		P0000461	Waiau 5 ERV Replacement	Yuen, M	54,720	54,720	0	0%
Pwr_Sup	Pln&Eng		P0000463	Waiau 8 ERV Replacement	Cummings, C	2,650	6,717	-4,067	-61%
Pwr_Sup	Pln&Eng		P0000464	Waiau 5 Wastewater Sump Upgr	Yuen, M	262,138	259,525	2,613	1%
Pwr_Sup	Pln&Eng		P0000466	K3&4 Service Air Compressor	Arakaki, J	200,848	261,815	-60,967	-23%
Pwr_Sup	Pln&Eng		P0000470	W7&8 Control Room AC	Yuen, M	116,505	0	116,505	100%
Pwr_Sup	Pln&Eng		P0000475	K5&6 Control Room AC	Yonamin, G	148,921	0	148,921	100%
Pwr_Sup	Pln&Eng		P0000478	Waiau Springs Kam Hwy Fence	Tasaka, S	99,974	0	99,974	100%
Pwr_Sup	Pln&Eng		P0000479	Kahe 3&4 Sootblower Platform	Tasaka, S	146,599	0	146,599	100%
Pwr_Sup	Pln&Eng		P0000480	Waiau Stream Fence Wall	Tasaka, S	43,774	0	43,774	100%
Pwr_Sup	Pln&Eng		P0000481	K1 Fan Sound Barrier	Yanagid, J	39,748	0	39,748	100%
Pwr_Sup	Pln&Eng		P0000482	KPP FWH #33 Replacement	Economo, D	252,589	252,589	0	0%
Pwr_Sup	Pln&Eng		P0000483	WPP FWH #54 Replacement	Yamashi, K	445,201	445,677	-476	0%

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to	Project to Date Budget	Var $	Var %
90	5,140	2,250	44%
58	60,858	0	0%
03	2,250	4,653	207%
02	278,934	-131,932	-47%
66	4,667	7,699	165%
38	28,966	-12,028	-42%
39	420	19	5%
39	420	19	5%
14	0	152,214	100%
39	173,337	-998	-1%
30	0	154,030	100%
56	0	129,156	100%
01	0	99,501	100%
98	365,998	0	0%
63	0	170,563	100%
32	92,914	-88,882	-96%
46	0	97,146	100%
19	349,131	-329,312	-94%
36	0	55,336	100%
94	467,083	-50,089	-11%
0	31,093	-31,093	-100%
0	10,225	-10,225	-100%
54	133,741	-118,287	-88%
75	331,341	-129,166	-39%
83	77,273	-11,790	-15%
0	53,044	-53,044	-100%
24	79,426	1,198	2%
70	102,740	-2,670	-3%
38	31,238	0	0%
75	341,764	-49,589	-15%
18	0	171,318	100%
0	7,727	-7,727	-100%
77	98,090	-81,813	-83%

	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
L-1 Blades	Yonamin, G	436,377	0	436,377	100%
Stator Rewind	Arakawa, D	1,046,554	1,060,820	-14,266	-1%
wtr piping	Arakaki, J	175,297	0	175,297	100%
ement Replacements	Yamashi, K	1,356,739	1,117,625	239,114	21%
n Repl	Arakaki, J	151,097	138,527	12,570	9%
ine Blading	Yonamin, G	2,219,075	0	2,219,075	100%
Roof Replace	Isler, R	1,032,508	0	1,032,508	100%
Replacement	Yamashi, K	0	101	-101	-100%
Replacement	Yamashi, K	0	3,610	-3,610	-100%
n Repl	Arakaki, J	94,706	110,321	-15,615	-14%
n Repl	Arakaki, J	120,199	107,957	12,242	11%
mp Upgrade	Economo, D	24,650	70,268	-45,618	-65%
r pump	Economo, D	0	582	-582	-100%
mp Upgrade	Economo, D	0	9,436	-9,436	-100%
mp Upgrade	Economo, D	0	6,411	-6,411	-100%
mpr	Arakaki, J	0	43,182	-43,182	-100%
onsole Upgrade	Kabutan, D	0	3,545	-3,545	-100%
onsole Upgrade	Kabutan, D	16,815	137,018	-120,203	-88%
onsole Upgrade	Kabutan, D	0	7,339	-7,339	-100%
ghting	Kabutan, D	0	10,137	-10,137	-100%
/ Replacement	Economo, D	191,322	228,560	-37,238	-16%
r Replacement	Bechtel, M	0	22,095	-22,095	-100%
gulator Replace	Bechtel, M	0	15,684	-15,684	-100%
gulator Repl	Bechtel, M	0	12,445	-12,445	-100%
Replacement	Yoshida, A	0	4,096	-4,096	-100%
k Replacement	Bechtel, M	0	10,703	-10,703	-100%
eplacement	Yoshida, A	73,891	189,465	-115,574	-61%
eplacement	Yoshida, A	0	4,096	-4,096	-100%
Replacement	Kabutan, D	26,300	11,163	15,137	136%
ystem	Bechtel, M	0	7,466	-7,466	-100%
rmer	Fukuda, P	16,876	269,992	-253,116	-94%
Replacement	Fukuda, P	0	6,237	-6,237	-100%
Rotor Rewind	Dahlquist, L	805,324	780,805	24,519	3%

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Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000870	H9 Generator Rotor Rewind	Bechtel, M	328	0	328	100%
Pwr_Sup	Pln&Eng		P0000873	Kahe 2 Sootblower Controls	Economo, D	0	24,260	-24,260	-100%
Pwr_Sup	Pln&Eng		P0000893	H8 Generator Rotor Rewind	Dahlquist, L	797,422	0	797,422	100%
Pwr_Sup	Pln&Eng		P0000898	Kahe 42 Tvl Screen	Arakaki, J	129,584	0	129,584	100%
Pwr_Sup	Pln&Eng		P0000901	Kahe Reclaimed Oil Transfer	Arakaki, J	19,818	0	19,818	100%
Pwr_Sup	Pln&Eng		P0000912	Kahe 12 Traveling Screen	Arakaki, J	107,293	0	107,293	100%
Pwr_Sup	Pln&Eng		P0000939	Waiau CT Separation	Fukuda, P	11,382	0	11,382	100%
Pwr_Sup	Pln&Eng		P0000970	W5 Mixed Bed Polisher	Arakaki, J	8,257	0	8,257	100%
Pwr_Sup	Pln&Eng		P4010000	K1 Performance Monitoring	Fukuda, P	274,577	0	274,577	100%
Pwr_Sup	Pln&Eng		P4530000	Barbers Point Pier Pipeline	Fong, K	143,172	0	143,172	100%
Pwr_Sup	Pln&Eng		P8820000	W4 Exciter Upgrade	Kabutan, D	0	15,020	-15,020	-100%
Pwr_Sup	Pln&Eng		P8980000	K2 Performance Monitoring	Fukuda, P	230,384	0	230,384	100%
Pwr_Sup	Pln&Eng		P9009000	K6 Opacity Monitor Upgrade	Fukuda, P	60,718	0	60,718	100%
Pwr_Sup	Pln&Eng		P9027000	H9 Primary Fuel Oil Pumps	Isler, R	108,482	0	108,482	100%
Pwr_Sup	Pln&Eng		P9031000	K2 Main Trsf Fire Sprinkler	Yonamin, G	54,738	0	54,738	100%
Pwr_Sup	Pln&Eng		P9032000	K3 Main Trsf Fire Sprinkler	Yonamin, G	59,842	0	59,842	100%
Pwr_Sup	Pln&Eng		P9065000	W7 Opacity Monitor Upgrade	Fukuda, P	94,248	0	94,248	100%
Pwr_Sup	Pln&Eng		P9068000	W8 Opacity Monitor Upgrade	Fukuda, P	92,977	0	92,977	100%
Pwr_Sup	Pln&Eng		P9345000	Iwilei/HPP Pipeln Rnv Ph 2	Kabutan, D	133,404	133,404	0	0%
Pwr_Sup	Pln&Eng		P9401000	Kahe Fire Pump Inst	Arakaki, J	381,827	461,562	-79,735	-17%
Pwr_Sup	Pln&Eng		P9453000	H9 Coriolis FO Flowmeter	Yamashi, K	93,657	93,993	-336	0%
Pwr_Sup	Pln&Eng		P9454000	K4 Boiler Control Upgrade	Yoshida, A	333,730	341,821	-8,091	-2%
Pwr_Sup	Pln&Eng		P9488000	Kahe Caustic Rinse Trailer	Pasco, G	108,153	0	108,153	100%
Pwr_Sup	Pln&Eng		P9492000	K6 A/H Acoustic Sootblower	Economo, D	399,586	371,097	28,489	8%
Pwr_Sup	Pln&Eng		P9539000	K3 Boiler Control Upgrade	Kabutan, D	189,783	116,826	72,957	62%
Pwr_Sup	Pln&Eng		P9541000	K4 Data Acq and Monitor	Yoshida, A	21,036	19,643	1,393	7%
Pwr_Sup	Pln&Eng		P9542000	K3 Performance Monitor	Arakawa, D	488,494	0	488,494	100%
Pwr_Sup	Prod		P0000244	Waiau 4 2001 Overhaul	Ornellas, L	18	18	0	0%
Pwr_Sup Total						63,591,208	54,954,417	8,636,791	

Capital Expenditures Project Through March 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
SVPOp	CustSvc		P0000349	Meter Reading System Replacement	Oishi, L	337,897	332,942	4,955	1%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	414,575	459,736	-45,161	-10%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thomas	0	389,217	-389,217	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	200,000	-200,000	-100%
SVPOp	CustSvc		P0000780	Field Svc/Coll Entry Device	Oishi, L	19,104	0	19,104	100%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima, J	20,067	0	20,067	100%
SVPOp Total						791,643	1,381,895	-590,252	

March Recorded vs. Budget

Capital Expenditures

Project and Program

Year-to-Date June 2004

gram Year-to-Date June 2004

#	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
99	Ward A/C Imprv Phase II	Fujiwara, C	4,703	4,890	-187	-4%
06	Ward A/C Equip Repl	Fujiwara, C	5,912	0	5,912	100%
			10,615	4,890	5,725	
98	HECO Employee Cafeteria	Nakano, W	1,090	0	1,090	100%
00	Misc Office Furniture	Nakano, W	83,627	57,195	26,432	46%
02	Waiau Minor Gen Addns	Nakano, W	0	35,444	-35,444	-100%
03	Ward Ave Minor Addns	Nakano, W	73,357	95,350	-21,993	-23%
04	King St Minor Addns	Nakano, W	897	37,809	-36,912	-98%
05	Other Minor Gen Plt Addns	Nakano, W	9,201	19,875	-10,674	-54%
43	Ward Fire Sprinkler Sys	Fujiwara, C	0	5,281	-5,281	-100%
51	Waiau Guard House	Fujiwara, C	0	20,782	-20,782	-100%
86	King St Attic	Fujiwara, C	1,460	1,497	-37	-2%
94	Ward I Bldg access upgrade	Uemura, E	4,005	0	4,005	100%
13	Fuel Cell Test Facility	Fujiwara, C	26	0	26	100%
12	Archer Entry Gate	Fujiwara, C	17,301	0	17,301	100%
22	Tsf Oil Spill Containment	Fujiwara, C	70	0	70	100%
26	ITS Renovation	Nakano, W	0	394,550	-394,550	-100%
40	Security/Campbell Station	Cardoza, A	112,061	102,205	9,856	10%
41	Security/School Street Sub	Cardoza, A	1,300	102,205	-100,905	-99%
42	Security/Wahiawa Sub	Cardoza, A	6,356	102,205	-95,849	-94%
43	Security/Iwilei Sub	Cardoza, A	2,702	102,205	-99,503	-97%
51	Purchasing Warehouse Renov	Nakano, W	0	246,849	-246,849	-100%
52	Ward 04 Warehouse Improvemts	Nakano, W	0	43,236	-43,236	-100%
35	King St Chillwater Pipe	HFEng	0	101,113	-101,113	-100%
36	King Downspout Replcmt	HFEng	0	54,729	-54,729	-100%
37	King St Window Project	HFEng	0	71,219	-71,219	-100%
			324,068	1,598,639	-1,274,571	

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
En_Del	C&M	Y00005	P0000120	Corr (Inc Emg) OH Trsf Rpl	Kumatak, D	273,535	133,186	140,349	105%
En_Del	C&M	Y00005	P0000121	Corr (Inc Emg) UG Trsf Rpl	Kumatak, D	164,622	75,714	88,908	117%
En_Del	C&M	Y00005	P0000122	Cor (Inc Emg) Mis Cable Rpl	Kumatak, D	4,232,222	139,526	4,092,696	2933%
En_Del	C&M	Y00005	P0000123	Corr (Inc Emg) OH Dist Rpl	Kumatak, D	2,075,362	318,739	1,756,623	551%
En_Del	C&M	Y00005	P0000124	Cor (Inc Emg) OH Subtrn Rpl	Kumatak, D	78,571	215,203	-136,632	-63%
		Y00005 Total				6,824,312	882,368	5,941,944	
En_Del	C&M	Y00006	P0000127	Test & Treat Wood Poles	Kumatak, D	0	83,738	-83,738	-100%
En_Del	C&M	Y00006	P1260000	C&M Recon UG Dist Cable	Kumatak, D	171,318	0	171,318	100%
En_Del	C&M	Y00006	P1789000	Preventive OH Transf Repl	Kumatak, D	51,323	307,371	-256,048	-83%
En_Del	C&M	Y00006	P1793000	Preventive UG Transf Repl	Kumatak, D	51,962	416,191	-364,229	-88%
En_Del	C&M	Y00006	P1810000	Prev Misc Cable Failure Rpl	Kumatak, D	698,219	1,895,989	-1,197,770	-63%
En_Del	C&M	Y00006	P3400000	Prev OH Dist Repl	Kumatak, D	345,056	665,459	-320,403	-48%
En_Del	C&M	Y00006	P3401000	Prev OH Subtrans Repl	Kumatak, D	590,630	1,063,322	-472,692	-44%
En_Del	C&M	Y00006	P3402000	Prev OH Trans Repl	Kumatak, D	174,796	796,996	-622,200	-78%
		Y00006 Total				2,083,304	5,229,066	-3,145,762	
	C&M Total					8,907,616	6,111,434	2,796,182	
En_Del	Engr	Y00004	P0000109	BP NAS Transition	Ho, M	-125	0	-125	100%
		Y00004 Total				-125	0	-125	
En_Del	Engr	Y00017	P0000190	Waikiki Rehab Project 1	Chang, C	4,737	392,218	-387,481	-99%
		Y00017 Total				4,737	392,218	-387,481	
En_Del	Engr	Y00031	P0000726	West Loch Sub	JangChe, L	-810	0	-810	100%
		Y00031 Total				-810	0	-810	
En_Del	Engr	Y00036	P0000766	McCully tsf #1 recircuiting	Chang, C	5,207	0	5,207	100%
En_Del	Engr	Y00036	P0000767	Ft Wvr SS Tsf #2 Install	Tamayo, R	7,245	0	7,245	100%
		Y00036 Total				12,452	0	12,452	
En_Del	Engr	Y00037	P0000775	HECO UF Load Shed Upd Trans	Chong, R	80,843	0	80,843	100%
En_Del	Engr	Y00037	P0000776	HECO UF Load Shed Distr	Chong, R	17,248	0	17,248	100%
		Y00037 Total				98,091	0	98,091	
En_Del	Engr	Y00038	P0000672	Kakaako Makai-Kewalo 25kV DL	Hiyama, R	66,299	110,408	-44,109	-40%
En_Del	Engr	Y00038	P0000783	Kakaako Makai-Iwilei 25KV DL	Hiyama, R	632	64,474	-63,842	-99%
		Y00038 Total				66,931	174,882	-107,951	
En_Del	Engr	Y00039	P0000833	Mamala Substation	Nakagaw, N	38,091	0	38,091	100%
En_Del	Engr	Y00039	P0000834	46kV Fdrs to Mamala Sub	Panalal, T	22,001	16,186	5,815	36%
En_Del	Engr	Y00039	P0000835	Comm Links Mamala Sub	Oyadoma, M	2,977	348	2,629	755%
		Y00039 Total				63,069	16,534	46,535	

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
En_Del	Engr	Y00042	P0000891	Kamokila SS Tsf #2 Install	Tamayo, R	27,678	0	27,678	100%
En_Del	Engr	Y00042	P0000892	Kamokila Tsf#2 circuiting	Ikeda, L	48,319	0	48,319	100%
		Y00042 Total				75,997	0	75,997	
En_Del	Engr	Y00044	P0000947	KoOlina 46kV lines	Ikeda, L	18,642	0	18,642	100%
		Y00044 Total				18,642	0	18,642	
En_Del	Engr	Y00045	P0000951	Ocean Pointe 46kV Lines	Ikeda, L	3,907	0	3,907	100%
		Y00045 Total				3,907	0	3,907	
En_Del	Engr	Y18200	P1991000	Minor Dist Design UG Addns	Nakagaw, P	4,404	0	4,404	100%
		Y18200 Total				4,404	0	4,404	
En_Del	Engr		P0000089	Pwr Quality Monitor Install	Arakaki, D	3,047	28,011	-24,964	-89%
En_Del	Engr		P0000218	Waialae Nui Reliability Imp	Lee, I	54,636	0	54,636	100%
En_Del	Engr		P0000288	Emma 4kV Conversion	Lum, M	155,458	0	155,458	100%
En_Del	Engr		P0000289	Halawa Cap Bank Brk 4436	Arakaki, D	494	0	494	100%
En_Del	Engr		P0000290	Halawa Cap Bank Brk 4492	Arakaki, D	1,015	0	1,015	100%
En_Del	Engr		P0000294	Pukele Tie Breaker-Sw Rpl	Arakaki, D	33,410	48,277	-14,867	-31%
En_Del	Engr		P0000335	Intl Savings & Loan Vault	Kaneshi, R	3,624	305,474	-301,850	-99%
En_Del	Engr		P0000423	Kailua Rd UG Conversion	Lum, M	243,743	422,916	-179,173	-42%
En_Del	Engr		P0000445	Trayer Sub Sw Repl Prog	Kaneshi, R	901	32,291	-31,390	-97%
En_Del	Engr		P0000474	WSC Privatization	Fukumot, G	39,148	343,923	-304,775	-89%
En_Del	Engr		P0000491	K-H#2/Wai-Wah Str 86/25	Char, C	0	47,227	-47,227	-100%
En_Del	Engr		P0000507	Kam Hy Resurf Waiahole-Cr Ln	Lee, I	834,816	1,379,373	-544,557	-39%
En_Del	Engr		P0000508	PM-Makalapa MW Replace	Lau, D	0	138,312	-138,312	-100%
En_Del	Engr		P0000509	PM-Ewa Nui MW Replace	Lau, D	0	139,235	-139,235	-100%
En_Del	Engr		P0000530	Ka Iwi 12kV UG, Ph 1 Inc 2	Lung, H	13,156	21,308	-8,152	-38%
En_Del	Engr		P0000575	Nimitz Hwy Rehab-UA #1691	Fukumot, G	65,695	69,401	-3,706	-5%
En_Del	Engr		P0000597	Diamond Head Rd OH/UG Imp	Panalal, T	991	47,446	-46,455	-98%
En_Del	Engr		P0000598	Kahekili Hy Ltg OH/UG Conv	Lee, I	5,856	115,939	-110,083	-95%
En_Del	Engr		P0000603	Nanaikapono OH Relocation	Hiyama, R	29,012	0	29,012	100%
En_Del	Engr		P0000608	Sand Isle WWTP Disinfection	Ho, M	172,774	51,555	121,219	235%
En_Del	Engr		P0000611	Kaneohe Bay Dr Improvements	Lee, I	78,912	0	78,912	100%
En_Del	Engr		P0000614	City Hall Vlt 11	Kaneshi, R	333	0	333	100%
En_Del	Engr		P0000720	Forrest Ave Realignment OH	Hiyama, R	121,588	0	121,588	100%
En_Del	Engr		P0000721	Archer Sub Basement Flooding	Oshiro, E	11,883	0	11,883	100%
En_Del	Engr		P0000732	Gen Ctrl Unit WAN Upgrades	Oyadoma, M	0	12,377	-12,377	-100%
En_Del	Engr		P0000733	Trns Sub RTU Migration Pgm	Lai, D	391,359	397,942	-6,583	-2%

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
En_Del	Engr		P0000734	RTU Wide Area Network	Oyadoma, M	10,509	24,530	-14,021	-57%
En_Del	Engr		P0000764	H-1 Widening Waimalu Reloc	Panalal, T	15,670	52,149	-36,479	-70%
En_Del	Engr		P0000769	2003 Spare 138-46kv Tsf	Hayakaw, W	77,529	89,702	-12,173	-14%
En_Del	Engr		P0000778	Waialua #2 12.5MVA Tsf Repl	Chong, R	-824	0	-824	100%
En_Del	Engr		P0000879	Kahe-Halawa #1 138kV SW Repl	Ikeda, L	46,076	0	46,076	100%
En_Del	Engr		P0000880	Kahe-Halawa #2 138kV SW Repl	Ikeda, L	114,797	0	114,797	100%
En_Del	Engr		P0000883	Purch spare 8%, 46-12kV tsf	Tamayo, R	13,216	0	13,216	100%
En_Del	Engr		P0000884	Purch spare 10%, 46-12kV tsf	Tamayo, R	14,849	0	14,849	100%
En_Del	Engr		P0000885	Midweek Auto-Transfer Swgr	Chang, C	242,200	1,471	240,729	16365%
En_Del	Engr		P0000886	Wal-Mart Sams Keeaumoku'	Hiyama, R	253,896	557,444	-303,548	-54%
En_Del	Engr		P0000888	Koolau-Pukele #1 Str. 18	Char, C	295,928	0	295,928	100%
En_Del	Engr		P0000889	Airport 12KV Ckts Install	Chang, C	41,463	0	41,463	100%
En_Del	Engr		P0000894	Spare 15kV Switchgear	Tamayo, R	8,977	0	8,977	100%
En_Del	Engr		P0000902	Fort Street #1 Tsf Replace	Tamayo, R	67,336	0	67,336	100%
En_Del	Engr		P0000903	Ena #2 Tsf Replace	Tamayo, R	27,290	0	27,290	100%
En_Del	Engr		P0000904	Purch 10% 46-12kV spare tsf	Tamayo, R	24,198	0	24,198	100%
En_Del	Engr		P0000905	Kaonohi #2 Tsf Replace	Tamayo, R	59,060	0	59,060	100%
En_Del	Engr		P0000911	Palehua East A 46kV Reloc	Lee, I	17,824	0	17,824	100%
En_Del	Engr		P0000913	Kona Makaloa 25kV UG	Hiyama, R	22,781	192,701	-169,920	-88%
En_Del	Engr		P0000918	Kewalo #2 Tsf Replace	Tamayo, R	68,428	0	68,428	100%
En_Del	Engr		P0000919	Pohakupu #2 Tsf Replace	Tamayo, R	345,218	0	345,218	100%
En_Del	Engr		P0000920	Waiawa #2 Tsf Replace	Tamayo, R	360,325	0	360,325	100%
En_Del	Engr		P0000921	Helemano #1 Tsf Replace	Tamayo, R	327,074	0	327,074	100%
En_Del	Engr		P0000923	Kahala #2 4KV Tsf Replace	Oshiro, E	3,342	0	3,342	100%
En_Del	Engr		P0000925	Purch 10% 46-12kV spare tsf	Oshiro, E	306,641	0	306,641	100%
En_Del	Engr		P0000926	Mililani Mauka North Gulley	Panalal, T	42,579	0	42,579	100%
En_Del	Engr		P0000927	Mililani Mauka Unit 134A	Panalal, T	10,969	0	10,969	100%
En_Del	Engr		P0000929	Loop Feed Protection Tsf	Kaneshi, R	6,265	0	6,265	100%
En_Del	Engr		P0000930	PMH-9 Control Upgrades	Kaneshi, R	98,237	0	98,237	100%
En_Del	Engr		P0000940	Pearl Highlands 2nd Fdr	Chang, C	25,676	0	25,676	100%
En_Del	Engr		P0000941	Tree Wire - Lai Road	Chang, C	38,147	0	38,147	100%
En_Del	Engr		P0001012	Sheridan St Raising OH Lines	Lung, H	94,468	0	94,468	100%
En_Del	Engr		P0001015	Wahiawa-Waialua #2 P23X-P33	Chang, C	29,498	0	29,498	100%
En_Del	Engr		P0001019	Structure 22 Wailupe #2 Repl	Chang, C	9,371	0	9,371	100%
En_Del	Engr		P0001029	Mobile Substation Storage	Noda, R	3,273	0	3,273	100%

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
En_Del	Engr		P0001032	Honouliuli Reserv 46kV Reloc	Lee, I	5,433	0	5,433	100%
En_Del	Engr		P1470000	Minor Trans Sub Addns	Lai, D	561,179	181,003	380,176	210%
En_Del	Engr		P1480000	Minor Dist Sub Addns	Tamayo, R	1,069,036	311,149	757,887	244%
En_Del	Engr		P1500000	Misc CM Fac-Op & Ctrl (TD)	Lau, D	412,538	133,195	279,343	210%
En_Del	Engr		P1505000	Other Misc Comm Fac SOD	Lau, D	21,173	143,069	-121,896	-85%
En_Del	Engr		P1690000	Minor T&D Customer Programs	Ho, M	192,899	227,673	-34,774	-15%
En_Del	Engr		P1990000	Minor T&D System Programs	Nakagaw, P	355,765	198,479	157,286	79%
En_Del	Engr		P6740000	Iwilei Ntwk Bkr Failure	Arakaki, D	14,522	0	14,522	100%
En_Del	Engr		P6862000	Kahe Bus B Bkup Prot	Arakaki, D	4,569	0	4,569	100%
En_Del	Engr		P7270000	N Shore Automation Comm	Shin, D	71,209	12,315	58,894	478%
En_Del	Engr		P7430000	Kahe 1-4 Cntrl Hse Expnsn	Arakaki, D	196	0	196	100%
En_Del	Engr		P8290000	Tripler Wahiawa mwr replace	Arakaki, G	30,133	184,021	-153,888	-84%
En_Del	Engr		P8470000	Koolau/Tripler MWR Repl	Arakaki, G	24,844	194,923	-170,079	-87%
En_Del	Engr		P9028000	Mobile Radio F1/F2 Replace	Arakaki, G	0	22,358	-22,358	-100%
En_Del	Engr		P9243000	450MHZZ Radio Replacement	Oyadoma, M	4,695	113,727	-109,032	-96%
En_Del	Engr		P9497000	Honolulu Spur	Hayakaw, W	59,150	0	59,150	100%
En_Del	Engr		P9511000	Generation Hotline Upgrd	Lau, D	4,230	50,889	-46,659	-92%
En_Del	Engr		P9903000	Puuloa Road Widening	Panalal, T	755,240	483,971	271,269	56%
En_Del	Engr		P9904000	H1 WIDENING AIEA	Kaneshi, R	0	100,500	-100,500	-100%
	Engr Total					9,318,243	7,459,910	1,858,333	
En_Del	ProjMgt	Y00021	P0000277	New Kuahua Substation	Wong, K	130,748	104,284	26,464	25%
En_Del	ProjMgt	Y00021	P0000278	Makalapa Substation Prot	Wong, K	53,574	10,190	43,384	426%
En_Del	ProjMgt	Y00021	P0000279	Puuloa Substation Prot	Wong, K	1,003	3,762	-2,759	-73%
En_Del	ProjMgt	Y00021	P0000280	Makalapa-Kuahua FO Line	Wong, K	54,004	50,342	3,662	7%
En_Del	ProjMgt	Y00021	P0000281	Makalapa-Puuloa FO Line	Wong, K	2,053	42,726	-40,673	-95%
En_Del	ProjMgt	Y00021	P0000282	Kuahua 46kv Ln Reconnect	Wong, K	7,805	14,464	-6,659	-46%
		Y00021 Total				249,187	225,768	23,419	
En_Del	ProjMgt	Y00030	P0000713	Dispatch Center Building	Naito, C	279,185	566,960	-287,775	-51%
En_Del	ProjMgt	Y00030	P0000714	Materials Storage Relocation	Naito, C	6,435	167,817	-161,382	-96%
En_Del	ProjMgt	Y00030	P0000715	Dispatch Boards	Naito, C	0	3,157	-3,157	-100%
En_Del	ProjMgt	Y00030	P0000716	Telecomm Extensions	Naito, C	3,871	18,152	-14,281	-79%
En_Del	ProjMgt	Y00030	P0000717	EMS Replacement	Naito, C	140,224	171,913	-31,689	-18%
En_Del	ProjMgt	Y00030	P0000718	Dispatch Training Simulator	Naito, C	0	3,639	-3,639	-100%
		Y00030 Total				429,715	931,638	-501,923	
En_Del	ProjMgt	Y00040	P0000836	Ford Island Substation	Chong, R	34,621	8,816	25,805	293%

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
En_Del	ProjMgt	Y00040	P0000837	Makalapa 46kV Brkr Addition	Chong, R	2,283	0	2,283	100%
En_Del	ProjMgt	Y00040	P0000838	46kV Fdrs to Fl Sub	Chong, R	76,385	273,338	-196,953	-72%
En_Del	ProjMgt	Y00040	P0000839	Comm. Links Fl-Maklpa	Chong, R	9,780	0	9,780	100%
		Y00040 Total				123,069	282,154	-159,085	
En_Del	ProjMgt	Y47600	P0000512	Kewalo-Kamoku 138kv UG Elec	Naito, C	2,471	0	2,471	100%
En_Del	ProjMgt	Y47600	P4762000	Kamoku Sub Kewalo Term	Naito, C	1,668	0	1,668	100%
En_Del	ProjMgt	Y47600	P4764000	Kamoku EMS	Naito, C	601	0	601	100%
		Y47600 Total				4,740	0	4,740	
En_Del	ProjMgt	Y48500	P0000922	Kamoku 46kV UG Alt Phase 1	Wong, K	1,239,308	419,439	819,869	195%
En_Del	ProjMgt	Y48500	P0000924	Kamoku 46kV UG Alt Phase 2	Wong, K	166,697	0	166,697	100%
En_Del	ProjMgt	Y48500	P4850000	Kamoku-Pukele 138KV OH Ln	Wong, K	-160	784,946	-785,106	-100%
En_Del	ProjMgt	Y48500	P4851000	Kamoku Pukele Term	Wong, K	0	42,227	-42,227	-100%
En_Del	ProjMgt	Y48500	P4852000	Pukele Termination	Wong, K	0	39,145	-39,145	-100%
En_Del	ProjMgt	Y48500	P4853000	Kamoku-Pukele Fiber Optic	Wong, K	0	475	-475	-100%
		Y48500 Total				1,405,845	1,286,232	119,613	
En_Del	ProjMgt		P0000143	Salt Lake Blvd Widening Ph2	Naito, C	379,970	575,081	-195,111	-34%
En_Del	ProjMgt		P0000669	Kakaako ID10	Naito, C	85,317	150,703	-65,386	-43%
En_Del	ProjMgt		P0000917	Village Park - DB Cable Rpl	Liu, R	81,858	0	81,858	100%
En_Del	ProjMgt		P0001016	Lurline/Mariposa Cable Repl	Liu, R	5,501	0	5,501	100%
En_Del	ProjMgt		P9036000	Kakaako ID7 Kamakee St Conv	Naito, C	0	27,920	-27,920	-100%
	ProjMgt Total					2,765,202	3,479,496	-714,294	
En_Del	SupSvcs		P1081000	Capitalized Tools & Equip	Barnes, C	353,119	405,470	-52,351	-13%
En_Del	SupSvcs		P1250000	Vehicle Purchases	Yoshida, C	669,695	310,856	358,839	115%
	SupSvcs Total					1,022,814	716,326	306,488	
En_Del	Telecom		P9548000	Kahe-Kahe SCADA Comm	Shin, D	98	0	98	100%
En_Del	Telecom		P9599000	Miki 2-Miki 3 SCADA Comm	Shin, D	539	0	539	100%
	Telecom Total					637	0	637	
En_Del Total						22,014,512	17,767,166	4,247,346	

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	300,914	1,770,319	-1,469,405	-83%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Tamayo, R	198,158	519,865	-321,707	-62%
		Y00027 Total				499,072	2,290,184	-1,791,112	
En_Sol	CustInst	Y16700	P1670000	P&I&Test Meters & Mtr Eq	Che, E	215,489	391,544	-176,055	-45%
		Y16700 Total				215,489	391,544	-176,055	
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	189,010	157,881	31,129	20%
En_Sol	CustInst		P1510000	Misc OH Svc & Extn (CID)	Che, E	974,421	1,182,537	-208,116	-18%
En_Sol	CustInst		P1580000	Minor OH Dist Addn (CID)	Che, E	398,232	362,318	35,914	10%
En_Sol	CustInst		P1680000	Tsf & Equip Pur/Svc (CID)	Che, E	1,510,617	2,089,901	-579,284	-28%
En_Sol	CustInst		P1700000	Misc UG Svc & Extn (CID)	Che, E	4,611,578	5,002,470	-390,892	-8%
En_Sol	Custinst		P1800000	Minor OH To UG Conv (CID)	Che, E	-11,197	0	-11,197	100%
En_Sol	CustInst		P1820000	Minor UG Addns (CID)	Che, E	563,287	604,768	-41,481	-7%
En_Sol	EngyProj	YBUD00	P0000897	HECO CHP Program	Suehiro, D	0	1,400,677	-1,400,677	-100%
		YBUD00 Total				0	1,400,677	-1,400,677	
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	6,716	0	6,716	100%
En_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	51	1,376	-1,325	-96%
		Y00026 Total				51	1,376	-1,325	
En_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	24,270	58,380	-34,110	-58%
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	189,573	-189,573	-100%
En_Sol Total						8,981,546	13,731,609	-4,750,063	

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
Finance	ITS	Y00029	P0000710	King and Ward PBXs	Lee, J	313,077	1,132,523	-819,446	-72%
		Y00029 Total				313,077	1,132,523	-819,446	
Finance	ITS		P0000501	Misc Office Equipment	Young, P	12,654	36,624	-23,970	-65%
Finance	ITS		P0000652	Misc Mainframe Hardware	Stuller, R	9,680	63,840	-54,160	-85%
Finance	ITS		P0000653	Collaborative Communications	Stuller, R	1,703	0	1,703	100%
Finance	ITS		P1243000	Purchase PCs-ITS	Young, P	111,452	509,600	-398,148	-78%
Finance	ITS		P1244000	Copiers/Faxes/Printers	McCarter, L	5,783	101,920	-96,137	-94%
Finance	ITS		P1251000	Misc Tel Eqpt NT	Young, P	736	3,080	-2,344	-76%
Finance	MgtAcctg		P0000896	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
Finance Total						455,085	1,869,987	-1,414,902	

June Recorded vs. Budget

enditures Project and Program Year-to-Date June 2004

Dept	Grand parent	Project #	Project Title	ject hager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
and		P0000062	Ce-Terminating Trust Esmnts	vara, C	31,213	1,582	29,631	1873%
and		P1370000	Distr R/W Purch (Blanket)	vara, C	22,138	0	22,138	100%
and		P1373000	46kv R/W Purch (blanket)	vara, C	1,493	0	1,493	100%
otal					54,844	1,582	53,262	

rded vs. Budget

ogram Year-to-Date June 2004

ct #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
223	W3&W4 Control Rm Roof	Yanagid, J	1,928	0	1,928	100%
269	Waiau Gantry Crane Catwalks	Uechi, S	3,705	0	3,705	100%
274	W3&4 Boilder Bldg ReRoof	Yanagid, J	9,310	0	9,310	100%
336	K5 Burner Front Roof	Uechi, S	0	10,083	-10,083	-100%
338	K6 Burner Front Roof	Uechi, S	0	10,083	-10,083	-100%
451	Kahe Stormwater Berm	Tasaka, S	36,227	113,079	-76,852	-68%
616	Kahe Parking Lot Addition	Tasaka, S	67	0	67	100%
620	Kahe Fire Water Storage Tnk2	Yanagid, J	15,478	52,389	-36,911	-70%
656	W 3&4 CW Sht Pile Upgrade	Tasaka, S	0	9,699	-9,699	-100%
661	W2 Maintenance Laydown Area	Yanagid, J	220	6,136	-5,916	-96%
667	Kahe Sewer System Upgrade	Tasaka, S	94,501	72,714	21,787	30%
719	Kahe Fire Line for Wtr Tank	Yanagid, J	9,710	1,000	8,710	871%
909	Kahe 13-14 FT Berm Upgrade	Yanagid, J	13,389	0	13,389	100%
910	Kahe 11-12 FT Berm Upgrade	Yanagid, J	8,478	0	8,478	100%
933	K2 to CW Basin Pipe Trench	Yanagid, J	8,895	0	8,895	100%
969	Waiau Maint Office Rennovate	Yanagid, J	4,874	0	4,874	100%
064	Waiau Fuel Pipeline Project	Fong, K	16,395,711	16,859,924	-464,213	-3%
738	Waiau Pipeline SEC Lease	Fong, K	2,000	0	2,000	100%
746	Barbers Point TF 46kV TL	Fong, K	78,275	177,201	-98,926	-56%
747	Valve Station Service	Fong, K	15,058	159,608	-144,550	-91%
748	Barbers Point TF 46kV Substation	Fong, K	247,479	221,404	26,075	12%
			16,738,523	17,418,137	-679,614	
00	Kahe Disc. Conc. Topping	Yanagid, J	0	23,386	-23,386	-100%
			0	23,386	-23,386	
00	Power Station Misc	Yonamin, G	425,017	140,882	284,135	202%
00	FO Tank Level Gauge Upgrade	Fukuda, P	2,583	4	2,579	64475%
			427,600	140,886	286,714	
00	AES 138KV SUB-TERM BP #1,2,3	Yonamin, G	-41,587	0	-41,587	100%
			-41,587	0	-41,587	
00	Barbers Point Unit 1 Addition	Isler, R	28,063	394,051	-365,988	-93%
			28,063	394,051	-365,988	
00	Kahe Disc Struct Reinf	Noda, R	23,628	65,643	-42,015	-64%
			23,628	65,643	-42,015	
56	H8 Blr Elec Warm Sys	Pasco, G	46,142	0	46,142	100%
57	H9 Blr Elec Warm Sys	Economo, D	152	0	152	100%

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get	Var $	%
37,638	745,50	17%
43,511	13,06	30%
0	55,66	00%
25,805	-114,14	51%
1,085	1,83	69%
0	1,73	00%
0	30	00%
101	5,71	56%
12,624	7,61	60%
11,013	-10,32	94%
0	80	00%
70,813	-110,92	41%
2,215	-2,21	00%
1,791	-1,79	00%
24,596	-87,67	70%
35,333	-39,79	29%
2,416	28,83	93%
0	14,66	00%
844	-84	00%
45,702	-71,39	49%
0	5,19	00%
2,071	2,72	31%
68,591	-91,85	34%
18,502	-113,12	95%
0	68,83	00%
50,878	-222,25	39%
43,141	84,13	95%
0	2,64	00%
50,600	22,78	15%
11,203	-11,20	00%
48,890	62,95	12%
0	3	00%
05,874	-97,86	18%
13,384	95,53	14%
51,649	-246,90	98%

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000327	K4 Flue Gas O2 Analyzer	Yoshida, A	17,653	7,622	10,031	132%
Pwr_Sup	Pln&Eng		P0000328	K5 Flue Gas O2 Analyzer	Fukuda, P	74,922	37,852	37,070	98%
Pwr_Sup	Pln&Eng		P0000330	Waiau 3 Ignitor Replacement	Lum, D	87,759	163,433	-75,674	-46%
Pwr_Sup	Pln&Eng		P0000331	H8 Turbine Steam Gland Conv	Arakaki, J	117	0	117	100%
Pwr_Sup	Pln&Eng		P0000439	Waiau FWH #63 Replacement	Yamashi, K	189	0	189	100%
Pwr_Sup	Pln&Eng		P0000441	W3 Soot Blower Upgrade	Yamashi, K	5,925	361,083	-355,158	-98%
Pwr_Sup	Pln&Eng		P0000449	Kahe Electronic Parts Store	Shimabu, M	704	0	704	100%
Pwr_Sup	Pln&Eng		P0000450	Kahe Motor Part Wash Enclose	Uechi, S	132	0	132	100%
Pwr_Sup	Pln&Eng		P0000452	Waiau Electric Parts Store	Shimabu, M	1,007	0	1,007	100%
Pwr_Sup	Pln&Eng		P0000453	Waiau Pond Sheetpiling	Tasaka, S	1,742	19,243	-17,501	-91%
Pwr_Sup	Pln&Eng		P0000454	K6 Fan Enclosure	Yanagid, J	19,491	11,599	7,892	68%
Pwr_Sup	Pln&Eng		P0000459	Waiau 3 ERV Replacement	Cummings, C	41,088	69,823	-28,735	-41%
Pwr_Sup	Pln&Eng		P0000463	Waiau 8 ERV Replacement	Fackrel, J	8,764	85,747	-76,983	-90%
Pwr_Sup	Pln&Eng		P0000464	Waiau 5 Wastewater Sump Upgr	Yuen, M	1,500	0	1,500	100%
Pwr_Sup	Pln&Eng		P0000466	K3&4 Service Air Compressor	Arakaki, J	29,107	41,596	-12,489	-30%
Pwr_Sup	Pln&Eng		P0000469	K5&6 Service Air Compressors	Fackrel, J	1,639	2,321	-682	-29%
Pwr_Sup	Pln&Eng		P0000485	WPP FWH #35 Replacement	Yamashi, K	246,948	133,165	113,783	85%
Pwr_Sup	Pln&Eng		P0000490	H8&9 Emergency Generator	Fackrel, J	3,481	7,212	-3,731	-52%
Pwr_Sup	Pln&Eng		P0000492	K4 HP Turb Row 9-11 Blades	Yuen, M	146,809	273,268	-126,459	-46%
Pwr_Sup	Pln&Eng		P0000493	W6 HP Turbine Blades	Yuen, M	276,920	6,509	270,411	4154%
Pwr_Sup	Pln&Eng		P0000497	Waiau WW Pond Closure	Tasaka, S	14,025	72,353	-58,328	-81%
Pwr_Sup	Pln&Eng		P0000510	Circ Water Temp Monitors	Kabutan, D	36,393	28,790	7,603	26%
Pwr_Sup	Pln&Eng		P0000511	BFP Automated Test	Yoshida, A	41,138	102,590	-61,452	-60%
Pwr_Sup	Pln&Eng		P0000564	W9 DCS Processor Upgrade	Yoshida, A	129	0	129	100%
Pwr_Sup	Pln&Eng		P0000565	W10 DCS Processor Upgrade	Yoshida, A	158	0	158	100%
Pwr_Sup	Pln&Eng		P0000590	PP Security Hardware Upgrade	Yonamin, G	79,800	56,494	23,306	41%
Pwr_Sup	Pln&Eng		P0000601	Gen Prot Relay Replacement	Dahlquist, L	64,555	142,401	-77,846	-55%
Pwr_Sup	Pln&Eng		P0000604	W4 Aux TFMR Replacement	Arakawa, D	48	0	48	100%
Pwr_Sup	Pln&Eng		P0000605	W3 and W4 Stack Drain	Lum, D	4,203	93,543	-89,340	-96%
Pwr_Sup	Pln&Eng		P0000609	K2 Blr Access Door Addition	Arakaki, J	0	1,169	-1,169	-100%
Pwr_Sup	Pln&Eng		P0000624	Kahe Tank Farm Fire Main	Arakaki, J	28,307	376,897	-348,590	-92%
Pwr_Sup	Pln&Eng		P0000625	HPP Swyd Cable Tray Sprinkler	Arakaki, J	14,290	0	14,290	100%
Pwr_Sup	Pln&Eng		P0000626	W3-8 Cable Rm Smoke Detector	Arakaki, J	0	40,648	-40,648	-100%
Pwr_Sup	Pln&Eng		P0000627	W3-8 Swgr Rm Smoke Detector	Arakaki, J	0	73,891	-73,891	-100%
Pwr_Sup	Pln&Eng		P0000628	K1-6 Cable Rm Smoke Detector	Arakaki, J	0	56,112	-56,112	-100%

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000629	K1-6 Swgr Rm Smoke Detectors	Arakaki, J	2,376	31,763	-29,387	-93%
Pwr_Sup	Pln&Eng		P0000633	K4 Exciter/Regulator Upgrade	Dahlquist, L	174,594	276,875	-102,281	-37%
Pwr_Sup	Pln&Eng		P0000634	W7&8 Boiler Wash Sump Pump	Fackrel, J	233	78,882	-78,649	-100%
Pwr_Sup	Pln&Eng		P0000637	Kahe Chlorine Dioxide System	Arakaki, J	0	15,005	-15,005	-100%
Pwr_Sup	Pln&Eng		P0000638	W3 Air Heater Tube Replmnt	Economo, D	345,297	420,938	-75,641	-18%
Pwr_Sup	Pln&Eng		P0000646	Kahe 24FWH Replacement	Economo, D	36,819	171,388	-134,569	-79%
Pwr_Sup	Pln&Eng		P0000647	Kahe 23FWH Replacement	Economo, D	818	34,025	-33,207	-98%
Pwr_Sup	Pln&Eng		P0000651	K5 AEH Limit Switch Upgrd	Bechtel, M	26,825	15,000	11,825	79%
Pwr_Sup	Pln&Eng		P0000657	W10 Exhaust Duct Replacement	Yuen, M	2,995	0	2,995	100%
Pwr_Sup	Pln&Eng		P0000658	W9 Exhaust Duct Replacement	Yuen, M	5,534	0	5,534	100%
Pwr_Sup	Pln&Eng		P0000659	Kahe 25FWH Replacement	Economo, D	818	61,065	-60,247	-99%
Pwr_Sup	Pln&Eng		P0000664	W3 UPS Installation	Kabutan, D	54,122	34,499	19,623	57%
Pwr_Sup	Pln&Eng		P0000666	Waiau Maint Shop Office	Yanagid, J	116,065	223,631	-107,566	-48%
Pwr_Sup	Pln&Eng		P0000674	Waiau Start-Up SWGR Replace	Yoshida, A	32,226	328	31,898	9725%
Pwr_Sup	Pln&Eng		P0000675	W6 Control/DC Cables to Swyd	Rompask, D	0	6,960	-6,960	-100%
Pwr_Sup	Pln&Eng		P0000676	K2 Opacity Monitor Upgrade	Fukuda, P	0	2,566	-2,566	-100%
Pwr_Sup	Pln&Eng		P0000678	Kahe H2 Gas Dryers	Economo, D	0	19,980	-19,980	-100%
Pwr_Sup	Pln&Eng		P0000681	Kahe1 Condenser Tube Replacement	Economo, D	2,519	0	2,519	100%
Pwr_Sup	Pln&Eng		P0000682	W6 Annunciator Upgrade	Fukuda, P	0	17,099	-17,099	-100%
Pwr_Sup	Pln&Eng		P0000685	Waiau Start-Up Cable Replace	Yoshida, A	197,114	111,863	85,251	76%
Pwr_Sup	Pln&Eng		P0000690	W5 Annunciator Upgrade	Fukuda, P	95,519	88,876	6,643	7%
Pwr_Sup	Pln&Eng		P0000737	Chlorine Dioxide Systm	Yuen, M	1,204	0	1,204	100%
Pwr_Sup	Pln&Eng		P0000741	W5 Demin raw wtr piping	Arakaki, J	81,384	0	81,384	100%
Pwr_Sup	Pln&Eng		P0000750	K5 Reheater Element Replacements	Yamashi, K	682,040	351,926	330,114	94%
Pwr_Sup	Pln&Eng		P0000771	H81 TVL Screen Repl	Arakaki, J	471	1,003	-532	-53%
Pwr_Sup	Pln&Eng		P0000772	H92 TVL Screen Repl	Arakaki, J	94,413	3,520	90,893	2582%
Pwr_Sup	Pln&Eng		P0000777	Waiau Tank 5 Roof Replace	Isler, R	16,577	0	16,577	100%
Pwr_Sup	Pln&Eng		P0000781	KPP FWH #41 Replacement	Kurisu, A	0	5,754	-5,754	-100%
Pwr_Sup	Pln&Eng		P0000782	KPP FWH #42 Replacement	Kurisu, A	0	9,340	-9,340	-100%
Pwr_Sup	Pln&Eng		P0000784	K22 TVL Screen Repl	Arakaki, J	28,600	68,690	-40,090	-58%
Pwr_Sup	Pln&Eng		P0000785	K41 TVL Screen Repl	Arakaki, J	27,072	7,088	19,984	282%
Pwr_Sup	Pln&Eng		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	26,122	114,833	-88,711	-77%
Pwr_Sup	Pln&Eng		P0000787	K5/6 Lube water pump	Kurisu, A	0	43,644	-43,644	-100%
Pwr_Sup	Pln&Eng		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	0	114,002	-114,002	-100%
Pwr_Sup	Pln&Eng		P0000789	Kahe 3 BW Sump Upgrade	Economo, D	57,695	113,177	-55,482	-49%

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000790	Kahe 4 BW Sump Upgrade	Economo, D	0	70,268	-70,268	-100%
Pwr_Sup	Pln&Eng		P0000791	Kahe 5 BW Sump Upgrade	Economo, D	0	9,436	-9,436	-100%
Pwr_Sup	Pln&Eng		P0000792	Kahe 6 BW Sump Upgrade	Economo, D	0	6,411	-6,411	-100%
Pwr_Sup	Pln&Eng		P0000798	W6 Instr Air Compr	Kurisu, A	0	54,392	-54,392	-100%
Pwr_Sup	Pln&Eng		P0000799	K2 Operator Console Upgrade	Kabutan, D	0	5,087	-5,087	-100%
Pwr_Sup	Pln&Eng		P0000803	W3 Operator Console Upgrade	Kabutan, D	45,101	156,240	-111,139	-71%
Pwr_Sup	Pln&Eng		P0000804	W6 Operator Console Upgrade	Kabutan, D	0	11,282	-11,282	-100%
Pwr_Sup	Pln&Eng		P0000805	Kahe Intake Lighting	Kabutan, D	0	2,689	-2,689	-100%
Pwr_Sup	Pln&Eng		P0000806	K06 CWP MOV Replacement	Economo, D	69,936	157,726	-87,790	-56%
Pwr_Sup	Pln&Eng		P0000809	K6 Annunciator Replacement	Dahlquist, L	0	5,174	-5,174	-100%
Pwr_Sup	Pln&Eng		P0000811	W8 Annunciator Replacement	Dahlquist, L	0	70,464	-70,464	-100%
Pwr_Sup	Pln&Eng		P0000817	W6 Exciter/Regulator Replace	Dahlquist, L	0	36,482	-36,482	-100%
Pwr_Sup	Pln&Eng		P0000819	W8 Exciter/Regulator Repl	Dahlquist, L	0	57,220	-57,220	-100%
Pwr_Sup	Pln&Eng		P0000820	K1 Main Xfmr Replacement	Yoshida, A	0	6,257	-6,257	-100%
Pwr_Sup	Pln&Eng		P0000821	K2 Battery Bank Replacement	Garriso, R	0	18,536	-18,536	-100%
Pwr_Sup	Pln&Eng		P0000822	K4 Recorder Replacement	Yoshida, A	15,975	47,454	-31,479	-66%
Pwr_Sup	Pln&Eng		P0000830	K1 Aux Xfmr Replacement	Yoshida, A	0	6,257	-6,257	-100%
Pwr_Sup	Pln&Eng		P0000832	W3 Main Xfmr Replacement	Kabutan, D	40,984	642,345	-601,361	-94%
Pwr_Sup	Pln&Eng		P0000853	K2 Excitation System	Dahlquist, L	0	24,731	-24,731	-100%
Pwr_Sup	Pln&Eng		P0000854	K1 Excitation System	Dahlquist, L	0	6,167	-6,167	-100%
Pwr_Sup	Pln&Eng		P0000855	K6 Aux Transformer	Fukuda, P	191,804	366,901	-175,097	-48%
Pwr_Sup	Pln&Eng		P0000860	K2 Annunciator Replacement	Fukuda, P	0	19,331	-19,331	-100%
Pwr_Sup	Pln&Eng		P0000863	K4 Generator Rotor Rewind	Dahlquist, L	416,827	520,434	-103,607	-20%
Pwr_Sup	Pln&Eng		P0000869	K4 Annunciator Replacement	Yoshida, A	0	2,142	-2,142	-100%
Pwr_Sup	Pln&Eng		P0000870	H9 Generator Rotor Rewind	Kabutan, D	1,268	0	1,268	100%
Pwr_Sup	Pln&Eng		P0000873	Kahe 2 Sootblower Controls	Economo, D	3,390	26,661	-23,271	-87%
Pwr_Sup	Pln&Eng		P0000874	Kahe 4 Sootblower Controls	Economo, D	0	4,676	-4,676	-100%
Pwr_Sup	Pln&Eng		P0000893	H8 Generator Rotor Rewind	Dahlquist, L	-2,702	0	-2,702	100%
Pwr_Sup	Pln&Eng		P0000898	Kahe 42 Tvl Screen	Arakaki, J	11,905	0	11,905	100%
Pwr_Sup	Pln&Eng		P0000901	Kahe Reclaimed Oil Transfer	Arakaki, J	18,360	0	18,360	100%
Pwr_Sup	Pln&Eng		P0000912	Kahe 12 Traveling Screen	Arakaki, J	44,341	0	44,341	100%
Pwr_Sup	Pln&Eng		P0000936	Waiau Turbine Drains	Arakaki, J	1,533	0	1,533	100%
Pwr_Sup	Pln&Eng		P0000939	Waiau CT Separation	Fukuda, P	48,193	0	48,193	100%
Pwr_Sup	Pln&Eng		P0000963	K51 TVL SCREEN REPL	Arakaki, J	1,006	0	1,006	100%
Pwr_Sup	Pln&Eng		P0000970	W5 Mixed Bed Polisher	Arakaki, J	27,647	0	27,647	100%

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0001002	K31 TVL SCREEN REPL	Arakaki, J	106,585	0	106,585	100%
Pwr_Sup	Pln&Eng		P0001018	K5 Turbine Blades	Yuen, M	424,623	0	424,623	100%
Pwr_Sup	Pln&Eng		P8820000	W4 Exciter Upgrade	Kabutan, D	0	15,328	-15,328	-100%
Pwr_Sup	Pln&Eng		P9027000	H9 Primary Fuel Oil Pumps	Isler, R	51	0	51	100%
Pwr_Sup	Pln&Eng		P9401000	Kahe Fire Pump Inst	Arakaki, J	49,397	70,772	-21,375	-30%
Pwr_Sup	Pln&Eng		P9453000	H9 Coriolis FO Flowmeter	Yamashi, K	30	0	30	100%
Pwr_Sup	Pln&Eng		P9454000	K4 Boiler Control Upgrade	Yoshida, A	159,566	179,732	-20,166	-11%
Pwr_Sup	Pln&Eng		P9492000	K6 A/H Acoustic Sootblower	Economo, D	41,047	117	40,930	34983%
Pwr_Sup	Pln&Eng		P9539000	K3 Boiler Control Upgrade	Kabutan, D	0	5,092	-5,092	-100%
Pwr_Sup	Pln&Eng		P9541000	K4 Data Acq and Monitor	Yoshida, A	2,886	6,954	-4,068	-58%
Pwr_Sup	PSO&M	Y14300	P1429000	Emergency Power Plant	Marzano, V	346,404	471,097	-124,693	-26%
		Y14300 Total				346,404	471,097	-124,693	
Pwr_Sup	VPPwrSup		P0000942	Waiau Tank 4 Bottom Replmt	Yuen, N	880	0	880	100%
Pwr_Sup Total						25,733,263	28,990,492	-3,257,229	

June Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	YTD Jun 04 Actuals	YTD Jun 04 Budget	Var $	Var %
SVPOp	CustSvc		P0000349	Meter Reading System Replacement	Oishi, L	100	0	100	100%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	97,303	0	97,303	100%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thomas	0	397,791	-397,791	-100%
SVPOp	CustSvc		P0000692	CSD Technical Support Prgrm	Ejercito, A	0	17,000	-17,000	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	100,000	-100,000	-100%
SVPOp	CustSvc		P0000877	Payment Extraction Equip	Ejercito, A	-987	44,800	-45,787	-102%
SVPOp	CustSvc		P0000878	Check Processing Upgrade	Ejercito, A	0	26,680	-26,680	-100%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima, J	20,527	0	20,527	100%
SVPOp Total						116,943	586,271	-469,328	

June Recorded vs. Budget

Capital Expenditures

Project

Through June 2004

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Cor_Exc	SSF	Y00023	P0000499	Ward A/C Imprv Phase II	Fujiwara, C	111,806	9,742	102,064	1048%
Cor_Exc	SSF	Y00023	P0000506	Ward A/C Equip Repl	Fujiwara, C	3,294,120	3,281,721	12,399	0%
		Y00023 Total				3,405,926	3,291,463	114,463	
Cor_Exc	SSF	Y00033	P0000744	Call Center Relocation - GP	Nakano, W	204,822	310,034	-105,212	-34%
Cor_Exc	SSF	Y00033	P0000745	Call Center Relocation - FE	Nakano, W	238,756	238,756	0	0%
		Y00033 Total				443,578	548,790	-105,212	
Cor_Exc	SSF		P0000189	Upg Makai Elev Ctrls-King	Ishii, A	-11,648	0	-11,648	100%
Cor_Exc	SSF		P0000369	Ward Ave Security System	Fujiwara, C	175,032	0	175,032	100%
Cor_Exc	SSF		P0000415	CPP Access Control	Fujiwara, C	172,664	172,668	-4	0%
Cor_Exc	SSF		P0000418	Ward Ave Fire Alarm System	Beavers, J	131,312	131,312	0	0%
Cor_Exc	SSF		P0000495	Access Control System Upgrade	Uemura, E	217,824	0	217,824	100%
Cor_Exc	SSF		P0000540	King St Power Improv	Fujiwara, C	0	1	-1	-100%
Cor_Exc	SSF		P0000543	Ward Fire Sprinkler Sys	Fujiwara, C	0	7,708	-7,708	-100%
Cor_Exc	SSF		P0000551	Waiau Guard House	Fujiwara, C	0	274,400	-274,400	-100%
Cor_Exc	SSF		P0000580	King St UV Installation	Fujiwara, C	39,379	0	39,379	100%
Cor_Exc	SSF		P0000586	King St Attic	Fujiwara, C	35,068	35,105	-37	0%
Cor_Exc	SSF		P0000594	Ward I Bldg access upgrade	Uemura, E	96,164	90,210	5,954	7%
Cor_Exc	SSF		P0000612	Ward Whse 04 fire sprinkler	Fujiwara, C	201,814	201,814	0	0%
Cor_Exc	SSF		P0000613	Fuel Cell Test Facility	Fujiwara, C	2,974	2,929	45	2%
Cor_Exc	SSF		P0000704	Security/Halawa Meva Site	Uemura, E	98,699	0	98,699	100%
Cor_Exc	SSF		P0000705	Security/Makalapa Meva	Uemura, E	110,710	0	110,710	100%
Cor_Exc	SSF		P0000706	Security/Koolau Meva Site	Uemura, E	82,085	0	82,085	100%
Cor_Exc	SSF		P0000707	Security/Pukele Meva Site	Uemura, E	85,298	85,298	0	0%
Cor_Exc	SSF		P0000712	Archer Entry Gate	Fujiwara, C	60,865	23,802	37,063	156%
Cor_Exc	SSF		P0000722	Tsf Oil Spill Containment	Fujiwara, C	1,684	1,580	104	7%
Cor_Exc	SSF		P0000742	Security Command Center	Nakano, W	317,229	317,229	0	0%
Cor_Exc	SSF		P0000779	Sec Command Ctr Equip	Cardoza, A	204,981	0	204,981	100%
Cor_Exc	SSF		P0000826	ITS Renovation	Nakano, W	0	423,201	-423,201	-100%
Cor_Exc	SSF		P0000840	Security/Campbell Station	Cardoza, A	112,061	102,205	9,856	10%
Cor_Exc	SSF		P0000841	Security/School Street Sub	Cardoza, A	1,300	102,205	-100,905	-99%
Cor_Exc	SSF		P0000842	Security/Wahiawa Sub	Cardoza, A	6,356	102,205	-95,849	-94%
Cor_Exc	SSF		P0000843	Security/Iwilei Sub	Cardoza, A	2,702	102,205	-99,503	-97%
Cor_Exc	SSF		P0000851	Purchasing Warehouse Renov	Nakano, W	0	286,644	-286,644	-100%
Cor_Exc	SSF		P0000852	Ward 04 Warehouse Improvemts	Nakano, W	0	43,236	-43,236	-100%
Cor_Exc	SSF		P0000865	King St Chillwater Pipe	HFEng	0	101,113	-101,113	-100%

June Recorded vs. Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Cor_Exc	SSF		P0000866	King Downspout Replcmt	HFEng	0	54,729	-54,729	-100%
Cor_Exc	SSF		P0000867	King St Window Project	HFEng	0	71,219	-71,219	-100%
Cor_Exc Total						5,994,057	6,573,271	-579,214	

June Recorded vs. Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	Engr	Y00004	P0000108	BP NAS Purchase	Ho, M	0	622	-622	-100%
En_Del	Engr	Y00004	P0000109	BP NAS Transition	Ho, M	0	525,330	-525,330	-100%
		Y00004 Total				0	525,952	-525,952	
En_Del	Engr	Y00017	P0000190	Waikiki Rehab Project 1	Chang, C	111,767	563,605	-451,838	-80%
		Y00017 Total				111,767	563,605	-451,838	
En_Del	Engr	Y00024	P0000372	Perm UG, Waimea Rockfall	Ho, M	269,816	0	269,816	100%
		Y00024 Total				269,816	0	269,816	
En_Del	Engr	Y00031	P0000726	West Loch Sub	JangChe, L	434,828	0	434,828	100%
En_Del	Engr	Y00031	P0000728	Makakilo#2 Tsf Replacement	JangChe, L	101,924	0	101,924	100%
En_Del	Engr	Y00031	P0000729	Makakilo 4 12.47kV Feeder	Ikeda, L	41,456	0	41,456	100%
En_Del	Engr	Y00031	P0000730	McCully Ckts Reconnection	JangChe, L	1,687	0	1,687	100%
En_Del	Engr	Y00031	P0000731	CEIP46 46kV Extension	JangChe, L	139,203	0	139,203	100%
		Y00031 Total				719,098	0	719,098	
En_Del	Engr	Y00036	P0000765	McCully tsf #1 Removal	Tamayo, R	14,204	13,610	594	4%
En_Del	Engr	Y00036	P0000766	McCully tsf #1 recircuiting	Chang, C	21,825	25,786	-3,961	-15%
En_Del	Engr	Y00036	P0000767	Ft Wvr SS Tsf #2 Install	Tamayo, R	146,039	154,537	-8,498	-5%
En_Del	Engr	Y00036	P0000768	Ft Weaver Tsf#2 circuiting	Chang, C	115,252	118,665	-3,413	-3%
		Y00036 Total				297,320	312,598	-15,278	
En_Del	Engr	Y00037	P0000775	HECO UF Load Shed Upd Trans	Chong, R	107,825	0	107,825	100%
En_Del	Engr	Y00037	P0000776	HECO UF Load Shed Distr	Chong, R	215,990	0	215,990	100%
		Y00037 Total				323,815	0	323,815	
En_Del	Engr	Y00038	P0000672	Kakaako Makai-Kewalo 25kV DL	Hiyama, R	98,984	178,467	-79,483	-45%
En_Del	Engr	Y00038	P0000783	Kakaako Makai-Iwilei 25KV DL	Hiyama, R	632	141,901	-141,269	-100%
		Y00038 Total				99,616	320,368	-220,752	
En_Del	Engr	Y00039	P0000833	Mamala Substation	Nakagaw, N	38,091	0	38,091	100%
En_Del	Engr	Y00039	P0000834	46kV Fdrs to Mamala Sub	Panalal, T	26,408	16,186	10,222	63%
En_Del	Engr	Y00039	P0000835	Comm Links Mamala Sub	Oyadoma, M	2,977	8,164	-5,187	-64%
		Y00039 Total				67,476	24,350	43,126	
En_Del	Engr	Y00042	P0000891	Kamokila SS Tsf #2 Install	Tamayo, R	435,324	0	435,324	100%
En_Del	Engr	Y00042	P0000892	Kamokila Tsf#2 circuiting	Ikeda, L	83,074	0	83,074	100%
		Y00042 Total				518,398	0	518,398	
En_Del	Engr	Y00044	P0000947	KoOlina 46kV lines	Ikeda, L	18,642	0	18,642	100%
		Y00044 Total				18,642	0	18,642	
En_Del	Engr	Y00045	P0000951	Ocean Pointe 46kV Lines	Ikeda, L	3,907	0	3,907	100%
		Y00045 Total				3,907	0	3,907	

June Recorded vs. Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	Engr	Y15300	P9294000	MOANALUA RD IMPRV AIEA, PH 3	Ikeda, L	15	0	15	100%
		Y15300 Total				15	0	15	
En_Del	Engr	Y15800	P9422000	WAIMANALO 4KV CONVERSION	Ching, A	51,265	0	51,265	100%
		Y15800 Total				51,265	0	51,265	
En_Del	Engr	Y64100	P6410000	Salt Lake Blvd. Widening	Ho, M	2,121,880	0	2,121,880	100%
		Y64100 Total				2,121,880	0	2,121,880	
En_Del	Engr	Y66400	P6640000	New Interchange Improv	Lum, M	95,567	0	95,567	100%
		Y66400 Total				95,567	0	95,567	
En_Del	Engr	Y68400	P6841000	Waiau-Koolau Pkle Twr #2	Char, C	414,891	0	414,891	100%
		Y68400 Total				414,891	0	414,891	
En_Del	Engr	Y83000	P8300000	Ward-Tripler MW Repl	Arakaki, G	327,483	327,188	295	0%
En_Del	Engr	Y83000	P8302000	Waiau-PM MW Replace	Arakaki, G	222,494	222,494	0	0%
En_Del	Engr	Y83000	P8304000	CEIP-Kahe MW Replace	Arakaki, G	194,606	194,459	147	0%
		Y83000 Total				744,583	744,141	442	
En_Del	Engr	Y84900	P8490000	WAIAU-CIP 138 KV LINES PART 2	Char, C	1,472,937	0	1,472,937	100%
		Y84900 Total				1,472,937	0	1,472,937	
En_Del	Engr		P0000067	Iwilei DWE 138kv Brkr Repl	Hayakaw, W	170,910	0	170,910	100%
En_Del	Engr		P0000068	Makalapa DWE 138kV Bkr Repl	Hayakaw, W	151,911	0	151,911	100%
En_Del	Engr		P0000135	Keaahala Rd Widening	Chang, C	149,810	149,810	0	0%
En_Del	Engr		P0000218	Waialae Nui Reliability Imp	Lee, I	491,720	0	491,720	100%
En_Del	Engr		P0000219	Pur Spare 15kv Switchgear	Tamayo, R	163,519	0	163,519	100%
En_Del	Engr		P0000275	Waihee #1 Circuit Extension	Kaneshi, R	323,253	0	323,253	100%
En_Del	Engr		P0000288	Emma 4kV Conversion	Lum, M	538,103	446,134	91,969	21%
En_Del	Engr		P0000289	Halawa Cap Bank Brk 4436	Arakaki, D	130,137	0	130,137	100%
En_Del	Engr		P0000290	Halawa Cap Bank Brk 4492	Arakaki, D	157,690	163,503	-5,813	-4%
En_Del	Engr		P0000294	Pukele Tie Breaker-Sw Rpl	Arakaki, D	192,132	246,370	-54,238	-22%
En_Del	Engr		P0000296	Pukele Breaker 4815 Replace	Arakaki, D	148,569	148,569	0	0%
En_Del	Engr		P0000335	Intl Savings & Loan Vault	Kaneshi, R	87,019	388,869	-301,850	-78%
En_Del	Engr		P0000373	Kam Hy Imp at Leilehua	Hiyama, R	37,658	43,945	-6,287	-14%
En_Del	Engr		P0000390	Kahala Kua 2ndary Repl	Kaneshi, R	564,337	540,598	23,739	4%
En_Del	Engr		P0000402	Ka Iwi 12kV OH to UG, ph1, inc1	Ho, M	161,304	0	161,304	100%
En_Del	Engr		P0000409	Waimalu Cable Replacement	Kaneshi, R	216,619	0	216,619	100%
En_Del	Engr		P0000410	Waimalu #3 Ckt Improvement	Kaneshi, R	90,950	0	90,950	100%
En_Del	Engr		P0000421	East-West Ctr #3 Tsf Replace	Tamayo, R	357,959	0	357,959	100%
En_Del	Engr		P0000422	Museum 4kV Conversion	Kaneshi, R	186,966	0	186,966	100%

June Recorded vs. Budget

s Project Through June 2004

Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	ar $	Var %
	P0000423	Kailua Rd UG Conversion	Lum, M	409,817	560,510	50,693	-27%
	P0000436	Wahiawa Hts Tree Wire Inst	Kaneshi, R	197,324	0	97,324	100%
	P0000444	Pauoa 4kv Conversion	JangChe, L	291,161	0	91,161	100%
	P0000474	WSC Privatization	Fukumot, G	1,066,855	1,429,618	62,763	-25%
	P0000491	K-H#2/Wai-Wah Str 86/25	Char, C	21,730	69,427	47,697	-69%
	P0000496	Mauka Ckt Reliability Imprv	Kaneshi, R	144,614	0	44,614	100%
	P0000507	Kam Hy Resurf Waiahole-Cr Ln	Lee, I	1,567,579	2,125,450	57,871	-26%
	P0000508	PM-Makalapa MW Replace	Lau, D	0	145,112	45,112	-100%
	P0000509	PM-Ewa Nui MW Replace	Lau, D	0	146,043	46,043	-100%
	P0000513	2100 Kalakaua	Chang, C	345,800	0	45,800	100%
	P0000515	Ko Olina Cable Installation	JangChe, L	351,259	351,259	0	0%
	P0000530	Ka Iwi 12kV UG, Ph 1 Inc 2	Lung, H	13,156	22,268	-9,112	-41%
	P0000575	Nimitz Hwy Rehab-UA #1691	Fukumot, G	198,306	265,774	67,468	-25%
	P0000579	Spare 46-12kV, 12.5MVA Tsf	Tamayo, R	291,593	0	91,593	100%
	P0000581	HMR SS Tsf Replacement 5MVA	Chong, R	165,996	0	65,996	100%
	P0000585	Waialua-Kahuku 46kV Recond	Ikeda, L	200,258	0	00,258	100%
	P0000588	Mililani Mauka 46kV Reloc	Fukumot, G	295,150	0	95,150	100%
	P0000589	Spare 15kv Switchgear	Tamayo, R	228,850	224,990	3,860	2%
	P0000591	Waialua-Kahuku 46kV Recond 2	Ikeda, L	51,065	0	51,065	100%
	P0000597	Diamond Head Rd OH/UG Imp	Panalal, T	18,193	63,636	45,443	-71%
	P0000598	Kahekili Hy Ltg OH/UG Conv	Lee, I	16,676	126,758	10,082	-87%
	P0000599	EMS UPS Replacement	Arakaki, G	460,256	451,862	8,394	2%
	P0000603	Nanaikapono OH Relocation	Hiyama, R	238,952	209,757	29,195	14%
	P0000608	Sand Isle WWTP Disinfection	Ho, M	275,321	335,769	60,448	-18%
	P0000611	Kaneohe Bay Dr Improvements	Lee, I	157,566	168,997	11,431	-7%
	P0000614	City Hall Vlt 11	Kaneshi, R	340,233	347,009	-6,776	-2%
	P0000645	Wiliwili Ckt Reliability Impr	Chang, C	177,554	0	77,554	100%
	P0000720	Forrest Ave Realignment OH	Hiyama, R	286,660	165,604	21,056	73%
	P0000721	Archer Sub Basement Flooding	Oshiro, E	130,642	0	30,642	100%
	P0000732	Gen Ctrl Unit WAN Upgrades	Oyadoma, M	0	13,142	13,142	-100%
	P0000734	RTU Wide Area Network	Oyadoma, M	52,686	97,718	45,032	-46%
	P0000764	H-1 Widening Waimalu Reloc	Panalal, T	22,237	63,489	41,252	-65%
	P0000769	2003 Spare 138-46kv Tsf	Hayakaw, W	956,890	1,026,580	69,690	-7%
	P0000778	Waialua #2 12.5MVA Tsf Repl	Chong, R	487,835	0	37,835	100%
	P0000879	Kahe-Halawa #1 138kV SW Repl	Ikeda, L	177,636	0	77,636	100%

Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	Engr		P0000880	Kahe-Halawa #2 138kV SW Repl	Ikeda, L	202,948	0	202,948	100%
En_Del	Engr		P0000881	Kahe-Mikilua 46kV Reconduct	Chang, C	137,917	0	137,917	100%
En_Del	Engr		P0000883	Purch spare 8%, 46-12kV tsf	Tamayo, R	317,324	0	317,324	100%
En_Del	Engr		P0000884	Purch spare 10%, 46-12kV tsf	Tamayo, R	323,543	0	323,543	100%
En_Del	Engr		P0000885	Midweek Auto-Transfer Swgr	Chang, C	341,601	316,413	25,188	8%
En_Del	Engr		P0000886	Wal-Mart Sams Keeaumoku'	Hiyama, R	341,362	661,866	-320,504	-48%
En_Del	Engr		P0000888	Koolau-Pukele #1 Str. 18	Char, C	423,604	0	423,604	100%
En_Del	Engr		P0000889	Airport 12KV Ckts Install	Chang, C	527,719	0	527,719	100%
En_Del	Engr		P0000894	Spare 15kV Switchgear	Tamayo, R	174,532	0	174,532	100%
En_Del	Engr		P0000902	Fort Street #1 Tsf Replace	Tamayo, R	380,072	0	380,072	100%
En_Del	Engr		P0000903	Ena #2 Tsf Replace	Tamayo, R	385,738	0	385,738	100%
En_Del	Engr		P0000904	Purch 10% 46-12kV spare tsf	Tamayo, R	342,599	0	342,599	100%
En_Del	Engr		P0000905	Kaonohi #2 Tsf Replace	Tamayo, R	347,349	0	347,349	100%
En_Del	Engr		P0000911	Palehua East A 46kV Reloc	Lee, I	19,372	0	19,372	100%
En_Del	Engr		P0000913	Kona Makaloa 25kV UG	Hiyama, R	29,972	243,112	-213,140	-88%
En_Del	Engr		P0000918	Kewalo #2 Tsf Replace	Tamayo, R	368,589	0	368,589	100%
En_Del	Engr		P0000919	Pohakupu #2 Tsf Replace	Tamayo, R	345,218	0	345,218	100%
En_Del	Engr		P0000920	Waiawa #2 Tsf Replace	Tamayo, R	360,325	0	360,325	100%
En_Del	Engr		P0000921	Helemano #1 Tsf Replace	Tamayo, R	327,074	0	327,074	100%
En_Del	Engr		P0000923	Kahala #2 4KV Tsf Replace	Oshiro, E	3,342	0	3,342	100%
En_Del	Engr		P0000925	Purch 10% 46-12kV spare tsf	Oshiro, E	306,641	0	306,641	100%
En_Del	Engr		P0000926	Mililani Mauka North Gulley	Panalal, T	42,579	0	42,579	100%
En_Del	Engr		P0000927	Mililani Mauka Unit 134A	Panalal, T	10,969	0	10,969	100%
En_Del	Engr		P0000929	Loop Feed Protection Tsf	Kaneshi, R	6,265	0	6,265	100%
En_Del	Engr		P0000930	PMH-9 Control Upgrades	Kaneshi, R	98,237	0	98,237	100%
En_Del	Engr		P0000940	Pearl Highlands 2nd Fdr	Chang, C	25,676	0	25,676	100%
En_Del	Engr		P0000941	Tree Wire - Lai Road	Chang, C	38,147	0	38,147	100%
En_Del	Engr		P0001012	Sheridan St Raising OH Lines	Lung, H	94,468	0	94,468	100%
En_Del	Engr		P0001015	Wahiawa-Waialua #2 P23X-P33	Chang, C	29,498	0	29,498	100%
En_Del	Engr		P0001019	Structure 22 Wailupe #2 Repl	Chang, C	9,371	0	9,371	100%
En_Del	Engr		P0001029	Mobile Substation Storage	Noda, R	3,273	0	3,273	100%
En_Del	Engr		P0001032	Honouliuli Reserv 46kV Reloc	Lee, I	5,433	0	5,433	100%
En_Del	Engr		P6740000	Iwilei Ntwk Bkr Failure	Arakaki, D	189,130	0	189,130	100%
En_Del	Engr		P6862000	Kahe Bus B Bkup Prot	Arakaki, D	937,933	894,937	42,996	5%
En_Del	Engr		P7270000	N Shore Automation Comm	Shin, D	554,176	540,443	13,733	3%

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Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	Engr		P7430000	Kahe 1-4 Cntrl Hse Expnsn	Arakaki, D	681,725	672,681	9,044	1%
En_Del	Engr		P8290000	Tripler Wahiawa mwr replace	Arakaki, G	201,048	360,615	-159,567	-44%
En_Del	Engr		P8470000	Koolau/Tripler MWR Repl	Arakaki, G	178,468	336,034	-157,566	-47%
En_Del	Engr		P9243000	450MHZZ Radio Replacement	Oyadoma, M	4,695	113,727	-109,032	-96%
En_Del	Engr		P9497000	Honolulu Spur	Hayakaw, W	61,451	0	61,451	100%
En_Del	Engr		P9511000	Generation Hotline Upgrd	Lau, D	30,582	114,450	-83,868	-73%
En_Del	Engr		P9550000	Makaha 2-Mauka SCADA Comm	Shin, D	218,997	0	218,997	100%
En_Del	Engr		P9903000	Puuloa Road Widening	Panalal, T	1,478,908	979,593	499,315	51%
En_Del	Engr		P9904000	H1 WIDENING AIEA	Kaneshi, R	153,135	253,635	-100,500	-40%
	Engr Total					32,352,414	18,517,090	13,835,324	
En_Del	ProjMgt	Y00021	P0000277	New Kuahua Substation	Wong, K	398,684	361,665	37,019	10%
En_Del	ProjMgt	Y00021	P0000278	Makalapa Substation Prot	Wong, K	54,665	11,281	43,384	385%
En_Del	ProjMgt	Y00021	P0000279	Puuloa Substation Prot	Wong, K	2,074	4,833	-2,759	-57%
En_Del	ProjMgt	Y00021	P0000280	Makalapa-Kuahua FO Line	Wong, K	138,923	120,267	18,656	16%
En_Del	ProjMgt	Y00021	P0000281	Makalapa-Puuloa FO Line	Wong, K	21,987	62,661	-40,674	-65%
En_Del	ProjMgt	Y00021	P0000282	Kuahua 46kv Ln Reconnect	Wong, K	8,470	15,413	-6,943	-45%
		Y00021 Total				624,803	576,120	48,683	
En_Del	ProjMgt	Y00030	P0000713	Dispatch Center Building	Naito, C	1,081,000	1,220,797	-139,797	-11%
En_Del	ProjMgt	Y00030	P0000714	Materials Storage Relocation	Naito, C	101,212	253,219	-152,007	-60%
En_Del	ProjMgt	Y00030	P0000715	Dispatch Boards	Naito, C	0	4,668	-4,668	-100%
En_Del	ProjMgt	Y00030	P0000716	Telecomm Extensions	Naito, C	12,807	30,878	-18,071	-59%
En_Del	ProjMgt	Y00030	P0000717	EMS Replacement	Naito, C	460,810	585,741	-124,931	-21%
En_Del	ProjMgt	Y00030	P0000718	Dispatch Training Simulator	Naito, C	0	3,639	-3,639	-100%
		Y00030 Total				1,655,829	2,098,942	-443,113	
En_Del	ProjMgt	Y00040	P0000836	Ford Island Substation	Chong, R	47,234	15,911	31,323	197%
En_Del	ProjMgt	Y00040	P0000837	Makalapa 46kV Brkr Addition	Chong, R	2,283	0	2,283	100%
En_Del	ProjMgt	Y00040	P0000838	46kV Fdrs to FI Sub	Chong, R	118,818	359,482	-240,664	-67%
En_Del	ProjMgt	Y00040	P0000839	Comm. Links FI-Maklpa	Chong, R	10,070	0	10,070	100%
		Y00040 Total				178,405	375,393	-196,988	
En_Del	ProjMgt	Y46700	P0000151	Archer Subst Term Line	Naito, C	2,505,229	0	2,505,229	100%
En_Del	ProjMgt	Y46700	P0000153	Archer-Kewalo 138KV Line #2	Naito, C	1,290,794	0	1,290,794	100%
En_Del	ProjMgt	Y46700	P0000154	Kewalo Substation Line #2	Naito, C	822,631	0	822,631	100%
En_Del	ProjMgt	Y46700	P4670000	Kewalo 3 & 4 30/50 MVA	Naito, C	8,980,947	0	8,980,947	100%
En_Del	ProjMgt	Y46700	P4671000	Archer-Kewalo 138KV UG Ln 1	Naito, C	12,064,512	0	12,064,512	100%
En_Del	ProjMgt	Y46700	P4672000	Kewalo A&B 25KV UG Piikoi	Naito, C	4,979,731	0	4,979,731	100%

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Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	ProjMgt	Y46700	P4673000	Kewalo A&B 25KV UG Kamakee	Naito, C	2,704,406	0	2,704,406	100%
En_Del	ProjMgt	Y46700	P4674000	Archer Termination	Naito, C	1,121,995	0	1,121,995	100%
En_Del	ProjMgt	Y46700	P4676000	Archer-Kewalo Fiber Optic	Naito, C	436,256	0	436,256	100%
En_Del	ProjMgt	Y46700	P4677000	Kewalo 138Kv Sub EMS	Naito, C	137,009	0	137,009	100%
En_Del	ProjMgt	Y46700	P4678000	Kewalo 30/50 MVA Tsf	Naito, C	2,851,572	0	2,851,572	100%
		Y46700 Total				37,895,082	0	37,895,082	
En_Del	ProjMgt	Y47600	P0000152	Kamoku Subst T2 Transformer	Naito, C	2,471,421	0	2,471,421	100%
En_Del	ProjMgt	Y47600	P0000512	Kewalo-Kamoku 138kv UG Elec	Naito, C	3,592,684	0	3,592,684	100%
En_Del	ProjMgt	Y47600	P4760000	Kewalo-Kamoku 138KV UG Ln	Naito, C	25,925,775	0	25,925,775	100%
En_Del	ProjMgt	Y47600	P4761000	Kewalo Sub Kewalo-Kamoku	Naito, C	1,200,893	0	1,200,893	100%
En_Del	ProjMgt	Y47600	P4762000	Kamoku Sub Kewalo Term	Naito, C	13,461,708	0	13,461,708	100%
En_Del	ProjMgt	Y47600	P4763000	Kewalo-Kamoku Fiber Optic	Naito, C	2,180,351	0	2,180,351	100%
En_Del	ProjMgt	Y47600	P4764000	Kamoku EMS	Naito, C	201,452	0	201,452	100%
		Y47600 Total				49,034,284	0	49,034,284	
En_Del	ProjMgt	Y48500	P0000922	Kamoku 46kV UG Alt Phase 1	Wong, K	20,964,098	656,274	20,307,824	3094%
En_Del	ProjMgt	Y48500	P0000924	Kamoku 46kV UG Alt Phase 2	Wong, K	181,146	0	181,146	100%
En_Del	ProjMgt	Y48500	P4850000	Kamoku-Pukele 138KV OH Ln	Wong, K	594	18,406,374	-18,405,780	-100%
En_Del	ProjMgt	Y48500	P4851000	Kamoku Pukele Term	Wong, K	0	990,198	-990,198	-100%
En_Del	ProjMgt	Y48500	P4852000	Pukele Termination	Wong, K	0	917,912	-917,912	-100%
En_Del	ProjMgt	Y48500	P4853000	Kamoku-Pukele Fiber Optic	Wong, K	0	11,126	-11,126	-100%
		Y48500 Total				21,145,838	20,981,884	163,954	
En_Del	ProjMgt		P0000143	Salt Lake Blvd Widening Ph2	Naito, C	1,198,409	1,423,755	-225,346	-16%
En_Del	ProjMgt		P0000162	Kakaako ID9	Naito, C	2,453,269	2,451,674	1,595	0%
En_Del	ProjMgt		P0000536	Kaimuki Traffic Calming	Naito, C	675,709	664,509	11,200	2%
En_Del	ProjMgt		P0000669	Kakaako ID10	Naito, C	493,730	559,950	-66,220	-12%
En_Del	ProjMgt		P0000917	Village Park - DB Cable Rpl	Liu, R	81,858	0	81,858	100%
En_Del	ProjMgt		P0001016	Lurline/Mariposa Cable Repl	Liu, R	5,501	0	5,501	100%
En_Del	ProjMgt		P9036000	Kakaako ID7 Kamakee St Conv	Naito, C	2,109,867	2,137,787	-27,920	-1%
	ProjMgt Total					117,552,584	31,270,014	86,282,570	
En_Del	Telecom	Y86900	P8690000	Ward Analog MW Conv.	Oyadoma, M	186,541	0	186,541	100%
En_Del	Telecom	Y86900	P8710000	Kahe SWYD Analog MW Conv	Oyadoma, M	83,265	0	83,265	100%
En_Del	Telecom	Y86900	P8712000	System Cut Over	Oyadoma, M	187,041	0	187,041	100%
		Y86900 Total				456,847	0	456,847	
En_Del	Telecom		P0000448	Power Plant UHF Radios	Shin, D	401,360	0	401,360	100%
En_Del	Telecom		P0000595	Ewa Nui-CEIP OPGW Replace	Oyadoma, M	233,473	0	233,473	100%

June Recorded vs. Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	Telecom		P9547000	Makaha 1-Makaha SCADA Comm	Shin, D	130,109	0	130,109	100%
En_Del	Telecom		P9548000	Kahe-Kahe SCADA Comm	Shin, D	166,788	0	166,788	100%
En_Del	Telecom		P9549000	Miki 1-Miki 1 SCADA Comm	Shin, D	192,433	0	192,433	100%
En_Del	Telecom		P9599000	Miki 2-Miki 3 SCADA Comm	Shin, D	136,846	0	136,846	100%
	Telecom Total					1,717,856	0	1,717,856	
En_Del Total						151,622,854	49,787,104	101,835,750	

June Recorded vs. Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	486,662	2,076,020	-1,589,358	-77%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Tamayo, R	708,585	1,130,179	-421,594	-37%
		Y00027 Total				1,195,247	3,206,199	-2,010,952	
En_Sol	CustInst	Y00028	P0000577	Camp Smith #2 Tsf 46KV Ln Ext	Lee, I	90,071	0	90,071	100%
En_Sol	CustInst	Y00028	P0000578	Camp Smith #2 6.25MVA Tsf	Chong, R	1,266,412	0	1,266,412	100%
En_Sol	CustInst	Y00028	P0000602	Camp Smith #2 12kv Ln & Pr Mg	Yasuda, L	79,075	0	79,075	100%
		Y00028 Total				1,435,558	0	1,435,558	
En_Sol	CustInst		P0000105	Manana Infrastructure Imprv	Aochi, A	756,976	0	756,976	100%
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	189,010	713,244	-524,234	-73%
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	15,622	0	15,622	100%
En_Sol	EngySvcs	Y00026	P0000531	HECO SWAT Team-Ohana	Waller, D	31,845	31,845	0	0%
En_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	149,873	151,149	-1,276	-1%
		Y00026 Total				181,718	182,994	-1,276	
En_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	376,249	427,737	-51,488	-12%
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	189,573	-189,573	-100%
En_Sol Total						4,150,380	4,719,747	-569,367	

June Recorded vs. Budget

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Finance	FinVP	Y00034	P0000749	Project Ellipse (hardware)	Noda, R	28,647	17,281	11,366	66%
		Y00034 Total				28,647	17,281	11,366	
Finance	GenAcctg		P0000340	Document Management System	Shiraki, E	58,160	0	58,160	100%
Finance	ITS	Y00029	P0000708	IVR/ACD/CTI Ph1	Lee, J	203,924	203,347	577	0%
Finance	ITS	Y00029	P0000709	IVR/ACD/CTI Ph2	Lee, J	1,520,891	1,631,194	-110,303	-7%
Finance	ITS	Y00029	P0000710	King and Ward PBXs	Lee, J	313,077	1,132,523	-819,446	-72%
		Y00029 Total				2,037,892	2,967,064	-929,172	
Finance	ITS		P0000342	ITS Replace UPS	Young, P	194,188	0	194,188	100%
Finance	MgtAcctg		P0000896	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
Finance Total						2,318,887	3,006,745	-687,858	

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Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Gen_Coun	Land	Y66200	P1361000	Ko Olina Sub Land	Fujiwara, C	27,973	27,973	0	0%
		Y66200 Total				27,973	27,973	0	
Gen_Coun	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	209,219	88,059	121,160	138%
Gen_Coun	Land		P0000063	Conv Halawa School 138kv	Fujiwara, C	31,883	31,883	0	0%
Gen_Coun	Land		P1376000	Waiau-CEIP 138KV Pt 2 RW	Fujiwara, C	5,952,840	0	5,952,840	100%
Gen_Coun Total						6,221,915	147,915	6,074,000	

June Recorded vs. Budget

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' Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
. Control Rm Roof	Yanagid, J	77,646	71,228	6,418	9%
Santry Crane Catwalks	Uechi, S	174,416	195,463	-21,047	-11%
oilder Bldg ReRoof	Yanagid, J	232,734	301,660	-68,926	-23%
er Front Roof	Uechi, S	0	10,083	-10,083	-100%
er Front Roof	Uechi, S	0	10,083	-10,083	-100%
ormwater Berm	Tasaka, S	90,686	183,046	-92,360	-50%
dmin Building Reroof	Yanagid, J	157,453	0	157,453	100%
er Guardrail Upgrade	Yanagid, J	110,104	0	110,104	100%
er Str Railing Upgrad	Yanagid, J	102,224	0	102,224	100%
arking Lot Addition	Tasaka, S	57,830	57,764	66	0%
re Water Storage Tnk2	Yanagid, J	30,274	63,465	-33,191	-52%
CW Sht Pile Upgrade	Tasaka, S	0	9,699	-9,699	-100%
ntenance Laydown Area	Yanagid, J	5,840	6,265	-425	-7%
g Wall @ K1-4 Stack	Shimabu, M	174,630	0	174,630	100%
ewer System Upgrade	Tasaka, S	172,881	153,117	19,764	13%
re Line for Wtr Tank	Yanagid, J	368,279	353,343	14,936	4%
VW Reline Cells 1 & 2	Yanagid, J	214,567	0	214,567	100%
-14 FT Berm Upgrade	Yanagid, J	13,389	0	13,389	100%
-12 FT Berm Upgrade	Yanagid, J	8,478	0	8,478	100%
V Basin Pipe Trench	Yanagid, J	8,895	0	8,895	100%
laint Office Rennovate	Yanagid, J	4,874	0	4,874	100%
uel Pipeline Project	Fong, K	25,012,618	28,980,529	-3,967,911	-14%
ipeline SEC Lease	Fong, K	2,631,836	2,651,911	-20,075	-1%
Point TF 46kV TL	Fong, K	170,927	325,433	-154,506	-47%
ation Service	Fong, K	16,152	173,866	-157,714	-91%
Point TF 46kV Substation	Fong, K	700,439	977,316	-276,877	-28%
		28,531,972	33,109,055	-4,577,083	
-1 Turb/End Blades	Yonamin, G	231,477	231,477	0	0%
-1 Col/End Blades	Yonamin, G	218,131	218,131	0	0%
-0 Turb/End Blades	Yonamin, G	362,308	362,308	0	0%
-0 Col/End Blades	Yonamin, G	360,933	360,933	0	0%
Curtis R1 Blades	Yonamin, G	77,326	77,326	0	0%
Curtis R2 Blades	Yonamin, G	79,393	79,393	0	0%
itg 2 Rotor Blades	Yonamin, G	52,671	52,671	0	0%
itg 3 Rotor Blades	Yonamin, G	53,729	53,729	0	0%

er	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
ı, G	223,918	223,918	0	0%
ı, G	62,696	62,696	0	0%
ı, G	172,834	172,834	0	0%
ı, G	175,941	175,941	0	0%
ı, G	179,845	179,845	0	0%
	2,251,202	2,251,202	0	
ı, D	226,728	0	226,728	100%
ı, D	362,066	0	362,066	100%
, J	32,007	56,588	-24,581	-43%
	79,814	0	79,814	100%
	700,615	56,588	644,027	
	227,166	0	227,166	100%
	227,166	0	227,166	
ı, G	-41,587	0	-41,587	100%
	-41,587	0	-41,587	
	28,063	832,586	-804,523	-97%
	28,063	832,586	-804,523	
J	2,322,825	2,350,046	-27,221	-1%
	2,322,825	2,350,046	-27,221	
	398,855	451,173	-52,318	-12%
	398,855	451,173	-52,318	
, J	485,130	0	485,130	100%
ɜ	589,042	511,351	77,691	15%
o, D	231,098	195,813	35,285	18%
P	473,307	0	473,307	100%
P	454,677	0	454,677	100%
P	2,917,631	2,390,472	527,159	22%
, A	2,897,828	2,889,807	8,021	0%
ı, D	56,465	0	56,465	100%
ı, D	60,537	0	60,537	100%
	497,480	0	497,480	100%
	433,098	320,514	112,584	35%
	410,984	615,563	-204,579	-33%
	423,691	0	423,691	100%
J	56,590	54,926	1,664	3%

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000087	K3 Opacity Monitor Upgrade	Fukuda, P	87,161	0	87,161	100%
Pwr_Sup	Pln&Eng		P0000088	K4 Opacity Monitor Upgrade	Fukuda, P	105,302	0	105,302	100%
Pwr_Sup	Pln&Eng		P0000090	W7 FD Fan Instrumentation	Fukuda, P	146,107	0	146,107	100%
Pwr_Sup	Pln&Eng		P0000091	H9 Attemperator Block Valve	Economo, D	39,477	38,972	505	1%
Pwr_Sup	Pln&Eng		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	165,112	0	165,112	100%
Pwr_Sup	Pln&Eng		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	139,597	151,956	-12,359	-8%
Pwr_Sup	Pln&Eng		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	192,317	184,700	7,617	4%
Pwr_Sup	Pln&Eng		P0000136	K5&6 Reroof	Yanagid, J	82,011	0	82,011	100%
Pwr_Sup	Pln&Eng		P0000156	W8 Stack Relining	Yanagid, J	158,156	0	158,156	100%
Pwr_Sup	Pln&Eng		P0000172	Iwilei Fuel Oil Pump Rpl	Fackrel, J	4,061	14,388	-10,327	-72%
Pwr_Sup	Pln&Eng		P0000195	H9 Boiler Safety Valve Upg	Yuen, M	56,513	56,513	0	0%
Pwr_Sup	Pln&Eng		P0000197	H9 Stack Life Extension	Yanagid, J	111,166	0	111,166	100%
Pwr_Sup	Pln&Eng		P0000199	Kahe FWH #34 Replacement	Yamashi, K	110	0	110	100%
Pwr_Sup	Pln&Eng		P0000204	W7 BFP Rec Ctrl Valves Upg	Economo, D	37,969	0	37,969	100%
Pwr_Sup	Pln&Eng		P0000206	Waiau Tk1 Roof	Isler, R	298,968	0	298,968	100%
Pwr_Sup	Pln&Eng		P0000208	W3 Cycle Chem Instr.	Cummings, C	194,084	311,123	-117,039	-38%
Pwr_Sup	Pln&Eng		P0000209	W4 Cycle Chem Instr.	Lum, D	48,678	51,944	-3,266	-6%
Pwr_Sup	Pln&Eng		P0000210	W5 Cycle Chem Instr.	Lum, D	39,364	42,006	-2,642	-6%
Pwr_Sup	Pln&Eng		P0000211	W6 Cycle Chem Instr.	Lum, D	126,393	216,003	-89,610	-41%
Pwr_Sup	Pln&Eng		P0000212	W7 Cycle Chem Instr.	Isler, R	488,791	0	488,791	100%
Pwr_Sup	Pln&Eng		P0000213	W8 Cycle Chem Instr.	Lum, D	148,980	189,931	-40,951	-22%
Pwr_Sup	Pln&Eng		P0000214	K1 Cycle Chem Instr.	Isler, R	455,696	0	455,696	100%
Pwr_Sup	Pln&Eng		P0000215	K2 Cycle Chem Instr.	Lum, D	84,339	56,654	27,685	49%
Pwr_Sup	Pln&Eng		P0000216	H8 Cycle Chem Instr.	Isler, R	257,742	208,301	49,441	24%
Pwr_Sup	Pln&Eng		P0000217	H9 Cycle Chem Instr.	Lum, D	18,551	19,796	-1,245	-6%
Pwr_Sup	Pln&Eng		P0000220	W9&W10 Cardox Fire Prot	Yuen, M	366,605	366,605	0	0%
Pwr_Sup	Pln&Eng		P0000222	W3 Fuel Oil Heaters	Economo, D	83,701	0	83,701	100%
Pwr_Sup	Pln&Eng		P0000226	H8&9 Instrument Air Compr	Yuen, M	288,079	0	288,079	100%
Pwr_Sup	Pln&Eng		P0000227	W4 Fuel Oil Heaters	Economo, D	83,701	0	83,701	100%
Pwr_Sup	Pln&Eng		P0000228	K5 SH & RH Attemp Spray	Economo, D	152,209	201,978	-49,769	-25%
Pwr_Sup	Pln&Eng		P0000229	K6 SH & RH Attemp Spray	Economo, D	40,001	0	40,001	100%
Pwr_Sup	Pln&Eng		P0000230	W7 SH & RH Attemp Spray	Economo, D	91,281	0	91,281	100%
Pwr_Sup	Pln&Eng		P0000231	W8 BFP Rec Ctrl Valves Upg	Economo, D	12,092	8,320	3,772	45%
Pwr_Sup	Pln&Eng		P0000232	W8 SH & RH Attemp Spray	Economo, D	9,149	100,191	-91,042	-91%
Pwr_Sup	Pln&Eng		P0000233	W7&8 Service Air Compressor	Arakaki, J	125,364	326,469	-201,105	-62%

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Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000234	K1 BFP Rec Ctrl Valves Upg	Pasco, G	62,465	0	62,465	100%
Pwr_Sup	Pln&Eng		P0000235	K2 BFP Rec Ctrl Valves Upg	Pasco, G	38,503	0	38,503	100%
Pwr_Sup	Pln&Eng		P0000236	K3 BFP Rec Ctrl Valves Upg	Pasco, G	61,250	0	61,250	100%
Pwr_Sup	Pln&Eng		P0000239	K1 SH & RH Attemp Spray	Pasco, G	142,991	0	142,991	100%
Pwr_Sup	Pln&Eng		P0000240	K2 SH & RH Attemp Spray	Pasco, G	97,316	0	97,316	100%
Pwr_Sup	Pln&Eng		P0000241	K3 SH & RH Attemp Spray	Pasco, G	94,917	0	94,917	100%
Pwr_Sup	Pln&Eng		P0000242	K4 SH & RH Attemp Spray	Economo, D	149,403	6,839	142,564	2085%
Pwr_Sup	Pln&Eng		P0000254	W3 Stack & Breeching Rpl	Yanagid, J	28,621	250,878	-222,257	-89%
Pwr_Sup	Pln&Eng		P0000255	W4 Stack & Breeching Rpl	Yanagid, J	194,273	0	194,273	100%
Pwr_Sup	Pln&Eng		P0000260	W3 Data Acq & Monitoring	Yoshida, A	127,279	43,141	84,138	195%
Pwr_Sup	Pln&Eng		P0000261	W4 Data Acq & Monitoring	Arakawa, D	118,391	0	118,391	100%
Pwr_Sup	Pln&Eng		P0000262	W5 Data Acq & Monitoring	Fukuda, P	133,600	141,233	-7,633	-5%
Pwr_Sup	Pln&Eng		P0000264	H9 Data Acq & Monitoring	Yoshida, A	242,668	0	242,668	100%
Pwr_Sup	Pln&Eng		P0000265	H8 Data Acq & Monitoring	Yoshida, A	56,401	0	56,401	100%
Pwr_Sup	Pln&Eng		P0000266	K6 Data Acq & Monitoring	Yoshida, A	485,965	0	485,965	100%
Pwr_Sup	Pln&Eng		P0000267	K5 Data Acq & Monitoring	Fukuda, P	429,223	436,060	-6,837	-2%
Pwr_Sup	Pln&Eng		P0000268	W5 Curtis R1 Blades	Yuen, M	150,766	150,766	0	0%
Pwr_Sup	Pln&Eng		P0000272	K1-4 Stack Deck Coating	Yanagid, J	73,643	0	73,643	100%
Pwr_Sup	Pln&Eng		P0000273	Kahe Stormwater Erosion Ctrl	Tasaka, S	0	11,203	-11,203	-100%
Pwr_Sup	Pln&Eng		P0000297	W3 Condenser Refurbishment	Arakaki, J	299,038	175,637	123,401	70%
Pwr_Sup	Pln&Eng		P0000298	HPP WWTF Batch Tnk Mods	Yamashi, K	379,157	380,667	-1,510	0%
Pwr_Sup	Pln&Eng		P0000302	Waiau FWH #72 Replacement	Kurisu, A	111,696	214,649	-102,953	-48%
Pwr_Sup	Pln&Eng		P0000303	Waiau FWH #82 Replacement	Kurisu, A	112,778	17,196	95,582	556%
Pwr_Sup	Pln&Eng		P0000304	Waiau Emerg Tank Conversion	Economo, D	365,410	0	365,410	100%
Pwr_Sup	Pln&Eng		P0000312	K3 Recorders/Transmitters	Arakawa, D	142,051	0	142,051	100%
Pwr_Sup	Pln&Eng		P0000313	W8 APH Sootblower Upgrade	Arakaki, J	4,746	251,649	-246,903	-98%
Pwr_Sup	Pln&Eng		P0000326	K3 Flue Gas O2 Analyzer	Yuen, M	93,043	0	93,043	100%
Pwr_Sup	Pln&Eng		P0000327	K4 Flue Gas O2 Analyzer	Yoshida, A	97,863	121,528	-23,665	-19%
Pwr_Sup	Pln&Eng		P0000328	K5 Flue Gas O2 Analyzer	Fukuda, P	106,583	81,573	25,010	31%
Pwr_Sup	Pln&Eng		P0000329	K6 Flue Gas O2 Analyzer	Yoshida, A	61,837	0	61,837	100%
Pwr_Sup	Pln&Eng		P0000330	Waiau 3 Ignitor Replacement	Lum, D	97,942	168,669	-70,727	-42%
Pwr_Sup	Pln&Eng		P0000331	H8 Turbine Steam Gland Conv	Arakaki, J	259,912	0	259,912	100%
Pwr_Sup	Pln&Eng		P0000337	Waiau Technician Shop Add	Tasaka, S	143,825	0	143,825	100%
Pwr_Sup	Pln&Eng		P0000365	W5&6 Chem Rm Reloc	Yonamin, G	343,918	0	343,918	100%
Pwr_Sup	Pln&Eng		P0000374	W42 Traveling Screen Repl	Yonamin, G	137,812	0	137,812	100%

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Pwr_Sup	Pln&Eng		P0000375	W31 Traveling Screen Replace	Yonamin, G	141,789	0	141,789	100%
Pwr_Sup	Pln&Eng		P0000392	W8 Heater Drip Pump Replace	Yonamin, G	47,642	0	47,642	100%
Pwr_Sup	Pln&Eng		P0000413	W4 Hydrogen Purity Meter	Yoshida, A	60,229	60,229	0	0%
Pwr_Sup	Pln&Eng		P0000414	W71 Service Water Pump	Yonamin, G	48,812	0	48,812	100%
Pwr_Sup	Pln&Eng		P0000416	W5 Hydrogen Purity Meter	Yoshida, A	64,576	64,576	0	0%
Pwr_Sup	Pln&Eng		P0000417	K6 Hydrogen Purity Meter	Yoshida, A	66,802	0	66,802	100%
Pwr_Sup	Pln&Eng		P0000437	Waiau FWH #64 Replacement	Yamashi, K	404,628	405,265	-637	0%
Pwr_Sup	Pln&Eng		P0000438	Waiau FWH #74 Replacement	Yamashi, K	362,738	362,738	0	0%
Pwr_Sup	Pln&Eng		P0000439	Waiau FWH #63 Replacement	Yamashi, K	259,586	260,335	-749	0%
Pwr_Sup	Pln&Eng		P0000440	W41 Trvl Scrn Rpl	Yuen, M	132,452	128,934	3,518	3%
Pwr_Sup	Pln&Eng		P0000441	W3 Soot Blower Upgrade	Yamashi, K	5,925	543,242	-537,317	-99%
Pwr_Sup	Pln&Eng		P0000443	W32 Trvl Scrn Rpl	Yuen, M	142,064	135,907	6,157	5%
Pwr_Sup	Pln&Eng		P0000449	Kahe Electronic Parts Store	Shimabu, M	7,817	0	7,817	100%
Pwr_Sup	Pln&Eng		P0000450	Kahe Motor Part Wash Enclose	Uechi, S	16,755	16,742	13	0%
Pwr_Sup	Pln&Eng		P0000452	Waiau Electric Parts Store	Shimabu, M	7,328	0	7,328	100%
Pwr_Sup	Pln&Eng		P0000453	Waiau Pond Sheetpiling	Tasaka, S	220,865	239,795	-18,930	-8%
Pwr_Sup	Pln&Eng		P0000454	K6 Fan Enclosure	Yanagid, J	35,220	19,212	16,008	83%
Pwr_Sup	Pln&Eng		P0000457	H9 Stack Lining	Yanagid, J	209,347	0	209,347	100%
Pwr_Sup	Pln&Eng		P0000459	Waiau 3 ERV Replacement	Cummings, C	41,217	69,823	-28,606	-41%
Pwr_Sup	Pln&Eng		P0000461	Waiau 5 ERV Replacement	Yuen, M	54,720	54,720	0	0%
Pwr_Sup	Pln&Eng		P0000463	Waiau 8 ERV Replacement	Fackrel, J	11,006	85,747	-74,741	-87%
Pwr_Sup	Pln&Eng		P0000464	Waiau 5 Wastewater Sump Upgr	Yuen, M	262,138	259,525	2,613	1%
Pwr_Sup	Pln&Eng		P0000466	K3&4 Service Air Compressor	Arakaki, J	204,981	261,815	-56,834	-22%
Pwr_Sup	Pln&Eng		P0000469	K5&6 Service Air Compressors	Fackrel, J	1,639	2,321	-682	-29%
Pwr_Sup	Pln&Eng		P0000470	W7&8 Control Room AC	Yuen, M	116,505	0	116,505	100%
Pwr_Sup	Pln&Eng		P0000475	K5&6 Control Room AC	Yonamin, G	148,921	0	148,921	100%
Pwr_Sup	Pln&Eng		P0000478	Waiau Springs Kam Hwy Fence	Tasaka, S	99,974	0	99,974	100%
Pwr_Sup	Pln&Eng		P0000479	Kahe 3&4 Sootblower Platform	Tasaka, S	146,599	0	146,599	100%
Pwr_Sup	Pln&Eng		P0000480	Waiau Stream Fence Wall	Tasaka, S	43,774	0	43,774	100%
Pwr_Sup	Pln&Eng		P0000481	K1 Fan Sound Barrier	Yanagid, J	39,748	0	39,748	100%
Pwr_Sup	Pln&Eng		P0000482	KPP FWH #33 Replacement	Economo, D	252,589	252,589	0	0%
Pwr_Sup	Pln&Eng		P0000483	WPP FWH #54 Replacement	Yamashi, K	445,201	445,677	-476	0%
Pwr_Sup	Pln&Eng		P0000485	WPP FWH #35 Replacement	Yamashi, K	250,716	136,791	113,925	83%
Pwr_Sup	Pln&Eng		P0000488	H9 Hydrogen Purity Meter	Yoshida, A	60,858	60,858	0	0%
Pwr_Sup	Pln&Eng		P0000490	H8&9 Emergency Generator	Fackrel, J	7,641	9,462	-1,821	-19%

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bject Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
HP Turb Row 9-11 Blades	Yuen, M	147,002	278,934	-131,932	-47%
HP Turbine Blades	Yuen, M	288,631	9,326	279,305	2995%
iau WW Pond Closure	Tasaka, S	26,558	92,192	-65,634	-71%
DCS Processor Upgrade	Yoshida, A	559	420	139	33%
0 DCS Processor Upgrade	Yoshida, A	588	420	168	40%
1 Traveling Screen Replace	Yonamin, G	152,214	0	152,214	100%
Turbine Supv Instr	Kabutan, D	172,339	173,337	-998	-1%
IDHS Fan Motor Replacemt	Yoshida, A	154,030	0	154,030	100%
Opacity Monitor Upgrade	Arakawa, D	129,156	0	129,156	100%
Gen Partial Disch Monitor	Fukuda, P	99,501	0	99,501	100%
CO/Tesoro Oil Pipeline	Yuen, M	365,998	365,998	0	0%
Aux TFMR Replacement	Arakawa, D	170,611	0	170,611	100%
and W4 Stack Drain	Lum, D	4,203	98,181	-93,978	-96%
Blr Access Door Addition	Arakaki, J	0	1,169	-1,169	-100%
Auxiliary Transformer	Arakawa, D	97,146	0	97,146	100%
ne Tank Farm Fire Main	Arakaki, J	44,762	412,568	-367,806	-89%
P Swyd Cable Tray Sprinkler	Arakaki, J	67,705	0	67,705	100%
Exciter/Regulator Upgrade	Dahlquist, L	461,738	520,679	-58,941	-11%
&8 Boiler Wash Sump Pump	Fackrel, J	233	78,882	-78,649	-100%
ne Chlorine Dioxide System	Arakaki, J	0	15,005	-15,005	-100%
Air Heater Tube Replmnt	Economo, D	359,668	429,401	-69,733	-16%
ne 24FWH Replacement	Economo, D	230,699	340,850	-110,151	-32%
ne 23FWH Replacement	Economo, D	818	34,025	-33,207	-98%
AEH Limit Switch Upgrd	Bechtel, M	77,032	77,273	-241	0%
0 Exhaust Duct Replacement	Yuen, M	2,995	0	2,995	100%
Exhaust Duct Replacement	Yuen, M	5,534	0	5,534	100%
ne 25FWH Replacement	Economo, D	818	61,065	-60,247	-99%
1 F.O. Heater Tube Bundle	Economo, D	80,624	79,426	1,198	2%
UPS Installation	Kabutan, D	152,522	135,024	17,498	13%
iau Parking Lot Addition	Tasaka, S	31,238	31,238	0	0%
iau Maint Shop Office	Yanagid, J	373,872	386,940	-13,068	-3%
Control/DC Cables to Swyd	Arakawa, D	171,318	0	171,318	100%
Control/DC Cables to Swyd	Rompask, D	0	6,960	-6,960	-100%
Opacity Monitor Upgrade	Fukuda, P	0	2,566	-2,566	-100%
ne1 Condenser Tube Replacement	Economo, D	2,519	0	2,519	100%

