

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Application of)
HAWAIIAN ELECTRIC COMPANY, INC.) Docket No. 03-0220
For Approval to Commit Funds) Decision and Order No. 20626
in Excess of \$500,000 for)
Item P0000832, the Main)
Transformer Replacement Project.)

DECISION AND ORDER

I.

Background

HAWAIIAN ELECTRIC COMPANY, INC. ("HECO") requests the commission's approval to commit approximately \$753,861 for the Waiiau 3 Main Transformer Replacement Project ("Project"). HECO makes its request in accordance with Section 2.3.g.2 of General Order No. 7, *Standards for Electric Utility Service in the State of Hawaii*.¹

HECO served copies of its application upon the Department of Commerce and Consumer Affairs, Division of Consumer Advocacy ("Consumer Advocate"). HECO responded to the Consumer Advocate's information requests on September 30 and October 7, 2003.

¹HECO's application, filed on August 12, 2003.

The Consumer Advocate does not object to the commission's approval of HECO's application.²

II.

Waiiau 3

A.

Waiiau 3 is a nominal fifty (50) megawatt non-reheat steam unit, commissioned in 1947. HECO operates Waiiau 3 as a cycling unit to meet the daily peak demands. Waiiau 3 starts every weekday morning, Monday through Friday, prior to the morning peak, and shuts down following the evening peak. Waiiau 3 also runs as HECO's system requirements dictate.

The main transformer bank consists of three (3) single-phase transformers manufactured by Westinghouse. The transformer's main components are the core; primary and secondary windings; and insulating oil.

The transformer core consists of stacks of steel laminations and provides a path for the magnetic flux. The primary winding carries the excitation current necessary to magnetize the core. The secondary winding carries the induced load current. Both windings are comprised of insulated copper wire wrapped around the metallic core. Paper between the windings provide additional insulation.

The core and winding assembly is immersed in mineral oil, "which provides good insulation and heat transfer."

²Consumer Advocate's position statement, filed on October 14, 2003.

The transformer operates when an AC voltage source (i.e., 11 kilovolt ("kV") from the Waiiau 3 generator) is connected to the primary winding, which magnetizes the core and induces a voltage (i.e., 46 kV) on the secondary winding.

B.

The Project's scope of work "consists of the purchase and installation of three single-phase, 27.23/47.15Y - 11 KV, 14.0/18.667 MVA, OA/FA oil-immersed transformers, with high voltage winding to have no-load tap changer with taps 49.5/48.4/47.2/46.2/45kV wye and low voltage winding rated 11kV delta." The existing transformers will be removed, retired, and scrapped. HECO confirms that there is no remaining book value for the existing Waiiau 3 main transformer bank and its associated equipment.

HECO will undertake a competitive bid process to purchase the transformers. It intends to replace the transformers during Waiiau 3's overhaul, currently scheduled for April 2004. HECO proposes to commit funds for this Project with the issuance of purchase orders in October 2003. The lead-time to purchase and install a new transformer, HECO estimates, is approximately 6 - 7 months.

HECO expects the new single-phase transformers to last well beyond the Waiiau 3's retirement review date of 2035. In addition, the new transformers, HECO projects, will require about the same operations and maintenance expenses as the existing transformers.

III.

Discussion

A.

HECO provides the following justification for the Project:

1. The Waiiau 3 main transformer is the original equipment installed with the generating unit in 1947. Over the past 56 years, the transformer's components have slowly deteriorated.

2. Oil analysis test results in October 2002 "indicate an increase in electrically conductive contaminants in the insulating oil, degradation of paper insulation, and overheating of the insulating oil." The replacement of all three transformers "is required to ensure reliable operation of the unit."

3. In addition, "incipient faults (i.e., hot spots, partial discharges, arcing, etc.) are occurring within each transformer, as evidenced by the test data." The replacement of all three transformers "is required to ensure that such incipient faults do not continue toward a transformer failure and the loss of the unit until the transformer is replaced."

4. A catastrophic failure of the transformer "can rupture the tank and spew flaming oil in the vicinity[,]" endangering workers and adversely impacting the surrounding environment. Preventing such a catastrophe is prudent.

B.

The Consumer Advocate examined the reasonableness of the Project and the Project's estimated cost.