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Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	Pln&Eng		P0000682	W6 Annunciator Upgrade	Fukuda, P	0	17,099	-17,099	-100%
Pwr_Sup	Pln&Eng		P0000690	W5 Annunciator Upgrade	Fukuda, P	107,640	178,828	-71,188	-40%
Pwr_Sup	Pln&Eng		P0000736	W5 LP Turbine L-1 Blades	Yonamin, G	436,377	0	436,377	100%
Pwr_Sup	Pln&Eng		P0000739	W5 Generator Stator Rewind	Arakawa, D	1,046,554	1,060,820	-14,266	-1%
Pwr_Sup	Pln&Eng		P0000741	W5 Demin raw wtr piping	Arakaki, J	247,392	0	247,392	100%
Pwr_Sup	Pln&Eng		P0000750	K5 Reheater Element Replacements	Yamashi, K	1,573,319	1,236,222	337,097	27%
Pwr_Sup	Pln&Eng		P0000771	H81 TVL Screen Repl	Arakaki, J	151,097	138,527	12,570	9%
Pwr_Sup	Pln&Eng		P0000772	H92 TVL Screen Repl	Arakaki, J	94,413	3,520	90,893	2582%
Pwr_Sup	Pln&Eng		P0000773	H8 HP/LP Turbine Blading	Yonamin, G	2,219,075	0	2,219,075	100%
Pwr_Sup	Pln&Eng		P0000777	Waiau Tank 5 Roof Replace	Isler, R	1,039,887	0	1,039,887	100%
Pwr_Sup	Pln&Eng		P0000781	KPP FWH #41 Replacement	Kurisu, A	0	5,754	-5,754	-100%
Pwr_Sup	Pln&Eng		P0000782	KPP FWH #42 Replacement	Kurisu, A	0	9,340	-9,340	-100%
Pwr_Sup	Pln&Eng		P0000784	K22 TVL Screen Repl	Arakaki, J	121,074	174,329	-53,255	-31%
Pwr_Sup	Pln&Eng		P0000785	K41 TVL Screen Repl	Arakaki, J	120,784	112,719	8,065	7%
Pwr_Sup	Pln&Eng		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	38,223	114,833	-76,610	-67%
Pwr_Sup	Pln&Eng		P0000787	K5/6 Lube water pump	Kurisu, A	0	43,644	-43,644	-100%
Pwr_Sup	Pln&Eng		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	0	114,002	-114,002	-100%
Pwr_Sup	Pln&Eng		P0000789	Kahe 3 BW Sump Upgrade	Economo, D	57,695	113,177	-55,482	-49%
Pwr_Sup	Pln&Eng		P0000790	Kahe 4 BW Sump Upgrade	Economo, D	0	70,268	-70,268	-100%
Pwr_Sup	Pln&Eng		P0000791	Kahe 5 BW Sump Upgrade	Economo, D	0	9,436	-9,436	-100%
Pwr_Sup	Pln&Eng		P0000792	Kahe 6 BW Sump Upgrade	Economo, D	0	6,411	-6,411	-100%
Pwr_Sup	Pln&Eng		P0000798	W6 Instr Air Compr	Kurisu, A	0	92,368	-92,368	-100%
Pwr_Sup	Pln&Eng		P0000799	K2 Operator Console Upgrade	Kabutan, D	0	5,087	-5,087	-100%
Pwr_Sup	Pln&Eng		P0000803	W3 Operator Console Upgrade	Kabutan, D	45,101	157,759	-112,658	-71%
Pwr_Sup	Pln&Eng		P0000804	W6 Operator Console Upgrade	Kabutan, D	0	11,282	-11,282	-100%
Pwr_Sup	Pln&Eng		P0000805	Kahe Intake Lighting	Kabutan, D	0	12,608	-12,608	-100%
Pwr_Sup	Pln&Eng		P0000806	K06 CWP MOV Replacement	Economo, D	222,200	237,049	-14,849	-6%
Pwr_Sup	Pln&Eng		P0000809	K6 Annunciator Replacement	Dahlquist, L	0	5,174	-5,174	-100%
Pwr_Sup	Pln&Eng		P0000811	W8 Annunciator Replacement	Dahlquist, L	0	72,482	-72,482	-100%
Pwr_Sup	Pln&Eng		P0000817	W6 Exciter/Regulator Replace	Dahlquist, L	0	40,519	-40,519	-100%
Pwr_Sup	Pln&Eng		P0000819	W8 Exciter/Regulator Repl	Dahlquist, L	0	67,370	-67,370	-100%
Pwr_Sup	Pln&Eng		P0000820	K1 Main Xfmr Replacement	Yoshida, A	0	6,257	-6,257	-100%
Pwr_Sup	Pln&Eng		P0000821	K2 Battery Bank Replacement	Garriso, R	0	18,536	-18,536	-100%
Pwr_Sup	Pln&Eng		P0000822	K4 Recorder Replacement	Yoshida, A	73,947	189,908	-115,961	-61%
Pwr_Sup	Pln&Eng		P0000830	K1 Aux Xfmr Replacement	Yoshida, A	0	6,257	-6,257	-100%

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roject Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
3 Main Xfmr Replacement	Kabutan, D	60,250	650,554	-590,304	-91%
2 Excitation System	Dahlquist, L	0	26,557	-26,557	-100%
1 Excitation System	Dahlquist, L	0	6,167	-6,167	-100%
6 Aux Transformer	Fukuda, P	208,014	373,624	-165,610	-44%
2 Annunciator Replacement	Fukuda, P	0	19,331	-19,331	-100%
4 Generator Rotor Rewind	Dahlquist, L	806,557	786,389	20,168	3%
4 Annunciator Replacement	Yoshida, A	0	2,142	-2,142	-100%
9 Generator Rotor Rewind	Kabutan, D	1,268	0	1,268	100%
ahe 2 Sootblower Controls	Economo, D	3,390	29,025	-25,635	-88%
ahe 4 Sootblower Controls	Economo, D	0	4,676	-4,676	-100%
8 Generator Rotor Rewind	Dahlquist, L	797,563	0	797,563	100%
ahe 42 Tvl Screen	Arakaki, J	129,913	0	129,913	100%
ahe Reclaimed Oil Transfer	Arakaki, J	21,255	0	21,255	100%
ahe 12 Traveling Screen	Arakaki, J	136,968	0	136,968	100%
aiau CT Separation	Fukuda, P	48,193	0	48,193	100%
51 TVL SCREEN REPL	Arakaki, J	1,006	0	1,006	100%
5 Mixed Bed Polisher	Arakaki, J	27,647	0	27,647	100%
31 TVL SCREEN REPL	Arakaki, J	106,585	0	106,585	100%
5 Turbine Blades	Yuen, M	424,623	0	424,623	100%
1 Performance Monitoring	Fukuda, P	274,577	0	274,577	100%
arbers Point Pier Pipeline	Fong, K	143,172	0	143,172	100%
4 Exciter Upgrade	Kabutan, D	0	15,328	-15,328	-100%
2 Performance Monitoring	Fukuda, P	230,384	0	230,384	100%
6 Opacity Monitor Upgrade	Fukuda, P	60,718	0	60,718	100%
9 Primary Fuel Oil Pumps	Isler, R	108,533	0	108,533	100%
2 Main Trsf Fire Sprinkler	Yonamin, G	54,738	0	54,738	100%
3 Main Trsf Fire Sprinkler	Yonamin, G	59,842	0	59,842	100%
7 Opacity Monitor Upgrade	Fukuda, P	94,248	0	94,248	100%
8 Opacity Monitor Upgrade	Fukuda, P	92,977	0	92,977	100%
ilei/HPP Pipeln Rnv Ph 2	Kabutan, D	133,404	133,404	0	0%
ahe Fire Pump Inst	Arakaki, J	395,968	461,562	-65,594	-14%
9 Coriolis FO Flowmeter	Yamashi, K	93,657	93,993	-336	0%
4 Boiler Control Upgrade	Yoshida, A	486,743	513,187	-26,444	-5%
ahe Caustic Rinse Trailer	Pasco, G	108,153	0	108,153	100%
6 A/H Acoustic Sootblower	Economo, D	413,831	371,097	42,734	12%

Through June 2004

Project #	Project Title	ct ger	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
P9539000	K3 Boiler Control Upgrade	an, D	189,783	119,400	70,383	59%
P9541000	K4 Data Acq and Monitor	ła, A	22,163	25,973	-3,810	-15%
P9542000	K3 Performance Monitor	wa, D	488,494	0	488,494	100%
P0000244	Waiau 4 2001 Overhaul	as, L	18	18	0	0%
P0000942	Waiau Tank 4 Bottom Replmt	N	880	0	880	100%
			78,711,708	67,914,044	10,797,664	

Capital Expenditures Project Through June 2004

Project Link	Dept	Grand parent	Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
SVPOp	CustSvc		P0000349	Meter Reading System Replacement	Oishi, L	337,897	332,942	4,955	1%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	437,236	459,736	-22,500	-5%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thomas	0	397,791	-397,791	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	250,000	-250,000	-100%
SVPOp	CustSvc		P0000780	Field Svc/Coll Entry Device	Oishi, L	19,104	0	19,104	100%
SVPOp	CustSvc		P0000877	Payment Extraction Equip	Ejercito, A	-987	44,800	-45,787	-102%
SVPOp	CustSvc		P0000878	Check Processing Upgrade	Ejercito, A	0	26,680	-26,680	-100%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima, J	20,527	0	20,527	100%
SVPOp Total						813,777	1,511,949	-698,172	

June Recorded vs. Budget

Capital Expenditures

Project and Program

Year-to-Date October 2004

4	YTD Oct 04 Budget	Var $	Var %
9	14,593	172,266	1180%
2	0	5,912	100%
1	14,593	178,178	
0	0	1,090	100%
7	95,325	91,372	96%
7	59,073	-57,026	-97%
2	158,916	-62,354	-39%
9	63,016	-42,837	-68%
7	33,125	7,972	24%
0	8,932	-8,932	-100%
0	35,148	-35,148	-100%
8	2,532	-4,420	-175%
8	0	5,378	100%
6	0	26	100%
0	10,073	-10,073	-100%
0	115,000	-115,000	-100%
0	0	32,240	100%
2	0	82	100%
0	394,550	-394,550	-100%
1	102,205	16,096	16%
2	102,205	717	1%
7	102,205	-5,898	-6%
3	102,205	-10,862	-11%
8	246,849	-61,121	-25%
0	145,162	-145,162	-100%
0	111,138	-111,138	-100%
9	83,504	-35,365	-42%
0	89,860	-89,860	-100%
7	0	122,047	100%
4	0	86,424	100%
6	0	1,556	100%
3	0	29,313	100%
3	0	206	100%
3	0	183	100%

Capital Expenditu :es Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Cor_Exc	SSF		P0001057	Energy Projects Relocation	Nakano, W	1,475	0	1,475	100%
Cor_Exc Total						1,460,225	2,075,616	-615,391	

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Cust_Sol	EngySvcs	Y00026	P0000531	HECO SWAT Team-Ohana	Waller, D	147	0	147	100%
Cust_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	85	1,376	-1,291	-94%
		Y00026 Total				232	1,376	-1,144	
Cust_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	47,118	70,990	-23,872	-34%
Cust_Sol Total						47,350	72,366	-25,016	

October Recorded vs. Budget

04	YTD Oct 04		
s	Budget	Var $	Var %
054	246,340	138,714	56%
326	166,218	214,608	129%
739	793,057	7,204,682	908%
294	571,663	2,169,631	380%
366	334,599	-210,733	-63%
779	2,111,877	9,516,902	
0	139,564	-139,564	-100%
713	0	182,713	100%
324	462,562	-367,238	-79%
316	685,191	-586,875	-86%
518	3,541,739	-2,120,121	-60%
042	966,932	-584,890	-60%
205	1,540,878	-741,673	-48%
980	1,205,971	-736,991	-61%
198	8,542,837	-5,094,639	
25	0	-125	100%
25	0	-125	
151	651,295	-637,844	-98%
151	651,295	-637,844	
310	0	-810	100%
310	0	-810	
207	0	5,207	100%
46	0	11,446	100%
53	0	16,653	
79	0	82,179	100%
58	0	23,358	100%
37	0	105,537	
64	337,535	-259,571	-77%
50	88,268	-86,218	-98%
14	425,803	-345,789	
84	255,575	-208,991	-82%
90	42,432	-13,242	-31%
98	589	4,109	698%
72	298,596	-218,124	

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
En_Del	Engr	Y00042	P0000891	Kamokila SS Tsf #2 Install	Tamayo, R	27,925	0	27,925	100%
En_Del	Engr	Y00042	P0000892	Kamokila Tsf#2 circuiting	Ikeda, L	48,319	0	48,319	100%
		Y00042 Total				76,244	0	76,244	
En_Del	Engr	Y00044	P0000946	KoOlina SS Tsf#1 Install	Tamayo, R	1,910	0	1,910	100%
En_Del	Engr	Y00044	P0000947	KoOlina 46kV lines	Ikeda, L	24,710	0	24,710	100%
		Y00044 Total				26,620	0	26,620	
En_Del	Engr	Y00045	P0000950	Ocean Point SS Tsf#1 Install	Tamayo, R	2,173	0	2,173	100%
En_Del	Engr	Y00045	P0000951	Ocean Pointe 46kV Lines	Ikeda, L	23,112	0	23,112	100%
		Y00045 Total				25,285	0	25,285	
En_Del	Engr	Y00047	P0001037	Puuloa Rd Widening - UG	Panalal, T	108,664	0	108,664	100%
En_Del	Engr	Y00047	P9903000	Puuloa Road Widening	Panalal, T	648,616	680,421	-31,805	-5%
		Y00047 Total				757,280	680,421	76,859	
En_Del	Engr	Y00049	P0001045	Palehua East B 46kV UG PH1	Lee, I	10,388	0	10,388	100%
		Y00049 Total				10,388	0	10,388	
En_Del	Engr	Y00050	P0000886	Wal-Mart Sams Keeaumoku'	Nakamoto, D	1,071,661	991,455	80,206	8%
		Y00050 Total				1,071,661	991,455	80,206	
En_Del	Engr	Y15300	P9294000	MOANALUA RD IMPRV AIEA, PH 3	Ikeda, L	-15	0	-15	100%
		Y15300 Total				-15	0	-15	
En_Del	Engr	Y18200	P1991000	Minor Dist Design UG Addns	Lum, M	7,445	0	7,445	100%
		Y18200 Total				7,445	0	7,445	
En_Del	Engr		P0000089	Pwr Quality Monitor Install	Arakaki, D	9,721	101,993	-92,272	-90%
En_Del	Engr		P0000135	Keaahala Rd Widening	Chang, C	69,700	51,582	18,118	35%
En_Del	Engr		P0000218	Waialae Nui Reliability Imp	Lee, I	54,636	0	54,636	100%
En_Del	Engr		P0000288	Emma 4kV Conversion	Lum, M	156,504	0	156,504	100%
En_Del	Engr		P0000289	Halawa Cap Bank Brk 4436	Arakaki, D	494	0	494	100%
En_Del	Engr		P0000290	Halawa Cap Bank Brk 4492	Arakaki, D	1,015	0	1,015	100%
En_Del	Engr		P0000294	Pukele Tie Breaker-Sw Rpl	Arakaki, D	33,651	48,277	-14,626	-30%
En_Del	Engr		P0000335	Intl Savings & Loan Vault	Kaneshi, R	4,243	305,474	-301,231	-99%
En_Del	Engr		P0000423	Kailua Rd UG Conversion	Lum, M	330,521	422,916	-92,395	-22%
En_Del	Engr		P0000445	Trayer Sub Sw Repl Prog	Kaneshi, R	3,492	32,291	-28,799	-89%
En_Del	Engr		P0000474	WSC Privatization	Fukumot, G	138,125	385,473	-247,348	-64%
En_Del	Engr		P0000491	K-H#2/Wai-Wah Str 86/25	Uechi, S	5,227	61,605	-56,378	-92%
En_Del	Engr		P0000507	Kam Hy Resurf Waiahole-Cr Ln	Lee, I	1,242,130	2,139,765	-897,635	-42%
En_Del	Engr		P0000508	PM-Makalapa MW Replace	Thompson, R	0	157,432	-157,432	-100%

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
En_Del	Engr		P0000509	PM-Ewa Nui MW Replace	Thompson, R	0	152,326	-152,326	-100%
En_Del	Engr		P0000530	Ka Iwi 12kV UG, Ph 1 Inc 2	Lung, H	19,834	149,189	-129,355	-87%
En_Del	Engr		P0000575	Nimitz Hwy Rehab-UA #1691	Fukumot, G	72,101	69,401	2,700	4%
En_Del	Engr		P0000597	Diamond Head Rd OH/UG Imp	Panalal, T	1,515	253,394	-251,879	-99%
En_Del	Engr		P0000598	Kahekili Hy Ltg OH/UG Conv	Lee, I	50,080	163,065	-112,985	-69%
En_Del	Engr		P0000603	Nanaikapono OH Relocation	Hiyama, R	43,284	0	43,284	100%
En_Del	Engr		P0000608	Sand Isle WWTP Disinfection	Ho, M	196,612	51,555	145,057	281%
En_Del	Engr		P0000611	Kaneohe Bay Dr Improvements	Lee, I	82,953	68,708	14,245	21%
En_Del	Engr		P0000614	City Hall Vlt 11	Kaneshi, R	5,533	0	5,533	100%
En_Del	Engr		P0000720	Forrest Ave Realignment OH	Hiyama, R	125,794	0	125,794	100%
En_Del	Engr		P0000721	Archer Sub Basement Flooding	Oshiro, E	11,883	0	11,883	100%
En_Del	Engr		P0000732	Gen Ctrl Unit WAN Upgrades	Oyadoma, M	0	99,554	-99,554	-100%
En_Del	Engr		P0000733	Trns Sub RTU Migration Pgm	Lai, D	664,837	645,330	19,507	3%
En_Del	Engr		P0000734	RTU Wide Area Network	Oyadoma, M	12,168	27,410	-15,242	-56%
En_Del	Engr		P0000764	H-1 Widening Waimalu Reloc	Panalal, T	86,060	150,615	-64,555	-43%
En_Del	Engr		P0000769	2003 Spare 138-46kv Tsf	Hayakaw, W	77,529	89,702	-12,173	-14%
En_Del	Engr		P0000778	Waialua #2 12.5MVA Tsf Repl	Chong, R	-824	0	-824	100%
En_Del	Engr		P0000879	Kahe-Halawa #1 138kV SW Repl	Ikeda, L	208,501	0	208,501	100%
En_Del	Engr		P0000880	Kahe-Halawa #2 138kV SW Repl	Ikeda, L	235,978	0	235,978	100%
En_Del	Engr		P0000883	Purch spare 8%, 46-12kV tsf	Tamayo, R	17,747	0	17,747	100%
En_Del	Engr		P0000884	Purch spare 10%, 46-12kV tsf	Tamayo, R	24,156	0	24,156	100%
En_Del	Engr		P0000885	Midweek Auto-Transfer Swgr	Chang, C	253,522	1,471	252,051	17135%
En_Del	Engr		P0000888	Koolau-Pukele #1 Str. 18	Uechi, S	310,916	0	310,916	100%
En_Del	Engr		P0000889	Airport 12KV Ckts Install	Chang, C	41,463	0	41,463	100%
En_Del	Engr		P0000894	Spare 15kV Switchgear	Tamayo, R	11,469	0	11,469	100%
En_Del	Engr		P0000902	Fort Street #1 Tsf Replace	Tamayo, R	78,547	0	78,547	100%
En_Del	Engr		P0000903	Ena #2 Tsf Replace	Tamayo, R	38,773	0	38,773	100%
En_Del	Engr		P0000904	Purch 10% 46-12kV spare tsf	Tamayo, R	34,053	0	34,053	100%
En_Del	Engr		P0000905	Kaonohi #2 Tsf Replace	Tamayo, R	69,258	0	69,258	100%
En_Del	Engr		P0000911	Palehua East A 46kV Reloc	Lee, I	21,835	0	21,835	100%
En_Del	Engr		P0000913	Kona Makaloa 25kV UG	Hiyama, R	180,781	192,701	-11,920	-6%
En_Del	Engr		P0000918	Kewalo #2 Tsf Replace	Tamayo, R	79,031	0	79,031	100%
En_Del	Engr		P0000919	Pohakupu #2 Tsf Replace	Tamayo, R	355,457	0	355,457	100%
En_Del	Engr		P0000920	Waiawa #2 Tsf Replace	Tamayo, R	370,953	0	370,953	100%

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
En_Del	Engr		P0000921	Helemano #1 Tsf Replace	Tamayo, R	336,633	0	336,633	100%
En_Del	Engr		P0000923	Kahala #2 4KV Tsf Replace	Nagata, C	257,196	0	257,196	100%
En_Del	Engr		P0000925	Purch 10% 46-12kV spare tsf	Oshiro, E	312,663	0	312,663	100%
En_Del	Engr		P0000926	Mililani Mauka North Gulley	Panalal, T	61,355	0	61,355	100%
En_Del	Engr		P0000927	Mililani Mauka Unit 134A	Panalal, T	66,196	0	66,196	100%
En_Del	Engr		P0000929	Loop Feed Protection Tsf	Kaneshi, R	36,557	0	36,557	100%
En_Del	Engr		P0000930	PMH-9 Control Upgrades	Kaneshi, R	262,328	0	262,328	100%
En_Del	Engr		P0000940	Pearl Highlands 2nd Fdr	Chang, C	43,573	0	43,573	100%
En_Del	Engr		P0000941	Tree Wire - Lai Road	Chang, C	154,325	0	154,325	100%
En_Del	Engr		P0000944	Ala Wai Canal 46kV Dredging	Lum, M	299,528	0	299,528	100%
En_Del	Engr		P0001012	Sheridan St Raising OH Lines	Lung, H	95,841	0	95,841	100%
En_Del	Engr		P0001015	Wahiawa-Waialua #2 P23X-P33	Chang, C	38,607	0	38,607	100%
En_Del	Engr		P0001019	Structure 22 Wailupe #2 Repl	Chang, C	42,766	0	42,766	100%
En_Del	Engr		P0001029	Mobile Substation Storage	Muranaka, G	3,986	0	3,986	100%
En_Del	Engr		P0001032	Honouliuli Reserv 46kV Reloc	Lee, I	9,077	0	9,077	100%
En_Del	Engr		P0001038	Kahe-CEIP OPGW Replace	Oyadoma, M	6,761	0	6,761	100%
En_Del	Engr		P0001039	Purch Spare 8%, 10MVA Tsf	Nakagaw, N	108	0	108	100%
En_Del	Engr		P0001047	HECO Vault 15 Relocate	Kaneshi, R	2,697	0	2,697	100%
En_Del	Engr		P0001048	Kunia TSF Replacement	Ejercit, D	8,996	0	8,996	100%
En_Del	Engr		P1470000	Minor Trans Sub Addns	Lai, D	936,989	347,772	589,217	169%
En_Del	Engr		P1480000	Minor Dist Sub Addns	Tamayo, R	1,856,654	517,762	1,338,892	259%
En_Del	Engr		P1500000	Misc CM Fac-Op & Ctrl (TD)	Lau, D	597,030	221,992	375,038	169%
En_Del	Engr		P1505000	Other Misc Comm Fac SOD	Lau, D	37,628	157,835	-120,207	-76%
En_Del	Engr		P1690000	Minor T&D Customer Programs	Ho, M	267,364	379,357	-111,993	-30%
En_Del	Engr		P1990000	Minor T&D System Programs	Lum, M	671,219	330,798	340,421	103%
En_Del	Engr		P6740000	Iwilei Ntwk Bkr Failure	Arakaki, D	14,522	0	14,522	100%
En_Del	Engr		P6862000	Kahe Bus B Bkup Prot	Arakaki, D	5,040	0	5,040	100%
En_Del	Engr		P7270000	N Shore Automation Comm	Shin, D	138,230	12,315	125,915	1022%
En_Del	Engr		P7430000	Kahe 1-4 Cntrl Hse Expnsn	Arakaki, D	196	0	196	100%
En_Del	Engr		P8290000	Tripler Wahiawa mwr replace	Arakaki, G	193,831	184,021	9,810	5%
En_Del	Engr		P8470000	Koolau/Tripler MWR Repl	Arakaki, G	197,341	253,955	-56,614	-22%
En_Del	Engr		P9028000	Mobile Radio F1/F2 Replace	Arakaki, G	0	233,292	-233,292	-100%
En_Del	Engr		P9243000	450MHZZ Radio Replacement	Oyadoma, M	8,466	153,852	-145,386	-94%
En_Del	Engr		P9262000	Malae-Koolau MW Replace	Shin, D	0	56,636	-56,636	-100%

October Recorded vs. Budget

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Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
		Y48500 Total				2,963,361	2,217,181	746,180	
En_Del	ProjMgt		P0000143	Salt Lake Blvd Widening Ph2	Naito, C	571,290	1,126,051	-554,761	-49%
En_Del	ProjMgt		P0000669	Kakaako ID10	Naito, C	121,138	189,694	-68,556	-36%
En_Del	ProjMgt		P0000828	Outage Management System	Naito, C	0	1,399	-1,399	-100%
En_Del	ProjMgt		P0000917	Village Park - DB Cable Rpl	Liu, R	115,304	0	115,304	100%
En_Del	ProjMgt		P0001016	Lurline/Mariposa Cable Repl	Liu, R	8,429	0	8,429	100%
En_Del	ProjMgt		P0001034	Kakaako ID 11	Naito, C	45,458	0	45,458	100%
En_Del	ProjMgt		P9036000	Kakaako ID7 Kamakee St Conv	Naito, C	0	27,920	-27,920	-100%
En_Del	SupSvcs		P1081000	Capitalized Tools & Equip	Barnes, C	650,257	675,784	-25,527	-4%
En_Del	SupSvcs		P1250000	Vehicle Purchases	Yoshida, C	1,190,878	1,368,136	-177,258	-13%
En_Del	Telecom		P9548000	Kahe-Kahe SCADA Comm	Shin, D	98	0	98	100%
En_Del	Telecom		P9599000	Miki 2-Miki 3 SCADA Comm	Shin, D	539	0	539	100%
En_Del Total						37,764,942	32,066,405	5,698,537	

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	2,721,296	2,933,228	-211,932	-7%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Tamayo, R	705,568	519,865	185,703	36%
		Y00027 Total				3,426,864	3,453,093	-26,229	
En_Sol	CustInst	Y00048	P0001042	BWS Desal SS T&D	Lee, I	3,190	0	3,190	100%
		Y00048 Total				3,190	0	3,190	
En_Sol	CustInst	Y16700	P1670000	P&I&Test Meters & Mtr Eq	China, R	346,981	652,485	-305,504	-47%
		Y16700 Total				346,981	652,485	-305,504	
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	483,310	157,881	325,429	206%
En_Sol	CustInst		P1510000	Misc OH Svc & Extn (CID)	Che, E	1,450,080	1,970,899	-520,819	-26%
En_Sol	CustInst		P1580000	Minor OH Dist Addn (CID)	Che, E	857,650	603,988	253,662	42%
En_Sol	CustInst		P1680000	Tsf & Equip Pur/Svc (CID)	Che, E	3,256,771	3,483,156	-226,385	-6%
En_Sol	CustInst		P1700000	Misc UG Svc & Extn (CID)	Che, E	7,860,831	8,336,625	-475,794	-6%
En_Sol	Custinst		P1800000	Minor OH To UG Conv (CID)	Che, E	-11,197	0	-11,197	100%
En_Sol	CustInst		P1820000	Minor UG Addns (CID)	Che, E	1,128,010	1,007,671	120,339	12%
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	17,888	0	17,888	100%
En_Sol	EngyProj		P0000897	HECO CHP Program	Suehiro, D	0	3,084,768	-3,084,768	-100%
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	320,623	-320,623	-100%
En_Sol Total						18,820,378	23,071,189	-4,250,811	

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Finance	ITS	Y00029	P0000710	King and Ward PBXs	Lee, J	1,688,757	1,984,582	-295,825	-15%
		Y00029 Total				1,688,757	1,984,582	-295,825	
Finance	ITS		P0000501	Misc Office Equipment	Young, P	39,705	61,040	-21,335	-35%
Finance	ITS		P0000652	Misc Mainframe Hardware	Stuller, R	9,680	63,840	-54,160	-85%
Finance	ITS		P0000653	Collaborative Communications	Stuller, R	1,703	0	1,703	100%
Finance	ITS		P1243000	Purchase PCs-ITS	Young, P	521,722	849,333	-327,611	-39%
Finance	ITS		P1244000	Copiers/Faxes/Printers	McCarter, L	19,061	169,867	-150,806	-89%
Finance	ITS		P1251000	Misc Tel Eqpt NT	Young, P	2,255	5,133	-2,878	-56%
Finance	MgtAcctg		P0000896	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
Finance Total						2,282,883	3,156,195	-873,312	

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Gen_Coun	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	32,345	15,569	16,776	108%
Gen_Coun	Land		P1370000	Distr R/W Purch (Blanket)	Fujiwara, C	31,335	0	31,335	100%
Gen_Coun	Land		P1373000	46kv R/W Purch (blanket)	Fujiwara, C	16,079	0	16,079	100%
Gen_Coun Total						79,759	15,569	64,190	

October Recorded vs. Budget

YTD Oct 04 Actuals	YTD Oct 04 Budget		$	Var %
1,935	0		1,935	100%
3,044	0		3,044	100%
32,130	0		2,130	100%
624	60,563		9,939	-99%
1,803	57,616		5,813	-97%
62,278	272,598		0,320	-77%
67	0		67	100%
16,494	663,649		7,155	-98%
0	103,281		3,281	-100%
372	12,067		1,695	-97%
162,232	532,629		9,397	-70%
10,831	1,000		9,831	983%
183,802	0		3,802	100%
10,501	0		0,501	100%
16,134	0		6,134	100%
11,997	0		,997	100%
-18	0		-18	100%
23,148,909	20,195,268	2	3,641	15%
2,469	0		2,469	100%
359,514	177,201		2,313	103%
46,903	159,608		2,705	-71%
542,139	221,404		0,735	145%
24,099,934	20,753,481	3	6,453	
-32,007	39,556		,563	-181%
-32,007	39,556		,563	
702,023	234,389		7,634	200%
3,040	46,986		3,946	-94%
705,063	281,375		3,688	
-41,587	0		,587	100%
-41,587	0		,587	
822,127	674,141		,986	22%
822,127	674,141		,986	
68,317	113,691		,374	-40%
68,317	113,691		,374	

pital Expenditures Project and Program Year-to-Date October 2004

ject k	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
r_Sup	PSEngr		P0000056	H8 Blr Elec Warm Sys	Pasco, G	63,942	0	63,942	100%
r_Sup	PSEngr		P0000057	H9 Blr Elec Warm Sys	Economo, D	11,048	0	11,048	100%
r_Sup	PSEngr		P0000078	K5 Boiler Controls Upgrade	Fukuda, P	1,724,305	637,638	1,086,667	170%
r_Sup	PSEngr		P0000079	K6 Boiler Controls Upgrade	Yoshida, A	57,502	43,511	13,991	32%
r_Sup	PSEngr		P0000083	K4 Blr Wtr Chem Alyz Repl	Isler, R	55,666	0	55,666	100%
r_Sup	PSEngr		P0000084	K5 Blr Wtr Chem Alyz Repl	Lum, D	112,554	225,805	-113,251	-50%
r_Sup	PSEngr		P0000086	Waiau WW Oil Detectors	Fackrel, J	5,101	9,206	-4,105	-45%
r_Sup	PSEngr		P0000091	H9 Attemperator Block Valve	Economo, D	2,017	0	2,017	100%
r_Sup	PSEngr		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	309	0	309	100%
r_Sup	PSEngr		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	6,807	101	6,706	6640%
r_Sup	PSEngr		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	246,615	110,605	136,010	123%
r_Sup	PSEngr		P0000172	Iwilei Fuel Oil Pump Rpl	Fackrel, J	69,975	113,119	-43,144	-38%
r_Sup	PSEngr		P0000203	Waiau 4 Ignitor Replacement	Lum, D	0	6,078	-6,078	-100%
r_Sup	PSEngr		P0000204	W7 BFP Rec Ctrl Valves Upg	Economo, D	808	0	808	100%
r_Sup	PSEngr		P0000208	W3 Cycle Chem Instr.	Cummings, C	272,311	273,082	-771	0%
r_Sup	PSEngr		P0000209	W4 Cycle Chem Instr.	Lum, D	0	3,747	-3,747	-100%
r_Sup	PSEngr		P0000210	W5 Cycle Chem Instr.	Lum, D	0	3,030	-3,030	-100%
r_Sup	PSEngr		P0000211	W6 Cycle Chem Instr.	Lum, D	168,003	287,604	-119,601	-42%
r_Sup	PSEngr		P0000213	W8 Cycle Chem Instr.	Lum, D	356,337	320,097	36,240	11%
r_Sup	PSEngr		P0000215	K2 Cycle Chem Instr.	Lum, D	77,141	132,903	-55,762	-42%
_Sup	PSEngr		P0000216	H8 Cycle Chem Instr.	Isler, R	14,726	0	14,726	100%
_Sup	PSEngr		P0000217	H9 Cycle Chem Instr.	Lum, D	0	1,428	-1,428	-100%
_Sup	PSEngr		P0000228	K5 SH & RH Attemp Spray	Economo, D	81,787	145,702	-63,915	-44%
_Sup	PSEngr		P0000230	W7 SH & RH Attemp Spray	Economo, D	5,198	0	5,198	100%
_Sup	PSEngr		P0000231	W8 BFP Rec Ctrl Valves Upg	Economo, D	75,329	46,619	28,710	62%
_Sup	PSEngr		P0000232	W8 SH & RH Attemp Spray	Economo, D	111,166	107,553	3,613	3%
_Sup	PSEngr		P0000233	W7&8 Service Air Compressor	Arakaki, J	49,824	118,502	-68,678	-58%
_Sup	PSEngr		P0000242	K4 SH & RH Attemp Spray	Economo, D	68,838	554	68,284	12326%
_Sup	PSEngr		P0000254	W3 Stack & Breeching Rpl	Yanagid, J	282,824	257,634	25,190	10%
_Sup	PSEngr		P0000260	W3 Data Acq & Monitoring	Yoshida, A	231,213	43,456	187,757	432%
_Sup	PSEngr		P0000265	H8 Data Acq & Monitoring	Yoshida, A	2,660	0	2,660	100%
_Sup	PSEngr		P0000267	K5 Data Acq & Monitoring	Fukuda, P	182,790	152,286	30,504	20%
_Sup	PSEngr		P0000273	Kahe Stormwater Erosion Ctrl	Tasaka, S	0	26,397	-26,397	-100%
_Sup	PSEngr		P0000297	W3 Condenser Refurbishment	Arakaki, J	388,029	390,542	-2,513	-1%

ober Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	ar %
Pwr_Sup	PSEngr		P0000298	HPP WWTF Batch Tnk Mods	Yamashi, K	30	0	30	100%
Pwr_Sup	PSEngr		P0000302	Waiau FWH #72 Replacement	Kurisu, A	124,878	217,439	-92,561	-43%
Pwr_Sup	PSEngr		P0000303	Waiau FWH #82 Replacement	Kurisu, A	255,927	212,361	43,566	21%
Pwr_Sup	PSEngr		P0000313	W8 APH Sootblower Upgrade	Arakaki, J	61,495	286,869	-225,374	-79%
Pwr_Sup	PSEngr		P0000327	K4 Flue Gas O2 Analyzer	Yoshida, A	17,653	7,622	10,031	132%
Pwr_Sup	PSEngr		P0000328	K5 Flue Gas O2 Analyzer	Fukuda, P	76,150	37,852	38,298	101%
Pwr_Sup	PSEngr		P0000330	Waiau 3 Ignitor Replacement	Lum, D	121,543	164,663	-43,120	-26%
Pwr_Sup	PSEngr		P0000331	H8 Turbine Steam Gland Conv	Arakaki, J	117	0	117	100%
Pwr_Sup	PSEngr		P0000379	PI Data Loggers	Isler, R	0	107,278	-107,278	100%
Pwr_Sup	PSEngr		P0000439	Waiau FWH #63 Replacement	Yamashi, K	614	0	614	100%
Pwr_Sup	PSEngr		P0000441	W3 Soot Blower Upgrade	Yamashi, K	6,009	368,348	-362,339	-98%
Pwr_Sup	PSEngr		P0000449	Kahe Electronic Parts Store	Shimabu, M	1,583	0	1,583	100%
Pwr_Sup	PSEngr		P0000450	Kahe Motor Part Wash Enclose	Kogasaka, D	335	0	335	100%
Pwr_Sup	PSEngr		P0000452	Waiau Electric Parts Store	Shimabu, M	1,424	0	1,424	100%
Pwr_Sup	PSEngr		P0000453	Waiau Pond Sheetpiling	Tasaka, S	12,243	30,488	-18,245	-60%
Pwr_Sup	PSEngr		P0000454	K6 Fan Enclosure	Yanagid, J	25,482	20,296	5,186	26%
Pwr_Sup	PSEngr		P0000458	Kahe Pond 1A Clean & Lining	Ornellas, L	0	8,055	-8,055	100%
Pwr_Sup	PSEngr		P0000459	Waiau 3 ERV Replacement	Cummings, C	71,431	71,967	-536	-1%
Pwr_Sup	PSEngr		P0000463	Waiau 8 ERV Replacement	Fackrel, J	86,926	118,754	-31,828	-27%
Pwr_Sup	PSEngr		P0000464	Waiau 5 Wastewater Sump Upgr	Yuen, M	1,500	0	1,500	100%
Pwr_Sup	PSEngr		P0000466	K3&4 Service Air Compressor	Arakaki, J	47,950	41,596	6,354	15%
Pwr_Sup	PSEngr		P0000469	K5&6 Service Air Compressors	Fackrel, J	28,479	205,636	-177,157	-86%
Pwr_Sup	PSEngr		P0000485	WPP FWH #35 Replacement	Yamashi, K	495,003	223,570	271,433	121%
Pwr_Sup	PSEngr		P0000489	W4 Cond Wtrbx Repl	Kurisu, A	0	5,878	-5,878	100%
Pwr_Sup	PSEngr		P0000490	H8&9 Emergency Generator	Fackrel, J	3,701	106,776	-103,075	-97%
Pwr_Sup	PSEngr		P0000492	K4 HP Turb Row 9-11 Blades	Yuen, M	146,809	273,268	-126,459	-46%
Pwr_Sup	PSEngr		P0000493	W6 HP Turbine Blades	Yuen, M	1,115,345	2,128,251	-1,012,906	-48%
Pwr_Sup	PSEngr		P0000497	Waiau WW Pond Closure	Tasaka, S	26,857	219,172	-192,315	-88%
Pwr_Sup	PSEngr		P0000510	Circ Water Temp Monitors	Kabutan, D	63,345	29,411	33,934	115%
Pwr_Sup	PSEngr		P0000511	BFP Automated Test	Yoshida, A	100,906	171,956	-71,050	-41%
Pwr_Sup	PSEngr		P0000564	W9 DCS Processor Upgrade	Yoshida, A	1,610	0	1,610	100%
Pwr_Sup	PSEngr		P0000565	W10 DCS Processor Upgrade	Yoshida, A	21,312	0	21,312	100%
Pwr_Sup	PSEngr		P0000582	H9 Turbine Supv Instr	Kabutan, D	60	0	60	100%
Pwr_Sup	PSEngr		P0000590	PP Security Hardware Upgrade	Yuen, M	128,681	94,157	34,524	37%

October Recorded vs. Budget

o-Date October 2004

	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Replacement	Rompask, D	173,382	228,905	-55,523	-24%
Replacement	Arakawa, D	48	0	48	100%
ck Drain	Lum, D	40,667	94,097	-53,430	-57%
Door Addition	Arakaki, J	41,646	62,880	-21,234	-34%
Door Addition	Arakaki, J	0	2,913	-2,913	-100%
n Fire Main	Arakaki, J	250,589	382,136	-131,547	-34%
le Tray Sprinkler	Arakaki, J	18,825	0	18,825	100%
Smoke Detector	Arakaki, J	0	76,825	-76,825	-100%
Smoke Detector	Arakaki, J	0	73,891	-73,891	-100%
Smoke Detector	Arakaki, J	0	56,112	-56,112	-100%
Smoke Detectors	Arakaki, J	3,380	56,906	-53,526	-94%
lator Upgrade	Dahlquist, L	243,967	284,494	-40,527	-14%
ash Sump Pump	Fackrel, J	8,426	81,180	-72,754	-90%
Dioxide System	Arakaki, J	0	106,430	-106,430	-100%
Tube Replmnt	Economo, D	716,398	425,688	290,710	68%
izer Upgrade	Arakaki, J	0	7,040	-7,040	-100%
eplacement	Economo, D	51,175	171,388	-120,213	-70%
eplacement	Economo, D	23,732	172,778	-149,046	-86%
witch Upgrd	Dahlquist, L	54,505	15,000	39,505	263%
uct Replacement	Vlacovsky, R	5,258	0	5,258	100%
ct Replacement	Vlacovsky, R	10,576	0	10,576	100%
eplacement	Economo, D	47,994	270,692	-222,698	-82%
ation	Kabutan, D	73,197	35,484	37,713	106%
Lot Addition	Tasaka, S	264	0	264	100%
lop Office	Yanagid, J	154,235	229,230	-74,995	-33%
SWGR Replace	Yoshida, A	32,366	328	32,038	9768%
Cables to Swyd	Rompask, D	29,296	141,292	-111,996	-79%
itor Upgrade	Fukuda, P	0	65,526	-65,526	-100%
ryers	Vlacovsky, R	388	97,202	-96,814	-100%
er Tube Replacement	Economo, D	19,219	0	19,219	100%
Upgrade	Fukuda, P	0	339,689	-339,689	-100%
Cable Replace	Yoshida, A	197,245	111,863	85,382	76%
Upgrade	Fukuda, P	114,343	88,876	25,467	29%
e Systm	Yuen, M	1,204	0	1,204	100%

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000741	W5 Demin raw wtr piping	Arakaki, J	89,699	0	89,699	100%
Pwr_Sup	PSEngr		P0000750	K5 Reheater Element Replacements	Yamashi, K	691,031	354,917	336,114	95%
Pwr_Sup	PSEngr		P0000771	H81 TVL Screen Repl	Arakaki, J	471	1,003	-532	-53%
Pwr_Sup	PSEngr		P0000772	H92 TVL Screen Repl	Arakaki, J	158,081	89,537	68,544	77%
Pwr_Sup	PSEngr		P0000777	Waiau Tank 5 Roof Replace	Isler, R	29,962	0	29,962	100%
Pwr_Sup	PSEngr		P0000781	KPP FWH #41 Replacement	Kurisu, A	0	14,605	-14,605	-100%
Pwr_Sup	PSEngr		P0000782	KPP FWH #42 Replacement	Kurisu, A	0	18,891	-18,891	-100%
Pwr_Sup	PSEngr		P0000784	K22 TVL Screen Repl	Arakaki, J	27,977	68,690	-40,713	-59%
Pwr_Sup	PSEngr		P0000785	K41 TVL Screen Repl	Arakaki, J	10,006	70,270	-60,264	-86%
Pwr_Sup	PSEngr		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	89,715	118,219	-28,504	-24%
Pwr_Sup	PSEngr		P0000787	K5/6 Lube water pump	Kurisu, A	6,826	54,173	-47,347	-87%
Pwr_Sup	PSEngr		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	63,195	117,363	-54,168	-46%
Pwr_Sup	PSEngr		P0000789	Kahe 3 BW Sump Upgrade	Economo, D	91,353	116,514	-25,161	-22%
Pwr_Sup	PSEngr		P0000790	Kahe 4 BW Sump Upgrade	Economo, D	55,045	115,671	-60,626	-52%
Pwr_Sup	PSEngr		P0000791	Kahe 5 BW Sump Upgrade	Economo, D	58,585	114,833	-56,248	-49%
Pwr_Sup	PSEngr		P0000792	Kahe 6 BW Sump Upgrade	Economo, D	53,999	114,002	-60,003	-53%
Pwr_Sup	PSEngr		P0000798	W6 Instr Air Compr	Kurisu, A	0	113,424	-113,424	-100%
Pwr_Sup	PSEngr		P0000799	K2 Operator Console Upgrade	Kabutan, D	0	148,253	-148,253	-100%
Pwr_Sup	PSEngr		P0000800	K1 Operator Console Upgrade	Fukuda, P	0	4,591	-4,591	-100%
Pwr_Sup	PSEngr		P0000802	W5 Operator Console Upgrade	Kabutan, D	0	8,438	-8,438	-100%
Pwr_Sup	PSEngr		P0000803	W3 Operator Console Upgrade	Kabutan, D	266,126	173,160	92,966	54%
Pwr_Sup	PSEngr		P0000804	W6 Operator Console Upgrade	Kabutan, D	69,447	176,695	-107,248	-61%
Pwr_Sup	PSEngr		P0000805	Kahe Intake Lighting	Kabutan, D	0	80,849	-80,849	-100%
Pwr_Sup	PSEngr		P0000806	K06 CWP MOV Replacement	Economo, D	112,988	187,866	-74,878	-40%
Pwr_Sup	PSEngr		P0000809	K6 Annunciator Replacement	Tiede, C	0	44,937	-44,937	-100%
Pwr_Sup	PSEngr		P0000811	W8 Annunciator Replacement	Dahlquist, L	0	396,201	-396,201	-100%
Pwr_Sup	PSEngr		P0000817	W6 Exciter/Regulator Replace	Rompask, D	0	296,966	-296,966	-100%
Pwr_Sup	PSEngr		P0000819	W8 Exciter/Regulator Repl	Yoshida, A	0	337,409	-337,409	-100%
Pwr_Sup	PSEngr		P0000820	K1 Main Xfmr Replacement	Yoshida, A	0	6,441	-6,441	-100%
Pwr_Sup	PSEngr		P0000821	K2 Battery Bank Replacement	Garrison, R	0	64,603	-64,603	-100%
Pwr_Sup	PSEngr		P0000822	K4 Recorder Replacement	Yoshida, A	15,975	47,454	-31,479	-66%
Pwr_Sup	PSEngr		P0000829	W4 Main Xfmr Replacement	Kabutan, D	0	4,591	-4,591	-100%
Pwr_Sup	PSEngr		P0000830	K1 Aux Xfmr Replacement	Yoshida, A	0	6,441	-6,441	-100%
Pwr_Sup	PSEngr		P0000832	W3 Main Xfmr Replacement	Kabutan, D	807,619	717,791	89,828	13%

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Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000853	K2 Excitation System	Kabutan, D	0	75,650	-75,650	-100%
Pwr_Sup	PSEngr		P0000854	K1 Excitation System	Kabutan, D	0	22,551	-22,551	-100%
Pwr_Sup	PSEngr		P0000855	K6 Aux Transformer	Fukuda, P	238,727	366,901	-128,174	-35%
Pwr_Sup	PSEngr		P0000860	K2 Annunciator Replacement	Fukuda, P	0	300,697	-300,697	-100%
Pwr_Sup	PSEngr		P0000861	K1 Annunciator Replacement	Fukuda, P	0	1,462	-1,462	-100%
Pwr_Sup	PSEngr		P0000863	K4 Generator Rotor Rewind	Dahlquist, L	416,827	520,434	-103,607	-20%
Pwr_Sup	PSEngr		P0000869	K4 Annunciator Replacement	Yoshida, A	0	5,277	-5,277	-100%
Pwr_Sup	PSEngr		P0000870	H9 Generator Rotor Rewind	Kabutan, D	2,497	0	2,497	100%
Pwr_Sup	PSEngr		P0000871	Kahe 1 Sootblower Controls	Economo, D	0	4,676	-4,676	-100%
Pwr_Sup	PSEngr		P0000873	Kahe 2 Sootblower Controls	Economo, D	16,948	271,545	-254,597	-94%
Pwr_Sup	PSEngr		P0000874	Kahe 4 Sootblower Controls	Economo, D	0	28,779	-28,779	-100%
Pwr_Sup	PSEngr		P0000893	H8 Generator Rotor Rewind	Dahlquist, L	-2,702	0	-2,702	100%
Pwr_Sup	PSEngr		P0000898	Kahe 42 Tvl Screen	Arakaki, J	12,010	0	12,010	100%
Pwr_Sup	PSEngr		P0000901	Kahe Reclaimed Oil Transfer	Arakaki, J	89,094	0	89,094	100%
Pwr_Sup	PSEngr		P0000912	Kahe 12 Traveling Screen	Arakaki, J	44,343	0	44,343	100%
Pwr_Sup	PSEngr		P0000934	Kahe Turbine Drains	Arakaki, J	1,779	0	1,779	100%
Pwr_Sup	PSEngr		P0000936	Waiau Turbine Drains	Arakaki, J	14,481	0	14,481	100%
Pwr_Sup	PSEngr		P0000939	Waiau CT Separation	Fukuda, P	215,535	0	215,535	100%
Pwr_Sup	PSEngr		P0000955	W8 BFP Rotating Elem/Volute	Yuen, M	314,960	0	314,960	100%
Pwr_Sup	PSEngr		P0000958	K6 SSH Element Replacement	Fackrel, J	27,543	0	27,543	100%
Pwr_Sup	PSEngr		P0000961	W82 TVL SCREEN REPL	Vlacovsky, R	2,329	0	2,329	100%
Pwr_Sup	PSEngr		P0000963	K51 TVL SCREEN REPL	Arakaki, J	156,612	0	156,612	100%
Pwr_Sup	PSEngr		P0000964	K62 TVL SCREEN REPL	Arakaki, J	12,308	0	12,308	100%
Pwr_Sup	PSEngr		P0000965	K11 TVL SCREEN REPL	Arakaki, J	127,999	0	127,999	100%
Pwr_Sup	PSEngr		P0000968	Process Parameter Monitoring	Yoshida, A	36,309	0	36,309	100%
Pwr_Sup	PSEngr		P0000970	W5 Mixed Bed Polisher	Arakaki, J	188,145	0	188,145	100%
Pwr_Sup	PSEngr		P0001002	K31 TVL SCREEN REPL	Arakaki, J	148,584	0	148,584	100%
Pwr_Sup	PSEngr		P0001018	K5 Turbine Blades	Yuen, M	424,623	0	424,623	100%
Pwr_Sup	PSEngr		P0001036	W3 HP Turbine Curtis Blade	Yuen, M	157,849	0	157,849	100%
Pwr_Sup	PSEngr		P7590000	W7 Controls Upgrade	Slingerland, G	0	51,156	-51,156	-100%
Pwr_Sup	PSEngr		P8820000	W4 Exciter Upgrade	Kabutan, D	0	15,750	-15,750	-100%
Pwr_Sup	PSEngr		P9027000	H9 Primary Fuel Oil Pumps	Isler, R	51	0	51	100%
Pwr_Sup	PSEngr		P9401000	Kahe Fire Pump Inst	Arakaki, J	180,218	70,772	109,446	155%
Pwr_Sup	PSEngr		P9453000	H9 Coriolis FO Flowmeter	Yamashi, K	30	0	30	100%

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
Pwr_Sup	PSEngr		P9454000	K4 Boiler Control Upgrade	Yoshida, A	314,102	540,273	-226,171	-42%
Pwr_Sup	PSEngr		P9492000	K6 A/H Acoustic Sootblower	Economo, D	69,428	117	69,311	59240%
Pwr_Sup	PSEngr		P9539000	K3 Boiler Control Upgrade	Garrison, R	2,592	8,612	-6,020	-70%
Pwr_Sup	PSEngr		P9541000	K4 Data Acq and Monitor	Yoshida, A	17,948	37,599	-19,651	-52%
Pwr_Sup	PSO&M	Y14300	P1429000	Emergency Power Plant	Marzano, V	1,129,109	785,161	343,948	44%
		Y14300 Total				1,129,109	785,161	343,948	
Pwr_Sup	VPPwrSup		P0000942	Waiau Tank 4 Bottom Replmt	Yuen, N	733,735	0	733,735	100%
Pwr_Sup Total						44,010,734	43,145,564	865,170	

October Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date October 2004

Project Link	Dept	Grand Parent	Project #	Project Title	Project Manager	YTD Oct 04 Actuals	YTD Oct 04 Budget	Var $	Var %
SVPOp	CustSvc		P0000349	Meter Reading System Replacement	Oishi, L	100	0	100	100%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	114,268	0	114,268	100%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thomas	0	409,518	-409,518	-100%
SVPOp	CustSvc		P0000692	CSD Technical Support Prgrm	Ejercito, A	0	22,000	-22,000	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	150,000	-150,000	-100%
SVPOp	CustSvc		P0000877	Payment Extraction Equip	Ejercito, A	-987	44,800	-45,787	-102%
SVPOp	CustSvc		P0000878	Check Processing Upgrade	Ejercito, A	29,564	26,680	2,884	11%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima, J	21,935	0	21,935	100%
SVPOp Total						164,880	652,998	-488,118	

Capital Expenditures

Project

Through October 2004

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Cor_Exc	SSF	Y00023	P0000499	Ward A/C Imprv Phase II	Fujiwara, C	293,961	19,446	274,515	1412%
Cor_Exc	SSF	Y00023	P0000506	Ward A/C Equip Repl	Fujiwara, C	3,294,120	3,281,721	12,399	0%
		Y00023 Total				3,588,081	3,301,167	286,914	
Cor_Exc	SSF		P0000189	Upg Makai Elev Ctrls-King	Ishii, A	-11,648	0	-11,648	100%
Cor_Exc	SSF		P0000415	CPP Access Control	Fujiwara, C	172,664	172,668	-4	0%
Cor_Exc	SSF		P0000540	King St Power Improv	Fujiwara, C	0	1	-1	-100%
Cor_Exc	SSF		P0000543	Ward Fire Sprinkler Sys	Fujiwara, C	0	11,359	-11,359	-100%
Cor_Exc	SSF		P0000551	Waiau Guard House	Fujiwara, C	0	288,766	-288,766	-100%
Cor_Exc	SSF		P0000586	King St Attic	Fujiwara, C	31,720	36,140	-4,420	-12%
Cor_Exc	SSF		P0000594	Ward I Bldg access upgrade	Uemura, E	97,537	90,210	7,327	8%
Cor_Exc	SSF		P0000613	Fuel Cell Test Facility	Fujiwara, C	2,974	2,929	45	2%
Cor_Exc	SSF		P0000699	Fire sprinkler-tsf oil stora	Fujiwara, C	0	10,073	-10,073	-100%
Cor_Exc	SSF		P0000700	Fire sprinkler-whse hi-stora	Fujiwara, C	0	115,000	-115,000	-100%
Cor_Exc	SSF		P0000704	Security/Halawa Meva Site	Uemura, E	98,699	0	98,699	100%
Cor_Exc	SSF		P0000705	Security/Makalapa Meva	Uemura, E	110,710	0	110,710	100%
Cor_Exc	SSF		P0000706	Security/Koolau Meva Site	Uemura, E	82,085	0	82,085	100%
Cor_Exc	SSF		P0000707	Security/Pukele Meva Site	Uemura, E	85,298	85,298	0	0%
Cor_Exc	SSF		P0000712	Archer Entry Gate	Fujiwara, C	75,803	23,802	52,001	218%
Cor_Exc	SSF		P0000722	Tsf Oil Spill Containment	Fujiwara, C	1,696	1,580	116	7%
Cor_Exc	SSF		P0000826	ITS Renovation	Nakano, W	0	423,201	-423,201	-100%
Cor_Exc	SSF		P0000840	Security/Campbell Station	Cardoza, A	118,301	102,205	16,096	16%
Cor_Exc	SSF		P0000841	Security/School Street Sub	Cardoza, A	102,922	102,205	717	1%
Cor_Exc	SSF		P0000842	Security/Wahiawa Sub	Cardoza, A	96,307	102,205	-5,898	-6%
Cor_Exc	SSF		P0000843	Security/Iwilei Sub	Cardoza, A	91,343	102,205	-10,862	-11%
Cor_Exc	SSF		P0000851	Purchasing Warehouse Renov	Nakano, W	185,728	286,644	-100,916	-35%
Cor_Exc	SSF		P0000852	Ward 04 Warehouse Improvemts	Nakano, W	0	145,162	-145,162	-100%
Cor_Exc	SSF		P0000865	King St Chillwater Pipe	HFEng	0	111,138	-111,138	-100%
Cor_Exc	SSF		P0000866	King Downspout Replcmt	HFEng	48,139	83,504	-35,365	-42%
Cor_Exc	SSF		P0000867	King St Window Project	HFEng	0	89,860	-89,860	-100%
Cor_Exc	SSF		P0001017	King-Elevator	HFEng	86,424	0	86,424	100%
Cor_Exc	SSF		P0001022	Employee Smart Cards	Angell, R	1,556	0	1,556	100%
Cor_Exc	SSF		P0001023	ACCESS SYSTEM	Uemura, E	29,313	0	29,313	100%
Cor_Exc	SSF		P0001055	Customer Solutions Consolidn	Nakano, W	206	0	206	100%