The Consumer Advocate finds that:

1. Based on HECO's representations, "the replacement of the Waiiau 3 main transformer is reasonable."

2. HECO's 2nd Integrated Resource Plan, 1998 - 2017 ("IRP"), estimated that the service life of Waiiau 3 could be extended to the year 2035. Since HECO expects the new transformers to last well beyond Waiiau 3's retirement review date of 2035, the Project appears "consistent with HECO's plans to keep the Waiiau 3 generating unit in service until the end of its estimated service life."

3. Nonetheless, based on the Consumer Advocate's review of documents filed to support HECO's 2nd IRP, it does not appear that the additional capital improvement projects required to maintain Waiiau 3's operations until the year 2035 were considered in HECO's 2nd IRP. HECO has also not considered these additional capital costs "in a re-evaluation of the cost-effectiveness of operating Waiiau 3." The additional capital project costs for Waiiau 3 during the 2003 - 2006 time period are estimated at \$4.4 million, "which is relatively insignificant when compared to the cost of installing a generating unit."

However, "additional projects and costs may later be deemed necessary to maintain the continued operation of the Waiiau 3 and HECO's other generating units." Should this occur, "the relationship between the costs of the continued operation of the

Waiiau 3 unit to the costs of a new generating unit will increase."

That said, the Consumer Advocate's overall concerns regarding future additional costs, it concludes, are more appropriately addressed in its review of HECO's 3rd IRP in Docket No. 03-0253.

4. The Project's estimated cost is \$753,861. The major component of the Project's cost, ninety (90) per cent, is the purchase of the three (3) new single-phase transformers, at approximately \$675,997. HECO has not completed its bid process for the purchase of the main transformer. Thus, the Consumer Advocate is presently unable to assess the reasonableness of the Project's estimated cost. The Consumer Advocate is able to better examine the reasonableness of the Project's final, actual cost "at the time of the final cost report or in the next rate proceeding, if necessary."

C.

The Consumer Advocate concludes that it does not object to the approval of HECO's application.

D.

The commission finds that the Project is reasonable and consistent with the public interest. The new transformers will provide for the more efficient and safe operation of the Waiiau 3 unit until its projected retirement. The commission, thus, will approve the expenditure of funds for the Project.

IV.

Orders

THE COMMISSION ORDERS:

1. HECO's request to expend an estimated \$753,861 for the Waiiau 3 Main Transformer Replacement Project is approved; provided that no part of the Project may be included in HECO's rate base unless and until the Project is in fact installed, and is used and useful for public utility purposes.

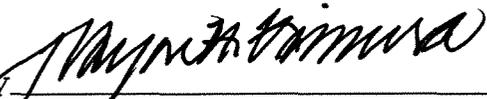
2. HECO shall submit a report within sixty (60) days of the Project's commercial operation, with an explanation of any deviation of ten (10) per cent or more in the Project's cost from that estimated in the application. HECO's failure to submit this report will constitute cause to limit the cost of the Project, for ratemaking purposes, to that estimated in the application.

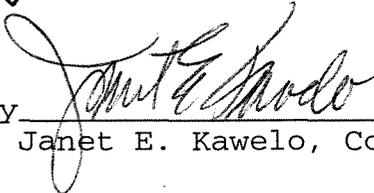
3. HECO shall conform to all of the commission's orders set forth above. Failure to adhere to the commission's orders shall constitute cause for the commission to void this decision and order, and may result in further regulatory actions as authorized by law.

DONE at Honolulu, Hawaii this 7th day of November,
2003.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By 
Carlito P. Caliboso, Chairman

By 
Wayne H. Kimura, Commissioner

By 
Janet E. Kawelo, Commissioner

APPROVED AS TO FORM:


for Kevin M. Katsura
Commission Counsel

03-0220.sl

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Decision and Order No. 20626 upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS
DIVISION OF CONSUMER ADVOCACY
P. O. Box 541
Honolulu, HI 96809

WILLIAM A. BONNET
VICE PRESIDENT, GOVERNMENT AND COMMUNITY AFFAIRS
HAWAIIAN ELECTRIC COMPANY, INC.
P. O. Box 2750
Honolulu, HI 96840

LORIE ANN NAGATA
TREASURER
HAWAIIAN ELECTRIC COMPANY, INC.
P. O. Box 2750
Honolulu, HI 96840



Karen Higashi

DATED: November 7, 2003