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Cor_Exc	SSF		P0001056	DSM Expansion	Nakano, W	183	0	183	100%
Cor_Exc	SSF		P0001057	Energy Projects Relocation	Nakano, W	1,475	0	1,475	100%
Cor_Exc Total						5,097,516	5,687,322	-589,806	

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Cust_Sol	EngySvcs	Y00026	P0000531	HECO SWAT Team-Ohana	Waller, D	31,993	31,845	148	0%
Cust_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	149,907	151,149	-1,242	-1%
		Y00026 Total				181,900	182,994	-1,094	
Cust_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	399,096	440,347	-41,251	-9%
Cust_Sol Total						580,996	623,341	-42,345	

October Recorded vs. Budget

ect ager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
M	0	622	-622	-100%
M	0	525,330	-525,330	-100%
	0	525,952	-525,952	
ng, C	120,481	822,682	-702,201	-85%
	120,481	822,682	-702,201	
gChe, L	434,828	0	434,828	100%
gChe, L	101,924	0	101,924	100%
a, L	41,456	0	41,456	100%
gChe, L	1,687	0	1,687	100%
gChe, L	139,203	0	139,203	100%
	719,098	0	719,098	
ıayo, R	14,204	13,610	594	4%
ng, C	21,825	25,786	-3,961	-15%
ıayo, R	150,239	154,537	-4,298	-3%
ng, C	115,252	118,665	-3,413	-3%
	301,520	312,598	-11,078	
ng, R	109,161	0	109,161	100%
ng, R	222,100	0	222,100	100%
	331,261	0	331,261	
alal, T	110,648	405,594	-294,946	-73%
alal, T	2,050	165,695	-163,645	-99%
	112,698	571,289	-458,591	
agaw, N	46,584	255,575	-208,991	-82%
alal, T	33,596	42,432	-8,836	-21%
doma, M	4,698	8,405	-3,707	-44%
	84,878	306,412	-221,534	
ıayo, R	435,572	0	435,572	100%
a, L	83,074	0	83,074	100%
	518,646	0	518,646	
ıayo, R	1,910	0	1,910	100%
a, L	24,710	0	24,710	100%
	26,620	0	26,620	
ıayo, R	2,173	0	2,173	100%

	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
	Ikeda, L	23,112	0	23,112	100%
		25,285	0	25,285	
	Panalal, T	108,664	0	108,664	100%
	Panalal, T	1,372,284	1,176,044	196,240	17%
		1,480,948	1,176,044	304,904	
PH1	Lee, I	10,388	0	10,388	100%
		10,388	0	10,388	
:u'	Nakamoto, D	1,159,126	1,095,876	63,250	6%
		1,159,126	1,095,876	63,250	
	Ho, M	2,121,880	0	2,121,880	100%
		2,121,880	0	2,121,880	
	Lum, M	95,567	0	95,567	100%
		95,567	0	95,567	
; PART 2	Char, C	1,472,937	0	1,472,937	100%
		1,472,937	0	1,472,937	
	Chang, C	219,510	201,392	18,118	9%
	Lee, I	491,720	0	491,720	100%
	Lum, M	539,150	446,134	93,016	21%
3	Arakaki, D	130,137	0	130,137	100%
2	Arakaki, D	157,690	163,503	-5,813	-4%
	Arakaki, D	192,372	246,370	-53,998	-22%
	Kaneshi, R	87,638	388,869	-301,231	-77%
	Hiyama, R	37,658	43,945	-6,287	-14%
	Kaneshi, R	564,337	540,598	23,739	4%
	Lum, M	496,595	560,510	-63,915	-11%
	JangChe, L	291,161	0	291,161	100%
	Fukumot, G	1,165,832	1,471,167	-305,335	-21%
	Uechi, S	26,957	83,804	-56,847	-68%
Cr Ln	Lee, I	1,974,893	2,885,842	-910,949	-32%
	Thompson, R	0	164,232	-164,232	-100%
	Thompson, R	0	159,134	-159,134	-100%
	JangChe, L	351,259	351,259	0	0%
	Lung, H	19,834	150,149	-130,315	-87%

er 2004

itle	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
y Rehab-UA #1691	Fukumot, G	204,712	265,774	-61,062	-23%
auka 46kV Reloc	Fukumot, G	295,150	0	295,150	100%
kv Switchgear	Tamayo, R	228,850	224,990	3,860	2%
Head Rd OH/UG Imp	Panalal, T	18,717	269,584	-250,867	-93%
ly Ltg OH/UG Conv	Lee, I	60,900	173,884	-112,984	-65%
Replacement	Arakaki, G	460,256	451,862	8,394	2%
ono OH Relocation	Hiyama, R	253,224	209,757	43,467	21%
WWTP Disinfection	Ho, M	299,159	335,769	-36,610	-11%
Bay Dr Improvements	Lee, I	161,606	237,705	-76,099	-32%
/lt 11	Kaneshi, R	345,433	347,009	-1,576	0%
e Realignment OH	Hiyama, R	290,865	165,604	125,261	76%
b Basement Flooding	Oshiro, E	130,642	0	130,642	100%
Jnit WAN Upgrades	Oyadoma, M	0	100,318	-100,318	-100%
Area Network	Oyadoma, M	54,345	100,598	-46,253	-46%
ning Waimalu Reloc	Panalal, T	92,627	161,955	-69,328	-43%
re 138-46kv Tsf	Hayakaw, W	956,890	1,026,580	-69,690	-7%
2 12.5MVA Tsf Repl	Chong, R	487,835	0	487,835	100%
awa #1 138kV SW Repl	Ikeda, L	340,061	0	340,061	100%
awa #2 138kV SW Repl	Ikeda, L	324,129	0	324,129	100%
re 8%, 46-12kV tsf	Tamayo, R	321,856	0	321,856	100%
re 10%, 46-12kV tsf	Tamayo, R	332,850	0	332,850	100%
Auto-Transfer Swgr	Chang, C	352,923	316,413	36,510	12%
ukele #1 Str. 18	Uechi, S	438,591	0	438,591	100%
KV Ckts Install	Chang, C	527,719	0	527,719	100%
V Switchgear	Tamayo, R	177,024	0	177,024	100%
t #1 Tsf Replace	Tamayo, R	391,283	0	391,283	100%
f Replace	Tamayo, R	397,221	0	397,221	100%
% 46-12kV spare tsf	Tamayo, R	352,454	0	352,454	100%
2 Tsf Replace	Tamayo, R	357,547	0	357,547	100%
ast A 46kV Reloc	Lee, I	23,384	0	23,384	100%
aloa 25kV UG	Hiyama, R	187,972	243,112	-55,140	-23%
Tsf Replace	Tamayo, R	379,192	0	379,192	100%
#2 Tsf Replace	Tamayo, R	355,457	0	355,457	100%

Project Manager	Proj to Date Actuals	Proj to Date Budget	$	Var %
Tamayo, R	370,953	0	0,953	100%
Tamayo, R	336,633	0	6,633	100%
Nagata, C	257,196	0	7,196	100%
Oshiro, E	312,663	0	2,663	100%
Panalal, T	61,355	0	1,355	100%
Panalal, T	66,196	0	6,196	100%
Kaneshi, R	36,557	0	6,557	100%
Kaneshi, R	262,328	0	2,328	100%
Chang, C	43,573	0	3,573	100%
Chang, C	154,325	0	4,325	100%
Lum, M	299,528	0	9,528	100%
Lung, H	95,841	0	5,841	100%
Chang, C	38,607	0	8,607	100%
Chang, C	42,766	0	2,766	100%
Muranaka, G	3,986	0	3,986	100%
Lee, I	9,077	0	9,077	100%
Oyadoma, M	6,761	0	6,761	100%
Nakagaw, N	108	0	108	100%
Kaneshi, R	2,697	0	2,697	100%
Ejercit, D	8,996	0	8,996	100%
Arakaki, D	189,130	0	9,130	100%
Arakaki, D	938,404	894,937	3,467	5%
Shin, D	621,197	540,443	0,754	15%
Arakaki, D	681,725	672,681	9,044	1%
Arakaki, G	364,745	360,615	4,130	1%
Arakaki, G	350,965	395,066	4,101	-11%
Oyadoma, M	8,466	153,852	5,386	-94%
Shin, D	0	56,636	6,636	-100%
Hayakaw, W	74,864	0	4,864	100%
Thompson, R	31,462	114,450	2,988	-73%
Kaneshi, R	153,135	253,635	0,500	-40%
Wong, K	781,234	753,783	,451	4%
Wong, K	160,057	33,956	6,101	371%

ct ger	Proj to Date Actuals	Proj to Date Budget	Var $	%
K	28,672	16,955	11,717	9%
K	156,155	137,364	18,791	1%
K	22,889	90,670	-67,781	5%
K	10,062	27,046	-16,984	3%
	1,159,069	1,059,774	99,295	
C	1,213,095	2,721,752	-1,508,657	5%
C	104,398	255,496	-151,098	9%
C	738	6,851	-6,113	9%
C	27,898	46,479	-18,581	9%
C	636,033	816,433	-180,400	%
C	0	40,630	-40,630	9%
C	0	6,094	-6,094	9%
	1,982,162	3,893,735	-1,911,573	
, R	73,808	64,231	9,577	%
, R	8,762	2,567	6,195	%
, R	226,305	526,340	-300,035	%
, R	31,033	0	31,033	%
	339,908	593,138	-253,230	
C	2,473,598	0	2,473,598	%
C	3,615,130	0	3,615,130	%
C	25,925,775	0	25,925,775	%
C	1,200,893	0	1,200,893	%
C	13,486,751	0	13,486,751	%
C	2,180,351	0	2,180,351	%
C	201,452	0	201,452	%
	49,083,950	0	49,083,950	
K	22,076,105	988,016	21,088,089	%
K	626,654	0	626,654	%
K	594	18,949,002	-18,948,408	%
K	0	1,019,389	-1,019,389	%
K	0	944,972	-944,972	%
K	0	11,454	-11,454	%
	22,703,353	21,912,833	790,520	

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Del	ProjMgt		P0000143	Salt Lake Blvd Widening Ph2	Naito, C	1,389,730	1,974,725	-584,995	-30%
En_Del	ProjMgt		P0000162	Kakaako ID9	Naito, C	2,453,269	2,451,674	1,595	0%
En_Del	ProjMgt		P0000536	Kaimuki Traffic Calming	Naito, C	675,709	664,509	11,200	2%
En_Del	ProjMgt		P0000669	Kakaako ID10	Naito, C	529,551	598,940	-69,389	-12%
En_Del	ProjMgt		P0000828	Outage Management System	Naito, C	0	1,399	-1,399	-100%
En_Del	ProjMgt		P0000917	Village Park - DB Cable Rpl	Liu, R	115,304	0	115,304	100%
En_Del	ProjMgt		P0001016	Lurline/Mariposa Cable Repl	Liu, R	8,429	0	8,429	100%
En_Del	ProjMgt		P0001034	Kakaako ID 11	Naito, C	45,458	0	45,458	100%
En_Del	ProjMgt		P9036000	Kakaako ID7 Kamakee St Conv	Naito, C	2,109,867	2,137,787	-27,920	-1%
En_Del	Telecom		P9547000	Makaha 1-Makaha SCADA Comm	Shin, D	130,109	0	130,109	100%
En_Del	Telecom		P9548000	Kahe-Kahe SCADA Comm	Shin, D	166,788	0	166,788	100%
En_Del	Telecom		P9549000	Miki 1-Miki 1 SCADA Comm	Shin, D	192,433	0	192,433	100%
En_Del	Telecom		P9599000	Miki 2-Miki 3 SCADA Comm	Shin, D	136,846	0	136,846	100%
En_Del Total						113,975,124	56,029,504	57,945,620	

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	2,907,044	3,238,928	-331,884	-10%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Tamayo, R	1,215,994	1,130,179	85,815	8%
		Y00027 Total				4,123,038	4,369,107	-246,069	
En_Sol	CustInst	Y00028	P0000577	Camp Smith #2 Tsf 46KV Ln Ext	Lee, I	90,071	0	90,071	100%
En_Sol	CustInst	Y00028	P0000578	Camp Smith #2 6.25MVA Tsf	Chong, R	1,266,412	0	1,266,412	100%
En_Sol	CustInst	Y00028	P0000602	Camp Smith #2 12kv Ln & Pr Mg	Yasuda, L	79,075	0	79,075	100%
		Y00028 Total				1,435,558	0	1,435,558	
En_Sol	CustInst	Y00048	P0001042	BWS Desal SS T&D	Lee, I	3,190	0	3,190	100%
		Y00048 Total				3,190	0	3,190	
En_Sol	CustInst		P0000105	Manana Infrastructure Imprv	Aochi, A	756,976	0	756,976	100%
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	483,310	713,244	-229,934	-32%
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	26,794	0	26,794	100%
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	320,623	-320,623	-100%
En_Sol Total						6,828,866	5,402,974	1,425,892	

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Finance	FinVP	Y00034	P0000749	Project Ellipse (hardware)	Noda, R	28,647	17,281	11,366	66%
		Y00034 Total				28,647	17,281	11,366	
Finance	ITS	Y00029	P0000708	IVR/ACD/CTI Ph1	Lee, J	203,924	203,347	577	0%
Finance	ITS	Y00029	P0000709	IVR/ACD/CTI Ph2	Lee, J	1,520,891	1,631,194	-110,303	-7%
Finance	ITS	Y00029	P0000710	King and Ward PBXs	Lee, J	1,688,757	1,984,582	-295,825	-15%
		Y00029 Total				3,413,572	3,819,123	-405,551	
Finance	ITS		P0000342	ITS Replace UPS	Young, P	194,188	0	194,188	100%
Finance	MgtAcctg		P0000896	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
Finance Total						3,636,407	3,858,804	-222,397	

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Gen_Coun	Land	Y66200	P1361000	Ko Olina Sub Land	Fujiwara, C	27,973	27,973	0	0%
		Y66200 Total				27,973	27,973	0	
Gen_Coun	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	210,351	102,046	108,305	106%
Gen_Coun	Land		P0000063	Conv Halawa School 138kv	Fujiwara, C	31,883	31,883	0	0%
Gen_Coun	Land		P1376000	Waiau-CEIP 138KV Pt 2 RW	Fujiwara, C	5,952,840	0	5,952,840	100%
Gen_Coun Total						6,223,047	161,902	6,061,145	

October Recorded vs. Budget

	Project Manager	Proj to Date Actuals	oj to ate dget	Var $	Var %
m Roof	Yanagid, J	77,653	71,228	6,425	9%
ne Catwalks	Uechi, S	173,755	95,463	-21,708	-11%
g ReRoof	Yanagid, J	255,554	01,660	-46,106	-15%
oof	Kogasaka, D	624	60,563	-59,939	-99%
oof	Kogasaka, D	1,803	57,616	-55,813	-97%
Berm	Tasaka, S	116,737	42,565	-225,828	-66%
Addition	Tasaka, S	57,830	57,764	66	0%
torage Tnk2	Yanagid, J	31,290	74,725	-643,435	-95%
e Upgrade	Tasaka, S	0	03,281	-103,281	-100%
Laydown Area	Yanagid, J	5,992	12,197	-6,205	-51%
K1-4 Stack	Shimabu, M	174,630	0	174,630	100%
m Upgrade	Tasaka, S	240,612	13,032	-372,420	-61%
Wtr Tank	Yanagid, J	369,401	53,343	16,058	5%
Cells 1 & 2	Yanagid, J	214,567	0	214,567	100%
rm Upgrade	Yanagid, J	183,802	0	183,802	100%
rm Upgrade	Yanagid, J	10,501	0	10,501	100%
pe Trench	Yanagid, J	16,134	0	16,134	100%
Mods	Yanagid, J	11,997	0	11,997	100%
rhaul	Ornellas, L	0	18	-18	-100%
e Project	Fong, K	31,765,816	15,873	-550,057	-2%
C Lease	Fong, K	2,632,305	51,911	-19,606	-1%
46kV TL	Fong, K	452,166	25,433	126,733	39%
ice	Fong, K	47,997	73,866	-125,869	-72%
46kV Substation	Fong, K	995,100	77,316	17,784	2%
		35,893,384	44,399	-551,015	
Topping	Yanagid, J	0	72,757	-72,757	-100%
		0	72,757	-72,757	
TERM BP #1,2,3	Yonamin, G	-41,587	0	-41,587	100%
		-41,587	0	-41,587	
1 Addition	Isler, R	822,127	12,677	-290,550	-26%
		822,127	12,677	-290,550	
ment Sys	Arakaki, J	2,322,825	50,046	-27,221	-1%
		2,322,825	50,046	-27,221	

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	PSEngr	Y70600	P7060000	Kahe Disc Struct Reinf	Noda, R	443,544	499,221	-55,677	-11%
		Y70600 Total				443,544	499,221	-55,677	
Pwr_Sup	PSEngr		P0000052	Kahe Fire Wtr Storage Tank	Yanagid, J	485,130	0	485,130	100%
Pwr_Sup	PSEngr		P0000056	H8 Blr Elec Warm Sys	Pasco, G	606,842	511,351	95,491	19%
Pwr_Sup	PSEngr		P0000057	H9 Blr Elec Warm Sys	Economo, D	241,994	195,813	46,181	24%
Pwr_Sup	PSEngr		P0000058	W7 Data Acq and Monitor	Fukuda, P	473,307	0	473,307	100%
Pwr_Sup	PSEngr		P0000059	W8 Data Acq and Monitor	Fukuda, P	454,677	0	454,677	100%
Pwr_Sup	PSEngr		P0000078	K5 Boiler Controls Upgrade	Fukuda, P	3,258,798	2,390,472	868,326	36%
Pwr_Sup	PSEngr		P0000079	K6 Boiler Controls Upgrade	Yoshida, A	2,898,753	2,889,807	8,946	0%
Pwr_Sup	PSEngr		P0000083	K4 Blr Wtr Chem Alyz Repl	Isler, R	433,098	320,514	112,584	35%
Pwr_Sup	PSEngr		P0000084	K5 Blr Wtr Chem Alyz Repl	Lum, D	411,879	615,563	-203,684	-33%
Pwr_Sup	PSEngr		P0000086	Waiau WW Oil Detectors	Fackrel, J	58,772	63,047	-4,275	-7%
Pwr_Sup	PSEngr		P0000091	H9 Attemperator Block Valve	Economo, D	39,758	38,972	786	2%
Pwr_Sup	PSEngr		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	165,112	0	165,112	100%
Pwr_Sup	PSEngr		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	140,590	151,956	-11,366	-7%
Pwr_Sup	PSEngr		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	418,690	282,681	136,009	48%
Pwr_Sup	PSEngr		P0000172	Iwilei Fuel Oil Pump Rpl	Fackrel, J	73,350	116,494	-43,144	-37%
Pwr_Sup	PSEngr		P0000199	Kahe FWH #34 Replacement	Yamashi, K	110	0	110	100%
Pwr_Sup	PSEngr		P0000203	Waiau 4 Ignitor Replacement	Lum, D	0	6,078	-6,078	-100%
Pwr_Sup	PSEngr		P0000204	W7 BFP Rec Ctrl Valves Upg	Economo, D	37,969	0	37,969	100%
Pwr_Sup	PSEngr		P0000206	Waiau Tk1 Roof	Isler, R	298,968	0	298,968	100%
Pwr_Sup	PSEngr		P0000208	W3 Cycle Chem Instr.	Cummings, C	306,503	313,391	-6,888	-2%
Pwr_Sup	PSEngr		P0000209	W4 Cycle Chem Instr.	Lum, D	48,678	53,476	-4,798	-9%
Pwr_Sup	PSEngr		P0000210	W5 Cycle Chem Instr.	Lum, D	39,364	43,245	-3,881	-9%
Pwr_Sup	PSEngr		P0000211	W6 Cycle Chem Instr.	Lum, D	257,477	379,011	-121,534	-32%
Pwr_Sup	PSEngr		P0000213	W8 Cycle Chem Instr.	Lum, D	409,780	374,694	35,086	9%
Pwr_Sup	PSEngr		P0000215	K2 Cycle Chem Instr.	Lum, D	130,232	187,141	-56,909	-30%
Pwr_Sup	PSEngr		P0000216	H8 Cycle Chem Instr.	Isler, R	257,801	208,301	49,500	24%
Pwr_Sup	PSEngr		P0000217	H9 Cycle Chem Instr.	Lum, D	18,551	20,380	-1,829	-9%
Pwr_Sup	PSEngr		P0000220	W9&W10 Cardox Fire Prot	Yuen, M	366,605	366,605	0	0%
Pwr_Sup	PSEngr		P0000226	H8&9 Instrument Air Compr	Yuen, M	288,079	0	288,079	100%
Pwr_Sup	PSEngr		P0000228	K5 SH & RH Attemp Spray	Economo, D	159,694	201,978	-42,284	-21%
Pwr_Sup	PSEngr		P0000229	K6 SH & RH Attemp Spray	Economo, D	40,001	0	40,001	100%

October Recorded vs. Budget

penditures Project Through October 2004

ept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
SEngr		P0000230	W7 SH & RH Attemp Spray	Economo, D	91,281	0	91,281	100%
SEngr		P0000231	W8 BFP Rec Ctrl Valves Upg	Economo, D	82,629	52,868	29,761	56%
SEngr		P0000232	W8 SH & RH Attemp Spray	Economo, D	143,577	139,153	4,424	3%
SEngr		P0000233	W7&8 Service Air Compressor	Arakaki, J	169,815	326,469	-156,654	-48%
SEngr		P0000234	K1 BFP Rec Ctrl Valves Upg	Pasco, G	62,465	0	62,465	100%
SEngr		P0000235	K2 BFP Rec Ctrl Valves Upg	Pasco, G	38,503	0	38,503	100%
SEngr		P0000236	K3 BFP Rec Ctrl Valves Upg	Pasco, G	61,250	0	61,250	100%
SEngr		P0000239	K1 SH & RH Attemp Spray	Pasco, G	142,991	0	142,991	100%
SEngr		P0000240	K2 SH & RH Attemp Spray	Pasco, G	97,316	0	97,316	100%
SEngr		P0000241	K3 SH & RH Attemp Spray	Pasco, G	94,917	0	94,917	100%
SEngr		P0000242	K4 SH & RH Attemp Spray	Economo, D	149,403	7,393	142,010	1921%
SEngr		P0000254	W3 Stack & Breeching Rpl	Yanagid, J	282,824	257,634	25,190	10%
SEngr		P0000260	W3 Data Acq & Monitoring	Yoshida, A	231,213	43,456	187,757	432%
SEngr		P0000262	W5 Data Acq & Monitoring	Fukuda, P	133,600	141,233	-7,633	-5%
SEngr		P0000265	H8 Data Acq & Monitoring	Yoshida, A	56,414	0	56,414	100%
SEngr		P0000267	K5 Data Acq & Monitoring	Fukuda, P	438,629	437,746	883	0%
SEngr		P0000273	Kahe Stormwater Erosion Ctrl	Tasaka, S	0	26,397	-26,397	-100%
SEngr		P0000297	W3 Condenser Refurbishment	Arakaki, J	475,227	417,289	57,938	14%
SEngr		P0000298	HPP WWTF Batch Tnk Mods	Yamashi, K	379,157	380,667	-1,510	0%
SEngr		P0000302	Waiau FWH #72 Replacement	Kurisu, A	128,564	226,214	-97,650	-43%
SEngr		P0000303	Waiau FWH #82 Replacement	Kurisu, A	259,792	216,173	43,619	20%
SEngr		P0000313	W8 APH Sootblower Upgrade	Arakaki, J	61,495	286,869	-225,374	-79%
SEngr		P0000327	K4 Flue Gas O2 Analyzer	Yoshida, A	97,863	121,528	-23,665	-19%
SEngr		P0000328	K5 Flue Gas O2 Analyzer	Fukuda, P	107,811	81,573	26,238	32%
SEngr		P0000330	Waiau 3 Ignitor Replacement	Lum, D	131,726	169,899	-38,173	-22%
SEngr		P0000331	H8 Turbine Steam Gland Conv	Arakaki, J	259,912	0	259,912	100%
SEngr		P0000379	PI Data Loggers	Isler, R	0	107,278	-107,278	-100%
SEngr		P0000413	W4 Hydrogen Purity Meter	Yoshida, A	60,229	60,229	0	0%
SEngr		P0000437	Waiau FWH #64 Replacement	Yamashi, K	404,628	405,265	-637	0%
SEngr		P0000439	Waiau FWH #63 Replacement	Yamashi, K	260,010	260,335	-325	0%
SEngr		P0000440	W41 Trvl Scrn Rpl	Yuen, M	132,452	128,934	3,518	3%
SEngr		P0000441	W3 Soot Blower Upgrade	Yamashi, K	6,009	550,508	-544,499	-99%
SEngr		P0000443	W32 Trvl Scrn Rpl	Yuen, M	142,064	135,907	6,157	5%

rded vs. Budget

r 2004

le	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
tronic Parts Store	Shimabu, M	8,695	0	8,695	100%
r Part Wash Enclose	Kogasaka, D	16,958	16,742	216	1%
tric Parts Store	Shimabu, M	7,745	0	7,745	100%
d Sheetpiling	Tasaka, S	231,366	251,040	-19,674	-8%
closure	Yanagid, J	41,211	27,910	13,301	48%
1A Clean & Lining	Ornellas, L	0	8,055	-8,055	-100%
RV Replacement	Cummings, C	71,559	71,967	-408	-1%
RV Replacement	Fackrel, J	89,169	118,754	-29,585	-25%
astewater Sump Upgr	Yuen, M	262,138	259,525	2,613	1%
ice Air Compressor	Arakaki, J	223,823	261,815	-37,992	-15%
ice Air Compressors	Fackrel, J	28,479	205,636	-177,157	-86%
ngs Kam Hwy Fence	Tasaka, S	99,974	0	99,974	100%
Sootblower Platform	Tasaka, S	146,599	0	146,599	100%
am Fence Wall	Tasaka, S	43,774	0	43,774	100%
#33 Replacement	Economo, D	252,589	252,589	0	0%
#54 Replacement	Yamashi, K	445,201	445,677	-476	0%
#35 Replacement	Yamashi, K	498,770	227,196	271,574	120%
Vtrbx Repl	Kurisu, A	0	5,878	-5,878	-100%
rgency Generator	Fackrel, J	7,860	109,026	-101,166	-93%
Row 9-11 Blades	Yuen, M	147,002	278,934	-131,932	-47%
bine Blades	Yuen, M	1,127,056	2,131,068	-1,004,012	-47%
Pond Closure	Tasaka, S	39,390	239,011	-199,621	-84%
rocessor Upgrade	Yoshida, A	2,040	420	1,620	386%
Processor Upgrade	Yoshida, A	21,742	420	21,322	5077%
Supv Instr	Kabutan, D	172,399	173,337	-938	-1%
MR Replacement	Arakawa, D	170,611	0	170,611	100%
Stack Drain	Lum, D	40,667	98,734	-58,067	-59%
ess Door Addition	Arakaki, J	41,646	62,880	-21,234	-34%
ess Door Addition	Arakaki, J	0	2,913	-2,913	-100%
Farm Fire Main	Arakaki, J	267,044	417,807	-150,763	-36%
Cable Tray Sprinkler	Arakaki, J	72,240	0	72,240	100%
Regulator Upgrade	Dahlquist, L	531,111	528,299	2,812	1%
r Wash Sump Pump	Fackrel, J	8,426	81,180	-72,754	-90%

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000637	Kahe Chlorine Dioxide System	Arakaki, J	0	106,430	-106,430	-100%
Pwr_Sup	PSEngr		P0000638	W3 Air Heater Tube Replmnt	Economo, D	730,769	434,151	296,618	68%
Pwr_Sup	PSEngr		P0000640	HNL Demineralizer Upgrade	Arakaki, J	0	7,040	-7,040	-100%
Pwr_Sup	PSEngr		P0000646	Kahe 24FWH Replacement	Economo, D	245,055	340,850	-95,795	-28%
Pwr_Sup	PSEngr		P0000647	Kahe 23FWH Replacement	Economo, D	23,732	172,778	-149,046	-86%
Pwr_Sup	PSEngr		P0000651	K5 AEH Limit Switch Upgrd	Dahlquist, L	104,712	77,273	27,439	36%
Pwr_Sup	PSEngr		P0000657	W10 Exhaust Duct Replacement	Vlacovsky, R	5,258	0	5,258	100%
Pwr_Sup	PSEngr		P0000658	W9 Exhaust Duct Replacement	Vlacovsky, R	10,576	0	10,576	100%
Pwr_Sup	PSEngr		P0000659	Kahe 25FWH Replacement	Economo, D	47,994	270,692	-222,698	-82%
Pwr_Sup	PSEngr		P0000663	W71 F.O. Heater Tube Bundle	Economo, D	80,624	79,426	1,198	2%
Pwr_Sup	PSEngr		P0000664	W3 UPS Installation	Kabutan, D	171,596	136,009	35,587	26%
Pwr_Sup	PSEngr		P0000665	Waiau Parking Lot Addition	Tasaka, S	31,502	31,238	264	1%
Pwr_Sup	PSEngr		P0000666	Waiau Maint Shop Office	Yanagid, J	412,042	392,539	19,503	5%
Pwr_Sup	PSEngr		P0000668	W5 Control/DC Cables to Swyd	Arakawa, D	171,318	0	171,318	100%
Pwr_Sup	PSEngr		P0000675	W6 Control/DC Cables to Swyd	Rompask, D	29,296	141,292	-111,996	-79%
Pwr_Sup	PSEngr		P0000676	K2 Opacity Monitor Upgrade	Fukuda, P	0	65,526	-65,526	-100%
Pwr_Sup	PSEngr		P0000681	Kahe1 Condenser Tube Replacement	Economo, D	19,219	0	19,219	100%
Pwr_Sup	PSEngr		P0000682	W6 Annunciator Upgrade	Fukuda, P	0	339,689	-339,689	-100%
Pwr_Sup	PSEngr		P0000690	W5 Annunciator Upgrade	Fukuda, P	126,465	178,828	-52,363	-29%
Pwr_Sup	PSEngr		P0000741	W5 Demin raw wtr piping	Arakaki, J	255,707	0	255,707	100%
Pwr_Sup	PSEngr		P0000750	K5 Reheater Element Replacements	Yamashi, K	1,582,310	1,239,213	343,097	28%
Pwr_Sup	PSEngr		P0000771	H81 TVL Screen Repl	Arakaki, J	151,097	138,527	12,570	9%
Pwr_Sup	PSEngr		P0000772	H92 TVL Screen Repl	Arakaki, J	158,081	89,537	68,544	77%
Pwr_Sup	PSEngr		P0000773	H8 HP/LP Turbine Blading	Yonamin, G	2,219,075	0	2,219,075	100%
Pwr_Sup	PSEngr		P0000777	Waiau Tank 5 Roof Replace	Isler, R	1,053,272	0	1,053,272	100%
Pwr_Sup	PSEngr		P0000781	KPP FWH #41 Replacement	Kurisu, A	0	14,605	-14,605	-100%
Pwr_Sup	PSEngr		P0000782	KPP FWH #42 Replacement	Kurisu, A	0	18,891	-18,891	-100%
Pwr_Sup	PSEngr		P0000784	K22 TVL Screen Repl	Arakaki, J	120,452	174,329	-53,877	-31%
Pwr_Sup	PSEngr		P0000785	K41 TVL Screen Repl	Arakaki, J	103,718	175,900	-72,182	-41%
Pwr_Sup	PSEngr		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	101,816	118,219	-16,403	-14%
Pwr_Sup	PSEngr		P0000787	K5/6 Lube water pump	Kurisu, A	6,826	54,173	-47,347	-87%
Pwr_Sup	PSEngr		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	63,195	117,363	-54,168	-46%
Pwr_Sup	PSEngr		P0000789	Kahe 3 BW Sump Upgrade	Economo, D	91,353	116,514	-25,161	-22%

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000790	Kahe 4 BW Sump Upgrade	Economo, D	55,045	115,671	-60,626	-52%
Pwr_Sup	PSEngr		P0000791	Kahe 5 BW Sump Upgrade	Economo, D	58,585	114,833	-56,248	-49%
Pwr_Sup	PSEngr		P0000792	Kahe 6 BW Sump Upgrade	Economo, D	53,999	114,002	-60,003	-53%
Pwr_Sup	PSEngr		P0000798	W6 Instr Air Compr	Kurisu, A	0	151,400	-151,400	-100%
Pwr_Sup	PSEngr		P0000799	K2 Operator Console Upgrade	Kabutan, D	0	148,253	-148,253	-100%
Pwr_Sup	PSEngr		P0000800	K1 Operator Console Upgrade	Fukuda, P	0	4,591	-4,591	-100%
Pwr_Sup	PSEngr		P0000802	W5 Operator Console Upgrade	Kabutan, D	0	8,438	-8,438	-100%
Pwr_Sup	PSEngr		P0000803	W3 Operator Console Upgrade	Kabutan, D	266,126	174,680	91,446	52%
Pwr_Sup	PSEngr		P0000804	W6 Operator Console Upgrade	Kabutan, D	69,447	176,695	-107,248	-61%
Pwr_Sup	PSEngr		P0000805	Kahe Intake Lighting	Kabutan, D	0	90,768	-90,768	-100%
Pwr_Sup	PSEngr		P0000806	K06 CWP MOV Replacement	Economo, D	265,252	267,189	-1,937	-1%
Pwr_Sup	PSEngr		P0000809	K6 Annunciator Replacement	Tiede, C	0	44,937	-44,937	-100%
Pwr_Sup	PSEngr		P0000811	W8 Annunciator Replacement	Dahlquist, L	0	398,219	-398,219	-100%
Pwr_Sup	PSEngr		P0000817	W6 Exciter/Regulator Replace	Rompask, D	0	301,003	-301,003	-100%
Pwr_Sup	PSEngr		P0000819	W8 Exciter/Regulator Repl	Yoshida, A	0	347,559	-347,559	-100%
Pwr_Sup	PSEngr		P0000820	K1 Main Xfmr Replacement	Yoshida, A	0	6,441	-6,441	-100%
Pwr_Sup	PSEngr		P0000821	K2 Battery Bank Replacement	Garrison, R	0	64,603	-64,603	-100%
Pwr_Sup	PSEngr		P0000822	K4 Recorder Replacement	Yoshida, A	73,947	189,908	-115,961	-61%
Pwr_Sup	PSEngr		P0000829	W4 Main Xfmr Replacement	Kabutan, D	0	4,591	-4,591	-100%
Pwr_Sup	PSEngr		P0000830	K1 Aux Xfmr Replacement	Yoshida, A	0	6,441	-6,441	-100%
Pwr_Sup	PSEngr		P0000832	W3 Main Xfmr Replacement	Kabutan, D	826,885	726,000	100,885	14%
Pwr_Sup	PSEngr		P0000853	K2 Excitation System	Kabutan, D	0	77,476	-77,476	-100%
Pwr_Sup	PSEngr		P0000854	K1 Excitation System	Kabutan, D	0	22,551	-22,551	-100%
Pwr_Sup	PSEngr		P0000855	K6 Aux Transformer	Fukuda, P	254,937	373,624	-118,687	-32%
Pwr_Sup	PSEngr		P0000860	K2 Annunciator Replacement	Fukuda, P	0	300,697	-300,697	-100%
Pwr_Sup	PSEngr		P0000861	K1 Annunciator Replacement	Fukuda, P	0	1,462	-1,462	-100%
Pwr_Sup	PSEngr		P0000863	K4 Generator Rotor Rewind	Dahlquist, L	806,557	786,389	20,168	3%
Pwr_Sup	PSEngr		P0000869	K4 Annunciator Replacement	Yoshida, A	0	5,277	-5,277	-100%
Pwr_Sup	PSEngr		P0000870	H9 Generator Rotor Rewind	Kabutan, D	2,497	0	2,497	100%
Pwr_Sup	PSEngr		P0000871	Kahe 1 Sootblower Controls	Economo, D	0	4,676	-4,676	-100%
Pwr_Sup	PSEngr		P0000873	Kahe 2 Sootblower Controls	Economo, D	16,948	273,909	-256,961	-94%
Pwr_Sup	PSEngr		P0000874	Kahe 4 Sootblower Controls	Economo, D	0	28,779	-28,779	-100%
Pwr_Sup	PSEngr		P0000893	H8 Generator Rotor Rewind	Dahlquist, L	797,563	0	797,563	100%

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000898	Kahe 42 Tvl Screen	Arakaki, J	130,017	0	130,017	100%
Pwr_Sup	PSEngr		P0000901	Kahe Reclaimed Oil Transfer	Arakaki, J	91,989	0	91,989	100%
Pwr_Sup	PSEngr		P0000912	Kahe 12 Traveling Screen	Arakaki, J	136,969	0	136,969	100%
Pwr_Sup	PSEngr		P0000939	Waiau CT Separation	Fukuda, P	215,535	0	215,535	100%
Pwr_Sup	PSEngr		P0000955	W8 BFP Rotating Elem/Volute	Yuen, M	314,960	0	314,960	100%
Pwr_Sup	PSEngr		P0000958	K6 SSH Element Replacement	Fackrel, J	27,543	0	27,543	100%
Pwr_Sup	PSEngr		P0000961	W82 TVL SCREEN REPL	Vlacovsky, R	2,329	0	2,329	100%
Pwr_Sup	PSEngr		P0000963	K51 TVL SCREEN REPL	Arakaki, J	156,612	0	156,612	100%
Pwr_Sup	PSEngr		P0000964	K62 TVL SCREEN REPL	Arakaki, J	12,308	0	12,308	100%
Pwr_Sup	PSEngr		P0000965	K11 TVL SCREEN REPL	Arakaki, J	127,999	0	127,999	100%
Pwr_Sup	PSEngr		P0000970	W5 Mixed Bed Polisher	Arakaki, J	188,145	0	188,145	100%
Pwr_Sup	PSEngr		P0001002	K31 TVL SCREEN REPL	Arakaki, J	148,584	0	148,584	100%
Pwr_Sup	PSEngr		P0001018	K5 Turbine Blades	Yuen, M	424,623	0	424,623	100%
Pwr_Sup	PSEngr		P0001036	W3 HP Turbine Curtis Blade	Yuen, M	157,849	0	157,849	100%
Pwr_Sup	PSEngr		P7590000	W7 Controls Upgrade	Slingerland, G	0	51,156	-51,156	-100%
Pwr_Sup	PSEngr		P8820000	W4 Exciter Upgrade	Kabutan, D	0	15,750	-15,750	-100%
Pwr_Sup	PSEngr		P9027000	H9 Primary Fuel Oil Pumps	Isler, R	108,533	0	108,533	100%
Pwr_Sup	PSEngr		P9401000	Kahe Fire Pump Inst	Arakaki, J	526,789	461,562	65,227	14%
Pwr_Sup	PSEngr		P9453000	H9 Coriolis FO Flowmeter	Yamashi, K	93,657	93,993	-336	0%
Pwr_Sup	PSEngr		P9454000	K4 Boiler Control Upgrade	Yoshida, A	641,280	873,728	-232,448	-27%
Pwr_Sup	PSEngr		P9492000	K6 A/H Acoustic Sootblower	Economo, D	442,212	371,097	71,115	19%
Pwr_Sup	PSEngr		P9539000	K3 Boiler Control Upgrade	Garrison, R	192,375	122,920	69,455	57%
Pwr_Sup	PSEngr		P9541000	K4 Data Acq and Monitor	Yoshida, A	37,225	56,619	-19,394	-34%
Pwr_Sup	VPPwrSup		P0000942	Waiau Tank 4 Bottom Replmt	Yuen, N	733,735	0	733,735	100%
Pwr_Sup Total						81,080,903	76,720,274	4,360,629	

October Recorded vs. Budget

Capital Expenditures Project Through October 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Proj to Date Actuals	Proj to Date Budget	Var $	Var %
SVPOp	CustSvc		P0000349	Meter Reading System Replacement	Oishi, L	337,897	332,942	4,955	1%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	454,202	459,736	-5,534	-1%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thomas	0	409,518	-409,518	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	300,000	-300,000	-100%
SVPOp	CustSvc		P0000780	Field Svc/Coll Entry Device	Oishi, L	19,104	0	19,104	100%
SVPOp	CustSvc		P0000877	Payment Extraction Equip	Ejercito, A	-987	44,800	-45,787	-102%
SVPOp	CustSvc		P0000878	Check Processing Upgrade	Ejercito, A	29,564	26,680	2,884	11%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima, J	21,935	0	21,935	100%
SVPOp Total						861,715	1,573,676	-711,961	

October Recorded vs. Budget

Capital Expenditures

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Cor_Exc	SSF	Y00023	P0000499	Ward A/C Imprv Phase II	Fujiwara, C	570,359	2,371,574	-1,801,215	-76%
Cor_Exc	SSF	Y00023	P0000506	Ward A/C Equip Repl	Fujiwara, C	5,945	0	5,945	100%
		Y00023 Total				576,304	2,371,574	-1,795,270	-76%
Cor_Exc	SSF		P0000498	HECO Employee Cafeteria	Nakano, W	1,090	0	1,090	100%
Cor_Exc	SSF		P0000500	Misc Office Furniture	Nakano, W	209,632	114,391	95,241	83%
Cor_Exc	SSF		P0000502	Waiau Minor Gen Addns	Nakano, W	5,357	70,888	-65,531	-92%
Cor_Exc	SSF		P0000503	Ward Ave Minor Addns	Nakano, W	105,693	190,700	-85,007	-45%
Cor_Exc	SSF		P0000504	King St Minor Addns	Nakano, W	34,248	75,619	-41,371	-55%
Cor_Exc	SSF		P0000505	Other Minor Gen Plt Addns	Nakano, W	43,229	39,750	3,479	9%
Cor_Exc	SSF		P0000543	Ward Fire Sprinkler Sys	Fujiwara, C	0	251,701	-251,701	-100%
Cor_Exc	SSF		P0000551	Waiau Guard House	Fujiwara, C	0	42,489	-42,489	-100%
Cor_Exc	SSF		P0000586	King St Attic	Fujiwara, C	-1,435	3,061	-4,496	-147%
Cor_Exc	SSF		P0000594	Ward I Bldg access upgrade	Uemura, E	5,378	0	5,378	100%
Cor_Exc	SSF		P0000613	Fuel Cell Test Facility	Fujiwara, C	26	0	26	100%
Cor_Exc	SSF		P0000699	Fire sprinkler-tsf oil stora	Fujiwara, C	29,928	40,549	-10,621	-2619%
Cor_Exc	SSF		P0000700	Fire sprinkler-whse hi-stora	Fujiwara, C	0	115,000	-115,000	-100%
Cor_Exc	SSF		P0000712	Archer Entry Gate	Fujiwara, C	32,796	0	32,796	100%
Cor_Exc	SSF		P0000722	Tsf Oil Spill Containment	Fujiwara, C	-1,614	0	-1,614	100%
Cor_Exc	SSF		P0000826	ITS Renovation	Nakano, W	0	394,550	-394,550	-100%
Cor_Exc	SSF		P0000840	Security/Campbell Station	Cardoza, A	129,093	102,205	26,888	26%
Cor_Exc	SSF		P0000841	Security/School Street Sub	Cardoza, A	118,363	102,205	16,158	16%
Cor_Exc	SSF		P0000842	Security/Wahiawa Sub	Cardoza, A	134,229	102,205	32,024	31%
Cor_Exc	SSF		P0000843	Security/Iwilei Sub	Cardoza, A	158,461	102,205	56,256	55%
Cor_Exc	SSF		P0000851	Purchasing Warehouse Renov	Nakano, W	568,947	246,849	322,098	130%
Cor_Exc	SSF		P0000852	Ward 04 Warehouse Improvemts	Nakano, W	0	145,162	-145,162	-100%
Cor_Exc	SSF		P0000865	King St Chillwater Pipe	HFEng	0	111,138	-111,138	-100%
Cor_Exc	SSF		P0000866	King Downspout Replcmt	HFEng	49,064	86,595	-37,531	-43%
Cor_Exc	SSF		P0000867	King St Window Project	HFEng	0	111,308	-111,308	-100%
Cor_Exc	SSF		P0001004	HPP Perimeter Fence	Uemura, E	3,167	0	3,167	100%
Cor_Exc	SSF		P0001007	Security Lighting & Fencing	Uemura, E	25,509	0	25,509	100%
Cor_Exc	SSF		P0001014	Security CCTV System	Uemura, E	230,783	0	230,783	100%

December 2004 Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Cor_Exc	SSF		P0001017	King-Elevator	HFEng	87,658	0	87,658	100%
Cor_Exc	SSF		P0001022	Employee Smart Cards	Angell, R	14,901	0	14,901	100%
Cor_Exc	SSF		P0001023	ACCESS SYSTEM	Uemura, E	171,399	0	171,399	100%
Cor_Exc	SSF		P0001055	Customer Solutions Consolidn	Nakano, W	2,553	0	2,553	100%
Cor_Exc	SSF		P0001056	DSM Expansion	Nakano, W	1,823	0	1,823	100%
Cor_Exc	SSF		P0001057	Energy Projects Relocation	Nakano, W	287,959	0	287,959	100%
Cor_Exc	SSF		P0001058	Ward Ave Electronic Key Box	Lee, J	184,143	0	184,143	100%
	SSF Total					3,208,684	4,820,144	-1,611,460	
Cor_Exc Total						3,208,684	4,820,144	-1,611,460	

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Cust_Sol	EngySvcs	Y00026	P0000561	Class Load Study	Waller, D	85	1,376	-1,291	-94%
		Y00026 Total				85	1,376	-1,291	
Cust_Sol	EngySvcs		P4150000	Monitoring Services	Shimoda, S	51,262	77,434	-26,172	-34%
	EngySvcs Total					51,347	78,810	-27,463	
Cust_Sol Total						51,347	78,810	-27,463	

December 2004 Recorded vs. Budget

xpenditures Project and Program Year-to-Date December 2004

Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
M	Y00005	P0000120	Corr (Inc Emg) OH Trsf Rpl	Kumatak, D	455,624	299,789	155,835	52%
M	Y00005	P0000121	Corr (Inc Emg) UG Trsf Rpl	Kumatak, D	515,665	192,852	322,813	167%
M	Y00005	P0000122	Cor (Inc Emg) Mis Cable Rpl	Kumatak, D	9,271,182	916,297	8,354,885	912%
M	Y00005	P0000123	Corr (Inc Emg) OH Dist Rpl	Kumatak, D	3,073,035	677,432	2,395,603	354%
M	Y00005	P0000124	Cor (Inc Emg) OH Subtrn Rpl	Kumatak, D	266,665	383,774	-117,109	-31%
	Y00005 Total				13,582,171	2,470,144	11,112,027	
M	Y00006	P0000127	Test & Treat Wood Poles	Kumatak, D	0	167,476	-167,476	-100%
M	Y00006	P1260000	C&M Recon UG Dist Cable	Kumatak, D	182,713	0	182,713	100%
M	Y00006	P1789000	Preventive OH Transf Repl	Kumatak, D	102,915	534,199	-431,284	-81%
M	Y00006	P1793000	Preventive UG Transf Repl	Kumatak, D	156,015	751,032	-595,017	-79%
M	Y00006	P1810000	Prev Misc Cable Failure Rpl	Kumatak, D	1,775,405	4,090,533	-2,315,128	-57%
M	Y00006	P3400000	Prev OH Dist Repl	Kumatak, D	444,931	1,148,493	-703,562	-61%
M	Y00006	P3401000	Prev OH Subtrans Repl	Kumatak, D	937,230	1,863,125	-925,895	-50%
M	Y00006	P3402000	Prev OH Trans Repl	Kumatak, D	510,477	1,416,706	-906,229	-64%
	Y00006 Total				4,109,686	9,971,564	-5,861,878	
M Total					17,691,857	12,441,708	5,250,149	
gr	Y00004	P0000109	BP NAS Transition	Ho, M	-125	0	-125	100%
	Y00004 Total				-125	0	-125	
gr	Y00017	P0000190	Waikiki Rehab Project 1	Chang, C	16,718	764,284	-747,566	-98%
gr	Y00017	P0000191	Waikiki Rehab Project 2	Chang, C	0	8,096	-8,096	-100%
	Y00017 Total				16,718	772,380	-755,662	
gr	Y00031	P0000726	West Loch Sub	JangChe, L	-810	0	-810	100%
	Y00031 Total				-810	0	-810	
gr	Y00036	P0000766	McCully tsf #1 recircuiting	Chang, C	5,207	0	5,207	100%
gr	Y00036	P0000767	Ft Wvr SS Tsf #2 Install	Tamayo, R	11,481	0	11,481	100%
	Y00036 Total				16,688	0	16,688	
gr	Y00037	P0000775	HECO UF Load Shed Upd Trans	Chong, R	82,179	0	82,179	100%
gr	Y00037	P0000776	HECO UF Load Shed Distr	Chong, R	24,926	0	24,926	100%
	Y00037 Total				107,105	0	107,105	
gr	Y00038	P0000672	Kakaako Makai-Kewalo 25kV DL	Panalal, T	113,497	675,457	-561,960	-83%
gr	Y00038	P0000783	Kakaako Makai-Iwilei 25KV DL	Panalal, T	2,079	99,468	-97,389	-98%

ogram Year-to-Date December 2004

Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
		115,576	774,925	-659,349	
Mamala Substation	Nakagaw, N	59,607	1,114,777	-1,055,170	-95%
46kV Fdrs to Mamala Sub	Panalal, T	35,937	787,176	-751,239	-95%
Comm Links Mamala Sub	Oyadoma, M	5,973	89,773	-83,800	-93%
		101,517	1,991,726	-1,890,209	
Kamokila SS Tsf #2 Install	Tamayo, R	27,925	0	27,925	100%
Kamokila Tsf#2 circuiting	Ikeda, L	48,319	0	48,319	100%
		76,244	0	76,244	
KoOlina SS Tsf#1 Install	Tamayo, R	5,590	0	5,590	100%
KoOlina 46kV lines	Ikeda, L	34,947	0	34,947	100%
		40,537	0	40,537	
Ocean Point SS Tsf#1 Install	Tamayo, R	10,971	0	10,971	100%
Ocean Pointe 46kV Lines	Ikeda, L	24,819	0	24,819	100%
Ocean Pointe 12kV Lines	Ikeda, L	581	0	581	100%
		36,371	0	36,371	
Puuloa Rd Widening - UG	Panalal, T	110,216	0	110,216	100%
Puuloa Road Widening	Panalal, T	648,616	724,405	-75,789	-10%
		758,832	724,405	34,427	
Palehua East B 46kV UG PH1	Lee, I	12,720	0	12,720	100%
		12,720	0	12,720	
Wal-Mart Sams Keeaumoku'	Nakamoto, D	1,075,018	1,115,308	-40,290	-4%
HMSA Keeamoku Conversion	Nakamoto, D	62	0	62	100%
		1,075,080	1,115,308	-40,228	
MOANALUA RD IMPRV AIEA, PH 3	Ikeda, L	-15	0	-15	100%
		-15	0	-15	
Minor Dist Design UG Addns	Lum, M	8,999	0	8,999	100%
		8,999	0	8,999	
Pwr Quality Monitor Install	Arakaki, D	50,759	101,993	-51,234	-50%
Keaahala Rd Widening	Chang, C	69,700	51,582	18,118	35%
Waialae Nui Reliability Imp	Lee, I	54,636	0	54,636	100%
Emma 4kV Conversion	Lum, M	156,504	0	156,504	100%

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
En_Del	Engr		P0000289	Halawa Cap Bank Brk 4436	Arakaki, D	494	0	494	100%
En_Del	Engr		P0000290	Halawa Cap Bank Brk 4492	Arakaki, D	1,015	0	1,015	100%
En_Del	Engr		P0000294	Pukele Tie Breaker-Sw Rpl	Arakaki, D	33,651	48,277	-14,626	-30%
En_Del	Engr		P0000335	Intl Savings & Loan Vault	Kaneshi, R	4,591	305,474	-300,883	-98%
En_Del	Engr		P0000423	Kailua Rd UG Conversion	Lum, M	368,485	422,916	-54,431	-13%
En_Del	Engr		P0000445	Trayer Sub Sw Repl Prog	Kaneshi, R	4,317	32,291	-27,974	-87%
En_Del	Engr		P0000474	WSC Privatization	Ho, M	201,863	385,473	-183,610	-48%
En_Del	Engr		P0000491	K-H#2/Wai-Wah Str 86/25	Uechi, S	9,859	71,529	-61,670	-86%
En_Del	Engr		P0000507	Kam Hy Resurf Waiahole-Cr Ln	Lee, I	1,256,600	2,374,110	-1,117,510	-47%
En_Del	Engr		P0000508	PM-Makalapa MW Replace	Thompson, R	10,674	164,297	-153,623	-94%
En_Del	Engr		P0000509	PM-Ewa Nui MW Replace	Thompson, R	11,042	164,562	-153,520	-93%
En_Del	Engr		P0000530	Ka Iwi 12kV UG, Ph 1 Inc 2	Lung, H	20,564	396,158	-375,594	-95%
En_Del	Engr		P0000575	Nimitz Hwy Rehab-UA #1691	Ho, M	73,621	69,401	4,220	6%
En_Del	Engr		P0000597	Diamond Head Rd OH/UG Imp	Panalal, T	-17,202	253,394	-270,596	-107%
En_Del	Engr		P0000598	Kahekili Hy Ltg OH/UG Conv	Lee, I	55,961	163,065	-107,104	-66%
En_Del	Engr		P0000599	EMS UPS Replacement	Arakaki, G	0	1	-1	-100%
En_Del	Engr		P0000603	Nanaikapono OH Relocation	Hiyama, R	45,185	0	45,185	100%
En_Del	Engr		P0000608	Sand Isle WWTP Disinfection	Ho, M	221,546	51,555	169,991	330%
En_Del	Engr		P0000611	Kaneohe Bay Dr Improvements	Lee, I	82,953	68,708	14,245	21%
En_Del	Engr		P0000614	City Hall Vlt 11	Kaneshi, R	5,533	0	5,533	100%
En_Del	Engr		P0000720	Forrest Ave Realignment OH	Hiyama, R	125,794	0	125,794	100%
En_Del	Engr		P0000721	Archer Sub Basement Flooding	Oshiro, E	11,883	0	11,883	100%
En_Del	Engr		P0000732	Gen Ctrl Unit WAN Upgrades	Oyadoma, M	0	135,121	-135,121	-100%
En_Del	Engr		P0000733	Trns Sub RTU Migration Pgm	Lai, D	968,803	679,542	289,261	43%
En_Del	Engr		P0000734	RTU Wide Area Network	Oyadoma, M	12,944	563,005	-550,061	-98%
En_Del	Engr		P0000764	H-1 Widening Waimalu Reloc	Panalal, T	88,340	150,615	-62,275	-41%
En_Del	Engr		P0000769	2003 Spare 138-46kv Tsf	Hayakaw, W	77,529	89,702	-12,173	-14%
En_Del	Engr		P0000778	Waialua #2 12.5MVA Tsf Repl	Chong, R	-824	0	-824	100%
En_Del	Engr		P0000879	Kahe-Halawa #1 138kV SW Repl	Ikeda, L	210,419	0	210,419	100%
En_Del	Engr		P0000880	Kahe-Halawa #2 138kV SW Repl	Ikeda, L	241,949	0	241,949	100%
En_Del	Engr		P0000883	Purch spare 8%, 46-12kV tsf	Tamayo, R	17,747	0	17,747	100%

December 2004 Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
En_Del	Engr		P0000884	Purch spare 10%, 46-12kV tsf	Tamayo, R	26,601	0	26,601	100%
En_Del	Engr		P0000885	Midweek Auto-Transfer Swgr	Chang, C	253,522	1,471	252,051	17135%
En_Del	Engr		P0000888	Koolau-Pukele #1 Str. 18	Uechi, S	310,916	0	310,916	100%
En_Del	Engr		P0000889	Airport 12KV Ckts Install	Chang, C	41,463	0	41,463	100%
En_Del	Engr		P0000894	Spare 15kV Switchgear	Tamayo, R	11,469	0	11,469	100%
En_Del	Engr		P0000902	Fort Street #1 Tsf Replace	Tamayo, R	81,406	0	81,406	100%
En_Del	Engr		P0000903	Ena #2 Tsf Replace	Tamayo, R	41,692	0	41,692	100%
En_Del	Engr		P0000904	Purch 10% 46-12kV spare tsf	Tamayo, R	36,642	0	36,642	100%
En_Del	Engr		P0000905	Kaonohi #2 Tsf Replace	Tamayo, R	71,884	0	71,884	100%
En_Del	Engr		P0000911	Palehua East A 46kV Reloc	Lee, I	22,586	0	22,586	100%
En_Del	Engr		P0000913	Kona Makaloa 25kV UG	Hiyama, R	180,781	192,701	-11,920	-6%
En_Del	Engr		P0000918	Kewalo #2 Tsf Replace	Tamayo, R	82,025	0	82,025	100%
En_Del	Engr		P0000919	Pohakupu #2 Tsf Replace	Tamayo, R	358,637	0	358,637	100%
En_Del	Engr		P0000920	Waiawa #2 Tsf Replace	Tamayo, R	374,070	0	374,070	100%
En_Del	Engr		P0000921	Helemano #1 Tsf Replace	Tamayo, R	339,314	0	339,314	100%
En_Del	Engr		P0000923	Kahala #2 4KV Tsf Replace	Nagata, C	269,118	0	269,118	100%
En_Del	Engr		P0000925	Purch 10% 46-12kV spare tsf	Oshiro, E	312,663	0	312,663	100%
En_Del	Engr		P0000926	Mililani Mauka North Gulley	Panalal, T	163,798	0	163,798	100%
En_Del	Engr		P0000927	Mililani Mauka Unit 134A	Panalal, T	121,906	0	121,906	100%
En_Del	Engr		P0000929	Loop Feed Protection Tsf	Kaneshi, R	57,994	0	57,994	100%
En_Del	Engr		P0000930	PMH-9 Control Upgrades	Kaneshi, R	268,712	0	268,712	100%
En_Del	Engr		P0000940	Pearl Highlands 2nd Fdr	Chang, C	48,005	0	48,005	100%
En_Del	Engr		P0000941	Tree Wire - Lai Road	Chang, C	172,590	0	172,590	100%
En_Del	Engr		P0000944	Ala Wai Canal 46kV Dredging	Lum, M	301,728	0	301,728	100%
En_Del	Engr		P0001012	Sheridan St Raising OH Lines	Lung, H	95,841	0	95,841	100%
En_Del	Engr		P0001015	Wahiawa-Waialua #2 P23X-P33	Chang, C	40,538	0	40,538	100%
En_Del	Engr		P0001019	Structure 22 Wailupe #2 Repl	Chang, C	44,602	0	44,602	100%
En_Del	Engr		P0001029	Mobile Substation Storage	Muranaka, G	4,117	0	4,117	100%
En_Del	Engr		P0001032	Honouliuli Reserv 46kV Reloc	Lee, I	9,077	0	9,077	100%
En_Del	Engr		P0001038	Kahe-CEIP OPGW Replace	Oyadoma, M	356,646	0	356,646	100%
En_Del	Engr		P0001039	Purch Spare 8%, 10MVA Tsf	Nakagaw, N	316,128	0	316,128	100%

December 2004 Recorded vs. Budget

to-Date December 2004

Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
5 Relocate	Kaneshi, R	8,135	0	8,135	100%
placement	Ejercit, D	246,338	0	246,338	100%
estead Rd Impr.	Panalal, T	7,052	0	7,052	100%
%, 10 MVA Tsf	Nagata, C	107,576	0	107,576	100%
ub Addns	Lai, D	1,025,652	437,999	587,653	134%
Addns	Tamayo, R	2,072,100	615,067	1,457,033	237%
Op & Ctrl (TD)	Lau, D	708,439	266,390	442,049	166%
mm Fac SOD	Lau, D	130,819	160,655	-29,836	-19%
stomer Programs	Ho, M	327,733	455,150	-127,417	-28%
stem Programs	Lum, M	825,521	396,957	428,564	108%
Failure	Arakaki, D	14,522	0	14,522	100%
cup Prot	Arakaki, D	5,040	0	5,040	100%
nation Comm	Shin, D	142,775	12,315	130,460	1059%
Hse Expnsn	Arakaki, D	196	0	196	100%
a mwr replace	Arakaki, G	139,482	184,021	-44,539	-24%
MWR Repl	Arakaki, G	270,385	253,955	16,430	6%
1/F2 Replace	Arakaki, G	0	294,943	-294,943	-100%
io Replacement	Oyadoma, M	91,466	215,178	-123,712	-57%
MW Replace	Shin, D	0	84,115	-84,115	-100%
	Hayakaw, W	74,781	0	74,781	100%
tline Upgrd	Thompson, R	5,559	50,889	-45,330	-89%
AIEA	Kaneshi, R	0	100,500	-100,500	-100%
		17,862,414	15,843,821	2,018,593	
ubstation	Chong, R	826,391	1,313,139	-486,748	-37%
station Prot	Chong, R	164,517	49,685	114,832	231%
tion Prot	Chong, R	34,163	28,840	5,323	18%
nua FO Line	Chong, R	98,941	71,120	27,821	39%
oa FO Line	Chong, R	3,282	82,768	-79,486	-96%
n Reconnect	Chong, R	12,120	76,231	-64,111	-84%
		1,139,414	1,621,783	-482,369	
er Building	Naito, C	793,150	3,336,357	-2,543,207	-76%

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
En_Del	ProjMgt	Y00030	P0000714	Materials Storage Relocation	Naito, C	18,626	171,675	-153,049	-89%
En_Del	ProjMgt	Y00030	P0000715	Dispatch Boards	Naito, C	748	6,454	-5,706	-88%
En_Del	ProjMgt	Y00030	P0000716	Telecomm Extensions	Naito, C	37,665	46,337	-8,672	-19%
En_Del	ProjMgt	Y00030	P0000717	EMS Replacement	Naito, C	392,252	554,140	-161,888	-29%
En_Del	ProjMgt	Y00030	P0000718	Dispatch Training Simulator	Naito, C	0	74,752	-74,752	-100%
En_Del	ProjMgt	Y00030	P0000795	Parking-C&M,SysOp,&Employee	Naito, C	0	6,484	-6,484	-100%
		Y00030 Total				1,242,441	4,196,199	-2,953,758	
En_Del	ProjMgt	Y00040	P0000836	Ford Island Substation	Chong, R	77,944	80,117	-2,173	-3%
En_Del	ProjMgt	Y00040	P0000837	Makalapa 46kV Brkr Addition	Chong, R	29,259	11,923	17,336	145%
En_Del	ProjMgt	Y00040	P0000838	46kV Fdrs to FI Sub	Chong, R	315,978	525,461	-209,483	-40%
En_Del	ProjMgt	Y00040	P0000839	Comm. Links FI-Maklpa	Chong, R	35,820	0	35,820	100%
		Y00040 Total				459,001	617,501	-158,500	
En_Del	ProjMgt	Y47600	P0000152	Kamoku Subst T2 Transformer	Naito, C	2,177	0	2,177	100%
En_Del	ProjMgt	Y47600	P0000512	Kewalo-Kamoku 138kv UG Elec	Naito, C	24,918	0	24,918	100%
En_Del	ProjMgt	Y47600	P4762000	Kamoku Sub Kewalo Term	Naito, C	26,711	0	26,711	100%
En_Del	ProjMgt	Y47600	P4764000	Kamoku EMS	Naito, C	601	0	601	100%
		Y47600 Total				54,407	0	54,407	
En_Del	ProjMgt	Y48500	P0000922	Kamoku 46kV UG Alt Phase 1	Wong, K	2,895,655	1,027,268	1,868,387	182%
En_Del	ProjMgt	Y48500	P0000924	Kamoku 46kV UG Alt Phase 2	Wong, K	743,517	0	743,517	100%
En_Del	ProjMgt	Y48500	P4850000	Kamoku-Pukele 138KV OH Ln	Wong, K	-160	1,604,858	-1,605,018	-100%
En_Del	ProjMgt	Y48500	P4851000	Kamoku Pukele Term	Wong, K	0	86,337	-86,337	-100%
En_Del	ProjMgt	Y48500	P4852000	Pukele Termination	Wong, K	0	80,034	-80,034	-100%
En_Del	ProjMgt	Y48500	P4853000	Kamoku-Pukele Fiber Optic	Wong, K	0	970	-970	-100%
		Y48500 Total				3,639,012	2,799,467	839,545	
En_Del	ProjMgt		P0000143	Salt Lake Blvd Widening Ph2	Naito, C	927,963	1,127,601	-199,638	-18%
En_Del	ProjMgt		P0000162	Kakaako ID9	Naito, C	0	44,800	-44,800	-100%
En_Del	ProjMgt		P0000669	Kakaako ID10	Naito, C	124,863	202,694	-77,831	-38%
En_Del	ProjMgt		P0000828	Outage Management System	Naito, C	0	2,114	-2,114	-100%
En_Del	ProjMgt		P0000917	Village Park - DB Cable Rpl	Liu, R	117,224	0	117,224	100%
En_Del	ProjMgt		P0001016	Lurline/Mariposa Cable Repl	Liu, R	12,367	0	12,367	100%
En_Del	ProjMgt		P0001034	Kakaako ID 11	Naito, C	53,133	0	53,133	100%

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
En_Del	ProjMgt		P0001072	Kakaako ID 12	Naito, C	36,047	0	36,047	100%
En_Del	ProjMgt		P9036000	Kakaako ID7 Kamakee St Conv	Naito, C	0	27,920	-27,920	-100%
	ProjMgt Total					7,805,872	10,640,079	-2,834,207	
En_Del	SupSvcs		P1081000	Capitalized Tools & Equip	Barnes, C	967,585	810,941	156,644	19%
En_Del	SupSvcs		P1250000	Vehicle Purchases	Yoshida, C	1,963,485	1,655,976	307,509	19%
	SupSvcs Total					2,931,070	2,466,917	464,153	
En_Del	Telecom		P9548000	Kahe-Kahe SCADA Comm	Shin, D	98	0	98	100%
En_Del	Telecom		P9599000	Miki 2-Miki 3 SCADA Comm	Shin, D	539	0	539	100%
	Telecom Total					637	0	637	
En_Del Total						46,291,850	41,392,525	4,899,325	

	YTD Dec 2004 Budget	Var $	Var %
59	3,040,829	553,730	18%
64	519,865	315,799	61%
23	3,560,694	869,529	
79	0	79	100%
48	0	4,248	100%
27	0	4,327	
83	783,088	-65,005	-8%
83	783,088	-65,005	
40	157,881	616,159	390%
11	2,365,076	-696,165	-29%
05	724,859	345,146	48%
92	4,179,802	47,290	1%
00	11,854,549	222,351	2%
97	0	-11,197	100%
23	1,208,993	79,930	7%
07	24,834,942	1,412,365	
69	0	28,569	100%
0	3,556,412	-3,556,412	-100%
69	3,556,412	-3,527,843	
0	387,590	-387,590	-100%
0	387,590	-387,590	
76	28,778,944	-2,503,068	

	Var $	Var %
77	-199,646	-9%
0	248,439	100%
77	48,793	
48	-19,257	-26%
40	7,923	12%
0	340	100%
00	4,802	21%
0	178,362	100%
00	271,819	27%
40	67,498	33%
60	-3,905	-63%
65	556,375	
00	-22,400	-100%
00	-22,400	
35	533,975	

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Gen_Coun	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	280,405	275,562	4,843	2%
Gen_Coun	Land		P0000063	Conv Halawa School 138kv	Hauret, P	0	5,000	-5,000	-100%
Gen_Coun	Land		P1370000	Distr R/W Purch (Blanket)	Fujiwara, C	33,860	100,000	-66,140	-66%
Gen_Coun	Land		P1373000	46kv R/W Purch (blanket)	Fujiwara, C	16,079	100,000	-83,921	-84%
	Land Total					330,344	480,562	-150,218	
Gen_Coun Total						330,344	480,562	-150,218	

December 2004 Recorded vs. Budget

	Dec 04 Budget	Var $	Var %
35	0	1,935	100%
44	0	3,044	100%
55	0	45,455	100%
68	30,563	-53,495	-88%
99	57,616	-49,717	-86%
21	74,061	-210,040	-77%
57	0	67	100%
40	35,465	-648,525	-97%
0	34,541	-184,541	-100%
49	12,213	-11,764	-96%
16	52,629	-569,313	-76%
31	1,000	9,831	983%
21	0	4,121	100%
18	0	205,718	100%
27	0	176,127	100%
26	0	17,526	100%
11	0	69,211	100%
28	08,088	-1,194,360	
18	0	-18	100%
18	0	-18	
00	95,980	5,683,220	28%
69	0	2,469	100%
17	77,201	183,016	103%
46	59,608	-107,662	-67%
59	21,404	342,855	155%
91	54,193	6,103,898	
07	47,824	-79,831	-167%
07	47,824	-79,831	
39	41,018	512,651	182%
31	29,915	-204,354	-89%
30	0,933	308,297	

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Pwr_Sup	PSEngr	Y46800	P4683000	AES 138KV SUB-TERM BP #1,2,3	Yuen, M	-41,587	0	-41,587	100%
		Y46800 Total				-41,587	0	-41,587	
Pwr_Sup	PSEngr	Y49000	P0001050	AES-CEIP #2 Trans. Line	Isler, R	1,680	0	1,680	100%
Pwr_Sup	PSEngr	Y49000	P0001051	AES Substation Additions	Isler, R	923	0	923	100%
Pwr_Sup	PSEngr	Y49000	P4900000	Barbers Point Unit 1 Addition	Isler, R	1,036,532	885,802	150,730	17%
		Y49000 Total				1,039,135	885,802	153,333	
Pwr_Sup	PSEngr	Y70600	P7060000	Kahe Disc Struct Reinf	Shin, J	75,735	138,889	-63,154	-45%
		Y70600 Total				75,735	138,889	-63,154	
Pwr_Sup	PSEngr		P0000056	H8 Blr Elec Warm Sys	Pasco, G	76,632	0	76,632	100%
Pwr_Sup	PSEngr		P0000057	H9 Blr Elec Warm Sys	Economo, D	87,306	0	87,306	100%
Pwr_Sup	PSEngr		P0000078	K5 Boiler Controls Upgrade	Fukuda, P	1,880,730	637,638	1,243,092	195%
Pwr_Sup	PSEngr		P0000079	K6 Boiler Controls Upgrade	Yoshida, A	61,935	43,511	18,424	42%
Pwr_Sup	PSEngr		P0000083	K4 Blr Wtr Chem Alyz Repl	Isler, R	55,666	0	55,666	100%
Pwr_Sup	PSEngr		P0000084	K5 Blr Wtr Chem Alyz Repl	Lum, D	112,554	225,805	-113,251	-50%
Pwr_Sup	PSEngr		P0000086	Waiau WW Oil Detectors	Fackrel, J	5,940	9,206	-3,266	-35%
Pwr_Sup	PSEngr		P0000091	H9 Attemperator Block Valve	Economo, D	2,017	0	2,017	100%
Pwr_Sup	PSEngr		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	309	0	309	100%
Pwr_Sup	PSEngr		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	6,807	101	6,706	6640%
Pwr_Sup	PSEngr		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	279,296	110,605	168,691	153%
Pwr_Sup	PSEngr		P0000172	Iwilei Fuel Oil Pump Rpl	Fackrel, J	81,225	115,861	-34,636	-30%
Pwr_Sup	PSEngr		P0000203	Waiau 4 Ignitor Replacement	Lum, D	0	9,358	-9,358	-100%
Pwr_Sup	PSEngr		P0000204	W7 BFP Rec Ctrl Valves Upg	Economo, D	808	0	808	100%
Pwr_Sup	PSEngr		P0000208	W3 Cycle Chem Instr.	Cummings, C	293,071	273,082	19,989	7%
Pwr_Sup	PSEngr		P0000209	W4 Cycle Chem Instr.	Lum, D	0	4,529	-4,529	-100%
Pwr_Sup	PSEngr		P0000210	W5 Cycle Chem Instr.	Lum, D	0	3,662	-3,662	-100%
Pwr_Sup	PSEngr		P0000211	W6 Cycle Chem Instr.	Lum, D	342,189	287,604	54,585	19%
Pwr_Sup	PSEngr		P0000213	W8 Cycle Chem Instr.	Lum, D	406,714	320,097	86,617	27%
Pwr_Sup	PSEngr		P0000215	K2 Cycle Chem Instr.	Lum, D	115,313	161,073	-45,760	-28%
Pwr_Sup	PSEngr		P0000216	H8 Cycle Chem Instr.	Isler, R	14,726	0	14,726	100%
Pwr_Sup	PSEngr		P0000217	H9 Cycle Chem Instr.	Lum, D	0	1,726	-1,726	-100%
Pwr_Sup	PSEngr		P0000228	K5 SH & RH Attemp Spray	Economo, D	81,787	146,810	-65,023	-44%

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000230	W7 SH & RH Attemp Spray	Economo, D	5,198	0	5,198	100%
Pwr_Sup	PSEngr		P0000231	W8 BFP Rec Ctrl Valves Upg	Economo, D	90,095	47,095	43,000	91%
Pwr_Sup	PSEngr		P0000232	W8 SH & RH Attemp Spray	Economo, D	126,475	107,553	18,922	18%
Pwr_Sup	PSEngr		P0000233	W7&8 Service Air Compressor	Arakaki, J	85,669	118,502	-32,833	-28%
Pwr_Sup	PSEngr		P0000238	K6 BFP Rec Ctrl Valves Upg	Economo, D	0	44,368	-44,368	-100%
Pwr_Sup	PSEngr		P0000242	K4 SH & RH Attemp Spray	Economo, D	68,838	2,120	66,718	3147%
Pwr_Sup	PSEngr		P0000254	W3 Stack & Breeching Rpl	Yanagid, J	283,379	258,757	24,622	10%
Pwr_Sup	PSEngr		P0000260	W3 Data Acq & Monitoring	Yoshida, A	241,606	43,456	198,150	456%
Pwr_Sup	PSEngr		P0000265	H8 Data Acq & Monitoring	Yoshida, A	2,660	0	2,660	100%
Pwr_Sup	PSEngr		P0000267	K5 Data Acq & Monitoring	Fukuda, P	182,790	161,246	21,544	13%
Pwr_Sup	PSEngr		P0000273	Kahe Stormwater Erosion Ctrl	Tasaka, S	0	26,783	-26,783	-100%
Pwr_Sup	PSEngr		P0000297	W3 Condenser Refurbishment	Arakaki, J	432,710	390,542	42,168	11%
Pwr_Sup	PSEngr		P0000298	HPP WWTF Batch Tnk Mods	Yamashi, K	30	0	30	100%
Pwr_Sup	PSEngr		P0000302	Waiau FWH #72 Replacement	Kurisu, A	238,543	217,439	21,104	10%
Pwr_Sup	PSEngr		P0000303	Waiau FWH #82 Replacement	Kurisu, A	283,156	224,026	59,130	26%
Pwr_Sup	PSEngr		P0000313	W8 APH Sootblower Upgrade	Arakaki, J	70,328	286,869	-216,541	-75%
Pwr_Sup	PSEngr		P0000327	K4 Flue Gas O2 Analyzer	Yoshida, A	17,653	7,622	10,031	132%
Pwr_Sup	PSEngr		P0000328	K5 Flue Gas O2 Analyzer	Fukuda, P	76,150	37,852	38,298	101%
Pwr_Sup	PSEngr		P0000330	Waiau 3 Ignitor Replacement	Lum, D	123,685	164,663	-40,978	-25%
Pwr_Sup	PSEngr		P0000331	H8 Turbine Steam Gland Conv	Arakaki, J	117	0	117	100%
Pwr_Sup	PSEngr		P0000379	PI Data Loggers	Isler, R	0	107,278	-107,278	-100%
Pwr_Sup	PSEngr		P0000439	Waiau FWH #63 Replacement	Yamashi, K	614	0	614	100%
Pwr_Sup	PSEngr		P0000441	W3 Soot Blower Upgrade	Yamashi, K	6,009	368,348	-362,339	-98%
Pwr_Sup	PSEngr		P0000449	Kahe Electronic Parts Store	Noda, R	25,301	0	25,301	100%
Pwr_Sup	PSEngr		P0000450	Kahe Motor Part Wash Enclose	Kogasaka, D	335	0	335	100%
Pwr_Sup	PSEngr		P0000452	Waiau Electric Parts Store	Noda, R	16,670	0	16,670	100%
Pwr_Sup	PSEngr		P0000453	Waiau Pond Sheetpiling	Tasaka, S	12,507	39,373	-26,866	-68%
Pwr_Sup	PSEngr		P0000454	K6 Fan Enclosure	Yanagid, J	33,136	30,416	2,720	9%
Pwr_Sup	PSEngr		P0000458	Kahe Pond 1A Clean & Lining	Ornellas, L	0	12,172	-12,172	-100%
Pwr_Sup	PSEngr		P0000459	Waiau 3 ERV Replacement	Cummings, C	72,142	71,967	175	0%
Pwr_Sup	PSEngr		P0000463	Waiau 8 ERV Replacement	Fackrel, J	99,089	118,754	-19,665	-17%

December 2004 Recorded vs. Budget

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000464	Waiau 5 Wastewater Sump Upgr	Yuen, M	1,500	0	1,500	100%
Pwr_Sup	PSEngr		P0000466	K3&4 Service Air Compressor	Arakaki, J	48,641	41,596	7,045	17%
Pwr_Sup	PSEngr		P0000469	K5&6 Service Air Compressors	Fackrel, J	125,452	233,956	-108,504	-46%
Pwr_Sup	PSEngr		P0000485	WPP FWH #35 Replacement	Yamashi, K	757,263	223,570	533,693	239%
Pwr_Sup	PSEngr		P0000489	W4 Cond Wtrbx Repl	Kurisu, A	0	33,204	-33,204	-100%
Pwr_Sup	PSEngr		P0000490	H8&9 Emergency Generator	Fackrel, J	3,701	112,688	-108,987	-97%
Pwr_Sup	PSEngr		P0000492	K4 HP Turb Row 9-11 Blades	Yuen, M	146,809	273,268	-126,459	-46%
Pwr_Sup	PSEngr		P0000493	W6 HP Turbine Blades	Yuen, M	1,131,440	2,362,379	-1,230,939	-52%
Pwr_Sup	PSEngr		P0000497	Waiau WW Pond Closure	Tasaka, S	28,741	219,754	-191,013	-87%
Pwr_Sup	PSEngr		P0000510	Circ Water Temp Monitors	Kabutan, D	82,327	29,411	52,916	180%
Pwr_Sup	PSEngr		P0000511	BFP Automated Test	Yoshida, A	128,267	215,129	-86,862	-40%
Pwr_Sup	PSEngr		P0000564	W9 DCS Processor Upgrade	Yoshida, A	4,197	0	4,197	100%
Pwr_Sup	PSEngr		P0000565	W10 DCS Processor Upgrade	Yoshida, A	23,928	0	23,928	100%
Pwr_Sup	PSEngr		P0000582	H9 Turbine Supv Instr	Kabutan, D	60	0	60	100%
Pwr_Sup	PSEngr		P0000590	PP Security Hardware Upgrade	Yuen, M	128,806	112,989	15,817	14%
Pwr_Sup	PSEngr		P0000601	Gen Prot Relay Replacement	Rompask, D	203,012	269,935	-66,923	-25%
Pwr_Sup	PSEngr		P0000604	W4 Aux TFMR Replacement	Arakawa, D	48	0	48	100%
Pwr_Sup	PSEngr		P0000605	W3 and W4 Stack Drain	Lum, D	52,142	94,097	-41,955	-45%
Pwr_Sup	PSEngr		P0000609	K2 Blr Access Door Addition	Arakaki, J	42,240	95,013	-52,773	-56%
Pwr_Sup	PSEngr		P0000610	K1 Blr Access Door Addition	Arakaki, J	0	62,880	-62,880	-100%
Pwr_Sup	PSEngr		P0000624	Kahe Tank Farm Fire Main	Arakaki, J	821,104	382,136	438,968	115%
Pwr_Sup	PSEngr		P0000625	HPP Swyd Cable Tray Sprinkler	Arakaki, J	51,348	0	51,348	100%
Pwr_Sup	PSEngr		P0000626	W3-8 Cable Rm Smoke Detector	Arakaki, J	0	88,293	-88,293	-100%
Pwr_Sup	PSEngr		P0000627	W3-8 Swgr Rm Smoke Detector	Arakaki, J	0	73,891	-73,891	-100%
Pwr_Sup	PSEngr		P0000628	K1-6 Cable Rm Smoke Detector	Arakaki, J	0	56,112	-56,112	-100%
Pwr_Sup	PSEngr		P0000629	K1-6 Swgr Rm Smoke Detectors	Arakaki, J	3,881	56,906	-53,025	-93%
Pwr_Sup	PSEngr		P0000633	K4 Exciter/Regulator Upgrade	Dahlquist, L	266,973	284,494	-17,521	-6%
Pwr_Sup	PSEngr		P0000634	W7&8 Boiler Wash Sump Pump	Fackrel, J	12,721	81,180	-68,459	-84%
Pwr_Sup	PSEngr		P0000637	Kahe Chlorine Dioxide System	Arakaki, J	0	107,988	-107,988	-100%
Pwr_Sup	PSEngr		P0000638	W3 Air Heater Tube Replmnt	Economo, D	767,855	425,688	342,167	80%
Pwr_Sup	PSEngr		P0000640	HNL Demineralizer Upgrade	Arakaki, J	0	7,143	-7,143	-100%

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000641	K6 AEH Limit Switch Upgrd	Garrison, R	1,366	4,096	-2,730	-67%
Pwr_Sup	PSEngr		P0000646	Kahe 24FWH Replacement	Economo, D	54,948	171,388	-116,440	-68%
Pwr_Sup	PSEngr		P0000647	Kahe 23FWH Replacement	Economo, D	99,356	214,219	-114,863	-54%
Pwr_Sup	PSEngr		P0000651	K5 AEH Limit Switch Upgrd	Dahlquist, L	54,505	15,000	39,505	263%
Pwr_Sup	PSEngr		P0000657	W10 Exhaust Duct Replacement	Vlacovsky, R	193,766	0	193,766	100%
Pwr_Sup	PSEngr		P0000658	W9 Exhaust Duct Replacement	Vlacovsky, R	469,210	0	469,210	100%
Pwr_Sup	PSEngr		P0000659	Kahe 25FWH Replacement	Economo, D	208,294	347,489	-139,195	-40%
Pwr_Sup	PSEngr		P0000664	W3 UPS Installation	Kabutan, D	73,481	35,484	37,997	107%
Pwr_Sup	PSEngr		P0000665	Waiau Parking Lot Addition	Tasaka, S	264	0	264	100%
Pwr_Sup	PSEngr		P0000666	Waiau Maint Shop Office	Yanagid, J	203,892	229,230	-25,338	-11%
Pwr_Sup	PSEngr		P0000674	Waiau Start-Up SWGR Replace	Yoshida, A	32,366	328	32,038	9768%
Pwr_Sup	PSEngr		P0000675	W6 Control/DC Cables to Swyd	Rompask, D	64,705	141,292	-76,587	-54%
Pwr_Sup	PSEngr		P0000676	K2 Opacity Monitor Upgrade	Fukuda, P	0	148,644	-148,644	-100%
Pwr_Sup	PSEngr		P0000678	Kahe H2 Gas Dryers	Vlacovsky, R	53,838	107,334	-53,496	-50%
Pwr_Sup	PSEngr		P0000681	Kahe1 Condenser Tube Replacement	Economo, D	32,620	0	32,620	100%
Pwr_Sup	PSEngr		P0000682	W6 Annunciator Upgrade	Fukuda, P	6,465	340,915	-334,450	-98%
Pwr_Sup	PSEngr		P0000685	Waiau Start-Up Cable Replace	Yoshida, A	200,318	111,863	88,455	79%
Pwr_Sup	PSEngr		P0000690	W5 Annunciator Upgrade	Fukuda, P	164,241	88,876	75,365	85%
Pwr_Sup	PSEngr		P0000737	Chlorine Dioxide Systm	Yuen, M	1,204	0	1,204	100%
Pwr_Sup	PSEngr		P0000741	W5 Demin raw wtr piping	Arakaki, J	91,447	0	91,447	100%
Pwr_Sup	PSEngr		P0000750	K5 Reheater Element Replacements	Yamashi, K	692,446	354,917	337,529	95%
Pwr_Sup	PSEngr		P0000771	H81 TVL Screen Repl	Arakaki, J	471	1,003	-532	-53%
Pwr_Sup	PSEngr		P0000772	H92 TVL Screen Repl	Arakaki, J	158,081	152,650	5,431	4%
Pwr_Sup	PSEngr		P0000777	Waiau Tank 5 Roof Replace	Isler, R	37,782	0	37,782	100%
Pwr_Sup	PSEngr		P0000781	KPP FWH #41 Replacement	Kurisu, A	0	213,216	-213,216	-100%
Pwr_Sup	PSEngr		P0000782	KPP FWH #42 Replacement	Kurisu, A	0	224,373	-224,373	-100%
Pwr_Sup	PSEngr		P0000784	K22 TVL Screen Repl	Arakaki, J	27,977	68,690	-40,713	-59%
Pwr_Sup	PSEngr		P0000785	K41 TVL Screen Repl	Arakaki, J	10,006	70,270	-60,264	-86%
Pwr_Sup	PSEngr		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	100,819	119,949	-19,130	-16%
Pwr_Sup	PSEngr		P0000787	K5/6 Lube water pump	Kurisu, A	8,717	54,965	-46,248	-84%
Pwr_Sup	PSEngr		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	69,682	119,081	-49,399	-41%

December 2004 Recorded vs. Budget

ogram Year-to-Date December 2004

Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Kahe 3 BW Sump Upgrade	Economo, D	105,007	118,219	-13,212	-11%
Kahe 4 BW Sump Upgrade	Economo, D	61,762	117,363	-55,601	-47%
Kahe 5 BW Sump Upgrade	Economo, D	69,431	116,514	-47,083	-40%
Kahe 6 BW Sump Upgrade	Economo, D	58,698	115,671	-56,973	-49%
W6 Instr Air Compr	Kurisu, A	0	128,161	-128,161	-100%
K2 Operator Console Upgrade	Kabutan, D	0	175,772	-175,772	-100%
K1 Operator Console Upgrade	Fukuda, P	0	5,683	-5,683	-100%
W5 Operator Console Upgrade	Kabutan, D	0	10,701	-10,701	-100%
W3 Operator Console Upgrade	Kabutan, D	344,969	173,160	171,809	99%
W6 Operator Console Upgrade	Kabutan, D	154,736	194,100	-39,364	-20%
Kahe Intake Lighting	Kabutan, D	0	80,849	-80,849	-100%
K06 CWP MOV Replacement	Economo, D	127,417	187,866	-60,449	-32%
K6 Annunciator Replacement	Tiede, C	170	310,085	-309,915	-100%
W8 Annunciator Replacement	Garrison, R	0	402,028	-402,028	-100%
W6 Exciter/Regulator Replace	Rompask, D	0	344,764	-344,764	-100%
W8 Exciter/Regulator Repl	Yoshida, A	0	337,409	-337,409	-100%
K1 Main Xfmr Replacement	Yoshida, A	0	6,536	-6,536	-100%
K2 Battery Bank Replacement	Garrison, R	0	196,303	-196,303	-100%
K4 Recorder Replacement	Yoshida, A	15,975	47,454	-31,479	-66%
W4 Main Xfmr Replacement	Kabutan, D	0	5,683	-5,683	-100%
K1 Aux Xfmr Replacement	Yoshida, A	0	6,536	-6,536	-100%
W3 Main Xfmr Replacement	Kabutan, D	869,325	717,791	151,534	21%
K2 Excitation System	Kabutan, D	0	310,838	-310,838	-100%
K1 Excitation System	Kabutan, D	0	27,841	-27,841	-100%
K6 Aux Transformer	Fukuda, P	238,893	366,901	-128,008	-35%
K2 Annunciator Replacement	Fukuda, P	6,179	353,727	-347,548	-98%
K1 Annunciator Replacement	Fukuda, P	0	6,549	-6,549	-100%
K4 Generator Rotor Rewind	Dahlquist, L	416,827	520,434	-103,607	-20%
K4 Annunciator Replacement	Yoshida, A	0	7,496	-7,496	-100%
H9 Generator Rotor Rewind	Kabutan, D	10,256	0	10,256	100%
Kahe 1 Sootblower Controls	Economo, D	0	24,225	-24,225	-100%

	Var %
2	-93%
1	-100%
2	100%
0	100%
1	100%
3	100%
4	100%
1	100%
6	100%
2	100%
7	100%
9	100%
0	100%
9	100%
9	100%
9	100%
5	100%
6	100%
5	100%
5	100%
3	100%
5	100%
9	100%
1	-100%
6	-100%
1	100%
6	554%
0	100%
3	54%
1	60479%
5	-32%

Capital Expenditures Project and Program Year-to-Date December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	YTD Dec 2004 Actuals	YTD Dec 2004 Budget	Var $	Var %
Pwr_Sup	PSEngr		P9541000	K4 Data Acq and Monitor	Yoshida, A	139,743	58,416	81,327	139%
	PSEngr Total					50,096,799	43,701,666	6,395,133	
Pwr_Sup	PSO&M	Y14300	P1429000	Misc PowerPlant Additions	Marzano, V	1,531,330	942,193	589,137	63%
		Y14300 Total				1,531,330	942,193	589,137	
	PSO&M Total					1,531,330	942,193	589,137	
Pwr_Sup	VPPwrSup		P0000942	Waiau Tank 4 Bottom Replmt	Yuen, N	1,040,425	0	1,040,425	100%
	VPPwrSup Total					1,040,425	0	1,040,425	
Pwr_Sup Total						53,482,264	46,651,947	6,830,317	

December 2004

Title	Project Manager	Dec 04 Actuals	YTD Dec 2004 Budget	Var $	Var %
lot	Oishi, L	0	182,560	-182,560	-100%
Replacement	Oishi, L	100	0	100	100%
Replacement	Oda, W	5,579	0	125,579	100%
	Hull, Thomas	0	415,511	-415,511	-100%
Prgrm	Ejercito, A	0	27,000	-27,000	-100%
	Ejercito, A	0	200,000	-200,000	-100%
uip	Ejercito, A	0,678	44,800	-4,122	-9%
rade	Ejercito, A	8,408	26,680	21,728	81%
Imprv	Hirashima, J	1,940	0	21,940	100%
		6,705	896,551	-659,846	
		6,705	896,551	-659,846	

Capital Expenditures

Project

Through December 2004

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Cor_Exc	SSF	Y00023	P0000499	Ward A/C Imprv Phase II	Fujiwara, C	677,461	2,376,426	-1,698,965	-71%
Cor_Exc	SSF	Y00023	P0000506	Ward A/C Equip Repl	Fujiwara, C	3,294,153	3,281,721	12,432	0%
		Y00023 Total				3,971,614	5,658,147	-1,686,533	
Cor_Exc	SSF		P0000189	Upg Makai Elev Ctrls-King	Ishii, A	-11,648	0	-11,648	100%
Cor_Exc	SSF		P0000415	CPP Access Control	Fujiwara, C	172,664	172,668	-4	0%
Cor_Exc	SSF		P0000540	King St Power Improv	Fujiwara, C	0	1	-1	-100%
Cor_Exc	SSF		P0000543	Ward Fire Sprinkler Sys	Fujiwara, C	0	254,128	-254,128	-100%
Cor_Exc	SSF		P0000551	Waiau Guard House	Fujiwara, C	0	296,107	-296,107	-100%
Cor_Exc	SSF		P0000586	King St Attic	Fujiwara, C	32,173	36,669	-4,496	-12%
Cor_Exc	SSF		P0000594	Ward I Bldg access upgrade	Uemura, E	97,537	90,210	7,327	8%
Cor_Exc	SSF		P0000613	Fuel Cell Test Facility	Fujiwara, C	2,974	2,929	45	2%
Cor_Exc	SSF		P0000699	Fire sprinkler-tsf oil stora	Fujiwara, C	29,928	40,549	-10,621	-26%
Cor_Exc	SSF		P0000700	Fire sprinkler-whse hi-stora	Fujiwara, C	0	115,000	-115,000	-100%
Cor_Exc	SSF		P0000704	Security/Halawa Meva Site	Uemura, E	98,699	0	98,699	100%
Cor_Exc	SSF		P0000705	Security/Makalapa Meva	Uemura, E	110,710	0	110,710	100%
Cor_Exc	SSF		P0000706	Security/Koolau Meva Site	Uemura, E	82,085	0	82,085	100%
Cor_Exc	SSF		P0000707	Security/Pukele Meva Site	Uemura, E	85,298	85,298	0	0%
Cor_Exc	SSF		P0000712	Archer Entry Gate	Fujiwara, C	76,360	23,802	52,558	221%
Cor_Exc	SSF		P0000722	Tsf Oil Spill Containment	Fujiwara, C	0	1,580	-1,580	-100%
Cor_Exc	SSF		P0000826	ITS Renovation	Nakano, W	0	423,201	-423,201	-100%
Cor_Exc	SSF		P0000840	Security/Campbell Station	Cardoza, A	129,093	102,205	26,888	26%
Cor_Exc	SSF		P0000841	Security/School Street Sub	Cardoza, A	118,363	102,205	16,158	16%
Cor_Exc	SSF		P0000842	Security/Wahiawa Sub	Cardoza, A	134,229	102,205	32,024	31%
Cor_Exc	SSF		P0000843	Security/Iwilei Sub	Cardoza, A	158,461	102,205	56,256	55%
Cor_Exc	SSF		P0000851	Purchasing Warehouse Renov	Nakano, W	568,947	286,644	282,303	98%
Cor_Exc	SSF		P0000852	Ward 04 Warehouse Improvemts	Nakano, W	0	145,162	-145,162	-100%
Cor_Exc	SSF		P0000865	King St Chillwater Pipe	HFEng	0	111,138	-111,138	-100%
Cor_Exc	SSF		P0000866	King Downspout Replcmt	HFEng	49,064	86,595	-37,531	-43%
Cor_Exc	SSF		P0000867	King St Window Project	HFEng	0	111,308	-111,308	-100%
Cor_Exc	SSF		P0001004	HPP Perimeter Fence	Uemura, E	3,167	0	3,167	100%
Cor_Exc	SSF		P0001007	Security Lighting & Fencing	Uemura, E	25,509	0	25,509	100%

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Cor_Exc	SSF		P0001017	King-Elevator	HFEng	87,658	0	87,658	100%
Cor_Exc	SSF		P0001022	Employee Smart Cards	Angell, R	14,901	0	14,901	100%
Cor_Exc	SSF		P0001023	ACCESS SYSTEM	Uemura, E	171,399	0	171,399	100%
Cor_Exc	SSF		P0001055	Customer Solutions Consolidn	Nakano, W	2,553	0	2,553	100%
Cor_Exc	SSF		P0001056	DSM Expansion	Nakano, W	1,823	0	1,823	100%
Cor_Exc	SSF		P0001057	Energy Projects Relocation	Nakano, W	287,959	0	287,959	100%
Cor_Exc	SSF		P0001058	Ward Ave Electronic Key Box	Lee, J	184,143	0	184,143	100%
Cor_Exc Total						6,685,663	8,349,956	-1,664,293	
	SSF Total					6,685,663	8,349,956	-1,664,293	

tures Project Through December 2004

pt	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
vcs	Y00026	P0000531	HECO SWAT Team-Ohana	Waller, D	31,845	31,845	0	0%
vcs	Y00026	P0000561	Class Load Study	Waller, D	149,907	151,149	-1,242	-1%
	Y00026 Total				181,752	182,994	-1,242	
vcs		P4150000	Monitoring Services	Shimoda, S	403,240	446,792	-43,552	-10%
					584,992	629,786	-44,794	
vcs Total					584,992	629,786	-44,794	

corded vs. Budget

	Var %
22	-100%
30	-100%
52	
23	-87%
96	-100%
19	
28	100%
24	100%
56	100%
87	100%
03	100%
98	
94	4%
61	-15%
52	-3%
13	-3%
42	
61	100%
67	100%
28	
35	-80%
16	-99%
51	
70	-95%
32	-95%
16	-94%
18	
72	100%
74	100%
16	
90	100%

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr	Y00044	P0000947	KoOlina 46kV lines	Ikeda, L	34,947	0	34,947	100%
		Y00044 Total				40,537	0	40,537	
En_Del	Engr	Y00045	P0000950	Ocean Point SS Tsf#1 Install	Tamayo, R	10,971	0	10,971	100%
En_Del	Engr	Y00045	P0000951	Ocean Pointe 46kV Lines	Ikeda, L	24,819	0	24,819	100%
En_Del	Engr	Y00045	P0000952	Ocean Pointe 12kV Lines	Ikeda, L	581	0	581	100%
		Y00045 Total				36,371	0	36,371	
En_Del	Engr	Y00047	P0001037	Puuloa Rd Widening - UG	Panalal, T	110,216	0	110,216	100%
En_Del	Engr	Y00047	P9903000	Puuloa Road Widening	Panalal, T	1,372,284	1,220,028	152,256	12%
		Y00047 Total				1,482,500	1,220,028	262,472	
En_Del	Engr	Y00049	P0001045	Palehua East B 46kV UG PH1	Lee, I	12,720	0	12,720	100%
		Y00049 Total				12,720	0	12,720	
En_Del	Engr	Y00050	P0000886	Wal-Mart Sams Keeaumoku'	Nakamoto, D	1,162,483	1,219,729	-57,246	-5%
En_Del	Engr	Y00050	P0001053	HMSA Keeamoku Conversion	Nakamoto, D	62	0	62	100%
		Y00050 Total				1,162,545	1,219,729	-57,184	
En_Del	Engr	Y64100	P6410000	Salt Lake Blvd. Widening	Ho, M	2,121,880	0	2,121,880	100%
		Y64100 Total				2,121,880	0	2,121,880	
En_Del	Engr	Y66400	P6640000	New Interchange Improv	Lum, M	95,567	0	95,567	100%
		Y66400 Total				95,567	0	95,567	
En_Del	Engr	Y84900	P8490000	WAIAU-CIP 138 KV LINES PART 2	Char, C	1,472,937	0	1,472,937	100%
		Y84900 Total				1,472,937	0	1,472,937	
En_Del	Engr		P0000135	Keaahala Rd Widening	Chang, C	219,510	201,392	18,118	9%
En_Del	Engr		P0000218	Waialae Nui Reliability Imp	Lee, I	491,720	0	491,720	100%
En_Del	Engr		P0000288	Emma 4kV Conversion	Lum, M	539,150	446,134	93,016	21%
En_Del	Engr		P0000289	Halawa Cap Bank Brk 4436	Arakaki, D	130,137	0	130,137	100%
En_Del	Engr		P0000290	Halawa Cap Bank Brk 4492	Arakaki, D	157,690	163,503	-5,813	-4%
En_Del	Engr		P0000294	Pukele Tie Breaker-Sw Rpl	Arakaki, D	192,372	246,370	-53,998	-22%
En_Del	Engr		P0000335	Intl Savings & Loan Vault	Kaneshi, R	87,985	388,869	-300,884	-77%
En_Del	Engr		P0000373	Kam Hy Imp at Leilehua	Hiyama, R	37,658	43,945	-6,287	-14%
En_Del	Engr		P0000390	Kahala Kua 2ndary Repl	Kaneshi, R	564,337	540,598	23,739	4%
En_Del	Engr		P0000423	Kailua Rd UG Conversion	Lum, M	534,559	560,510	-25,951	-5%
En_Del	Engr		P0000444	Pauoa 4kv Conversion	HangChe, L	291,161	0	291,161	100%

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr		P0000474	WSC Privatization	Ho, M	1,229,570	1,471,167	-241,597	-16%
En_Del	Engr		P0000491	K-H#2/Wai-Wah Str 86/25	Uechi, S	31,589	93,728	-62,139	-66%
En_Del	Engr		P0000507	Kam Hy Resurf Waiahole-Cr Ln	Lee, I	1,989,363	3,120,186	-1,130,823	-36%
En_Del	Engr		P0000508	PM-Makalapa MW Replace	Thompson, R	10,674	171,097	-160,423	-94%
En_Del	Engr		P0000509	PM-Ewa Nui MW Replace	Thompson, R	11,042	171,369	-160,327	-94%
En_Del	Engr		P0000515	Ko Olina Cable Installation	JangChe, L	351,259	351,259	0	0%
En_Del	Engr		P0000530	Ka Iwi 12kV UG, Ph 1 Inc 2	Lung, H	20,564	397,119	-376,555	-95%
En_Del	Engr		P0000575	Nimitz Hwy Rehab-UA #1691	Ho, M	206,232	265,774	-59,542	-22%
En_Del	Engr		P0000588	Mililani Mauka 46kV Reloc	Fukumot, G	295,150	0	295,150	100%
En_Del	Engr		P0000589	Spare 15kv Switchgear	Tamayo, R	228,850	224,990	3,860	2%
En_Del	Engr		P0000597	Diamond Head Rd OH/UG Imp	Panalal, T	0	269,584	-269,584	-100%
En_Del	Engr		P0000598	Kahekili Hy Ltg OH/UG Conv	Lee, I	66,780	173,884	-107,104	-62%
En_Del	Engr		P0000599	EMS UPS Replacement	Arakaki, G	460,256	451,863	8,393	2%
En_Del	Engr		P0000603	Nanaikapono OH Relocation	Hiyama, R	255,125	209,757	45,368	22%
En_Del	Engr		P0000608	Sand Isle WWTP Disinfection	Ho, M	324,093	335,769	-11,676	-3%
En_Del	Engr		P0000611	Kaneohe Bay Dr Improvements	Lee, I	161,606	237,705	-76,099	-32%
En_Del	Engr		P0000614	City Hall Vlt 11	Kaneshi, R	345,433	347,009	-1,576	0%
En_Del	Engr		P0000720	Forrest Ave Realignment OH	Hiyama, R	290,865	165,604	125,261	76%
En_Del	Engr		P0000721	Archer Sub Basement Flooding	Oshiro, E	130,642	0	130,642	100%
En_Del	Engr		P0000732	Gen Ctrl Unit WAN Upgrades	Oyadoma, M	0	135,885	-135,885	-100%
En_Del	Engr		P0000734	RTU Wide Area Network	Oyadoma, M	55,121	636,193	-581,072	-91%
En_Del	Engr		P0000764	H-1 Widening Waimalu Reloc	Panalal, T	94,907	161,955	-67,048	-41%
En_Del	Engr		P0000769	2003 Spare 138-46kv Tsf	Hayakaw, W	956,890	1,026,580	-69,690	-7%
En_Del	Engr		P0000778	Waialua #2 12.5MVA Tsf Repl	Chong, R	487,835	0	487,835	100%
En_Del	Engr		P0000879	Kahe-Halawa #1 138kV SW Repl	Ikeda, L	341,979	0	341,979	100%
En_Del	Engr		P0000880	Kahe-Halawa #2 138kV SW Repl	Ikeda, L	330,100	0	330,100	100%
En_Del	Engr		P0000883	Purch spare 8%, 46-12kV tsf	Tamayo, R	321,856	0	321,856	100%
En_Del	Engr		P0000884	Purch spare 10%, 46-12kV tsf	Tamayo, R	335,295	0	335,295	100%
En_Del	Engr		P0000885	Midweek Auto-Transfer Swgr	Chang, C	352,923	316,413	36,510	12%
En_Del	Engr		P0000888	Koolau-Pukele #1 Str. 18	Uechi, S	438,591	0	438,591	100%
En_Del	Engr		P0000889	Airport 12KV Ckts Install	Chang, C	527,719	0	527,719	100%

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr		P0000894	Spare 15kV Switchgear	Tamayo, R	177,024	0	177,024	100%
En_Del	Engr		P0000902	Fort Street #1 Tsf Replace	Tamayo, R	394,142	0	394,142	100%
En_Del	Engr		P0000903	Ena #2 Tsf Replace	Tamayo, R	400,139	0	400,139	100%
En_Del	Engr		P0000904	Purch 10% 46-12kV spare tsf	Tamayo, R	355,043	0	355,043	100%
En_Del	Engr		P0000905	Kaonohi #2 Tsf Replace	Tamayo, R	360,173	0	360,173	100%
En_Del	Engr		P0000911	Palehua East A 46kV Reloc	Lee, I	24,135	0	24,135	100%
En_Del	Engr		P0000913	Kona Makaloa 25kV UG	Hiyama, R	187,972	243,112	-55,140	-23%
En_Del	Engr		P0000918	Kewalo #2 Tsf Replace	Tamayo, R	382,186	0	382,186	100%
En_Del	Engr		P0000919	Pohakupu #2 Tsf Replace	Tamayo, R	358,637	0	358,637	100%
En_Del	Engr		P0000920	Waiawa #2 Tsf Replace	Tamayo, R	374,070	0	374,070	100%
En_Del	Engr		P0000921	Helemano #1 Tsf Replace	Tamayo, R	339,314	0	339,314	100%
En_Del	Engr		P0000923	Kahala #2 4KV Tsf Replace	Nagata, C	269,118	0	269,118	100%
En_Del	Engr		P0000925	Purch 10% 46-12kV spare tsf	Oshiro, E	312,663	0	312,663	100%
En_Del	Engr		P0000926	Mililani Mauka North Gulley	Panalal, T	163,798	0	163,798	100%
En_Del	Engr		P0000927	Mililani Mauka Unit 134A	Panalal, T	121,906	0	121,906	100%
En_Del	Engr		P0000929	Loop Feed Protection Tsf	Kaneshi, R	57,994	0	57,994	100%
En_Del	Engr		P0000930	PMH-9 Control Upgrades	Kaneshi, R	268,712	0	268,712	100%
En_Del	Engr		P0000940	Pearl Highlands 2nd Fdr	Chang, C	48,005	0	48,005	100%
En_Del	Engr		P0000941	Tree Wire - Lai Road	Chang, C	172,590	0	172,590	100%
En_Del	Engr		P0000944	Ala Wai Canal 46kV Dredging	Lum, M	301,728	0	301,728	100%
En_Del	Engr		P0001012	Sheridan St Raising OH Lines	Lung, H	95,841	0	95,841	100%
En_Del	Engr		P0001015	Wahiawa-Waialua #2 P23X-P33	Chang, C	40,538	0	40,538	100%
En_Del	Engr		P0001019	Structure 22 Wailupe #2 Repl	Chang, C	44,602	0	44,602	100%
En_Del	Engr		P0001029	Mobile Substation Storage	Muranaka, G	4,117	0	4,117	100%
En_Del	Engr		P0001032	Honouliuli Reserv 46kV Reloc	Lee, I	9,077	0	9,077	100%
En_Del	Engr		P0001038	Kahe-CEIP OPGW Replace	Oyadoma, M	356,646	0	356,646	100%
En_Del	Engr		P0001039	Purch Spare 8%, 10MVA Tsf	Nakagaw, N	316,128	0	316,128	100%
En_Del	Engr		P0001047	HECO Vault 15 Relocate	Kaneshi, R	8,135	0	8,135	100%
En_Del	Engr		P0001048	Kunia TSF Replacement	Ejercit, D	246,338	0	246,338	100%
En_Del	Engr		P0001060	Lualualei Homestead Rd Impr.	Panalal, T	7,052	0	7,052	100%
En_Del	Engr		P0001068	Replace EW 8%, 10 MVA Tsf	Nagata, C	107,576	0	107,576	100%

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Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del	Engr		P6740000	wilei Ntwk Bkr Failure	Arakaki, D	189,130	0	189,130	100%
En_Del	Engr		P6862000	Kahe Bus B Bkup Prot	Arakaki, D	938,404	894,937	43,467	5%
En_Del	Engr		P7270000	N Shore Automation Comm	Shin, D	625,742	540,443	85,299	16%
En_Del	Engr		P7430000	Kahe 1-4 Cntrl Hse Expnsn	Arakaki, D	681,725	672,681	9,044	1%
En_Del	Engr		P8290000	Tripler Wahiawa mwr replace	Arakaki, G	310,396	360,615	-50,219	-14%
En_Del	Engr		P8470000	Koolau/Tripler MWR Repl	Arakaki, G	424,009	395,066	28,943	7%
En_Del	Engr		P9243000	150MHZZ Radio Replacement	Oyadoma, M	91,466	215,178	-123,712	-57%
En_Del	Engr		P9262000	Malae-Koolau MW Replace	Shin, D	0	84,115	-84,115	-100%
En_Del	Engr		P9497000	Honolulu Spur	Hayakaw, W	77,081	0	77,081	100%
En_Del	Engr		P9511000	Generation Hotline Upgrd	Thompson, R	31,911	114,450	-82,539	-72%
En_Del	Engr		P9904000	H1 WIDENING AIEA	Kaneshi, R	153,135	253,635	-100,500	-40%
	Engr Total					32,402,103	24,242,470	8,159,633	
En_Del	ProjMgt	Y00021	P0000277	New Kuahua Substation	Chong, R	1,094,326	1,570,521	-476,195	-30%
En_Del	ProjMgt	Y00021	P0000278	Makalapa Substation Prot	Chong, R	165,607	50,776	114,831	226%
En_Del	ProjMgt	Y00021	P0000279	Puuloa Substation Prot	Chong, R	35,233	29,911	5,322	18%
En_Del	ProjMgt	Y00021	P0000280	Makalapa-Kuahua FO Line	Chong, R	183,860	141,045	42,815	30%
En_Del	ProjMgt	Y00021	P0000281	Makalapa-Puuloa FO Line	Chong, R	23,216	102,702	-79,486	-77%
En_Del	ProjMgt	Y00021	P0000282	Kuahua 46kv Ln Reconnect	Chong, R	12,785	77,180	-64,395	-83%
		Y00021 Total				1,515,027	1,972,135	-457,108	
En_Del	ProjMgt	Y00030	P0000713	Dispatch Center Building	Naito, C	1,594,965	3,990,194	-2,395,229	-60%
En_Del	ProjMgt	Y00030	P0000714	Materials Storage Relocation	Naito, C	113,404	257,078	-143,674	-56%
En_Del	ProjMgt	Y00030	P0000715	Dispatch Boards	Naito, C	748	7,966	-7,218	-91%
En_Del	ProjMgt	Y00030	P0000716	Telecomm Extensions	Naito, C	46,601	59,064	-12,463	-21%
En_Del	ProjMgt	Y00030	P0000717	EMS Replacement	Naito, C	712,838	967,968	-255,130	-26%
En_Del	ProjMgt	Y00030	P0000718	Dispatch Training Simulator	Naito, C	0	74,752	-74,752	-100%
En_Del	ProjMgt	Y00030	P0000795	Parking-C&M,SysOp,&Employee	Naito, C	0	6,484	-6,484	-100%
		Y00030 Total				2,468,556	5,363,506	-2,894,950	
En_Del	ProjMgt	Y00040	P0000836	Ford Island Substation	Chong, R	90,557	87,212	3,345	4%
En_Del	ProjMgt	Y00040	P0000837	Makalapa 46kV Brkr Addition	Chong, R	29,259	11,923	17,336	145%
En_Del	ProjMgt	Y00040	P0000838	46kV Fdrs to FI Sub	Chong, R	358,411	611,605	-253,194	-41%
En_Del	ProjMgt	Y00040	P0000839	Comm. Links FI-Maklpa	Chong, R	36,111	0	36,111	100%

ecember 2004 Recorded vs. Budget

ject ager	Project to Date Actuals	ct to e get	Var $	Var %
	514,338	),740	-196,402	
C	2,473,598	0	2,473,598	100%
C	3,615,130	0	3,615,130	100%
C	25,925,775	0	25,925,775	100%
C	1,200,893	0	1,200,893	100%
C	13,486,751	0	13,486,751	100%
C	2,180,351	0	2,180,351	100%
C	201,452	0	201,452	100%
	49,083,950	0	49,083,950	
K	22,620,445	,104	21,356,341	1689%
K	757,966	0	757,966	100%
K	594	,286	-19,225,692	-100%
K	0	,307	-1,034,307	-100%
K	0	,801	-958,801	-100%
K	0	,622	-11,622	-100%
	23,379,005	,120	883,885	
C	1,746,402	,275	-229,873	-12%
C	2,453,269	,474	-43,205	-2%
C	675,709	,509	11,200	2%
C	533,276	,941	-78,665	-13%
C	0	,114	-2,114	-100%
	117,224	0	117,224	100%
	12,367	0	12,367	100%
C	53,133	0	53,133	100%
C	36,047	0	36,047	100%
C	2,109,867	,787	-27,920	-1%
	84,698,170	,601	46,267,569	
	130,109	0	130,109	100%
	166,788	0	166,788	100%
	192,433	0	192,433	100%
	136,846	0	136,846	100%

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Del Total						117,726,449	62,673,071	55,053,378	
Telecom Total						626,176	0	626,176	

December 2004 Recorded vs. Budget

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
En_Sol	CustInst	Y00027	P0000562	Mokuone 46-12KV Line Ext	Ho, M	3,780,307	3,346,530	433,777	13%
En_Sol	CustInst	Y00027	P0000563	Mokuone 46-12KV Substation 1	Tamayo, R	1,346,091	1,130,179	215,912	19%
		Y00027 Total				5,126,398	4,476,709	649,689	
En_Sol	CustInst	Y00028	P0000577	Camp Smith #2 Tsf 46KV Ln Ext	Lee, I	90,071	0	90,071	100%
En_Sol	CustInst	Y00028	P0000578	Camp Smith #2 6.25MVA Tsf	Chong, R	1,266,412	0	1,266,412	100%
En_Sol	CustInst	Y00028	P0000602	Camp Smith #2 12kv Ln & Pr Mg	Yasuda, L	79,075	0	79,075	100%
		Y00028 Total				1,435,558	0	1,435,558	
En_Sol	CustInst	Y00048	P0001041	BWS Desal SS CID	Denham, B	79	0	79	100%
En_Sol	CustInst	Y00048	P0001042	BWS Desal SS T&D	Lee, I	4,248	0	4,248	100%
		Y00048 Total				4,327	0	4,327	
En_Sol	CustInst		P0000105	Manana Infrastructure Imprv	Aochi, A	756,976	0	756,976	100%
En_Sol	Custinst		P0000774	Kukui Gardens Conversion	Ing, A	774,040	713,244	60,796	9%
	CustInst Total					8,097,299	5,189,953	2,907,346	
En_Sol	EngyProj		P0000887	COGEN: Pacific Allied	Suehiro, D	37,474	0	37,474	100%
	EngyProj Total					37,474	0	37,474	
En_Sol	SVPEnSol		P0000907	PLC Market Trial	Nordyke, M	0	387,590	-387,590	-100%
En_Sol Total						8,134,773	5,577,543	2,557,230	
	SVPEnSol Total					0	387,590	-387,590	

n December 2004

ct #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
9	Project Ellipse (hardware)	Noda, R	28,647	17,281	11,366	66%
			28,647	17,281	11,366	
			28,647	17,281	11,366	
8	IVR/ACD/CTI Ph1	Lee, J	203,924	203,347	577	0%
9	IVR/ACD/CTI Ph2	Lee, J	1,520,891	1,631,194	-110,303	-7%
0	King and Ward PBXs	Lee, J	1,946,731	2,146,377	-199,646	-9%
5	King/CPP PBX Replacement	Lee, J	248,439	0	248,439	100%
			3,919,985	3,980,918	-60,933	
2	ITS Replace UPS	Young, P	194,188	0	194,188	100%
8	Middleware Implementation	Stuller, R	27,202	22,400	4,802	21%
1	Data Center Cabinets	Stuller, R	178,362	0	178,362	100%
			4,319,737	4,003,318	316,419	
6	Finance Plus Replacement	Takamura, J	0	22,400	-22,400	-100%
			4,348,384	4,042,999	305,385	
			0	22,400	-22,400	

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Gen_Coun	Land	Y66200	P1361000	Ko Olina Sub Land	Hauret, P	27,973	27,973	0	0%
		Y66200 Total				27,973	27,973	0	
Gen_Coun	Land		P0000062	Ce-Terminating Trust Esmnts	Fujiwara, C	458,411	362,040	96,371	27%
Gen_Coun	Land		P0000063	Conv Halawa School 138kv	Hauret, P	31,883	36,883	-5,000	-14%
Gen_Coun	Land		P1376000	Waiau-CEIP 138KV Pt 2 RW	Fujiwara, C	5,952,840	0	5,952,840	100%
Gen_Coun Total						6,471,107	426,896	6,044,211	
	Land Total					6,471,107	426,896	6,044,211	

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	Engr		P0000223	W3&W4 Control Rm Roof	Yanagid, J	77,653	71,228	6,425	9%
Pwr_Sup	Engr		P0000269	Waiau Gantry Crane Catwalks	Uechi, S	173,755	195,463	-21,708	-11%
Pwr_Sup	Engr		P0000274	W3&4 Boilder Bldg ReRoof	Yanagid, J	268,879	301,660	-32,781	-11%
Pwr_Sup	Engr		P0000336	K5 Burner Front Roof	Kogasaka, D	7,068	60,563	-53,495	-88%
Pwr_Sup	Engr		P0000338	K6 Burner Front Roof	Kogasaka, D	7,899	57,616	-49,717	-86%
Pwr_Sup	Engr		P0000451	Kahe Stormwater Berm	Tasaka, S	118,480	344,028	-225,548	-66%
Pwr_Sup	Engr		P0000616	Kahe Parking Lot Addition	Tasaka, S	57,830	57,764	66	0%
Pwr_Sup	Engr		P0000620	Kahe Fire Water Storage Tnk2	Yanagid, J	31,736	676,540	-644,804	-95%
Pwr_Sup	Engr		P0000656	W 3&4 CW Sht Pile Upgrade	Tasaka, S	0	184,541	-184,541	-100%
Pwr_Sup	Engr		P0000661	W2 Maintenance Laydown Area	Yanagid, J	6,069	12,343	-6,274	-51%
Pwr_Sup	Engr		P0000662	Retaining Wall @ K1-4 Stack	Shimabu, M	174,630	0	174,630	100%
Pwr_Sup	Engr		P0000667	Kahe Sewer System Upgrade	Tasaka, S	261,696	833,032	-571,336	-69%
Pwr_Sup	Engr		P0000719	Kahe Fire Line for Wtr Tank	Yanagid, J	369,401	353,343	16,058	5%
Pwr_Sup	Engr		P0000882	Waiau WW Reline Cells 1 & 2	Yanagid, J	218,688	0	218,688	100%
Pwr_Sup	Engr		P0000909	Kahe 13-14 FT Berm Upgrade	Yanagid, J	205,718	0	205,718	100%
Pwr_Sup	Engr		P0000910	Kahe 11-12 FT Berm Upgrade	Yanagid, J	176,127	0	176,127	100%
Pwr_Sup	Engr		P0000933	K2 to CW Basin Pipe Trench	Yanagid, J	17,526	0	17,526	100%
Pwr_Sup	Engr		P0000969	Waiau Maint Shop Mods	Yanagid, J	69,211	0	69,211	100%
	Engr Total					2,242,366	3,148,121	-905,755	
Pwr_Sup	Prod		P0000244	Waiau 4 2001 Overhaul	Ornellas, L	0	18	-18	-100%
	Prod Total					0	18	-18	
Pwr_Sup	PSEngr	Y00032	P0000064	Waiau Fuel Pipeline Project	Fong, K	34,496,107	32,316,585	2,179,522	7%
Pwr_Sup	PSEngr	Y00032	P0000738	Waiau Pipeline SEC Lease	Fong, K	2,632,305	2,651,911	-19,606	-1%
Pwr_Sup	PSEngr	Y00032	P0000746	Barbers Point TF 46kV TL	Fong, K	452,869	325,433	127,436	39%
Pwr_Sup	PSEngr	Y00032	P0000747	Valve Station Service	Fong, K	53,040	173,866	-120,826	-69%
Pwr_Sup	PSEngr	Y00032	P0000748	Barbers Point TF 46kV Substation	Fong, K	1,017,219	977,316	39,903	4%
		Y00032 Total				38,651,540	36,445,111	2,206,429	
Pwr_Sup	PSEngr	Y14300	P9375000	Kahe Disc. Conc. Topping	Yanagid, J	0	81,025	-81,025	-100%
		Y14300 Total				0	81,025	-81,025	
Pwr_Sup	PSEngr	Y46800	P4683000	AES 138KV SUB-TERM BP #1,2,3	Yuen, M	-41,587	0	-41,587	100%
		Y46800 Total				-41,587	0	-41,587	100%

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Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	PSEngr	Y49000	P0001050	AES-CEIP #2 Trans. Line	Isler, R	1,680	0	1,680	100%
Pwr_Sup	PSEngr	Y49000	P0001051	AES Substation Additions	Isler, R	923	0	923	100%
Pwr_Sup	PSEngr	Y49000	P4900000	Barbers Point Unit 1 Addition	Isler, R	1,036,532	1,324,337	-287,805	-22%
		Y49000 Total				1,039,135	1,324,337	-285,202	
Pwr_Sup	PSEngr	Y64500	P6450000	Waiau Wtr Treamtment Sys	Arakaki, J	2,322,825	2,350,046	-27,221	-1%
		Y64500 Total				2,322,825	2,350,046	-27,221	
Pwr_Sup	PSEngr	Y70600	P7060000	Kahe Disc Struct Reinf	Shin, J	450,962	524,419	-73,457	-14%
		Y70600 Total				450,962	524,419	-73,457	
Pwr_Sup	PSEngr		P0000052	Kahe Fire Wtr Storage Tank	Yanagid, J	485,130	0	485,130	100%
Pwr_Sup	PSEngr		P0000056	H8 Blr Elec Warm Sys	Pasco, G	619,532	511,351	108,181	21%
Pwr_Sup	PSEngr		P0000057	H9 Blr Elec Warm Sys	Economo, D	318,252	195,813	122,439	63%
Pwr_Sup	PSEngr		P0000058	W7 Data Acq and Monitor	Fukuda, P	473,307	0	473,307	100%
Pwr_Sup	PSEngr		P0000059	W8 Data Acq and Monitor	Fukuda, P	454,677	0	454,677	100%
Pwr_Sup	PSEngr		P0000078	K5 Boiler Controls Upgrade	Fukuda, P	3,415,223	2,390,472	1,024,751	43%
Pwr_Sup	PSEngr		P0000079	K6 Boiler Controls Upgrade	Yoshida, A	2,903,186	2,889,807	13,379	0%
Pwr_Sup	PSEngr		P0000083	K4 Blr Wtr Chem Alyz Repl	Isler, R	433,098	320,514	112,584	35%
Pwr_Sup	PSEngr		P0000084	K5 Blr Wtr Chem Alyz Repl	Lum, D	411,879	615,563	-203,684	-33%
Pwr_Sup	PSEngr		P0000086	Waiau WW Oil Detectors	Fackrel, J	59,612	63,047	-3,435	-5%
Pwr_Sup	PSEngr		P0000091	H9 Attemperator Block Valve	Economo, D	39,758	38,972	786	2%
Pwr_Sup	PSEngr		P0000095	Kahe 5 Sootblower Ctls Upg	Pasco, G	165,112	0	165,112	100%
Pwr_Sup	PSEngr		P0000096	Waiau 7 Sootblower Ctls Upg	Pasco, G	140,590	151,956	-11,366	-7%
Pwr_Sup	PSEngr		P0000097	Waiau 8 Sootblower Ctls Upg	Arakaki, J	451,371	282,681	168,690	60%
Pwr_Sup	PSEngr		P0000172	Iwilei Fuel Oil Pump Rpl	Fackrel, J	84,599	119,236	-34,637	-29%
Pwr_Sup	PSEngr		P0000199	Kahe FWH #34 Replacement	Yamashi, K	110	0	110	100%
Pwr_Sup	PSEngr		P0000203	Waiau 4 Ignitor Replacement	Lum, D	0	9,358	-9,358	-100%
Pwr_Sup	PSEngr		P0000204	W7 BFP Rec Ctrl Valves Upg	Economo, D	37,969	0	37,969	100%
Pwr_Sup	PSEngr		P0000206	Waiau Tk1 Roof	Isler, R	298,968	0	298,968	100%
Pwr_Sup	PSEngr		P0000208	W3 Cycle Chem Instr.	Cummings, C	327,263	313,391	13,872	4%
Pwr_Sup	PSEngr		P0000209	W4 Cycle Chem Instr.	Lum, D	48,678	54,258	-5,580	-10%
Pwr_Sup	PSEngr		P0000210	W5 Cycle Chem Instr.	Lum, D	39,364	43,877	-4,513	-10%
Pwr_Sup	PSEngr		P0000211	W6 Cycle Chem Instr.	Lum, D	431,663	379,011	52,652	14%

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Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	%
e Chem Instr.	Lum, D	460,157	374,694	85,463	3%
Chem Instr.	Lum, D	168,404	215,311	-46,907	2%
e Chem Instr.	Isler, R	257,801	208,301	49,500	4%
e Chem Instr.	Lum, D	18,551	20,678	-2,127	0%
) Cardox Fire Prot	Yuen, M	366,605	366,605	0	0%
strument Air Compr	Yuen, M	288,079	0	288,079	0%
RH Attemp Spray	Economo, D	159,694	203,086	-43,392	1%
RH Attemp Spray	Economo, D	40,001	0	40,001	0%
RH Attemp Spray	Economo, D	91,281	0	91,281	0%
Rec Ctrl Valves Upg	Economo, D	97,395	53,343	44,052	3%
RH Attemp Spray	Economo, D	158,886	139,153	19,733	4%
ervice Air Compressor	Arakaki, J	205,660	326,469	-120,809	7%
Rec Ctrl Valves Upg	Pasco, G	62,465	0	62,465	0%
Rec Ctrl Valves Upg	Pasco, G	38,503	0	38,503	0%
Rec Ctrl Valves Upg	Pasco, G	61,250	0	61,250	0%
Rec Ctrl Valves Upg	Economo, D	0	44,368	-44,368	0%
RH Attemp Spray	Pasco, G	142,991	0	142,991	0%
RH Attemp Spray	Pasco, G	97,316	0	97,316	0%
RH Attemp Spray	Pasco, G	94,917	0	94,917	0%
RH Attemp Spray	Economo, D	149,403	8,960	140,443	7%
k & Breeching Rpl	Yanagid, J	283,379	258,757	24,622	0%
Acq & Monitoring	Yoshida, A	241,606	43,456	198,150	6%
Acq & Monitoring	Fukuda, P	133,600	141,233	-7,633	5%
Acq & Monitoring	Yoshida, A	56,414	0	56,414	0%
Acq & Monitoring	Fukuda, P	438,629	446,706	-8,077	2%
ormwater Erosion Ctrl	Tasaka, S	0	26,783	-26,783	0%
denser Refurbishment	Arakaki, J	519,908	417,289	102,619	5%
VTF Batch Tnk Mods	Yamashi, K	379,157	380,667	-1,510	0%
WH #72 Replacement	Kurisu, A	242,229	226,214	16,015	7%
WH #82 Replacement	Kurisu, A	287,020	227,838	59,182	6%
Sootblower Upgrade	Arakaki, J	70,328	286,869	-216,541	5%

2004

Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
e Gas O2 Analyzer	Yoshida, A	97,863	121,528	-23,665	-19%
e Gas O2 Analyzer	Fukuda, P	107,811	81,573	26,238	32%
3 Ignitor Replacement	Lum, D	133,868	169,899	-36,031	-21%
bine Steam Gland Conv	Arakaki, J	259,912	0	259,912	100%
Loggers	Isler, R	0	107,278	-107,278	-100%
drogen Purity Meter	Yoshida, A	60,229	60,229	0	0%
FWH #64 Replacement	Yamashi, K	404,628	405,265	-637	0%
FWH #63 Replacement	Yamashi, K	260,010	260,335	-325	0%
vl Scrn Rpl	Yuen, M	132,452	128,934	3,518	3%
ot Blower Upgrade	Yamashi, K	6,009	550,508	-544,499	-99%
vl Scrn Rpl	Yuen, M	142,064	135,907	6,157	5%
lectronic Parts Store	Noda, R	32,414	0	32,414	100%
lotor Part Wash Enclose	Kogasaka, D	16,958	16,742	216	1%
Electric Parts Store	Noda, R	22,991	0	22,991	100%
Pond Sheetpiling	Tasaka, S	231,630	259,925	-28,295	-11%
Enclosure	Yanagid, J	48,864	38,030	10,834	28%
ond 1A Clean & Lining	Ornellas, L	0	12,172	-12,172	-100%
3 ERV Replacement	Cummings, C	72,271	71,967	304	0%
3 ERV Replacement	Fackrel, J	101,332	118,754	-17,422	-15%
5 Wastewater Sump Upgr	Yuen, M	262,138	259,525	2,613	1%
ervice Air Compressor	Arakaki, J	224,515	261,815	-37,300	-14%
ervice Air Compressors	Fackrel, J	125,452	233,956	-108,504	-46%
Springs Kam Hwy Fence	Tasaka, S	99,974	0	99,974	100%
&4 Sootblower Platform	Tasaka, S	146,599	0	146,599	100%
Stream Fence Wall	Tasaka, S	43,774	0	43,774	100%
VH #33 Replacement	Economo, D	252,589	252,589	0	0%
WH #54 Replacement	Yamashi, K	445,201	445,677	-476	0%
WH #35 Replacement	Yamashi, K	761,031	227,196	533,835	235%
nd Wtrbx Repl	Kurisu, A	0	33,204	-33,204	-100%
mergency Generator	Fackrel, J	7,860	114,938	-107,078	-93%
Turb Row 9-11 Blades	Yuen, M	147,002	278,934	-131,932	-47%

	Var $	Var %
5	-1,222,044	-52%
3	-198,319	-83%
0	4,206	1001%
0	23,937	5699%
7	-938	-1%
0	170,611	100%
4	-46,592	-47%
3	-52,773	-56%
0	-62,880	-100%
7	419,752	100%
0	104,763	100%
9	25,818	5%
0	-68,459	-84%
8	-107,988	-100%
1	348,075	80%
3	-7,143	-100%
3	-2,730	-67%
0	-92,022	-27%
9	-114,863	-54%
3	27,439	36%
0	193,766	100%
0	469,210	100%
9	-139,195	-40%
3	1,198	2%
9	35,872	26%
3	264	1%
9	69,160	18%
0	171,318	100%
2	-76,587	-54%
4	-148,644	-100%
0	32,620	100%

Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000682	W6 Annunciator Upgrade	Fukuda, P	6,465	340,915	-334,450	-98%
Pwr_Sup	PSEngr		P0000690	W5 Annunciator Upgrade	Fukuda, P	176,362	178,828	-2,466	-1%
Pwr_Sup	PSEngr		P0000741	W5 Demin raw wtr piping	Arakaki, J	257,455	0	257,455	100%
Pwr_Sup	PSEngr		P0000750	K5 Reheater Element Replacemen	Yamashi, K	1,583,724	1,239,213	344,511	28%
Pwr_Sup	PSEngr		P0000771	H81 TVL Screen Repl	Arakaki, J	151,097	138,527	12,570	9%
Pwr_Sup	PSEngr		P0000772	H92 TVL Screen Repl	Arakaki, J	158,081	152,650	5,431	4%
Pwr_Sup	PSEngr		P0000773	H8 HP/LP Turbine Blading	Yuen, M	2,219,075	0	2,219,075	100%
Pwr_Sup	PSEngr		P0000777	Waiau Tank 5 Roof Replace	Isler, R	1,061,092	0	1,061,092	100%
Pwr_Sup	PSEngr		P0000781	KPP FWH #41 Replacement	Kurisu, A	0	213,216	-213,216	-100%
Pwr_Sup	PSEngr		P0000782	KPP FWH #42 Replacement	Kurisu, A	0	224,373	-224,373	-100%
Pwr_Sup	PSEngr		P0000784	K22 TVL Screen Repl	Arakaki, J	120,452	174,329	-53,877	-31%
Pwr_Sup	PSEngr		P0000785	K41 TVL Screen Repl	Arakaki, J	103,718	175,900	-72,182	-41%
Pwr_Sup	PSEngr		P0000786	Kahe 1 BW Sump Upgrade	Economo, D	112,920	119,949	-7,029	-6%
Pwr_Sup	PSEngr		P0000787	K5/6 Lube water pump	Kurisu, A	8,717	54,965	-46,248	-84%
Pwr_Sup	PSEngr		P0000788	Kahe 2 BW Sump Upgrade	Economo, D	69,682	119,081	-49,399	-41%
Pwr_Sup	PSEngr		P0000789	Kahe 3 BW Sump Upgrade	Economo, D	105,007	118,219	-13,212	-11%
Pwr_Sup	PSEngr		P0000790	Kahe 4 BW Sump Upgrade	Economo, D	61,762	117,363	-55,601	-47%
Pwr_Sup	PSEngr		P0000791	Kahe 5 BW Sump Upgrade	Economo, D	69,431	116,514	-47,083	-40%
Pwr_Sup	PSEngr		P0000792	Kahe 6 BW Sump Upgrade	Economo, D	58,698	115,671	-56,973	-49%
Pwr_Sup	PSEngr		P0000798	W6 Instr Air Compr	Kurisu, A	0	166,136	-166,136	-100%
Pwr_Sup	PSEngr		P0000799	K2 Operator Console Upgrade	Kabutan, D	0	175,772	-175,772	-100%
Pwr_Sup	PSEngr		P0000800	K1 Operator Console Upgrade	Fukuda, P	0	5,683	-5,683	-100%
Pwr_Sup	PSEngr		P0000802	W5 Operator Console Upgrade	Kabutan, D	0	10,701	-10,701	-100%
Pwr_Sup	PSEngr		P0000803	W3 Operator Console Upgrade	Kabutan, D	344,969	174,680	170,289	97%
Pwr_Sup	PSEngr		P0000804	W6 Operator Console Upgrade	Kabutan, D	154,736	194,100	-39,364	-20%
Pwr_Sup	PSEngr		P0000805	Kahe Intake Lighting	Kabutan, D	0	90,768	-90,768	-100%
Pwr_Sup	PSEngr		P0000806	K06 CWP MOV Replacement	Economo, D	279,681	267,189	12,492	5%
Pwr_Sup	PSEngr		P0000809	K6 Annunciator Replacement	Tiede, C	170	310,085	-309,915	-100%
Pwr_Sup	PSEngr		P0000811	W8 Annunciator Replacement	Garrison, R	0	404,047	-404,047	-100%
Pwr_Sup	PSEngr		P0000817	W6 Exciter/Regulator Replace	Rompask, D	0	348,801	-348,801	-100%
Pwr_Sup	PSEngr		P0000819	W8 Exciter/Regulator Repl	Yoshida, A	0	347,559	-347,559	-100%

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Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	PSEngr		P0000820	K1 Main Xfmr Replacement	Yoshida, A	0	6,536	-6,536	-100%
Pwr_Sup	PSEngr		P0000821	K2 Battery Bank Replacement	Garrison, R	0	196,303	-196,303	-100%
Pwr_Sup	PSEngr		P0000822	K4 Recorder Replacement	Yoshida, A	73,947	189,908	-115,961	-61%
Pwr_Sup	PSEngr		P0000829	W4 Main Xfmr Replacement	Kabutan, D	0	5,683	-5,683	-100%
Pwr_Sup	PSEngr		P0000830	K1 Aux Xfmr Replacement	Yoshida, A	0	6,536	-6,536	-100%
Pwr_Sup	PSEngr		P0000832	W3 Main Xfmr Replacement	Kabutan, D	888,591	726,000	162,591	22%
Pwr_Sup	PSEngr		P0000853	K2 Excitation System	Kabutan, D	0	312,664	-312,664	-100%
Pwr_Sup	PSEngr		P0000854	K1 Excitation System	Kabutan, D	0	27,841	-27,841	-100%
Pwr_Sup	PSEngr		P0000855	K6 Aux Transformer	Fukuda, P	255,103	373,624	-118,521	-32%
Pwr_Sup	PSEngr		P0000860	K2 Annunciator Replacement	Fukuda, P	6,179	353,727	-347,548	-98%
Pwr_Sup	PSEngr		P0000861	K1 Annunciator Replacement	Fukuda, P	0	6,549	-6,549	-100%
Pwr_Sup	PSEngr		P0000863	K4 Generator Rotor Rewind	Dahlquist, L	806,557	786,389	20,168	3%
Pwr_Sup	PSEngr		P0000869	K4 Annunciator Replacement	Yoshida, A	0	7,496	-7,496	-100%
Pwr_Sup	PSEngr		P0000870	H9 Generator Rotor Rewind	Kabutan, D	10,256	0	10,256	100%
Pwr_Sup	PSEngr		P0000871	Kahe 1 Sootblower Controls	Economo, D	0	24,225	-24,225	-100%
Pwr_Sup	PSEngr		P0000873	Kahe 2 Sootblower Controls	Economo, D	20,638	305,944	-285,306	-93%
Pwr_Sup	PSEngr		P0000874	Kahe 4 Sootblower Controls	Economo, D	0	210,601	-210,601	-100%
Pwr_Sup	PSEngr		P0000893	H8 Generator Rotor Rewind	Dahlquist, L	797,563	0	797,563	100%
Pwr_Sup	PSEngr		P0000898	Kahe 42 Tvl Screen	Arakaki, J	130,017	0	130,017	100%
Pwr_Sup	PSEngr		P0000901	Kahe Reclaimed Oil Transfer	Arakaki, J	184,116	0	184,116	100%
Pwr_Sup	PSEngr		P0000912	Kahe 12 Traveling Screen	Arakaki, J	136,969	0	136,969	100%
Pwr_Sup	PSEngr		P0000939	Waiau CT Separation	Fukuda, P	235,186	0	235,186	100%
Pwr_Sup	PSEngr		P0000955	W8 BFP Rotating Elem/Volute	Yuen, M	329,172	0	329,172	100%
Pwr_Sup	PSEngr		P0000958	K6 SSH Element Replacement	Fackrel, J	29,777	0	29,777	100%
Pwr_Sup	PSEngr		P0000961	W82 TVL SCREEN REPL	Vlacovsky, R	101,509	0	101,509	100%
Pwr_Sup	PSEngr		P0000963	K51 TVL SCREEN REPL	Arakaki, J	162,120	0	162,120	100%
Pwr_Sup	PSEngr		P0000964	K62 TVL SCREEN REPL	Arakaki, J	72,309	0	72,309	100%
Pwr_Sup	PSEngr		P0000965	K11 TVL SCREEN REPL	Arakaki, J	128,879	0	128,879	100%
Pwr_Sup	PSEngr		P0000970	W5 Mixed Bed Polisher	Arakaki, J	202,355	0	202,355	100%
Pwr_Sup	PSEngr		P0001002	K31 TVL SCREEN REPL	Arakaki, J	149,606	0	149,606	100%
Pwr_Sup	PSEngr		P0001008	W72 TVL SCREEN REPL	Arakaki, J	98,515	0	98,515	100%

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Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
Pwr_Sup	PSEngr		P0001011	W81 TVL SCREEN REPL	Arakaki, J	98,515	0	98,515	100%
Pwr_Sup	PSEngr		P0001018	K5 Turbine Blades	Yuen, M	424,623	0	424,623	100%
Pwr_Sup	PSEngr		P0001024	Kahe 52 Traveling Screen	Arakaki, J	124,565	0	124,565	100%
Pwr_Sup	PSEngr		P0001036	W3 HP Turbine Curtis Blade	Yuen, M	157,849	0	157,849	100%
Pwr_Sup	PSEngr		P7590000	W7 Controls Upgrade	Slingerland, G	0	84,841	-84,841	-100%
Pwr_Sup	PSEngr		P8820000	W4 Exciter Upgrade	Kabutan, D	0	15,966	-15,966	-100%
Pwr_Sup	PSEngr		P9027000	H9 Primary Fuel Oil Pumps	Isler, R	108,533	0	108,533	100%
Pwr_Sup	PSEngr		P9401000	Kahe Fire Pump Inst	Arakaki, J	809,098	461,562	347,536	75%
Pwr_Sup	PSEngr		P9453000	H9 Coriolis FO Flowmeter	Yamashi, K	93,657	93,993	-336	0%
Pwr_Sup	PSEngr		P9454000	K4 Boiler Control Upgrade	Yoshida, A	1,367,872	1,009,276	358,596	36%
Pwr_Sup	PSEngr		P9492000	K6 A/H Acoustic Sootblower	Economo, D	443,662	371,097	72,565	20%
Pwr_Sup	PSEngr		P9539000	K3 Boiler Control Upgrade	Garrison, R	196,879	124,718	72,161	58%
Pwr_Sup	PSEngr		P9541000	K4 Data Acq and Monitor	Yoshida, A	159,019	77,435	81,584	105%
	PSEngr Total					86,510,283	76,567,288	9,942,995	
Pwr_Sup	VPPwrSup		P0000942	Waiau Tank 4 Bottom Replmt	Yuen, N	1,040,425	0	1,040,425	100%
Pwr_Sup Total						89,793,074	79,715,427	10,077,647	
	VPPwrSup Total					1,040,425	0	1,040,425	

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Capital Expenditures Project Through December 2004

Project Link	Dept	Grand parent	*Project #	Project Title	Project Manager	Project to Date Actuals	Project to Date Budget	Var $	Var %
SVPOp	CustSvc		P0000348	Power Revenue Mgt Pilot	Oishi, L	0	182,560	-182,560	-100%
SVPOp	CustSvc		P0000349	Meter Reading System Replaceme	Oishi, L	337,897	332,942	4,955	1%
SVPOp	CustSvc		P0000350	Field Service System Replacement	Oda, W	465,513	459,736	5,777	1%
SVPOp	CustSvc		P0000571	CIS Replacement	Hull, Thomas	0	415,511	-415,511	-100%
SVPOp	CustSvc		P0000693	Time of Use Metr/Billing	Ejercito, A	0	350,000	-350,000	-100%
SVPOp	CustSvc		P0000780	Field Svc/Coll Entry Device	Oishi, L	19,104	0	19,104	100%
SVPOp	CustSvc		P0000877	Payment Extraction Equip	Ejercito, A	40,678	44,800	-4,122	-9%
SVPOp	CustSvc		P0000878	Check Processing Upgrade	Ejercito, A	48,408	26,680	21,728	81%
SVPOp	CustSvc		P0000928	Ward Lobby - Security Imprv	Hirashima, J	21,940	0	21,940	100%
SVPOp Total						933,540	1,812,229	-878,689	
	CustSvc Total					933,540	1,812,229	-878,689	

CA-IR-209

Ref: Underground cost sharing projects discussed beginning at page 7.

Please provide copies of any studies addressing the expected incremental costs (i.e., locating and repairing lines, etc.) and/or expected savings (i.e., avoided wind damage, avoided termite repairs, etc.) resulting from the underground versus overhead installation of lines.

HECO Response:

HECO does not have any study that specifically addresses the expected incremental costs (i.e., locating and repairing lines, etc.) and/or expected savings (i.e., avoided wind damage, avoided termite repairs, etc.) resulting from the underground versus overhead installation of lines. However, we do have copies of studies that touch upon the broader issue of cost and benefit between an overhead versus underground line.

In 2004, the Edison Electric Institute (EEI) conducted a study entitled "Out of Sight, Out of Mind?" that studies the costs and benefits of undergrounding overhead power lines (see pages 3 to 23). This report provides a summary overview of previously completed studies (in the US and abroad) and examines historical performance data for underground and overhead lines to evaluate the benefits and costs of placing more existing overhead electrical distribution lines underground. This report is voluminous and copyrighted. One copy each will be provided to the Consumer Advocate and the Commission under separate transmittal under the "fair use" exception to the copyright laws. Any copies made of the report is subject to copyright laws.

In 2000, HECO hired a consultant, Power Engineers, to conduct a study entitled "Life Cycle Cost for Overhead Versus Underground Subtransmission and Distribution Systems" (see pages 24 to 96). The purpose of this study was to provide HECO with projected life cycle costs (initial capital costs plus operation and maintenance costs) for various scenarios, which would then provide HECO a cost tool to be used when assessing the advantages and disadvantages of

overhead versus underground construction of subtransmission and distribution systems. Since the report is voluminous, one copy each will be provided to the Consumer Advocate and Commission under separate transmittal.

COPY

EDISON ELECTRIC INSTITUTE

Out of Sight, Out of Mind?

A study on the costs and benefits of undergrounding overhead power lines

By:
Brad Johnson
Independent Energy Advisor

For:
Edison Electric Institute

January 2004

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Published by:
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Report Outline

- *How much does undergrounding improve electric reliability?*
- *Other benefits of undergrounding.*
- *The costs of undergrounding.*
- *Benefit/cost summary.*
- *Paying for undergrounding.*

Executive Summary

It is an unpleasant fact of modern day life – big storms such as hurricanes and ice storms cause major power outages. Sometimes these outages in heavily damaged areas can last for days or even weeks. In the post mortem that follows a major storm related power outage, there is almost always a public clamoring for burying overhead power lines. For many, it seems only intuitive that placing electric wires underground should protect them from severe storms.

This report provides a summary overview of previously completed studies [in the US and abroad] and examines historical performance data for underground and overhead lines to evaluate the benefits and costs of placing more of our existing overhead electric distribution infrastructure underground.

The report finds that burying overhead power lines has a huge price tag, costing about 10 times what it costs to install overhead power lines. When compared to overhead power systems, underground power systems tend to have fewer power outages, but the duration of these outages tends to be much longer. Underground power systems are also not immune from outages during storms. The bottom line – reliability benefits associated with burying existing overhead power lines are uncertain and in most instances do not appear to be to be sufficient to justify the high price tag that undergrounding carries.

There are however, other substantial benefits for burying existing overhead power lines, the most significant of which is improved aesthetics. Many communities and individuals want their power lines removed from sight. While the benefits derived from these kinds of undergrounding initiatives are difficult to quantify, they are real and they are substantial. Because these projects cannot be justified based on standard economic criteria, community and government decision makers often struggle to determine who should pay and who should benefit from undergrounding initiatives based on aesthetics.

The report concludes with summaries of innovative programs that communities and local governments have adopted to help pay for burying their overhead power lines.

Introduction

In the last decade, the US East Coast and Midwest regions have experienced several catastrophic "100 year storms." These storms have left widespread electric power outages that have lasted for several days (Figure 1).

Given the critical role that electricity plays in our modern lifestyle, even a momentary power outage is an inconvenience. A days-long power outage presents a major hardship and can be catastrophic in terms of its health and safety consequences, and the economic losses it creates.

Why then, don't we bury more of our power lines so they will be protected from storms?

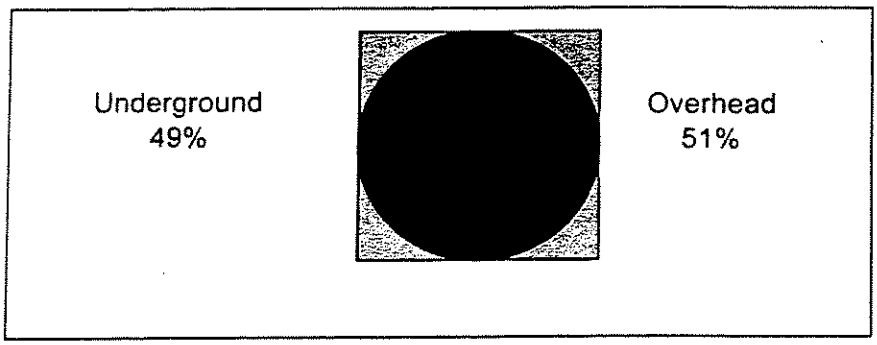
Figure 1: Electric Outages Caused by Severe Storms

Storm Event	Utility	Date	Customers Impacted	Outage Duration (Days)
Ice Storm	Kentucky Utilities	2003	146,000	8
Ice Storm	Duke	2002	1,375,000	9
	Carolina Power	2002	561,000	8
Ice Storm	KCPL	2002	305,000	10
Snowstorm	Carolina Power	2000	173,000	5
Hurricane Floyd	Virginia Power	1999	800,000	5
	Carolina Power	1999	537,000	6
	BGE	1999	490,000	5
Ice Storm	Pepco	1999	213,000	5
	BGE	1999	350,000	5
Ice Storm	Central Maine Power	1998	250,000	21
Ice Storm	Virginia Power	1998	401,000	10
Hurricane Fran	Virginia Power	1996	415,000	6
	Duke	1996	450,000	9
Ice Storm	Duke	1996	650,000	8
	Carolina Power	1996	61,000	4
	Carolina Power	1996	790,000	10

Source: Press Accounts of Storms

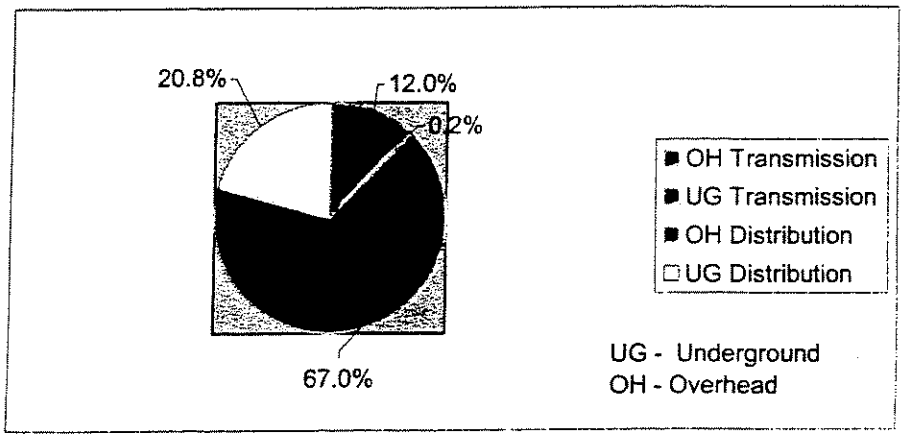
The fact is we already are placing significant numbers of power lines underground. Over the past 10 years, approximately half of the capital expenditures by US investor-owned utilities for ***new*** transmission and distribution wires have been for underground wires (Figure 2). Almost 80% of the nation's electric grid, however, has been built with overhead power lines (Figure 3). Would electric reliability be improved if more of these existing overhead lines were placed underground as well?

Figure 2: Capital Expenditures for New Power Lines (1993 – 2002 Average)



Source: FERC Form 1 Data 1993-2002

Figure 3: Miles of Overhead & Underground Line 2001 U.S. Total



Source: EEI Statistics

This report examines the major issues associated with undergrounding existing overhead power lines. It summarizes reliability comparisons between underground and overhead power lines and presents data on the benefits and costs of undergrounding. The report also presents summary information on programs that have been developed to fund undergrounding initiatives.

What the report finds is that burying existing overhead power lines does not completely protect consumers from storm-related power outages. However, underground power lines do result in fewer overall power outages, but the duration of power outages on underground systems tends to be longer than for overhead lines.

Also, undergrounding is expensive, costing up to $1 million/mile or almost 10 times the cost of a new overhead power line. This means that most undergrounding projects cannot be economically justified and must cite intangible, unquantifiable benefits such as improved community or neighborhood aesthetics for their justification. Determining who pays and who benefits from undergrounding projects can be difficult and often requires the establishment of separate government sponsored programs for funding.

I. How Much Does Undergrounding Improve Electric Reliability?

Many consumers assume that burying electric power lines will protect them from power outages caused by storms, and significantly improve overall power reliability. This is not necessarily the case.

Underground power systems are not immune from storm related outages. Figure 4 shows the

Measuring Electric Reliability

Accurately measuring electric reliability is difficult. Most measures of electric reliability focus on two metrics:

- The **frequency** with which a customer sustains a power outage, i.e. the number of power outages/year, and
- The **duration** of power outages, i.e. the number of minutes/year a customer is without power.

For most utilities, it is extremely difficult to track the number of outages that occur on their systems and determine the number of customers impacted by these power outages. Utility switching actions, for example, can result in momentary outages that last only a fraction of a second.

For storm-related outages, the utility often relies on customers to provide notification that they are without power. If the customer does not report the outage, the utility may be unaware of it.

In spite of these difficulties, utilities worldwide collect data on both the frequency and duration of power outages. Increasingly, this data is used to measure utility performance against reliability standards, and utilities are rewarded and penalized based on how the data indicates they are performing.

Comparing the reliability of overhead power lines to underground power lines is even more difficult. Most utility outage-reporting systems do not separately track overhead and underground systems.

Another problem in trying to evaluate underground lines is that most underground circuits have at least some component above the ground. Installing monitoring equipment to distinguish between outages on the overhead and underground components of the same circuit is prohibitively expensive.

Comparing Overhead Reliability to Underground Reliability

Comparative reliability data indicate that the frequency of outages on underground systems can be substantially less than for overhead systems. However, when the duration of outages is compared, underground systems lose much of their advantage.

Figure 5 shows the frequency of power outages for overhead and underground electric systems around the world. The data show that the frequency of power outages on underground systems is only about one-third of that of overhead systems.

Figure 5: Yearly Power Interruptions per 100 km of Circuit

Utility	Voltage	Overhead	Underground
Integral Energy	HV	30.3	2.8
Integral Energy	LV	7.4	7.7
Energy Australia	HV	13.0	4.0
Citipower	HV	4.0	1.0
Mercury Energy	HV	30.5	7.1
Survey of Australian Utilities	HV & LV	23.6	5.6
France	LV	12.3	7.6
Finland	LV	8.0	4.0
Average		**16.1**	**5.0**

Note: km = kilometer, HV = high voltage, LV = low voltage

Source: "The Putting Cables Underground Working Group Report"
http://www.dcita.gov.au/cables/econ/econ_9a.htm

Figure 6 compares the duration of power outages for overhead and underground systems for UK utilities. This data shows that in 1996 and 1997, underground circuits were actually ***less*** reliable than overhead circuits. Over the 10-year period, however, the duration of outages for underground was about half of what it was for overhead.

Figure 6: Thousands of Customer Minutes Lost per 100 km of Circuit: UK Utilities

	1996/97		10 Year Average	
Utility	Overhead	Underground	Overhead	Underground
Eastern	2.5	4.5	7.5	3.5
East Midland	3.5	5.0	7.5	4.0
Manweb	3.5	3.5	5.0	4.5
Midlands	6.5	5.0		1.0
Northern	1.8	3.0	4.8	4.0
NORWEB	2.8	3.5	3.5	3.0
SEEBOARD	6.5	6.0	20.0	5.5
Southern	3.0	3.0	7.0	3.5
SWALEC	3.8	6.5		
Southern Western	2.0	4.0	5.5	5.5
Yorkshire	4.5	4.0	2.8	3.5
Scottish	3.5	2.5	2.0	2.0
Average	**3.7**	**4.2**	**6.6**	**3.6**

"The Putting Cables Underground Working Group Report"
http://www.dcita.gov.au/cables/econ/econ_9a.htm

Figure 7 presents data from a 2000 report issued by the Maryland Public Service Commission. Maryland utilities were asked to select "comparable" overhead and underground feeders and provide comparative reliability data for an historical period.

Based on the data summarized in Figure 7, the Maryland commission concluded in its final report that the impact of undergrounding on reliability was "unclear."[1]

Figure 7: Maryland Overhead vs. Underground Feeder Reliability Comparison[1]

	Overhead	Avg	Underground	Avg
Allegheny Power				
1996 SAIFI	0.11		0.28	
1997 SAIFI	1.73	0.6	0.91	0.8
1998 SAIFI	0.04		1.29	
1996 SAIDI	25.16		49.49	
1997 SAIDI	124.96	51.6	569.88	236.8
1998 SAIDI	4.59		91.07	
BGE				
1997 SAIFI	3.43		0.58	
1998 SAIFI	0.45	2.6	1.72	1.2
1999 SAIFI	3.84		1.39	
1997 SAIDI	65.00		178.00	
1998 SAIDI	242.00	152.7	94.00	130.0
1999 SAIDI	151.00		118.00	
Conectiv				
1997 SAIFI	1.84		1.25	
1998 SAIFI	0.29	0.8	1.47	1.0
1999 SAIFI	0.34		0.21	
1997 SAIDI	129.04		11.80	
1998 SAIDI	23.48	65.6	129.61	53.3
1999 SAIDI	44.30		18.59	
Pepco				
1997 SAIFI	2.59		0.22	
1998 SAIFI	2.47	2.1	0.93	0.7
1999 SAIFI	1.31		1.07	
1997 SAIDI	4.55		2.21	
1998 SAIDI	0.78	3.2	0.71	2.1
1999 SAIDI	4.39		3.29	

[1] *Excludes major storms*
Source: "Report to the Public Service Commission of Maryland on the Selective Undergrounding of Electric Transmission & Distribution Plant" Februrary 14, 2000.

Note:
SAIFI = Total Number of Customers Interrupted/Total Customers

SAIDI = Sum of All Customer Interruption Minutes/Total Customers

[1] "Report to the Public Service Commission of Maryland on the Selective Undergrounding of Electric Transmission and Distribution Plant," prepared by the Selective Undergrounding Working Group; February 14, 2000; page 2

Figure 8 summarizes five years of underground and overhead reliability comparisons for North Carolina's investor-owned electric utilities – Duke Energy, Progress Energy Carolinas and

- It is relatively easy to locate a fault on an overhead line and repair it. A single line worker, for example, can locate and repair a fuse. This results in shorter duration outages.[4]
- Underground lines require specialized equipment and crews to locate a fault, a separate crew with heavy equipment to dig up a line, and a specialized crew to repair the fault. This greatly increases the cost and the time to repair a fault on an underground system.[5]
- In urban areas, underground lines are four times more costly to maintain than overhead facilities.[6]
- Underground lines have a higher failure rate initially due to dig-ins and installation problems. After three or four years, however, failures become virtually non-existent.[7]
- As underground cables approach their end of life, failure rates increase significantly and these failures are extremely difficult to locate and repair. Maryland utilities report that their underground cables are becoming unreliable after 15 to 20 years and reaching their end of life after 25 to 35 years.[8]

It is unlikely that 100% of the circuit from the substation to the customer can be placed entirely underground.

This leaves the circuit vulnerable to the same types of events that affect other overhead lines, e.g. high winds and ice storms.

- Pepco found that customers served by 40-year-old overhead lines had better reliability than customers served by 20-year-old underground lines.[9]
- Two Maryland utilities, Choptank and Conectiv, have replaced underground distribution systems with overhead systems to improve reliability.[10]
- Water and moisture infiltration can cause significant failures in underground systems when they are flooded, as often happens in hurricanes.[11]
- Due to cost or technical considerations, it is unlikely that 100% of the circuit from the substation to the customer can be placed entirely underground. This leaves the circuit vulnerable to the same types of events that impact other overhead lines, e.g. high winds and ice storms.

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[4] North Carolina Utilities Commission

[5] North Carolina Utilities Commission

[6] "The Feasibility of Placing Electric Distribution Facilities Underground," North Carolina Utilities Commission, November 2003

[7] Duke Power

[8] "Report to the Public Service Commission of Maryland on the Selective Undergrounding of Electric Transmission and Distribution Plant," prepared by The Selective Undergrounding Working Group; February 14, 2000; page 9

[9] "Report to the Public Service Commission of Maryland on the Selective Undergrounding of Electric Transmission and Distribution Plant," prepared by The Selective Undergrounding Working Group; February 14, 2000; page 2, page 9

[10] "Report to the Public Service Commission of Maryland on the Selective Undergrounding of Electric Transmission and Distribution Plant," prepared by the Selective Undergrounding Working Group; February 14, 2000; page 9

[11] Duke Power

II. Other Benefits of Undergrounding

One of the most commonly cited benefits of undergrounding is the removal of unsightly poles and wires. Local communities and neighborhoods routinely spend millions to place their existing overhead power lines underground.

Similarly, when given the option, builders of new residential communities will often pay a premium of several thousand dollars/home to place the utilities underground. These "aesthetic" benefits are virtually impossible to quantify but are, in many instances, the primary justification for projects to place existing power lines underground.

The "aesthetic" benefits are virtually impossible to quantify but are, in many instances, the primary justification for projects to place existing power lines underground.

Underground lines do have other benefits. In 1998, Australia completed a major benefit/cost analysis of undergrounding all existing power lines in urban and suburban areas throughout the country.[12] The study cost more than $1.5 million Australian ($1.05 million US at current rates), and represents what may be the most comprehensive undertaking to date to quantify the benefits and costs related to undergrounding.

In addition to the value of improved aesthetics (which the Australian study did not attempt to quantify except as it affected property values) the study identified the following potential benefits related to undergrounding that it attempted to quantify:

- Reduced motor-vehicle accidents caused by collisions with poles
- Reduced losses caused by electricity outages
- Reduced network maintenance costs.
- Reduced tree-pruning costs
- Increased property values
- Reduced transmission losses due to the use of larger conductors
- Reduced greenhouse-gas emissions (lower transmission losses)
- Reduced electrocutions
- Reduced brushfire risks, and
- Indirect effects on the economy such as employment.

Of this list, only four items were deemed significant in the study's benefit/cost calculus. Figure 9 summarizes the values the Australian study calculated for each of these benefits. They included:

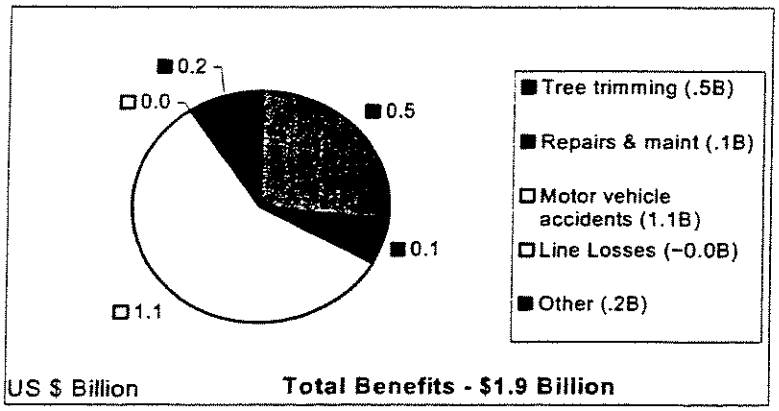
- Motor-vehicle accidents
- Maintenance costs
- Tree-trimming costs, and
- Line Losses.

The Australian list of benefits does not include improved reliability as a significant benefit of undergrounding. It identifies the reduction in losses from motor vehicle accidents as the largest benefit from undergrounding – something utilities have no control over (Figure 9).

[12] "The Putting Cables Underground Working Group Report" (http://www.dcita.gov.au/cables/report_x.htm#intro)

The US has never conducted a national undergrounding study comparable to the one conducted by Australia. Undergrounding studies in the US have been regional in nature, and have focused on the costs rather than the benefits of undergrounding.

Figure 9: 20 Year Underground Benefit Projection Australian Underground Study



Source: The Putting Cables Underground Working Group Report (http://www.dcita.gov.au/cables/report/chap_4.htm)

III. The Costs of Undergrounding

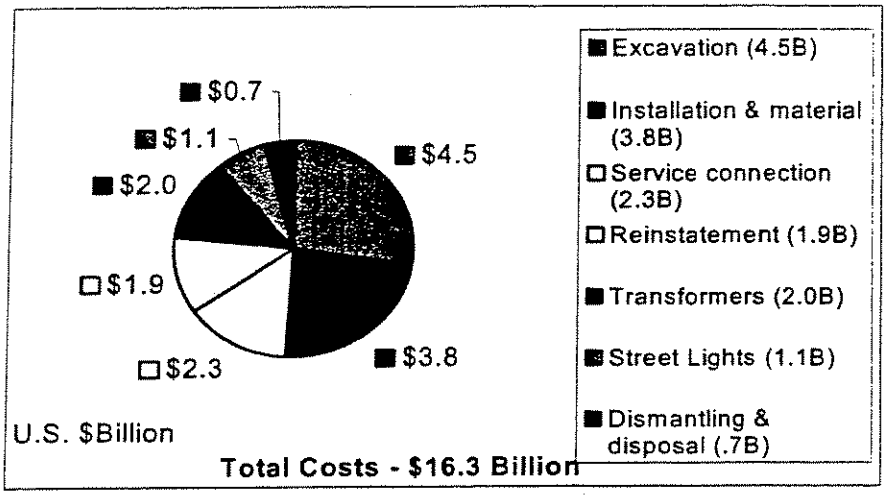
The Australian study performed an extensive analysis of underground costs, and developed a national costing model to estimate costs for undergrounding existing overhead power lines in urban and suburban areas. The results of that model are summarized on page 13 in Figures 10 and 10a.

In the U.S., the North Carolina Utilities Commission recently estimated it would take its three investor-owned utilities 25 years to underground all of their existing overhead distribution systems at a cost of approximately $41 billion. This six-fold increase in the existing book value of the utilities' current distribution assets would require a 125% rate increase.[13]

In other words, consumers would have to pay more than twice as much for electricity to enjoy the "benefits" of underground lines.

[13] "The Feasibility of Placing Electric Distribution Facilities Underground," North Carolina Utilities Commission, November 2003

Figure 10: Underground Cost Projection Australian Underground Study



Source: The Putting Cables Underground Working Group Report (http://www.dcita.gov.au/cables/report/report_x.htm#Intro)

Figure 10a: Underground Cost Summary Australian Underground Study

Total Cost (US $Billion)		$/Customer		$/Mile	
$	16.3	$	3,856	$	360,207

Source: The Putting Cables Underground Working Group Report (http://www.dcita.gov.au/cables/report/report_x.htm#Intro)

Underground cost data for other U.S. utilities is summarized in Figure 11, which indicates that the cost of placing overhead power lines underground is five to 10 times the cost of new overhead power lines.

Figure 11: Utility Underground Costs

	Average Cost/ Mile
Allegheny Power[1]	$ 764,655
BGE[1]	$ 952,066
Pepco[1]	$ 1,826,415
Conectiv[1]	$ 728,190
Va Power[2]	$ 950,000
California[3]	$ 500,000
FPL[4]	$ 840,000
Georgia Power[5]	$ 950,400
Puget Sount Energy[f]	$ 1,100,000
Average Overhead Line[6]	***$ 120,000***

Sources:
[1] Maryland Selective Undergrounding Working Group
[2] Dare County North Carolina Underground Study
[3] "Utility Undergrounding Programs", Scientech, May 2001, page 2
[4] "Utility Undergrounding Programs", Scientech, May 2001, page 3
[5] "Utility Undergrounding Programs", Scientech, May 2001, page 4
[6] "Utility Undergrounding Programs", Scientech, May 2001, page 4
[f] Puget Sound Energy

Figure 12 puts the U.S. underground cost data in perspective. It illustrates that, at a cost of $1 million/mile, a new underground system would require an investment of more than ten times what the typical U.S. investor owned utility currently has invested in distribution plant.

Figure 12: Investment Statistics IOU Distribution Plant

Investment Category	Existing Plant	New Underground
$/Customer[1]	$ 2,199	$29,854
$/Mile	$ 73,666	$1 Million

[1] Assumes U.S. average of 33.5 customers/mile of IOU distribution line
Source: NRECA Statistical Comparison
http://www.nreca.org/nreca/About_Us/Our_Members/Statistics/Statistics

Other factors also can result in substantial additional customer costs for undergrounding projects. These include:

- Electric undergrounding strands other utilities, e.g. cable and telephone companies, which must assume 100% of pole costs if electric lines are underground. These additional

non-electric costs will likely be passed on to cable and telephone consumers.

- Customers may incur substantial additional costs to connect homes to newly installed underground service, possibly as much as $2,000 if the household electric service must be upgraded to conform to current electric codes.

Both the Australian and US studies on undergrounding have identified significant issues related to who assumes the burden for underground costs. If utilities were told they must underground a significant portion of their overhead power lines, who would pay for it and who would get their power lines placed underground first?

If the costs of undergrounding are fully allocated, only the wealthy may be able to afford it. On the other hand, if undergrounding is financed or socialized through a broad-base tax or electricity rates, people may end up paying for undergrounding projects that do not get to their neighborhoods for a decade or more (or after they have already moved).

Some innovative approaches being used to fund undergrounding projects are discussed in the final section of this report.

IV. Benefit/Cost Summary

Based on the projected benefits and costs for undergrounding much of its existing urban and suburban power lines, the Australian study calculated that the benefits would offset only about 11% of total costs (Figure 13).

Figure 13: Projected 20 Year Costs and Benefits Australia Underground Study

Quantifiable Costs (US $Billion)		Quantifiable Benefits (US $ Billion)	
Excavation	$ 4.5	Motor vehicle accidents	$ 1.1
Installation & material	$ 3.8	Tree trimming	$ 0.5
Service connection	$ 2.3	Other	$ 0.2
Transformers	$ 2.0	Repairs & maint	$ 0.1
Reinstatement	$ 1.9	Line Losses	~0.0
Street Lights	$ 1.1		
Dismantling & disposal	$ 0.7		
Total	$ 16.3	Total	$ 1.9

Source: The Putting Cables Underground Working Group Report (http://www.dcita.gov.au/cables/report/report_x.htm#Intro)

For the US, no comparable benefit cost analysis exists. However, based on the high costs of undergrounding projected in Figure 11, it appears that placing existing overhead lines underground is difficult to justify economically. Today, most undergrounding costs appear to be justified by aesthetic and public-policy considerations.

V. Paying For Undergrounding

In-spite of its high cost and lack of economic justification, undergrounding is very popular across the country. In nine out of 10 new subdivisions, contractors bury power lines.[14] In addition, dozens of cities have developed comprehensive plans to bury or relocate utility lines to improve aesthetics, including:[15]

- San Antonio, Texas
- Colorado Springs, Colorado
- New Castle, Delaware
- Saratoga Springs, New York
- Williamsburg, Virginia
- Tacoma, Washington
- Frederick, Maryland.

For new residential construction, utilities vary on how they charge for the cost of providing underground services. A sample of these policies is provided in Figure 14.

Figure 14: Sample Residential Undergrounding Requirements

Utility	State	Requirement
SDG&E, PGE & SCE	CA	Customer/Developer pays for trenching & backfilling. Utility pays remaining costs.
Atlantic City Electric	NJ	Customer/Developer pays $802.74 + $4.35 per front foot for each home. Utility pays remaining costs.
Cobb Electric Membership Corp.	GA	Customer/developer pays $260 per customer. Utility pays remaining costs.
Green Mountain Power	VT	Customer/Developer pays for trenching & backfilling. Utility pays remaining costs.
Nantucket Electric Co.	MA	The utility pays up to $837.85. The customer pays the remaining costs.
Consolidated Edison	NY	The utility charges the customer the diferential in charges for equivalent overhead construction
Mississippi Power	MS	Developer pays the cost differential above what it would cost to install overhead lines

Source: "Utility Undergrounding Programs", Scientech, May, 2001

When it comes to converting existing overhead lines to underground, a variety of programs are being utilized. They include special assessment areas, undergrounding districts, and state and local government initiatives. Details are provided below.

[14] "Utility Undergrounding Programs," Scientech; May 2001; page 6

[15] "Utility Undergrounding Programs," Scientech; May 2001; page 6

Special Assessment Areas

Several communities are establishing "special assessment areas," where subscribers pay extra on their monthly bill to fund the underground project. These areas are typically created through a petition of the majority of the property owners in an area.

Commonwealth Electric in Massachusetts has used special assessments since 1970 to fund burial efforts in historic communities such as Nantucket. One drawback to special assessments is that the total revenue collected is often minimal, requiring utilities to extend the schedule for undergrounding over an extended period of time.[16]

Undergrounding Districts

Another approach employed in California and Oregon is the establishment of "underground districts."

In California, the public utility commission collects a percentage of revenue from wire-based utilities for a special undergrounding fund. To receive these funds, a community must form an undergrounding district, approved by at least 70% of the property owners in that district. The property owners also must agree to pay the $500 to $2,000 it costs to connect their homes to a new underground system.[17]

Hawaii

Hawaii Electric has a program where it pays for up to one-third of the cost to place existing neighborhood electric distribution lines underground. Hawaii Electric will undertake the conversion as part of a community or government-initiated underground project, subject to public utility commission approval. The program does not include transmission lines.[18]

Hawaii Electric has a program where it pays for up to one-third of the cost to place existing neighborhood electric distribution lines underground.

South Carolina Electric and Gas

SCE&G has established a special undergrounding program, approved by the South Carolina Public Service Commission. Under the program, if the local municipality agrees to contribute a matching amount, SCE&G contributes .5% of the gross receipts it is obligated to pay to the municipality. This money goes into a special underground fund.[19]

Dare County North Carolina

In 1999 the North Carolina legislature passed a law allowing Dare County on North Carolina's Outer Banks to form a special utility district for the purpose of funding the conversion of existing overhead power lines to underground.

[16] "Utility Undergrounding Programs," Scientech; May 2001; page 5

[17] "Utility Undergrounding Programs," Scientech; May 2001; page 5

[18] "Utility Undergrounding Programs," Scientech; May 2001; page 36

[19] "Utility Undergrounding Programs," Scientech; May 2001; page 38 and phone conversation with SCE&G

Under the legislation, once the utility district is created, the county's electric supplier, Dominion Virginia Power, is required to collect a maximum of $1/month from residential customers in the county and a maximum of $5/month from all other customers. These funds are placed in a special undergrounding fund, managed by Dominion Virginia Power, to be used on a pay-as-you-go basis to convert the county's existing overhead power lines to underground.

As of 2003, Dare County has not yet elected to form the special utility district. One of the reasons is that two communities in the county, Duck and Southern Shores, have objected to the special assessment. Both of these communities already have underground electric systems they paid for through development fees or special property-tax assessments. Residents in these communities believe it is unfair for them to pay for undergrounding the electric system for other county residents.

In communities in Dare County, N.C., residents who have already paid for underground systems through development fees or tax assessments object to a monthly assessment to fund underground conversion throughout the remainder of the county.

Several other counties in North Carolina and the Tidewater area of Southeast Virginia are studying the 1999 North Carolina legislation with the thought that they may seek similar legislation for their areas.

VI. Conclusion

Placing existing power lines underground is expensive, costing approximately $1 million/mile. This is almost 10 times the cost of a new overhead power line.

While communities and individuals continue to push for undergrounding—particularly after extended power outages caused by major storms—the reliability benefits that would result are uncertain, and there appears to be little economic justification for paying the required premiums.

"If a 10 percent return is imputed to the great amounts of capital freed up by building overhead instead of underground line, the earnings alone will pay for substantial ongoing overhead maintenance."

--Maryland Public Service Commission

Indeed, in its study of the undergrounding issue, the Maryland Public Service Commission concluded, "If a 10 percent return is imputed to the great amounts of capital freed up by building overhead instead of underground line, the earnings alone will pay for substantial ongoing overhead maintenance," implying that utilities could have more resources available to them to perform maintenance and improve reliability on overhead lines if they invested less in new underground facilities.[20]

For the foreseeable future, however, it appears that the undergrounding of existing overhead power lines will continue, justified primarily by aesthetic considerations—not reliability or

[20] "Report to the Public Service Commission of Maryland on the Selective Undergrounding of Electric Transmission and Distribution Plant," prepared by The Selective Undergrounding Working Group; February 14, 2000; page 3

economic benefits. Many consumers simply want their power lines placed underground, regardless of the costs. The challenge for decision makers, is determining who will pay for these projects and who will benefit.

There are several undergrounding programs around the country that are working through these equity issues and coming up with what appear to be viable compromises. Once a public-policy decision is reached to pursue an undergrounding project, it is worthwhile for the leaders involved to evaluate these programs in more detail to determine what is working, and what is not.

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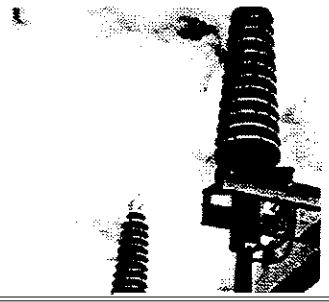
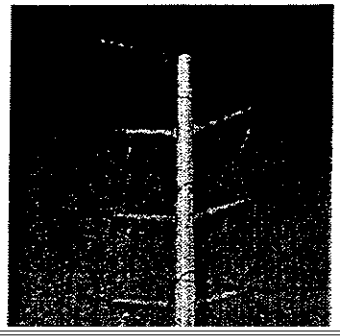
A Report From POWER Engineers Inc.

HAWAIIAN ELECTRIC COMPANY

Life Cycle Cost for Overhead Versus Underground Subtransmission and Distribution Systems





LIFE CYCLE COSTS FOR OVERHEAD VERSUS UNDERGROUND SUBTRANSMISSION AND DISTRIBUTION SYSTEMS

POWER Engineers, Inc.

February 11, 2000

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APPENDIX A ..... A

I. INTRODUCTION

General

Hawaiian Electric Company, Incorporated (HECO) has contracted POWER Engineers, Incorporated (POWER) (Work Authorization BA-96-09-BZ7) to develop life cycle cost comparisons for overhead systems and the corresponding equivalent underground alternatives. HECO's subtransmission and distribution lines may be installed either overhead or underground. There are several factors that must be considered in determining how the line will be installed. One key factor in the determination of the type of installation (overhead or underground) is the life cycle cost comparison of the overhead system and the corresponding underground alternative.

Study Objectives

The purpose of this study is to provide HECO with the projected life cycle costs for various scenarios, thus providing HECO a cost tool to be used when assessing the advantages and disadvantages of overhead versus underground construction of subtransmission and distribution systems. Six scenarios were selected to be representative of the HECO system. Table 1 in Appendix A has a cursory description of each overhead and underground alternative. A more detailed description of the alternatives is in Section V of this report. This report outlines the study objectives, procedures, and findings of these six scenarios. For system-wide usefulness, the life cycle cost comparisons were developed for various and typical rural, residential, and commercial/industrial scenarios. The present value of annual revenue requirements costs, including capital, operation and maintenance, and losses, for each of six (6) overhead scenarios and their underground alternative are provided.

Study Procedures

1. Development of the various subtransmission (46 kV) and distribution (12 kV) overhead scenarios to be considered with their underground equivalent alternative.
2. Development of typical losses evaluations, demand, and energy for each scenario and alternative.
3. Development of initial capital installation costs, removal costs, and operation and maintenance costs for each alternative.
4. Development of an economic analysis model to calculate the present value of annual revenue requirements for each scenario and alternative.

II. EXECUTIVE SUMMARY

The classic present value of annual revenue requirement evaluation is the cost comparison of at least two projects that have different capital expenditures and/or different annual costs. The capital expenditures may be converted into a levelized series of costs over the life of the facility using the factors developed from the annual revenue requirement method. (The utility is more likely to experience an uneven stream of life cycle costs from the capital expenditure, but this is more difficult to computerize in the model.) Annual costs such as operating, maintenance, and losses are estimated over the project life, taking into account the inflationary effects of these costs. Present value mathematics is used to bring each year's costs back to a common year. Present value mathematics discounts the beginning year cost by very little and discounts the cost in the later years by a substantial amount. The discounted costs over the study period are summed, and total present value costs of the alternatives are compared.

Typically, overhead 12 kV distribution and 46 kV subtransmission lines have a considerably lower initial installation cost than that of underground. An underground system, on the other hand, must use larger conductors for the same current carrying capacity because the cable insulation keeps the heat generated by the current in the cable, resulting in higher operating temperatures. Since larger conductors are used in

underground, the losses for the same current are lower and thus annual cost of losses is reduced. Typically, overhead structures (poles) do not last as long as underground structures (manholes and ducts) and must be replaced eventually. The other annual cost is that of maintenance. The annual estimated cost of operation and maintenance (O&M) can be higher or lower for overhead or underground depending on the system. Both the losses and O&M costs must be adjusted in future years for inflation.

The evaluation was overwhelmingly in favor of the lower initial cost alternatives of overhead construction for each of six scenarios. Table 27 shows the present value of the capital expenditures, cost of losses, and the cost of O&M, discounted at 9.22 percent, and is shown on the last page in Appendix A (page A-51). This observation, that is, lower present value cost of revenue requirements, was consistent for all the discount rates including the rate of zero. Since the present value of annual revenue requirement results was lower for all the overhead options when the discount rates were varied, other sensitivities were investigated. Varying the forecast growth, the starting load on the conductors, escalation rate, operation and maintenance cost, capital cost, and the demand and energy rate within reasonable ranges also did not change the study conclusion. The higher first cost of underground construction has the higher present value of life cycle cost.

Considerably lowering the capital cost of the underground alternative would bring the present value cost of the overhead and underground options more in line. Capital estimates are usually reasonably accurate, and large reductions in underground costs that would be necessary to swing the results in favor of underground are not a reasonable assumption. It is possible, that in the future, underground costs may be substantially lower compared to those of overhead. If this should happen, the present value comparison analysis should be reinitiated.

III. APPLICATION OF LIFE CYCLE COSTS

Definition

Life cycle cost can be defined as the total cost to HECO in each year for constructing and operating and maintaining a particular overhead or underground facility. Life cycle costs are calculated using the following data:

- The capital cost required for the installation of each facility.
- The useful life of each facility.
- The annual operational cost associated with the facility (losses).
- The annual maintenance costs associated with the facility.
- The salvage value or removal cost of the facility at the end of its useful life.
- The annual inflation or escalation rate for each component.
- HECO's preferred discount rate (cost of money).
- Forecast growth rate of the load on the facility.

The method and model presented in this section can be used by HECO in several ways. It will be possible to select initial installation cost based on the alternatives' physical components. Then one can compare costs and select the least-cost alternative. One should vary economic parameters to perform sensitivity analyses for the various options and parameters that are associated with a project. This versatility allows HECO to continue to use this guide as applications and circumstances for new facilities changes.

Parameters

In order for the life cycle cost of any alternative to represent a total, it must consider all of the costs associated with the installation, operation, and maintenance of the option, beginning with the year the option is installed and continuing throughout the entire length of the study period. In addition, economic factors such as interest and inflation rates must also be considered. A discussion of the parameters used in this evaluation is as follows.

Capital Cost

The capital cost refers to the total, one-time design and installation cost for an alternative. Costs include General and Administrative (G&A), Engineering and Supervision (E&S), material, labor, equipment, outage, and construction costs.

Salvage Value

The salvage value refers to the total worth of the facilities after they have reached their useful life. Since Hawaii does not have recycling facilities for used electrical equipment, the salvage value at the end of the facilities useful life is assumed to be zero. Removal costs do apply, however.

Discount Rate

The discount rate, or average cost of money, is the best after-tax return that HECO can expect to earn when investing its money. For sensitivity analyses, the scenarios consider the following discount rates:

0%	*(no discounting; present and future values are equal)*
3%	*(average inflation rate for capital and O&M expenditures)*
9.22%	*(HECO's weighted average after-tax cost of capital)*
12%	*(hypothetical value for comparison purposes)*

Annual Carrying Charge Rate

The annual carrying charge rate includes many factors such as interest, amortization over the life, advalorem tax, and sometimes insurance contributions. The annual carrying charge

rates used for the following discount rates of 3%, 9.22%, and 12% and the expected life are:

Poles (OH; 20-year life)	*9.11%, 13.56%, 15.85%*
Hardware (OH; 40-year life)	*6.45%, 11.65%, 14.29%*
Cable system (UG; 35-year life)	*6.82%, 11.86%, 14.44%*
Duct system (UG; 50-year life)	*5.96%, 11.43%, 14.15%*

Study Period

A fifty (50) year study period has been selected for the analyses. Due to the unequal lives of the facilities, (20 years for poles, 40 years for overhead hardware, 35 years for underground cable, and indefinite life for duct lines and manholes), new cycle costs are included with salvage values for facilities credited at the end of the useful life of the various facilities.

Annual Inflation Rate

The annual inflation rate, or escalation rate, for capital expenditures, demand and energy losses, and labor costs were all set at 3% in the model, although it could be set at a different rate for each.

Risk Assessment

Assessing the risks associated with outages was not included in the scope of work. Costs for forced outages could be an important factor in the analysis. Although overhead systems typically experience higher outage rates, and thus lost revenue by both HECO and their customers, outages to underground systems are typically less frequent but of longer duration. The analysis of outage rates, anticipated durations and the typical costs for consumer groups for outages might be of interest to HECO in future studies.

Installation or capital cost and removal cost for both the overhead and underground alternatives are shown in Table 2 in Appendix A. The capital costs are separated by their useful life. Wood poles on the Island have a life of about 20 years while aluminum conductors have a life of 40 years. Underground cables have a life of 35 years but the duct system for the cables has a life of over 50 years. Removal cost is a one-time cost and is not subjected to the annual revenue requirement factors.

IV. STUDY DATA & METHODOLOGY

Study Data

Data provided by HECO used for the study of its system consisted of:

- Circuit maps and/or one-line diagrams.
- Installation, removal, and operation and maintenance cost estimates.
- Discount and annual carrying charge rates for each piece of equipment's life for the currently used corporate rate of 9.22 percent.
- Demand and energy cost for losses provided.

Study Methodology

The approach to the study was to gather from HECO the facility data that are characteristic of many installations in order to gain an understanding of the typical installations that HECO usually encounters. From this data, descriptions for the various rural, residential, and commercial/industrial installations were developed. Estimates for the annual losses for each installation type were developed using Excel® spreadsheets. Finally, an economic analysis was performed to determine the present worth and annual revenue requirements for each underground and overhead alternative scenario. Using Excel® spreadsheets with the economic model, it was possible to perform sensitivity analyses to determine the effect of various load levels and growth rates on the cost of losses, capital cost and removal cost, escalation, and economic factors.

In an economic study there are many variables. Each variable may affect the results, but at the same time increase the work substantially, as each variable is included. The forecast growth used in the model was 1 percent. In each scenario a beginning year current of 150 amps was used in the principal circuit. Each year thereafter the current was increased by 1 percent. When the current exceeded one half the conductor rating a new circuit was added, which was assumed to be parallel to the original circuit. This

assumption was made to help equalize the various scenarios with different current carrying capacity. The smaller conductors carry less power and are generally less expensive in first cost. These systems would be favored in the present value analysis but would not be carrying an equal load.

Annual Losses

A load factor of 65 percent was selected for use in the model. The load factor was calculated outside the model using equation (1) below. The loss factor is determined from the load factor using the empirical equation (3) or it can be calculated outside the model using equation (2) below. Demand and energy losses and the cost for both these components of losses are calculated in the model.

Equation 1 - Load Factor:

$$F_l = (1/8760)\sum_{i=1}^{8760} l_i$$

Where: F_l = load factor

l_i = hourly load (per unit)

Equation 2 - Loss Factor:

$$F_{l^2} = (1/8760)\sum_{i=1}^{8760} l_i^2$$

Where: F_{l^2} = loss factor

Equation (1) is the Load Factor and has the following definition:

The ratio of the average load in kilowatts supplied during a designated period to the peak or maximum load in kilowatts occurring in that period.

Equation (2) is the Loss Factor and has the following definition:

The ratio of the average loss in kilowatts occurring during a designated period to the peak or maximum loss occurring in that period.

Equation (3) is the empirical equation for Loss Factor:

$$F_{l^2} = F_l^{1.912}$$

Losses are a function of the square of the current on the conductors in each year and the resistance. The resistance is a function of the temperature of the conductor, which in turn is a function of the current among other variables. A surrogate for the temperature of the conductor is the loading percent based on the conductor rating. The resistance was varied in each year in proportion to the percent loading. The extra energy in losses was accounted for in each leap year. Tables 3 through 8 show the annual calculated conductor loading, demand loss, energy loss and their associated escalated costs. When the conductor rating of 50 percent was exceeded the losses were decreased because of the parallel effects of carrying load with two circuits.

The demand and energy cost can be escalated each year at a different rate in the model but a 3 percent rate for this study was selected for both as provided by HECO. The system forecast growth rate, load factor, loss factor, and cost of electricity for each year of the study period are shown on the following Table.

Variable	Value Used in Model	Escalation Rate
Growth Rate of Conductor Current	1%	
Load Factor	0.65	
Loss Factor	0.44	
Demand Cost - $/kW-Year	164.16	3%
Energy Cost - $/kWh	0.04224	3%

Capital Cost

Capital cost for the six scenarios were provided by HECO. These scenarios represent different construction conditions for equivalent overhead and underground systems. The different types of construction have different lives. Wood poles have an assumed life of 20 years, underground cables have a life of 35 years, overhead cables have a life of 40 years, and underground ducts have a life of at least 50 years. Tables 9, 11, 13, 15, 17 and 19 show this capital cost in each year they are required. The original first year facility installation is made up of components with different life spans. In the overhead alternatives, for instance, the poles have a life of 20 years but the conductors do not need to be replaced for 40 years. Also shown on these tables is the installation of parallel lines required for load growth. Since the underground conductors have a higher capacity rating than the overhead conductors, these new facilities needed for growth are depicted further away from the beginning year.

In the model these capital expenditures are represented as annual cost based on the annual levelized revenue requirement over the assumed life of the facility. They are converted to an annual cost using the annual revenue requirement factors. These levelized annual costs are shown on Tables 10, 12, 14, 16, 18, and 20.

Operation & Maintenance Costs and Removal Costs

Removal costs are one-time costs and are not annualized. Operation and maintenance (O&M) costs are annual costs but can be variable year to year. The labor cost and parts associated with O&M are normally escalated based on labor cost escalation rates. The following table shows the O&M costs for each scenario:

Operation and Maintenance Cost		
Scenario	**Overhead ($)**	**Underground ($)**
1-12 kV Commercial / Industrial	13,886	10,742
2-12 kV Residential	17,111	10,742
3-12 kV Rural	9,407	10,742
4-46/12 kV Industrial	12,990	14,240
5-46/12 kV Residential	11,825	14,240
6-46 kV Rural	8,959	3,557

Annual Revenue Requirement

HECO provided their annual revenue requirement for project expected life of 20, 35, 40, and 50 years with an interest rate of 9.22 percent. Please note that the annual costs were not levelized and are based on the asset placed in service in the seventh month of the first year. In addition, there is one more year in the series than the expected life. HECO's current depreciation methodology is to start taking depreciation in the year after the asset goes into service.

When HECO develops the revenue requirements they include interest, amortization, and taxes, but not insurance. They also do not levelize the revenue requirement for company use because the costs are not recovered on a levelized basis. For the purposes of this study it is more convenient to levelize the cost.

This assignment was based on the evaluation of the scenarios with interest rates of 0, 3, 9.22, and 12 percent. The rate of 9.22 percent is the HECO present standard rate, which was provided by HECO staff. The zero rate is evaluated only on first cost, i.e., no costs are annualized. All costs, capital cost, and operating cost are treated the same and are just summed irrespective of the year of expenditure. The revenue requirements for interest rates of 3 and 12 percent were approximated based on the 9.22 percent levelized rate.

These approximations were calculated by subtracting out the interest and amortization

of the depreciation periods developed. This difference is added back into the interest and amortization for these non-standard rates.

Tables 21 through 26 show the present value of the capital cost from the annual revenue requirements and from the one-time removal costs. These tables also summarize the present value cost of losses and O&M.

V. DESCRIPTION OF SCENARIOS

Scenario #1 12 kV Commercial / Industrial

	2-4" Conduits for single-phase taps
	1-3" Conduit for secondary main and laterals
Installed Cost	$2,267,000 per mile
Removal Cost	$75,000 per mile

Scenario #2 12 kV Residential

The 12 kV residential scenario is based upon the Lanikai subdivision. This scenario consists of approximately five (5) circuit miles.

Overhead

Primary Conductor	336 kcmil AAC, (3-1C), 12 kV, 53,000 ft
Secondary	1/0 AWG, (2-1C) with 3/0 AWG (1-1C), 600 V, 26,880 ft
Structural	191 Poles (150 ft to 200 ft spans)
Installed Cost	$187,600 per mile
Removal Cost	$34,000 per mile

Underground

Primary Conductor	1000 kcmil Al, (3-1C), 15 kV, 3,040 ft
	4/0 AWG Al, (3-1C), 15 kV, 7,107 ft
	#2 AWG Al, (3-1C), 47,865 ft
Secondary	350 kcmil Al, (2-1C) with 4/0 AWG Al, (1-1C), 600 V, 23,400 ft
	3/0 AWG Al, (2-1C) with 1/0 AWG, (1-1C), 600 V, 12,533 ft
	#2 AWG Al, (3-1C), 600 V, 12,533 ft
Structural	338 handholes approximately 100 feet apart
	4-5" Conduits for primary mains
	4-4" Conduits for primary mains, fused and/or switched feeders
	2-2" Conduits for single-phase primary taps
	1-3" Conduit for secondary mains
	1-2" Conduit for secondary laterals/service
Installed Cost	$916,000 per mile
Removal Cost	$38,600 per mile

Scenario #3 12 kV Rural

The 12 kV rural scenario is based upon the Makaha section of construction along the Farrington Highway. This scenario consists of approximately 6,000 feet of primary backbone circuit.

Overhead

Primary Conductor	3/0 AWG AAAC, (3-1C), 12 kV, 6,000 ft
Secondary	1/0 AWG Al, (2-1C) with 3/0 AWG Al, (1-1C), 600 V, 6,000 ft
Structural	21 Poles (200 ft and 400 ft spans)
Installed Cost	$110,000 per mile
Removal Cost	$24,000 per mile

Underground

Primary Conductor	500 kcmil Al, (3-1C), 15 kV, 12,000 ft
	#2 AWG Al, (1-1C), 15 kV, 1,200 ft
Secondary	#2 AWG Al, (3-1C), 600 V, 2,400 ft
Structural	16 Manholes every 400 ft with 16 intermediate handholes
	2 – 5" Conduits for primary cable mains and feeder
	2 – 2" Conduits for single phase primary taps
	1 – 2" Conduit for secondary laterals/service
Installed Cost	$1,178,000 per mile
Removal Cost	$45,000 per mile

Scenario #4 46/12 kV Industrial

The 46 kV circuit, with 12 kV underbuild, industrial scenario is based upon the Kalaeloa Boulevard section of construction between Olai Street and Malakole Street. This scenario consists of approximately 5,900 feet of main backbone circuit.

Overhead

46 kV Conductor	336 kcmil AAC, (3-1C), 46 kV, 5,890 ft
12 kV Conductor	336 kcmil AAC, (3-1C), 12 kV, 5,890 ft
Secondary	1/0 AWG Al, (2-1C) with 3/0 AWG Al (1-1C), 600 V, 2,640 ft
Structural	29 Poles (200 ft spans)
Installed Cost	$421,000 per mile
Removal Cost	$44,000 per mile

Underground

46 kV Conductor	750 kcmil Al, (1-1C), 46 kV, 19,200 ft
12 kV Conductor	1000 kcmil Al, (3-1C), 15 kV, 15,000 ft
	#2 AWG Al, (3-1C), 15 kV, 800 ft
Secondary	350 kcmil Al, (2-1C) with 4/0 AWG Al, (1-1C), 600 V, 8,400 ft
Structural	15 Manholes every 400 ft and 95 intermediate handholes
	6 - 5" Conduits for 46 kV mains, primary mains, fused and switched feeders
	2 - 5" Conduits for primary fused and switched feeders
	2 - 4" Conduits for three-phase transformer taps
	1 - 3" Conduit for secondary service
Installed Cost	$2,696,000 per mile
Removal Cost	$83,000 per mile

Scenario #5 46/12 kV Residential

The 46/12 kV residential scenario is based upon the Harding Avenue section of construction between 9th Avenue and 22nd Avenue. This scenario consists of approximately 1 mile of main backbone circuit.

Overhead

46 kV Conductor	556 kcmil AAC, (3-1C), 46 kV, 5,200 ft
12 kV Conductor	336 kcmil AAC, (3-1C), 12 kV, 4,400 ft
Secondary	1/0 AWG Al, (2-1C) with 3/0 AWG Al, (1-1C), 600 V, 9,200 circuit feet
Structural	99 Poles including stub and riser poles (200 ft spans)
Installed Cost	$602,000 per mile
Removal Cost	$85,000 per mile

Underground

46 kV Conductor	1500 kcmil Al, (1-1C), 46 kV, 20,400 ft
12 kV Conductor	1000 kcmil Al, (3-1C), 15 kV, 12,800 ft
	500 kcmil Al, (3-1C), 15 kV, 4,800 circuit feet
	#2 AWG Al, (1-1C), 15 kV, 2,500 circuit feet
Structural	19 Manholes every 400 ft and 88 intermediate handholes

	6 - 5" Conduits for 46 kV mains, primary mains, fused and switched feeders
	2 - 5" Conduits for primary fused and switched feeders
	2 - 2" Conduits for single-phase transformer taps
Installed Cost	$3,737,000 per mile
Removal Cost	$184,000 per mile

Scenario #6 46 kV Rural

The 46 kV rural scenario is based upon the Wilikina Drive section of construction beginning from Kaukonahua Road. This scenario consists of approximately 5,000 feet of main backbone circuit.

Overhead

46 kV Conductor	556 kcmil AAC, (3-1C), 46 kV, 5,280 ft
Structural	20 Poles (approximately 200 ft spans)
Installed Cost	$158,600 per mile
Removal Cost	$23,000 per mile

Underground

46 kV Conductor	1500 kcmil Al, (1-1C), 46 kV, 15,840 ft
Structural	15 Manholes approximately 500 feet apart
	4-4'' Conduits for 46 kV mains
Installed Cost	$1,186,000 per mile
Removal Cost	$49,000 per mile

VI. SECTION III. UTILITY CONTACTS

Introduction

Several electric utilities were contacted regarding their efforts to determine life cycle costs of overhead construction versus underground construction. The utilities included the following:

- Arizona Public Service
- Baltimore Gas & Electric
- Centerior Energy, now First Energy
- Cinergy
- Colorado Springs Utilities
- Detroit Edison
- El Paso Electric
- Entergy
- Florida Power Corporation
- Houston Lighting & Power
- Orlando Utilities Commission
- Pacific Gas & Electric
- Portland General Electric
- Potomac Electric Power
- Public Service Company of New Mexico
- San Diego Gas & Electric
- Tampa Electric
- TXU Electric
- Virginia Power
- Wisconsin Electric Power

Conclusions from Contacts

All of the 17 electric utilities that responded indicated that they had not pursued a study to determine life cycle costs of overhead construction versus underground construction. All the utilities indicated that undergrounding of electric utilities was only done when local ordinances required undergrounding or if the customer would cover the additional cost of the construction.

VII. STUDY RESULTS AND FINDINGS

In an economic study there are two components, the capital expenditures and the annual expenditures (normally costs associated with operation, maintenance, and losses). These two types of costs may be compared using the present value functions that take into account the time cost of money. The time cost of money functions give greater value to expenditures in the present years and less value to expenditures in the latter years.

The problem evaluated in this report is a classic example of an economic analysis. Two alternatives are being compared -- one with a high initial expenditure and lower annual cost of losses and the other with a higher cost of losses and lower initial cost. This methodology also equalizes the differences when one alternative has capital expenditures in different years than the other alternative. Since the conductor used in the overhead alternatives has less current carrying capacity, an additional circuit must be placed in parallel sooner to accommodate the circuit load growth. This means that an additional capital expenditure that has been escalated to a higher cost occurs in the years closer to the present or study's initial year.

The results of the study indicate that the overhead alternative of each of the scenarios is the least costly method of service.

APPENDIX A

Table 1

Description of Scenarios

Scenario Number	Description	Voltage	Customer Class	Conductor							
				Overhead				Underground			
				46kV		12 kV		46kV		12 kV	
				Size kcmil	Rating Amps	Size kcmil	Rating Amps	Size kcmil	Rating Amps	Size kcmil	Rating Amps
1	PEARL CITY TO HONOMANU	12 kV	COMMERCIAL/INDUSTRIAL			336 AAC	495			1000 PEIJ	583
2	LANIKAI SUBDIVISION	12 kV	RESIDENTIAL			336 AAC	495			1000 PEIJ	583
3	MAKAHA	12 kV	RURAL			3/0 AAAC	340			500 PEICN	398
4	KALAELOA BLVD. CIP	46 kV & 12 kV	INDUSTRIAL	336 AAC	495	336 AAC	495	750 PEIJ	655	1000 PEIJ	583
5	HARDING AVENUE	46 kV & 12 kV	RESIDENTIAL	556 AAC	680	336 AAC	495	1500 PEIJ	960	1000 PEIJ	583
6	WILIKINA DR-KAUKONAHUA RD.	46 kV	RURAL	556 AAC	680			1500 PEIJ	960		

Table 2

Installation Cost

Scenario Number	Description	Overhead				Underground			
		1996 Installed Cost		1996 Removal Cost		1996 Installed Cost		1996 Removal Cost	
		Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1	PEARL CITY TO HONOMANU	127,000	14,000	7,600	30,400	2,014,000	253,000	75,000	0
2	LANIKAI SUBDIVISION	168,600	19,000	6,800	27,200	743,000	173,000	38,600	0
3	MAKAHA	99,000	11,000	4,800	19,200	1,091,000	87,000	45,000	0
4	KALAELOA BLVD. CIP	401,000	20,000	8,800	35,200	2,635,000	334,000	83,000	0
5	HARDING AVENUE	568,000	34,000	17,000	68,000	3,383,000	354,000	184,000	0
6	WILIKINA DR-KAUKONAHUA RD	146,000	12,000	4,600	18,400	1,049,000	137,000	49,000	0

Table 3

Scenario 1 System Losses

	Scenario 1 (OH)					Scenario 1 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
1999	150	19.87	76,413	3,262	3,225	150	6.92	26,612	1,136	1,123
2000	150	19.87	76,622	3,360	3,333	150	6.92	26,685	1,170	1,161
2001	150	19.99	76,874	3,481	3,444	150	6.97	26,804	1,214	1,201
2002	152	20.37	78,336	3,654	3,611	152	7.09	27,266	1,272	1,257
2003	153	20.74	79,759	3,832	3,789	153	7.23	27,804	1,336	1,321
2004	155	21.13	81,481	4,021	3,984	155	7.36	28,381	1,401	1,388
2005	156	21.56	82,912	4,226	4,179	156	7.51	28,881	1,472	1,456
2006	158	22.01	84,643	4,443	4,393	158	7.67	29,496	1,548	1,531
2007	159	22.47	86,412	4,672	4,623	159	7.83	30,111	1,628	1,611
2008	161	22.93	88,422	4,911	4,872	161	7.99	30,811	1,711	1,698
2009	162	23.41	90,026	5,164	5,113	162	8.16	31,380	1,800	1,782
2010	164	23.89	91,872	5,429	5,375	164	8.32	31,996	1,891	1,872
2011	166	24.39	93,795	5,708	5,656	166	8.50	32,688	1,989	1,971
2012	167	24.90	96,019	6,003	5,963	167	8.68	33,472	2,092	2,079
2013	169	25.40	97,679	6,307	6,251	169	8.85	34,034	2,197	2,178
2014	171	25.93	99,717	6,632	6,571	171	9.04	34,765	2,312	2,291
2015	172	26.47	101,794	6,973	6,912	172	9.23	35,495	2,431	2,410
2016	174	27.02	104,194	7,331	7,283	174	9.42	36,325	2,556	2,539
2017	176	27.58	106,063	7,708	7,637	176	9.62	36,995	2,688	2,664
2018	178	28.16	108,293	8,106	8,035	178	9.82	37,764	2,827	2,802
2019	179	28.74	110,524	8,521	8,444	179	10.03	38,572	2,974	2,947
2020	181	29.34	113,140	8,960	8,904	181	10.23	39,449	3,124	3,105
2021	183	29.95	115,177	9,420	9,341	183	10.44	40,148	3,284	3,256
2022	185	30.57	117,561	9,904	9,816	185	10.66	40,995	3,454	3,423
2023	187	31.21	120,022	10,414	10,322	187	10.89	41,879	3,634	3,602
2024	189	31.86	122,858	10,950	10,885	189	11.11	42,842	3,819	3,796
2025	190	32.52	125,060	11,512	11,418	190	11.34	43,610	4,014	3,982
2026	192	33.19	127,637	12,102	11,998	192	11.58	44,533	4,222	4,186
2027	194	33.88	130,290	12,724	12,612	194	11.82	45,455	4,439	4,400
2028	196	34.59	133,385	13,381	13,298	196	12.06	46,505	4,665	4,637
2029	198	35.31	135,790	14,069	13,946	198	12.32	47,378	4,909	4,866
2030	200	36.04	138,597	14,791	14,664	200	12.57	48,340	5,159	5,114
2031	202	36.80	141,520	15,556	15,426	202	12.84	49,378	5,428	5,382
2032	204	37.57	144,877	16,358	16,270	204	13.11	50,554	5,708	5,677

Table 3

Scenario 1 System Losses

Year	Scenario 1 (OH)					Scenario 1 (UG)				
	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
2047	237	51.24	197,051	34,757	34,504	237	17.89	68,798	12,135	12,047
2048	239	52.31	201,717	36,547	36,390	239	18.27	70,452	12,765	12,710
Conductor Rating (Amp)	495					583				
Resistance @ 25 & 75 or 90 C	0.2780	0.3320				0.0964	0.1204			

Table 4

Scenario 2 System Losses

	Scenario 2 (OH)					Scenario 2 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
1999	150	19.87	76,413	3,262	3,225	150	6.92	26,612	1,136	1,123
2000	150	19.87	76,622	3,360	3,333	150	6.92	26,685	1,170	1,161
2001	150	19.99	76,874	3,481	3,444	150	6.97	26,804	1,214	1,201
2002	152	20.37	78,336	3,654	3,611	152	7.09	27,266	1,272	1,257
2003	153	20.74	79,759	3,832	3,789	153	7.23	27,804	1,336	1,321
2004	155	21.13	81,481	4,021	3,984	155	7.36	28,381	1,401	1,388
2005	156	21.56	82,912	4,226	4,179	156	7.51	28,881	1,472	1,456
2006	158	22.01	84,643	4,443	4,393	158	7.67	29,496	1,548	1,531
2007	159	22.47	86,412	4,672	4,623	159	7.83	30,111	1,628	1,611
2008	161	22.93	88,422	4,911	4,872	161	7.99	30,811	1,711	1,698
2009	162	23.41	90,026	5,164	5,113	162	8.16	31,380	1,800	1,782
2010	164	23.89	91,872	5,429	5,375	164	8.32	31,996	1,891	1,872
2011	166	24.39	93,795	5,708	5,656	166	8.50	32,688	1,989	1,971
2012	167	24.90	96,019	6,003	5,963	167	8.68	33,472	2,092	2,079
2013	169	25.40	97,679	6,307	6,251	169	8.85	34,034	2,197	2,178
2014	171	25.93	99,717	6,632	6,571	171	9.04	34,765	2,312	2,291
2015	172	26.47	101,794	6,973	6,912	172	9.23	35,495	2,431	2,410
2016	174	27.02	104,194	7,331	7,283	174	9.42	36,325	2,556	2,539
2017	176	27.58	106,063	7,708	7,637	176	9.62	36,995	2,688	2,664
2018	178	28.16	108,293	8,106	8,035	178	9.82	37,764	2,827	2,802
2019	179	28.74	110,524	8,521	8,444	179	10.03	38,572	2,974	2,947
2020	181	29.34	113,140	8,960	8,904	181	10.23	39,449	3,124	3,105
2021	183	29.95	115,177	9,420	9,341	183	10.44	40,148	3,284	3,256
2022	185	30.57	117,561	9,904	9,816	185	10.66	40,995	3,454	3,423
2023	187	31.21	120,022	10,414	10,322	187	10.89	41,879	3,634	3,602
2024	189	31.86	122,858	10,950	10,885	189	11.11	42,842	3,819	3,796
2025	190	32.52	125,060	11,512	11,418	190	11.34	43,610	4,014	3,982
2026	192	33.19	127,637	12,102	11,998	192	11.58	44,533	4,222	4,186
2027	194	33.88	130,290	12,724	12,612	194	11.82	45,455	4,439	4,400
2028	196	34.59	133,385	13,381	13,298	196	12.06	46,505	4,665	4,637
2029	198	35.31	135,790	14,069	13,946	198	12.32	47,378	4,909	4,866
2030	200	36.04	138,597	14,791	14,664	200	12.57	48,340	5,159	5,114
2031	202	36.80	141,520	15,556	15,426	202	12.84	49,378	5,428	5,382
2032	204	37.57	144,877	16,358	16,270	204	13.11	50,554	5,708	5,677
2033	206	38.35	147,480	17,198	17,063	206	13.39	51,493	6,005	5,958
2034	208	39.14	150,518	18,079	17,942	208	13.66	52,531	6,310	6,262
2035	210	39.97	153,710	19,016	18,876	210	13.94	53,608	6,632	6,583
2036	212	40.80	157,332	19,993	19,902	212	14.24	54,912	6,978	6,946
2037	215	41.65	160,171	21,022	20,870	215	14.54	55,916	7,339	7,286
2038	217	42.51	163,478	22,100	21,939	217	14.84	57,069	7,715	7,659
2039	219	43.41	166,939	23,245	23,071	219	15.16	58,300	8,118	8,057
2040	221	44.31	170,867	24,438	24,314	221	15.48	59,694	8,538	8,494
2041	223	45.25	174,015	25,706	25,511	223	15.80	60,761	8,976	8,908
2042	226	46.19	177,630	27,027	26,822	226	16.13	62,030	9,438	9,367
2043	228	47.16	181,360	28,422	28,201	228	16.46	63,299	9,920	9,843
2044	230	48.14	185,636	29,883	29,739	230	16.81	64,822	10,435	10,384
2045	232	49.16	189,052	31,431	31,194	232	17.16	65,991	10,972	10,889
2046	235	50.18	192,974	33,046	32,806	235	17.52	67,376	11,538	11,454

Table 4

Scenario 2 System Losses

Year	Scenario 2 (OH)					Scenario 2 (UG)				
	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
2047	237	51.24	197,051	34,757	34,504	237	17.89	68,798	12,135	12,047
2048	239	52.31	201,717	36,547	36,390	239	18.27	70,452	12,765	12,710
Conductor Rating (Amp)	495					583				
Resistance @ 25 & 75 or 90 C	0.2780	0.3320				0.0964	0.1204			

Table 5

Scenario 3 System Losses

Year	Scenario 3 (OH)					Scenario 3 (UG)				
	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
1999	150	46.07	177,169	7,563	7,477	150	13.95	53,647	2,290	2,264
2000	150	46.07	177,654	7,790	7,728	150	13.95	53,794	2,359	2,340
2001	150	46.36	178,284	8,074	7,987	150	14.04	53,993	2,445	2,419
2002	152	47.23	181,630	8,472	8,373	152	14.30	54,993	2,565	2,535
2003	153	48.11	185,014	8,888	8,788	153	14.57	56,031	2,692	2,661
2004	155	49.01	188,991	9,326	9,242	155	14.85	57,264	2,826	2,800
2005	156	50.03	192,397	9,806	9,697	156	15.15	58,261	2,969	2,936
2006	158	51.08	196,435	10,312	10,195	158	15.47	59,492	3,123	3,088
2007	159	52.14	200,512	10,842	10,727	159	15.80	60,761	3,285	3,251
2008	161	53.23	205,264	11,401	11,310	161	16.13	62,200	3,455	3,427
2009	162	54.35	209,011	11,990	11,872	162	16.47	63,338	3,633	3,598
2010	164	55.48	213,356	12,607	12,481	164	16.82	64,684	3,822	3,784
2011	166	56.64	217,817	13,257	13,134	166	17.17	66,030	4,019	3,982
2012	167	57.82	222,964	13,939	13,846	167	17.54	67,637	4,228	4,200
2013	169	59.03	227,008	14,657	14,529	169	17.91	68,875	4,447	4,408
2014	171	28.92	111,216	7,396	7,329	171	18.28	70,298	4,675	4,633
2015	172	29.52	113,523	7,776	7,708	172	18.67	71,798	4,918	4,875
2016	174	30.12	116,148	8,172	8,119	174	19.06	73,499	5,171	5,138
2017	176	30.74	118,215	8,591	8,511	176	19.46	74,836	5,438	5,388
2018	178	31.37	120,638	9,030	8,951	178	19.87	76,413	5,719	5,670
2019	179	32.02	123,137	9,493	9,408	179	20.30	78,066	6,019	5,964
2020	181	32.68	126,020	9,979	9,918	181	20.73	79,939	6,330	6,291
2021	183	33.35	128,252	10,490	10,401	183	21.17	81,412	6,659	6,603
2022	185	34.03	130,867	11,025	10,927	185	21.61	83,104	7,001	6,939
2023	187	34.73	133,559	11,589	11,486	187	22.07	84,873	7,365	7,299
2024	189	35.45	136,701	12,184	12,112	189	22.54	86,918	7,747	7,701
2025	190	36.18	139,135	12,808	12,703	190	23.02	88,527	8,149	8,083
2026	192	36.92	141,981	13,462	13,346	192	23.50	90,373	8,569	8,495
2027	194	37.68	144,904	14,151	14,027	194	24.01	92,334	9,017	8,938
2028	196	38.45	148,270	14,874	14,783	196	24.51	94,515	9,481	9,423
2029	198	39.25	150,941	15,639	15,502	198	25.03	96,256	9,973	9,885
2030	200	40.06	154,056	16,441	16,299	200	12.06	46,378	4,949	4,907
2031	202	40.88	157,210	17,280	17,136	202	12.31	47,340	5,204	5,160
2032	204	41.72	160,880	18,164	18,067	204	12.56	48,434	5,468	5,439
2033	206	42.58	163,747	19,095	18,946	206	12.82	49,301	5,749	5,704
2034	208	43.46	167,132	20,074	19,922	208	13.09	50,339	6,046	6,000
2035	210	44.35	170,554	21,100	20,944	210	13.36	51,378	6,356	6,309
2036	212	45.27	174,569	22,184	22,083	212	13.63	52,560	6,679	6,649
2037	215	46.20	177,669	23,319	23,150	215	13.92	53,531	7,026	6,975
2038	217	47.16	181,360	24,517	24,339	217	14.21	54,647	7,387	7,334
2039	219	48.13	185,091	25,772	25,580	219	14.50	55,762	7,764	7,706
2040	221	49.13	189,454	27,097	26,959	221	14.80	57,071	8,163	8,121
2041	223	50.14	192,820	28,484	28,267	223	15.11	58,108	8,584	8,519
2042	226	51.17	196,781	29,941	29,714	226	15.42	59,300	9,023	8,954
2043	228	52.23	200,858	31,477	31,233	228	15.74	60,530	9,486	9,412
2044	230	53.31	205,573	33,092	32,933	230	16.07	61,969	9,975	9,927
2045	232	54.41	209,241	34,788	34,525	232	16.41	63,107	10,492	10,413
2046	235	55.54	213,587	36,576	36,310	235	16.75	64,414	11,031	10,950

Table 5

Scenario 3 System Losses

Year	Scenario 3 (OH)					Scenario 3 (UG)				
	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
2047	237	56.69	218,009	38,453	38,173	237	17.10	65,760	11,599	11,515
2048	239	57.85	223,080	40,417	40,244	239	17.45	67,290	12,192	12,139
Conductor Rating (Amp)	340					398				
Resistance @ 25 & 75 or 90 C	0.6340	0.7440				0.1885	0.2365			

Table 6

Scenario 4 System Losses

	Scenario 4 (OH)					Scenario 4 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
1999	150	19.87	76,413	3,262	3,225	150	9.04	34,765	1,484	1,467
2000	150	19.87	76,622	3,360	3,333	150	9.04	34,860	1,528	1,516
2001	150	19.99	76,874	3,481	3,444	150	9.09	34,957	1,583	1,566
2002	152	20.37	78,336	3,654	3,611	152	9.26	35,611	1,661	1,642
2003	153	20.74	79,759	3,832	3,789	153	9.43	36,264	1,742	1,723
2004	155	21.13	81,481	4,021	3,984	155	9.61	37,058	1,829	1,812
2005	156	21.56	82,912	4,226	4,179	156	9.81	37,726	1,923	1,901
2006	158	22.01	84,643	4,443	4,393	158	10.01	38,495	2,021	1,998
2007	159	22.47	86,412	4,672	4,623	159	10.22	39,302	2,125	2,103
2008	161	22.93	88,422	4,911	4,872	161	10.43	40,220	2,234	2,216
2009	162	23.41	90,026	5,164	5,113	162	10.65	40,956	2,349	2,326
2010	164	23.89	91,872	5,429	5,375	164	10.87	41,802	2,470	2,445
2011	166	24.39	93,795	5,708	5,656	166	11.09	42,648	2,596	2,572
2012	167	24.90	96,019	6,003	5,963	167	11.33	43,690	2,731	2,713
2013	169	25.40	97,679	6,307	6,251	169	11.55	44,417	2,868	2,843
2014	171	25.93	99,717	6,632	6,571	171	11.79	45,340	3,015	2,988
2015	172	26.47	101,794	6,973	6,912	172	12.04	46,302	3,172	3,144
2016	174	27.02	104,194	7,331	7,283	174	12.29	47,392	3,335	3,313
2017	176	27.58	106,063	7,708	7,637	176	12.55	48,263	3,507	3,475
2018	178	28.16	108,293	8,106	8,035	178	12.81	49,263	3,687	3,655
2019	179	28.74	110,524	8,521	8,444	179	13.08	50,301	3,878	3,843
2020	181	29.34	113,140	8,960	8,904	181	13.35	51,480	4,077	4,051
2021	183	29.95	115,177	9,420	9,341	183	13.63	52,416	4,287	4,251
2022	185	30.57	117,561	9,904	9,816	185	13.90	53,454	4,503	4,463
2023	187	31.21	120,022	10,414	10,322	187	14.19	54,570	4,735	4,693
2024	189	31.86	122,858	10,950	10,885	189	14.49	55,876	4,980	4,951
2025	190	32.52	125,060	11,512	11,418	190	14.79	56,877	5,236	5,193
2026	192	33.19	127,637	12,102	11,998	192	15.10	58,069	5,506	5,458
2027	194	33.88	130,290	12,724	12,612	194	15.41	59,261	5,788	5,736
2028	196	34.59	133,385	13,381	13,298	196	15.73	60,658	6,085	6,048
2029	198	35.31	135,790	14,069	13,946	198	16.06	61,761	6,399	6,343
2030	200	36.04	138,597	14,791	14,664	200	16.40	63,068	6,731	6,673
2031	202	36.80	141,520	15,556	15,426	202	16.74	64,376	7,076	7,017
2032	204	37.57	144,877	16,358	16,270	204	17.09	65,902	7,441	7,401
2033	206	38.35	147,480	17,198	17,063	206	17.44	67,068	7,821	7,760
2034	208	39.14	150,518	18,079	17,942	208	17.81	68,491	8,226	8,164
2035	210	39.97	153,710	19,016	18,876	210	18.18	69,914	8,649	8,585
2036	212	40.80	157,332	19,993	19,902	212	18.56	71,571	9,095	9,054
2037	215	41.65	160,171	21,022	20,870	215	18.96	72,913	9,570	9,501
2038	217	42.51	163,478	22,100	21,939	217	19.35	74,413	10,059	9,986
2039	219	43.41	166,939	23,245	23,071	219	19.76	75,990	10,581	10,502
2040	221	44.31	170,867	24,438	24,314	221	20.17	77,779	11,124	11,068
2041	223	45.25	174,015	25,706	25,511	223	20.59	79,182	11,697	11,608
2042	226	46.19	177,630	27,027	26,822	226	21.02	80,835	12,299	12,206
2043	228	47.16	181,360	28,422	28,201	228	21.46	82,527	12,933	12,833
2044	230	48.14	185,636	29,883	29,739	230	21.90	84,450	13,594	13,529
2045	232	49.16	189,052	31,431	31,194	232	22.38	86,065	14,309	14,201
2046	235	50.18	192,974	33,046	32,806	235	22.84	87,834	15,041	14,932

Table 6

Scenario 4 System Losses

	Scenario 4 (OH)					Scenario 4 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
2047	237	51.24	197,051	34,757	34,504	237	23.32	89,680	15,818	15,703
2048	239	52.31	201,717	36,547	36,390	239	23.81	91,816	16,635	16,564
Conductor Rating (Amp)	495					655				
Resistance @ 25 & 75 or 90 C	0.2780	0.3320				0.1263	0.1595			

Table 7

Scenario 5 System Losses

	Scenario 5 (OH)					Scenario 5 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
1999	150	11.90	45,763	1,954	1,931	150	5.45	20,959	895	884
2000	150	11.90	45,888	2,012	1,996	150	5.45	21,016	921	914
2001	150	11.97	46,032	2,085	2,062	150	5.49	21,113	956	946
2002	152	12.20	46,917	2,188	2,163	152	5.60	21,536	1,004	993
2003	153	12.42	47,763	2,295	2,269	153	5.71	21,959	1,055	1,043
2004	155	12.65	48,781	2,407	2,385	155	5.83	22,482	1,109	1,099
2005	156	12.91	49,647	2,530	2,502	156	5.95	22,882	1,166	1,153
2006	158	13.18	50,686	2,661	2,631	158	6.08	23,381	1,227	1,213
2007	159	13.44	51,685	2,795	2,765	159	6.21	23,881	1,291	1,278
2008	161	13.72	52,907	2,939	2,915	161	6.35	24,487	1,360	1,349
2009	162	14.00	53,839	3,089	3,058	162	6.49	24,958	1,432	1,418
2010	164	14.29	54,954	3,247	3,215	164	6.64	25,535	1,509	1,494
2011	166	14.58	56,069	3,412	3,381	166	6.78	26,073	1,587	1,572
2012	167	14.88	57,380	3,587	3,563	167	6.93	26,723	1,671	1,659
2013	169	15.19	58,415	3,772	3,739	169	7.09	27,266	1,760	1,745
2014	171	15.50	59,607	3,964	3,928	171	7.24	27,842	1,852	1,835
2015	172	15.82	60,838	4,167	4,131	172	7.40	28,458	1,949	1,932
2016	174	16.15	62,277	4,382	4,353	174	7.57	29,191	2,054	2,040
2017	176	16.47	63,338	4,603	4,560	176	7.73	29,727	2,160	2,140
2018	178	16.81	64,645	4,839	4,797	178	7.91	30,419	2,277	2,257
2019	179	17.16	65,991	5,088	5,042	179	8.08	31,073	2,396	2,374
2020	181	17.52	67,560	5,350	5,317	181	8.27	31,891	2,525	2,510
2021	183	17.88	68,760	5,624	5,576	183	8.44	32,457	2,655	2,632
2022	185	18.25	70,183	5,912	5,860	185	8.63	33,188	2,796	2,771
2023	187	18.63	71,644	6,217	6,161	187	8.83	33,957	2,946	2,920
2024	189	19.01	73,306	6,534	6,495	189	9.03	34,821	3,104	3,085
2025	190	19.39	74,567	6,864	6,808	190	9.23	35,495	3,268	3,241
2026	192	19.79	76,105	7,216	7,154	192	9.43	36,264	3,438	3,409
2027	194	20.20	77,682	7,587	7,520	194	9.64	37,072	3,620	3,589
2028	196	20.62	79,514	7,977	7,928	196	9.85	37,983	3,810	3,787
2029	198	21.05	80,951	8,387	8,314	198	10.08	38,764	4,016	3,981
2030	200	21.48	82,604	8,815	8,740	200	10.30	39,610	4,227	4,191
2031	202	21.93	84,335	9,270	9,193	202	10.53	40,495	4,451	4,414
2032	204	22.38	86,301	9,744	9,692	204	10.77	41,531	4,689	4,664
2033	206	22.84	87,834	10,243	10,162	206	11.01	42,340	4,937	4,899
2034	208	23.31	89,642	10,767	10,685	208	11.26	43,302	5,201	5,162
2035	210	23.80	91,526	11,323	11,239	210	11.51	44,263	5,476	5,435
2036	212	24.29	93,667	11,903	11,849	212	11.77	45,387	5,768	5,741
2037	215	24.79	95,333	12,512	12,422	215	12.04	46,302	6,077	6,033
2038	217	25.30	97,295	13,153	13,057	217	12.31	47,340	6,400	6,353
2039	219	25.83	99,333	13,831	13,728	219	12.58	48,378	6,736	6,686
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 7

Scenario 5 System Losses

	Scenario 5 (OH)					Scenario 5 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
2047	237	30.43	117,023	20,641	20,491	237	15.06	57,915	10,215	10,141
2048	239	31.06	119,773	21,700	21,607	239	15.39	59,347	10,752	10,706
Conductor Rating (Amp)	680					960				
Resistance @ 25 & 75 or 90 C	0.1690	0.2020				0.0663	0.1595			

Table 8

Scenario 6 System Losses

	Scenario 6 (OH)					Scenario 6 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
1999	150	11.90	45,763	1,954	1,931	150	4.65	17,882	763	755
2000	150	11.90	45,888	2,012	1,996	150	4.65	17,931	786	780
2001	150	11.97	46,032	2,085	2,062	150	4.69	18,036	817	808
2002	152	12.20	46,917	2,188	2,163	152	4.77	18,344	856	846
2003	153	12.42	47,763	2,295	2,269	153	4.86	18,690	898	888
2004	155	12.65	48,781	2,407	2,385	155	4.94	19,050	940	932
2005	156	12.91	49,647	2,530	2,502	156	5.05	19,420	990	979
2006	158	13.18	50,686	2,661	2,631	158	5.15	19,805	1,040	1,028
2007	159	13.44	51,685	2,795	2,765	159	5.26	20,228	1,094	1,082
2008	161	13.72	52,907	2,939	2,915	161	5.36	20,669	1,148	1,139
2009	162	14.00	53,839	3,089	3,058	162	5.48	21,074	1,209	1,197
2010	164	14.29	54,954	3,247	3,215	164	5.59	21,497	1,270	1,258
2011	166	14.58	56,069	3,412	3,381	166	5.70	21,920	1,334	1,322
2012	167	14.88	57,380	3,587	3,563	167	5.82	22,443	1,403	1,394
2013	169	15.19	58,415	3,772	3,739	169	5.94	22,843	1,475	1,462
2014	171	15.50	59,607	3,964	3,928	171	6.06	23,305	1,550	1,536
2015	172	15.82	60,838	4,167	4,131	172	6.18	23,766	1,628	1,614
2016	174	16.15	62,277	4,382	4,353	174	6.31	24,332	1,712	1,701
2017	176	16.47	63,338	4,603	4,560	176	6.44	24,766	1,800	1,783
2018	178	16.81	64,645	4,839	4,797	178	6.57	25,266	1,891	1,875
2019	179	17.16	65,991	5,088	5,042	179	6.71	25,804	1,989	1,971
2020	181	17.52	67,560	5,350	5,317	181	6.85	26,415	2,092	2,079
2021	183	17.88	68,760	5,624	5,576	183	6.98	26,843	2,195	2,177
2022	185	18.25	70,183	5,912	5,860	185	7.14	27,458	2,313	2,293
2023	187	18.63	71,644	6,217	6,161	187	7.28	27,996	2,429	2,408
2024	189	19.01	73,306	6,534	6,495	189	7.43	28,651	2,554	2,538
2025	190	19.39	74,567	6,864	6,808	190	7.59	29,188	2,687	2,665
2026	192	19.79	76,105	7,216	7,154	192	7.74	29,765	2,822	2,798
2027	194	20.20	77,682	7,587	7,520	194	7.89	30,342	2,963	2,937
2028	196	20.62	79,514	7,977	7,928	196	8.06	31,081	3,118	3,099
2029	198	21.05	80,951	8,387	8,314	198	8.23	31,650	3,279	3,250
2030	200	21.48	82,604	8,815	8,740	200	8.39	32,265	3,443	3,414
2031	202	21.93	84,335	9,270	9,193	202	8.57	32,957	3,623	3,592
2032	204	22.38	86,301	9,744	9,692	204	8.74	33,703	3,805	3,785
2033	206	22.84	87,834	10,243	10,162	206	8.93	34,342	4,005	3,973
2034	208	23.31	89,642	10,767	10,685	208	9.11	35,034	4,208	4,176
2035	210	23.80	91,526	11,323	11,239	210	9.30	35,764	4,425	4,392
2036	212	24.29	93,667	11,903	11,849	212	9.50	36,634	4,655	4,634
2037	215	24.79	95,333	12,512	12,422	215	9.69	37,264	4,891	4,855
2038	217	25.30	97,295	13,153	13,057	217	9.88	37,995	5,136	5,099
2039	219	25.83	99,333	13,831	13,728	219	10.09	38,803	5,403	5,363
2040	221	26.36	101,649	14,538	14,465	221	10.30	39,719	5,681	5,652
2041	223	26.90	103,448	15,281	15,165	223	10.52	40,456	5,976	5,931
2042	226	27.46	105,601	16,067	15,946	226	10.73	41,264	6,278	6,231
2043	228	28.04	107,832	16,899	16,768	228	10.95	42,110	6,599	6,548
2044	230	28.62	110,364	17,766	17,680	230	11.18	43,112	6,940	6,907
2045	232	29.21	112,331	18,676	18,535	232	11.41	43,879	7,295	7,240
2046	235	29.82	114,677	19,638	19,495	235	11.65	44,802	7,672	7,616

Table 8

Scenario 6 System Losses

	Scenario 6 (OH)					Scenario 6 (UG)				
Year	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $	Loading Amps	Demand Loss kW	Energy Loss kWh	Demand Cost $	Energy Cost $
2047	237	30.43	117,023	20,641	20,491	237	11.89	45,725	8,065	8,006
2048	239	31.06	119,773	21,700	21,607	239	12.13	46,775	8,475	8,438
Conductor Rating (Amp)	680					960				
Resistance @ 25 & 75 or 90 C	0.1690	0.2020				0.0663	0.0834			

Table 9

Scenario 1 Capital Cost

		Overhead				Underground				
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1999	150	127,000	14,000	0	0	150	2,014,000	253,000	0	0
2000	150	0	0	0	0	150	0	0	0	0
2001	150	0	0	0	0	150	0	0	0	0
2002	152	0	0	0	0	152	0	0	0	0
2003	153	0	0	0	0	153	0	0	0	0
2004	155	0	0	0	0	155	0	0	0	0
2005	156	0	0	0	0	156	0	0	0	0
2006	158	0	0	0	0	158	0	0	0	0
2007	159	0	0	0	0	159	0	0	0	0
2008	161	0	0	0	0	161	0	0	0	0
2009	162	0	0	0	0	162	0	0	0	0
2010	164	0	0	0	0	164	0	0	0	0
2011	166	0	0	0	0	166	0	0	0	0
2012	167	0	0	0	0	167	0	0	0	0
2013	169	0	0	0	0	169	0	0	0	0
2014	171	0	0	0	0	171	0	0	0	0
2015	172	0	0	0	0	172	0	0	0	0
2016	174	0	0	0	0	174	0	0	0	0
2017	176	0	0	0	0	176	0	0	0	0
2018	178	0	0	0	0	178	0	0	0	0
2019	179	229,376	0	13,726	0	179	0	0	0	0
2020	181	0	0	0	0	181	0	0	0	0
2021	183	0	0	0	0	183	0	0	0	0
2022	185	0	0	0	0	185	0	0	0	0
2023	187	0	0	0	0	187	0	0	0	0
2024	189	0	0	0	0	189	0	0	0	0
2025	190	0	0	0	0	190	0	0	0	0
2026	192	0	0	0	0	192	0	0	0	0
2027	194	0	0	0	0	194	0	0	0	0
2028	196	0	0	0	0	196	0	0	0	0
2029	198	0	0	0	0	198	0	0	0	0
2030	200	0	0	0	0	200	0	0	0	0
2031	202	0	0	0	0	202	0	0	0	0
2032	204	0	0	0	0	204	0	0	0	0
2033	206	0	0	0	0	206	0	0	0	0
2034	208	0	0	0	0	208	5,667,119	0	211,040	0
2035	210	0	0	0	0	210	0	0	0	0
2036	212	0	0	0	0	212	0	0	0	0
2037	215	0	0	0	0	215	0	0	0	0
2038	217	0	0	0	0	217	0	0	0	0
2039	219	414,279	45,669	24,791	99,166	219	0	0	0	0
2040	221	0	0	0	0	221	0	0	0	0
2041	223	0	0	0	0	223	0	0	0	0
2042	226	0	0	0	0	226	0	0	0	0
2043	228	0	0	0	0	228	0	0	0	0
2044	230	0	0	0	0	230	0	0	0	0

Table 9

Scenario 1 Capital Cost

		Overhead				Underground				
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
2045	232	0	0	0	0	232	0	0	0	0
2046	235	0	0	0	0	235	0	0	0	0
2047	237	0	0	0	0	237	0	0	0	0
2048	239	0	0	0	0	239	0	0	0	0
Conductor Rating	495					583				

Table 10

Scenario 1 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
1999	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2000	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2001	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2002	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2003	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2004	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2005	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2006	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2007	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2008	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2009	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2010	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2011	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2012	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2013	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2014	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2015	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2016	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2017	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2018	17,221	1,631	238,860	28,918	0	0	0	0	18,852	267,778
2019	31,103	1,631	238,860	28,918	0	0	0	0	46,461	267,778
2020	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2021	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2022	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2023	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2024	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2025	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2026	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2027	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2028	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2029	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2030	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2031	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2032	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2033	31,103	1,631	238,860	28,918	0	0	0	0	32,734	267,778
2034	31,103	1,631	672,120	28,918	0	0	0	0	32,734	912,078
2035	31,103	1,631	672,120	28,918	0	0	0	0	32,734	701,038
2036	31,103	1,631	672,120	28,918	0	0	0	0	32,734	701,038
2037	31,103	1,631	672,120	28,918	0	0	0	0	32,734	701,038
2038	31,103	1,631	672,120	28,918	0	0	0	0	32,734	701,038
2039	56,176	5,320	672,120	28,918	0	0	0	0	185,454	701,038
2040	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2041	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2042	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2043	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2044	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038

Table 10

Scenario 1 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
2045	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2046	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2047	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038
2048	56,176	5,320	672,120	28,918	0	0	0	0	61,497	701,038

Table 11

Scenario 2 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1999	150	168,600	19,000	0	0	150	743,000	173,000	0	0
2000	150	0	0	0	0	150	0	0	0	0
2001	150	0	0	0	0	150	0	0	0	0
2002	152	0	0	0	0	152	0	0	0	0
2003	153	0	0	0	0	153	0	0	0	0
2004	155	0	0	0	0	155	0	0	0	0
2005	156	0	0	0	0	156	0	0	0	0
2006	158	0	0	0	0	158	0	0	0	0
2007	159	0	0	0	0	159	0	0	0	0
2008	161	0	0	0	0	161	0	0	0	0
2009	162	0	0	0	0	162	0	0	0	0
2010	164	0	0	0	0	164	0	0	0	0
2011	166	0	0	0	0	166	0	0	0	0
2012	167	0	0	0	0	167	0	0	0	0
2013	169	0	0	0	0	169	0	0	0	0
2014	171	0	0	0	0	171	0	0	0	0
2015	172	0	0	0	0	172	0	0	0	0
2016	174	0	0	0	0	174	0	0	0	0
2017	176	0	0	0	0	176	0	0	0	0
2018	178	0	0	0	0	178	0	0	0	0
2019	179	304,510	0	12,282	0	179	0	0	0	0
2020	181	0	0	0	0	181	0	0	0	0
2021	183	0	0	0	0	183	0	0	0	0
2022	185	0	0	0	0	185	0	0	0	0
2023	187	0	0	0	0	187	0	0	0	0
2024	189	0	0	0	0	189	0	0	0	0
2025	190	0	0	0	0	190	0	0	0	0
2026	192	0	0	0	0	192	0	0	0	0
2027	194	0	0	0	0	194	0	0	0	0
2028	196	0	0	0	0	196	0	0	0	0
2029	198	0	0	0	0	198	0	0	0	0
2030	200	0	0	0	0	200	0	0	0	0
2031	202	0	0	0	0	202	0	0	0	0
2032	204	0	0	0	0	204	0	0	0	0
2033	206	0	0	0	0	206	0	0	0	0
2034	208	0	0	0	0	208	5,667,119	0	108,615	0
2035	210	0	0	0	0	210	0	0	0	0
2036	212	0	0	0	0	212	0	0	0	0
2037	215	0	0	0	0	215	0	0	0	0
2038	217	0	0	0	0	217	0	0	0	0
2039	219	549,980	45,669	22,182	88,727	219	0	0	0	0
2040	221	0	0	0	0	221	0	0	0	0
2041	223	0	0	0	0	223	0	0	0	0
2042	226	0	0	0	0	226	0	0	0	0
2043	228	0	0	0	0	228	0	0	0	0
2044	230	0	0	0	0	230	0	0	0	0

Table 11

Scenario 2 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
2045	232	0	0	0	0	232	0	0	0	0
2046	235	0	0	0	0	235	0	0	0	0
2047	237	0	0	0	0	237	0	0	0	0
2048	239	0	0	0	0	239	0	0	0	0
Conductor Rating	495					583				

Table 12

Scenario 2 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
1999	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2000	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2001	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2002	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2003	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2004	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2005	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2006	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2007	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2008	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2009	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2010	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2011	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2012	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2013	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2014	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2015	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2016	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2017	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2018	22,862	2,214	88,120	19,774	0	0	0	0	25,076	107,894
2019	41,292	2,214	88,120	19,774	0	0	0	0	55,787	107,894
2020	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2021	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2022	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2023	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2024	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2025	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2026	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2027	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2028	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2029	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2030	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2031	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2032	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2033	41,292	2,214	88,120	19,774	0	0	0	0	43,505	107,894
2034	41,292	2,214	247,957	19,774	0	0	0	0	43,505	376,346
2035	41,292	2,214	247,957	19,774	0	0	0	0	43,505	267,731
2036	41,292	2,214	247,957	19,774	0	0	0	0	43,505	267,731
2037	41,292	2,214	247,957	19,774	0	0	0	0	43,505	267,731
2038	41,292	2,214	247,957	19,774	0	0	0	0	43,505	267,731
2039	74,577	7,221	247,957	19,774	0	0	0	0	192,707	267,731
2040	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2041	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2042	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2043	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2044	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731

Table 12

Scenario 2 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
2045	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2046	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2047	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731
2048	74,577	7,221	247,957	19,774	0	0	0	0	81,798	267,731

Table 13

Scenario 3 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1999	150	99,000	11,000	0	0	150	1,091,000	87,000	0	0
2000	150	0	0	0	0	150	0	0	0	0
2001	150	0	0	0	0	150	0	0	0	0
2002	152	0	0	0	0	152	0	0	0	0
2003	153	0	0	0	0	153	0	0	0	0
2004	155	0	0	0	0	155	0	0	0	0
2005	156	0	0	0	0	156	0	0	0	0
2006	158	0	0	0	0	158	0	0	0	0
2007	159	0	0	0	0	159	0	0	0	0
2008	161	0	0	0	0	161	0	0	0	0
2009	162	0	0	0	0	162	0	0	0	0
2010	164	0	0	0	0	164	0	0	0	0
2011	166	0	0	0	0	166	0	0	0	0
2012	167	0	0	0	0	167	0	0	0	0
2013	169	0	0	0	0	169	0	0	0	0
2014	171	262,673	21,812	0	0	171	0	0	0	0
2015	172	0	0	0	0	172	0	0	0	0
2016	174	0	0	0	0	174	0	0	0	0
2017	176	0	0	0	0	176	0	0	0	0
2018	178	0	0	0	0	178	0	0	0	0
2019	179	304,510	0	8,669	0	179	0	0	0	0
2020	181	0	0	0	0	181	0	0	0	0
2021	183	0	0	0	0	183	0	0	0	0
2022	185	0	0	0	0	185	0	0	0	0
2023	187	0	0	0	0	187	0	0	0	0
2024	189	0	0	0	0	189	0	0	0	0
2025	190	0	0	0	0	190	0	0	0	0
2026	192	0	0	0	0	192	0	0	0	0
2027	194	0	0	0	0	194	0	0	0	0
2028	196	0	0	0	0	196	0	0	0	0
2029	198	0	0	0	0	198	0	0	0	0
2030	200	0	0	0	0	200	5,035,162	632,520	0	0
2031	202	0	0	0	0	202	0	0	0	0
2032	204	0	0	0	0	204	0	0	0	0
2033	206	0	0	0	0	206	0	0	0	0
2034	208	0	0	0	0	208	5,667,119	0	126,624	0
2035	210	0	0	0	0	210	0	0	0	0
2036	212	0	0	0	0	212	0	0	0	0
2037	215	0	0	0	0	215	0	0	0	0
2038	217	0	0	0	0	217	0	0	0	0
2039	219	549,980	45,669	15,658	62,631	219	0	0	0	0
2040	221	0	0	0	0	221	0	0	0	0
2041	223	0	0	0	0	223	0	0	0	0
2042	226	0	0	0	0	226	0	0	0	0
2043	228	0	0	0	0	228	0	0	0	0
2044	230	0	0	0	0	230	0	0	0	0

Table 13

Scenario 3 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
2045	232	0	0	0	0	232	0	0	0	0
2046	235	0	0	0	0	235	0	0	0	0
2047	237	0	0	0	0	237	0	0	0	0
2048	239	0	0	0	0	239	0	0	0	0
Conductor Rating	340					398				

Table 14

Scenario 3 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
1999	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2000	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2001	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2002	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2003	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2004	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2005	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2006	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2007	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2008	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2009	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2010	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2011	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2012	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2013	13,424	1,282	129,393	9,944	0	0	0	0	14,706	139,337
2014	13,424	1,282	129,393	9,944	26,830	2,541	0	0	44,077	139,337
2015	13,424	1,282	129,393	9,944	26,830	2,541	0	0	44,077	139,337
2016	13,424	1,282	129,393	9,944	26,830	2,541	0	0	44,077	139,337
2017	13,424	1,282	129,393	9,944	26,830	2,541	0	0	44,077	139,337
2018	13,424	1,282	129,393	9,944	26,830	2,541	0	0	44,077	139,337
2019	24,246	1,282	129,393	9,944	26,830	2,541	0	0	63,568	139,337
2020	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2021	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2022	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2023	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2024	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2025	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2026	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2027	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2028	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2029	24,246	1,282	129,393	9,944	26,830	2,541	0	0	54,899	139,337
2030	24,246	1,282	129,393	9,944	26,830	2,541	597,170	72,297	54,899	808,804
2031	24,246	1,282	129,393	9,944	26,830	2,541	597,170	72,297	54,899	808,804
2032	24,246	1,282	129,393	9,944	26,830	2,541	597,170	72,297	54,899	808,804
2033	24,246	1,282	129,393	9,944	26,830	2,541	597,170	72,297	54,899	808,804
2034	24,246	1,282	364,093	9,944	26,830	2,541	597,170	72,297	54,899	1,170,128
2035	24,246	1,282	364,093	9,944	26,830	2,541	597,170	72,297	54,899	1,043,504
2036	24,246	1,282	364,093	9,944	26,830	2,541	597,170	72,297	54,899	1,043,504
2037	24,246	1,282	364,093	9,944	26,830	2,541	597,170	72,297	54,899	1,043,504
2038	24,246	1,282	364,093	9,944	26,830	2,541	597,170	72,297	54,899	1,043,504
2039	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	155,631	1,043,504
2040	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2041	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2042	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2043	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2044	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504

Table 14

Scenario 3 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
2045	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2046	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2047	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504
2048	43,791	4,180	364,093	9,944	26,830	2,541	597,170	72,297	77,342	1,043,504

Table 15

Scenario 4 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1999	150	401,000	20,000	0	0	150	2,635,000	334,000	0	0
2000	150	0	0	0	0	150	0	0	0	0
2001	150	0	0	0	0	150	0	0	0	0
2002	152	0	0	0	0	152	0	0	0	0
2003	153	0	0	0	0	153	0	0	0	0
2004	155	0	0	0	0	155	0	0	0	0
2005	156	0	0	0	0	156	0	0	0	0
2006	158	0	0	0	0	158	0	0	0	0
2007	159	0	0	0	0	159	0	0	0	0
2008	161	0	0	0	0	161	0	0	0	0
2009	162	0	0	0	0	162	0	0	0	0
2010	164	0	0	0	0	164	0	0	0	0
2011	166	0	0	0	0	166	0	0	0	0
2012	167	0	0	0	0	167	0	0	0	0
2013	169	0	0	0	0	169	0	0	0	0
2014	171	0	0	0	0	171	0	0	0	0
2015	172	0	0	0	0	172	0	0	0	0
2016	174	0	0	0	0	174	0	0	0	0
2017	176	0	0	0	0	176	0	0	0	0
2018	178	0	0	0	0	178	0	0	0	0
2019	179	304,510	0	15,894	0	179	0	0	0	0
2020	181	0	0	0	0	181	0	0	0	0
2021	183	0	0	0	0	183	0	0	0	0
2022	185	0	0	0	0	185	0	0	0	0
2023	187	0	0	0	0	187	0	0	0	0
2024	189	0	0	0	0	189	0	0	0	0
2025	190	0	0	0	0	190	0	0	0	0
2026	192	0	0	0	0	192	0	0	0	0
2027	194	0	0	0	0	194	0	0	0	0
2028	196	0	0	0	0	196	0	0	0	0
2029	198	0	0	0	0	198	0	0	0	0
2030	200	0	0	0	0	200	0	0	0	0
2031	202	0	0	0	0	202	0	0	0	0
2032	204	0	0	0	0	204	0	0	0	0
2033	206	0	0	0	0	206	0	0	0	0
2034	208	0	0	0	0	208	5,667,119	0	233,551	0
2035	210	0	0	0	0	210	0	0	0	0
2036	212	0	0	0	0	212	0	0	0	0
2037	215	0	0	0	0	215	0	0	0	0
2038	217	0	0	0	0	217	0	0	0	0
2039	219	549,980	45,669	28,706	114,824	219	0	0	0	0
2040	221	0	0	0	0	221	0	0	0	0
2041	223	0	0	0	0	223	0	0	0	0
2042	226	0	0	0	0	226	0	0	0	0
2043	228	0	0	0	0	228	0	0	0	0
2044	230	0	0	0	0	230	0	0	0	0

Table 15

Scenario 4 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
2045	232	0	0	0	0	232	0	0	0	0
2046	235	0	0	0	0	235	0	0	0	0
2047	237	0	0	0	0	237	0	0	0	0
2048	239	0	0	0	0	239	0	0	0	0
Conductor Rating	495					655				

Table 16

Scenario 4 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
1999	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2000	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2001	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2002	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2003	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2004	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2005	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2006	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2007	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2008	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2009	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2010	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2011	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2012	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2013	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2014	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2015	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2016	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2017	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2018	54,376	2,330	312,511	38,176	0	0	0	0	56,706	350,687
2019	98,208	2,330	312,511	38,176	0	0	0	0	116,432	350,687
2020	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2021	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2022	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2023	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2024	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2025	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2026	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2027	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2028	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2029	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2030	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2031	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2032	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687
2033	98,208	2,330	312,511	38,176	0	0	0	0	100,538	350,687

Table 16

Scenario 4 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
2045	177,375	7,601	879,363	38,176	0	0	0	0	184,976	917,539
2046	177,375	7,601	879,363	38,176	0	0	0	0	184,976	917,539
2047	177,375	7,601	879,363	38,176	0	0	0	0	184,976	917,539
2048	177,375	7,601	879,363	38,176	0	0	0	0	184,976	917,539

Table 17

Scenario 5 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1999	150	568,000	34,000	0	0	150	3,383,000	354,000	0	0
2000	150	0	0	0	0	150	0	0	0	0
2001	150	0	0	0	0	150	0	0	0	0
2002	152	0	0	0	0	152	0	0	0	0
2003	153	0	0	0	0	153	0	0	0	0
2004	155	0	0	0	0	155	0	0	0	0
2005	156	0	0	0	0	156	0	0	0	0
2006	158	0	0	0	0	158	0	0	0	0
2007	159	0	0	0	0	159	0	0	0	0
2008	161	0	0	0	0	161	0	0	0	0
2009	162	0	0	0	0	162	0	0	0	0
2010	164	0	0	0	0	164	0	0	0	0
2011	166	0	0	0	0	166	0	0	0	0
2012	167	0	0	0	0	167	0	0	0	0
2013	169	0	0	0	0	169	0	0	0	0
2014	171	0	0	0	0	171	0	0	0	0
2015	172	0	0	0	0	172	0	0	0	0
2016	174	0	0	0	0	174	0	0	0	0
2017	176	0	0	0	0	176	0	0	0	0
2018	178	0	0	0	0	178	0	0	0	0
2019	179	304,510	0	30,704	0	179	0	0	0	0
2020	181	0	0	0	0	181	0	0	0	0
2021	183	0	0	0	0	183	0	0	0	0
2022	185	0	0	0	0	185	0	0	0	0
2023	187	0	0	0	0	187	0	0	0	0
2024	189	0	0	0	0	189	0	0	0	0
2025	190	0	0	0	0	190	0	0	0	0
2026	192	0	0	0	0	192	0	0	0	0
2027	194	0	0	0	0	194	0	0	0	0
2028	196	0	0	0	0	196	0	0	0	0
2029	198	0	0	0	0	198	0	0	0	0
2030	200	0	0	0	0	200	0	0	0	0
2031	202	0	0	0	0	202	0	0	0	0
2032	204	0	0	0	0	204	0	0	0	0
2033	206	0	0	0	0	206	0	0	0	0
2034	208	0	0	0	0	208	5,667,119	0	517,751	0
2035	210	0	0	0	0	210	0	0	0	0
2036	212	0	0	0	0	212	0	0	0	0
2037	215	0	0	0	0	215	0	0	0	0
2038	217	0	0	0	0	217	0	0	0	0
2039	219	549,980	45,669	55,455	221,819	219	0	0	0	0
2040	221	0	0	0	0	221	0	0	0	0
2041	223	0	0	0	0	223	0	0	0	0
2042	226	0	0	0	0	226	0	0	0	0
2043	228	0	0	0	0	228	0	0	0	0
2044	230	0	0	0	0	230	0	0	0	0

Table 17

Scenario 5 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
2045	232	0	0	0	0	232	0	0	0	0
2046	235	0	0	0	0	235	0	0	0	0
2047	237	0	0	0	0	237	0	0	0	0
2048	239	0	0	0	0	239	0	0	0	0
Conductor Rating	680					960				

Table 18

Scenario 5 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
1999	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2000	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2001	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2002	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2003	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2004	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2005	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2006	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2007	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2008	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2009	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2010	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2011	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2012	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2013	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2014	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2015	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2016	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2017	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2018	77,021	3,961	401,224	40,462	0	0	0	0	80,982	441,686
2019	139,108	3,961	401,224	40,462	0	0	0	0	173,773	441,686
2020	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2021	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2022	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2023	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2024	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2025	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2026	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2027	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2028	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2029	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2030	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2031	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2032	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2033	139,108	3,961	401,224	40,462	0	0	0	0	143,069	441,686
2034	139,108	3,961	1,128,989	40,462	0	0	0	0	143,069	1,687,201
2035	139,108	3,961	1,128,989	40,462	0	0	0	0	143,069	1,169,451
2036	139,108	3,961	1,128,989	40,462	0	0	0	0	143,069	1,169,451
2037	139,108	3,961	1,128,989	40,462	0	0	0	0	143,069	1,169,451
2038	139,108	3,961	1,128,989	40,462	0	0	0	0	143,069	1,169,451
2039	251,245	12,921	1,128,989	40,462	0	0	0	0	541,439	1,169,451
2040	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2041	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2042	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2043	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2044	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451

Table 18

Scenario 5 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
2045	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2046	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2047	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451
2048	251,245	12,921	1,128,989	40,462	0	0	0	0	264,166	1,169,451

Table 19

Scenario 6 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
2045	232	0	0	0	0	232	0	0	0	0
2046	235	0	0	0	0	235	0	0	0	0
2047	237	0	0	0	0	237	0	0	0	0
2048	239	0	0	0	0	239	0	0	0	0
Conductor Rating	680					960				

Table 19

Scenario 6 Capital Cost

		Overhead					Underground			
		Installed Cost		Removal Cost			Installed Cost		Removal Cost	
Year	Loading Amps	Wood Poles 20 Year $	Conductors 40 year $	Wood Poles $	Conductors $	Loading Amps	Cables 35 Year $	Ducts 50 Year $	Cables $	Ducts $
1999	150	146,000	12,000	0	0	150	1,049,000	137,000	0	0
2000	150	0	0	0	0	150	0	0	0	0
2001	150	0	0	0	0	150	0	0	0	0
2002	152	0	0	0	0	152	0	0	0	0
2003	153	0	0	0	0	153	0	0	0	0
2004	155	0	0	0	0	155	0	0	0	0
2005	156	0	0	0	0	156	0	0	0	0
2006	158	0	0	0	0	158	0	0	0	0
2007	159	0	0	0	0	159	0	0	0	0
2008	161	0	0	0	0	161	0	0	0	0
2009	162	0	0	0	0	162	0	0	0	0
2010	164	0	0	0	0	164	0	0	0	0
2011	166	0	0	0	0	166	0	0	0	0
2012	167	0	0	0	0	167	0	0	0	0
2013	169	0	0	0	0	169	0	0	0	0
2014	171	0	0	0	0	171	0	0	0	0
2015	172	0	0	0	0	172	0	0	0	0
2016	174	0	0	0	0	174	0	0	0	0
2017	176	0	0	0	0	176	0	0	0	0
2018	178	0	0	0	0	178	0	0	0	0
2019	179	304,510	0	8,308	0	179	0	0	0	0
2020	181	0	0	0	0	181	0	0	0	0
2021	183	0	0	0	0	183	0	0	0	0
2022	185	0	0	0	0	185	0	0	0	0
2023	187	0	0	0	0	187	0	0	0	0
2024	189	0	0	0	0	189	0	0	0	0
2025	190	0	0	0	0	190	0	0	0	0
2026	192	0	0	0	0	192	0	0	0	0
2027	194	0	0	0	0	194	0	0	0	0
2028	196	0	0	0	0	196	0	0	0	0
2029	198	0	0	0	0	198	0	0	0	0
2030	200	0	0	0	0	200	0	0	0	0
2031	202	0	0	0	0	202	0	0	0	0
2032	204	0	0	0	0	204	0	0	0	0
2033	206	0	0	0	0	206	0	0	0	0
2034	208	0	0	0	0	208	5,667,119	0	137,879	0
2035	210	0	0	0	0	210	0	0	0	0
2036	212	0	0	0	0	212	0	0	0	0
2037	215	0	0	0	0	215	0	0	0	0
2038	217	0	0	0	0	217	0	0	0	0
2039	219	549,980	45,669	15,005	60,021	219	0	0	0	0
2040	221	0	0	0	0	221	0	0	0	0
2041	223	0	0	0	0	223	0	0	0	0
2042	226	0	0	0	0	226	0	0	0	0
2043	228	0	0	0	0	228	0	0	0	0
2044	230	0	0	0	0	230	0	0	0	0

Table 20

Scenario 6 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
1999	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2000	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2001	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2002	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2003	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2004	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2005	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2006	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2007	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2008	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2009	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2010	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2011	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2012	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2013	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2014	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2015	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2016	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2017	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2018	19,798	1,398	124,411	15,659	0	0	0	0	21,196	140,071
2019	35,757	1,398	124,411	15,659	0	0	0	0	45,463	140,071
2020	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2021	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2022	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2023	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2024	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2025	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2026	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2027	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2028	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2029	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2030	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2031	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2032	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2033	35,757	1,398	124,411	15,659	0	0	0	0	37,155	140,071
2034	35,757	1,398	350,077	15,659	0	0	0	0	37,155	503,615
2035	35,757	1,398	350,077	15,659	0	0	0	0	37,155	365,736
2036	35,757	1,398	350,077	15,659	0	0	0	0	37,155	365,736
2037	35,757	1,398	350,077	15,659	0	0	0	0	37,155	365,736
2038	35,757	1,398	350,077	15,659	0	0	0	0	37,155	365,736
2039	64,581	4,560	350,077	15,659	0	0	0	0	144,168	365,736
2040	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2041	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2042	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2043	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2044	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736

Table 20

Scenario 6 Annual Cost

	Resulting from Facility Life				Resulting from Load Growth					
	Overhead		Underground		Overhead		Underground		Includes Removal	
Year	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	Wood Poles 20 Year $	Conductors 40 Year $	Cables 35 Year $	Ducts 50 Year $	OH Total $	UG Total $
2045	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2046	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2047	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736
2048	64,581	4,560	350,077	15,659	0	0	0	0	69,141	365,736

Table 21

Present Value of Annual Revenue Requirements

Scenario 1

Table 21

Present Value of Annual Revenue Requirements

Scenario 1

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
2041	61,497	51,217	48,055	160,769	701,038	17,884	37,175	756,097
2042	61,497	53,849	49,497	164,842	701,038	18,805	38,290	758,133
2043	61,497	56,623	50,982	169,101	701,038	19,763	39,439	760,240
2044	61,497	59,622	52,511	173,630	701,038	20,819	40,622	762,479
2045	61,497	62,625	54,087	178,208	701,038	21,861	41,841	764,740
2046	61,497	65,852	55,709	183,058	701,038	22,992	43,096	767,126
2047	61,497	69,261	57,380	188,138	701,038	24,182	44,389	769,609
2048	61,497	72,937	59,102	193,535	701,038	25,475	45,720	772,234
Total	1,784,382	1,366,532	1,566,297	4,717,211	20,098,853	476,873	1,211,664	21,787,390
50 Year Present Value	258,648	142,370	230,834	631,853	3,315,044	49,636	178,570	3,543,250

Table 22

Present Value of Annual Revenue Requirements

Scenario 2

	Annual Overhead PV Cost				Annual Underground PV Cost			
Year	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
1999	25,076	6,487	17,111	48,674	107,894	2,259	10,742	120,895
2000	25,076	6,693	17,624	49,393	107,894	2,331	11,064	121,289
2001	25,076	6,925	18,153	50,154	107,894	2,415	11,396	121,705
2002	25,076	7,265	18,698	51,038	107,894	2,529	11,738	122,161
2003	25,076	7,621	19,259	51,955	107,894	2,657	12,090	122,641
2004	25,076	8,005	19,836	52,917	107,894	2,789	12,453	123,136
2005	25,076	8,405	20,431	53,912	107,894	2,928	12,827	123,648
2006	25,076	8,836	21,044	54,956	107,894	3,079	13,211	124,184
2007	25,076	9,295	21,676	56,046	107,894	3,239	13,608	124,740
2008	25,076	9,783	22,326	57,185	107,894	3,409	14,016	125,319
2009	25,076	10,277	22,996	58,348	107,894	3,582	14,436	125,912
2010	25,076	10,804	23,686	59,565	107,894	3,763	14,869	126,526
2011	25,076	11,364	24,396	60,836	107,894	3,960	15,316	127,169
2012	25,076	11,966	25,128	62,170	107,894	4,171	15,775	127,840
2013	25,076	12,558	25,882	63,516	107,894	4,375	16,248	128,517
2014	25,076	13,203	26,658	64,937	107,894	4,603	16,736	129,232
2015	25,076	13,885	27,458	66,419	107,894	4,841	17,238	129,972
2016	25,076	14,614	28,282	67,972	107,894	5,095	17,755	130,744
2017	25,076	15,345	29,130	69,551	107,894	5,352	18,288	131,533
2018	25,076	16,141	30,004	71,221	107,894	5,629	18,836	132,359
2019	55,787	16,965	30,904	103,656	107,894	5,921	19,401	133,216
2020	43,505	17,864	31,832	93,201	107,894	6,229	19,983	134,106
2021	43,505	18,761	32,786	95,053	107,894	6,540	20,583	135,016
2022	43,505	19,720	33,770	96,995	107,894	6,877	21,200	135,971
2023	43,505	20,736	34,783	99,024	107,894	7,236	21,836	136,966
2024	43,505	21,835	35,827	101,167	107,894	7,615	22,491	138,000
2025	43,505	22,930	36,901	103,337	107,894	7,996	23,166	139,056
2026	43,505	24,100	38,008	105,614	107,894	8,408	23,861	140,163
2027	43,505	25,336	39,149	107,990	107,894	8,839	24,577	141,310
2028	43,505	26,679	40,323	110,507	107,894	9,302	25,314	142,510
2029	43,505	28,015	41,533	113,053	107,894	9,775	26,074	143,742
2030	43,505	29,455	42,779	115,739	107,894	10,273	26,856	145,023
2031	43,505	30,982	44,062	118,549	107,894	10,810	27,662	146,365
2032	43,505	32,628	45,384	121,517	107,894	11,385	28,491	147,770
2033	43,505	34,261	46,746	124,512	107,894	11,963	29,346	149,203
2034	43,505	36,021	48,148	127,674	376,346	12,572	30,227	419,144
2035	43,505	37,892	49,592	130,990	267,731	13,215	31,133	312,079
2036	43,505	39,895	51,080	134,480	267,731	13,924	32,067	313,722
2037	43,505	41,892	52,613	138,010	267,731	14,625	33,029	315,385

Table 22

Present Value of Annual Revenue Requirements

Scenario 2

	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital	Losses	O&M	Total	Capital	Losses	O&M	Total

Table 23

Present Value of Annual Revenue Requirements

Scenario 3

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
1999	14,706	15,040	9,407	39,153	139,337	4,554	10,742	154,633
2000	14,706	15,518	9,689	39,913	139,337	4,699	11,064	155,100
2001	14,706	16,061	9,980	40,747	139,337	4,864	11,396	155,597
2002	14,706	16,845	10,279	41,830	139,337	5,100	11,738	156,175
2003	14,706	17,676	10,588	42,970	139,337	5,353	12,090	156,780
2004	14,706	18,568	10,905	44,179	139,337	5,626	12,453	157,416
2005	14,706	19,503	11,232	45,441	139,337	5,905	12,827	158,068
2006	14,706	20,507	11,569	46,782	139,337	6,211	13,211	158,759
2007	14,706	21,569	11,917	48,191	139,337	6,536	13,608	159,480
2008	14,706	22,711	12,274	49,691	139,337	6,882	14,016	160,235
2009	14,706	23,862	12,642	51,210	139,337	7,231	14,436	161,004
2010	14,706	25,088	13,021	52,815	139,337	7,606	14,869	161,812
2011	14,706	26,391	13,412	54,509	139,337	8,001	15,316	162,653
2012	14,706	27,785	13,814	56,305	139,337	8,428	15,775	163,540
2013	14,706	29,186	14,229	58,121	139,337	8,855	16,248	164,440
2014	44,077	14,725	29,312	88,114	139,337	9,308	16,736	165,380
2015	44,077	15,484	30,191	89,752	139,337	9,793	17,238	166,367
2016	44,077	16,291	31,097	91,465	139,337	10,309	17,755	167,401
2017	44,077	17,102	32,030	93,209	139,337	10,826	18,288	168,450
2018	44,077	17,981	32,990	95,048	139,337	11,389	18,836	169,562
2019	63,568	18,901	33,980	116,449	139,337	11,983	19,401	170,721
2020	54,899	19,897	35,000	109,795	139,337	12,621	19,983	171,941
2021	54,899	20,891	36,050	111,839	139,337	13,262	20,583	173,181
2022	54,899	21,952	37,131	113,982	139,337	13,940	21,200	174,477
2023	54,899	23,075	38,245	116,219	139,337	14,664	21,836	175,837
2024	54,899	24,296	39,392	118,587	139,337	15,448	22,491	177,276
2025	54,899	25,511	40,574	120,984	139,337	16,232	23,166	178,735
2026	54,899	26,808	41,791	123,498	139,337	17,064	23,861	180,262
2027	54,899	28,178	43,045	126,122	139,337	17,955	24,577	181,869
2028	54,899	29,657	44,336	128,892	139,337	18,904	25,314	183,555
2029	54,899	31,141	45,667	131,706	139,337	19,858	26,074	185,268
2030	54,899	32,740	47,037	134,675	808,804	9,856	53,712	872,372
2031	54,899	34,416	48,448	137,762	808,804	10,364	55,323	874,491
2032	54,899	36,231	49,901	141,031	808,804	10,907	56,983	876,694
2033	54,899	38,041	51,398	144,338	808,804	11,453	58,692	878,949
2034	54,899	39,996	52,940	147,835	1,170,128	12,046	60,453	1,242,627
2035	54,899	42,044	54,528	151,471	1,043,504	12,665	62,267	1,118,436
2036	54,899	44,267	56,164	155,330	1,043,504	13,328	64,135	1,120,967
2037	54,899	46,469	57,849	159,217	1,043,504	14,001	66,059	1,123,564

Table 23

Present Value of Annual Revenue Requirements

Scenario 3

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
2038	54,899	48,856	59,584	163,339	1,043,504	14,721	68,040	1,126,266
2039	155,631	51,352	61,372	268,355	1,043,504	15,470	70,082	1,129,056
2040	77,342	54,056	63,213	194,611	1,043,504	16,284	72,184	1,131,972
2041	77,342	56,751	65,110	199,203	1,043,504	17,103	74,350	1,134,957
2042	77,342	59,655	67,063	204,060	1,043,504	17,977	76,580	1,138,061
2043	77,342	62,710	69,075	209,127	1,043,504	18,898	78,877	1,141,280
2044	77,342	66,025	71,147	214,514	1,043,504	19,902	81,244	1,144,650
2045	77,342	69,313	73,281	219,937	1,043,504	20,905	83,681	1,148,090
2046	77,342	72,886	75,480	225,708	1,043,504	21,981	86,192	1,151,677
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,155,396

Table 24

Present Value of Annual Revenue Requirements

Scenario 4

	Annual Overhead PV Cost				Annual Underground PV Cost			
Year	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
1999	56,706	6,487	12,990	76,183	350,687	2,951	14,240	367,878
2000	56,706	6,693	13,380	76,778	350,687	3,044	14,667	368,398
2001	56,706	6,925	13,781	77,412	350,687	3,149	15,107	368,943
2002	56,706	7,265	14,195	78,165	350,687	3,303	15,560	369,551
2003	56,706	7,621	14,620	78,947	350,687	3,465	16,027	370,179
2004	56,706	8,005	15,059	79,770	350,687	3,641	16,508	370,836
2005	56,706	8,405	15,511	80,621	350,687	3,824	17,003	371,515
2006	56,706	8,836	15,976	81,518	350,687	4,019	17,513	372,220
2007	56,706	9,295	16,455	82,456	350,687	4,228	18,039	372,954
2008	56,706	9,783	16,949	83,438	350,687	4,450	18,580	373,717
2009	56,706	10,277	17,457	84,440	350,687	4,675	19,137	374,500
2010	56,706	10,804	17,981	85,491	350,687	4,915	19,711	375,314
2011	56,706	11,364	18,521	86,590	350,687	5,168	20,303	376,158
2012	56,706	11,966	19,076	87,748	350,687	5,444	20,912	377,043
2013	56,706	12,558	19,649	88,912	350,687	5,711	21,539	377,937
2014	56,706	13,203	20,238	90,147	350,687	6,003	22,185	378,876
2015	56,706	13,885	20,845	91,436	350,687	6,316	22,851	379,854
2016	56,706	14,614	21,470	92,790	350,687	6,648	23,537	380,872
2017	56,706	15,345	22,115	94,165	350,687	6,982	24,243	381,912
2018	56,706	16,141	22,778	95,625	350,687	7,342	24,970	382,999
2019	116,432	16,965	23,461	156,859	350,687	7,721	25,719	384,127
2020	100,538	17,864	24,165	142,568	350,687	8,128	26,491	385,306
2021	100,538	18,761	24,890	144,190	350,687	8,538	27,285	386,511
2022	100,538	19,720	25,637	145,895	350,687	8,966	28,104	387,757
2023	100,538	20,736	26,406	147,680	350,687	9,428	28,947	389,062
2024	100,538	21,835	27,198	149,572	350,687	9,931	29,815	390,434
2025	100,538	22,930	28,014	151,483	350,687	10,429	30,710	391,826
2026	100,538	24,100	28,855	153,493	350,687	10,964	31,631	393,282
2027	100,538	25,336	29,720	155,595	350,687	11,524	32,580	394,791
2028	100,538	26,679	30,612	157,829	350,687	12,133	33,557	396,378
2029	100,538	28,015	31,530	160,084	350,687	12,742	34,564	397,993
2030	100,538	29,455	32,476	162,469	350,687	13,404	35,601	399,692
2031	100,538	30,982	33,450	164,971	350,687	14,093	36,669	401,449
2032	100,538	32,628	34,454	167,620	350,687	14,842	37,769	403,298
2033	100,538	34,261	35,487	170,287	350,687	15,581	38,902	405,171
2034	100,538	36,021	36,552	173,111	1,151,090	16,390	40,069	1,207,549
2035	100,538	37,892	37,649	176,079	917,539	17,234	41,271	976,045
2036	100,538	39,895	38,778	179,211	917,539	18,149	42,510	978,198
2037	100,538	41,892	39,941	182,372	917,539	19,071	43,785	980,395

Table 24

Present Value of Annual Revenue Requirements

Scenario 4

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
2038	100,538	44,039	41,140	185,717	917,539	20,045	45,098	982,683
2039	328,505	46,316	42,374	417,195	917,539	21,083	46,451	985,074
2040	184,976	48,752	43,645	277,373	917,539	22,192	47,845	987,576
2041	184,976	51,217	44,954	281,147	917,539	23,305	49,280	990,124
2042	184,976	53,849	46,303	285,128	917,539	24,505	50,759	992,803
2043	184,976	56,623	47,692	289,291	917,539	25,766	52,281	995,587
2044	184,976	59,622	49,123	293,721	917,539	27,123	53,850	998,512
2045	184,976	62,625	50,597	298,197	917,539	28,510	55,465	1,001,515
2046	184,976	65,852	52,115	302,942	917,539	29,973	57,129	1,004,642
2047	184,976	69,261	53,678	307,915	917,539	31,521	58,843	1,007,903
2048	184,976	72,937	55,288	313,201	917,539	33,199	60,609	1,011,347
Total	5,154,061	1,366,532	1,465,231	7,985,824	26,270,690	621,768	1,606,227	28,498,686
50 Year Present Value	770,395	142,370	215,939	1,128,705	4,339,265	64,761	236,719	4,640,745

Table 25

Present Value of Annual Revenue Requirements

Scenario 5

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
1999	80,982	3,885	11,825	96,692	441,686	1,779	14,240	457,705
2000	80,982	4,008	12,180	97,170	441,686	1,835	14,667	458,188
2001	80,982	4,147	12,545	97,674	441,686	1,902	15,107	458,695
2002	80,982	4,351	12,921	98,254	441,686	1,997	15,560	459,243
2003	80,982	4,564	13,309	98,855	441,686	2,098	16,027	459,811
2004	80,982	4,792	13,708	99,482	441,686	2,208	16,508	460,402
2005	80,982	5,032	14,120	100,133	441,686	2,319	17,003	461,008
2006	80,982	5,292	14,543	100,817	441,686	2,440	17,513	461,639
2007	80,982	5,560	14,980	101,521	441,686	2,569	18,039	462,294
2008	80,982	5,854	15,429	102,265	441,686	2,709	18,580	462,975
2009	80,982	6,147	15,892	103,021	441,686	2,850	19,137	463,673
2010	80,982	6,462	16,369	103,812	441,686	3,003	19,711	464,400
2011	80,982	6,793	16,860	104,634	441,686	3,159	20,303	465,148
2012	80,982	7,150	17,365	105,497	441,686	3,330	20,912	465,928
2013	80,982	7,511	17,886	106,379	441,686	3,505	21,539	466,730
2014	80,982	7,892	18,423	107,297	441,686	3,687	22,185	467,558
2015	80,982	8,298	18,976	108,255	441,686	3,881	22,851	468,418
2016	80,982	8,735	19,545	109,262	441,686	4,094	23,537	469,317
2017	80,982	9,163	20,131	110,276	441,686	4,300	24,243	470,229
2018	80,982	9,636	20,735	111,353	441,686	4,534	24,970	471,190
2019	173,773	10,130	21,357	205,260	441,686	4,770	25,719	472,175

Table 25

Present Value of Annual Revenue Requirements

Scenario 5

	Annual Overhead PV Cost				Annual Underground PV Cost			
Year	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
2038	143,069	26,210	37,450	206,729	1,169,451	12,753	45,098	1,227,302
2039	541,439	27,559	38,574	607,572	1,169,451	13,422	46,451	1,229,324
2040	264,166	29,003	39,731	332,899	1,169,451	14,150	47,845	1,231,446
2041	264,166	30,446	40,923	335,534	1,169,451	14,884	49,280	1,233,615
2042	264,166	32,013	42,150	338,329	1,169,451	15,692	50,759	1,235,902
2043	264,166	33,667	43,415	341,248	1,169,451	16,521	52,281	1,238,253
2044	264,166	35,446	44,717	344,329	1,169,451	17,426	53,850	1,240,727
2045	264,166	37,211	46,059	347,436	1,169,451	18,332	55,465	1,243,248
2046	264,166	39,133	47,441	350,739	1,169,451	19,330	57,129	1,245,910
2047	264,166	41,132	48,864	354,162	1,169,451	20,356	58,843	1,248,650
2048	264,166	43,307	50,330	357,802	1,169,451	21,458	60,609	1,251,517
Total	7,430,653	813,889	1,333,823	9,578,365	33,518,522	392,761	1,606,227	35,517,511
50 Year Present Value	1,102,845	85,053	196,573	1,384,472	5,480,939	39,909	236,719	5,757,567

Table 26

Present Value of Annual Revenue Requirements

Scenario 6

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
1999	21,196	3,885	8,959	34,040	140,071	1,518	3,557	145,146
2000	21,196	4,008	9,228	34,431	140,071	1,566	3,664	145,300
2001	21,196	4,147	9,505	34,847	140,071	1,625	3,774	145,469
2002	21,196	4,351	9,790	35,336	140,071	1,702	3,887	145,659
2003	21,196	4,564	10,083	35,843	140,071	1,786	4,003	145,860
2004	21,196	4,792	10,386	36,374	140,071	1,872	4,124	146,066
2005	21,196	5,032	10,698	36,925	140,071	1,969	4,247	146,287
2006	21,196	5,292	11,018	37,506	140,071	2,068	4,375	146,513
2007	21,196	5,560	11,349	38,105	140,071	2,176	4,506	146,752
2008	21,196	5,854	11,689	38,739	140,071	2,287	4,641	146,999
2009	21,196	6,147	12,040	39,383	140,071	2,406	4,780	147,257
2010	21,196	6,462	12,401	40,059	140,071	2,528	4,924	147,522
2011	21,196	6,793	12,773	40,762	140,071	2,656	5,071	147,798
2012	21,196	7,150	13,157	41,502	140,071	2,797	5,224	148,091
2013	21,196	7,511	13,551	42,258	140,071	2,937	5,380	148,388
2014	21,196	7,892	13,958	43,045	140,071	3,086	5,542	148,698
2015	21,196	8,298	14,377	43,870	140,071	3,242	5,708	149,020
2016	21,196	8,735	14,808	44,738	140,071	3,413	5,879	149,363
2017	21,196	9,163	15,252	45,611	140,071	3,583	6,056	149,709
2018	21,196	9,636	15,710	46,541	140,071	3,766	6,237	150,074
2019	45,463	10,130	16,181	71,774	140,071	3,960	6,424	150,455
2020	37,155	10,667	16,666	64,488	140,071	4,171	6,617	150,859
2021	37,155	11,200	17,166	65,521	140,071	4,372	6,816	151,258
2022	37,155	11,772	17,681	66,608	140,071	4,606	7,020	151,697
2023	37,155	12,378	18,212	67,744	140,071	4,837	7,231	152,138
2024	37,155	13,029	18,758	68,942	140,071	5,092	7,448	152,610
2025	37,155	13,672	19,321	70,148	140,071	5,352	7,671	153,093
2026	37,155	14,370	19,901	71,425	140,071	5,620	7,901	153,592
2027	37,155	15,107	20,498	72,759	140,071	5,900	8,138	154,109
2028	37,155	15,905	21,112	74,172	140,071	6,217	8,382	154,670
2029	37,155	16,701	21,746	75,602	140,071	6,529	8,634	155,233
2030	37,155	17,555	22,398	77,108	140,071	6,857	8,893	155,820
2031	37,155	18,463	23,070	78,688	140,071	7,215	9,160	156,445
2032	37,155	19,436	23,762	80,353	140,071	7,590	9,434	157,095
2033	37,155	20,405	24,475	82,035	140,071	7,978	9,717	157,766
2034	37,155	21,452	25,209	83,816	503,615	8,384	10,009	522,008
2035	37,155	22,562	25,966	85,682	365,736	8,817	10,309	384,862
2036	37,155	23,752	26,745	87,651	365,736	9,289	10,618	385,643
2037	37,155	24,934	27,547	89,636	365,736	9,746	10,937	386,419

Table 26

Present Value of Annual Revenue Requirements

Scenario 6

Year	Annual Overhead PV Cost				Annual Underground PV Cost			
	Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
2038	37,155	26,210	28,373	91,738	365,736	10,235	11,265	387,236
2039	144,168	27,559	29,225	200,951	365,736	10,766	11,603	388,105
2040	69,141	29,003	30,101	128,245	365,736	11,333	11,951	389,020
2041	69,141	30,446	31,004	130,591	365,736	11,907	12,310	389,952
2042	69,141	32,013	31,935	133,088	365,736	12,509	12,679	390,924
2043	69,141	33,667	32,893	135,700	365,736	13,147	13,059	391,942
2044	69,141	35,446	33,879	138,466	365,736	13,847	13,451	393,034
2045	69,141	37,211	34,896	141,248	365,736	14,535	13,855	394,125
2046	69,141	39,133	35,943	144,216	365,736	15,288	14,270	395,294
2047	69,141	41,132	37,021	147,294	365,736	16,071	14,698	396,505
2048	61,497	43,307	38,131	142,935	365,736	16,913	15,139	397,788
Total	1,934,105	813,889	1,010,547	3,758,541	10,526,382	318,066	401,218	11,245,666
50 Year Present Value	288,178	85,053	148,930	522,162	1,734,917	33,253	59,130	1,827,300

Table 27

Summary of Present Value of Annual Carrying Charges

Number	Description	Present Value Overhead Cost				Present Value Underground Cost			
		Capital $	Losses $	O&M $	Total $	Capital $	Losses $	O&M $	Total $
1	KAM HWY-PEARL CITY	258,648	142,370	230,834	631,853	3,315,044	49,636	178,570	3,543,250
2	LANIKAI	341,364	142,370	284,445	768,179	1,330,935	49,636	178,570	1,559,141
3	MAKAHA	289,304	246,494	216,120	751,918	2,148,125	90,498	199,148	2,437,771
4	KALAELOA BLVD. CIP	770,395	142,370	215,939	1,128,705	4,339,265	64,761	236,719	4,640,745
5	PAHOA RD. KAIMUKI	1,102,845	85,053	196,573	1,384,472	5,480,939	39,909	236,719	5,757,567
6	KAUKONAHUA RD. WAHIAWA	288,178	85,053	148,930	522,162	1,734,917	33,253	59,130	1,827,300