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BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

In the Matter of the Application of )  
 )  
 HAWAIIAN ELECTRIC COMPANY, INC. )  
 )  
 For Approval to Commit Funds in )  
 Excess of \$500,000 for Item )  
 P0000863, the Kahe 4 Generator )  
 Rotor Rewind Project, and for )  
 Waiver of Paragraph 2.3(G)(2) of )  
 General Order No. 7. )  
 \_\_\_\_\_ )

DOCKET NO. 03-0154

DECISION AND ORDER NO. 20390

DIV. OF CONSUMER ADVOCACY  
DEPT. OF COMMERCE AND  
CONSUMER AFFAIRS  
STATE OF HAWAII

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Filed August 25, 2003  
At 1:30 o'clock P.M.

Karen Higashi  
Chief Clerk of the Commission

ATTEST: A True Copy  
KAREN HIGASHI  
Chief Clerk, Public Utilities  
Commission, State of Hawaii.

K. Higashi

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_____ )	

DECISION AND ORDER

I.

By application filed on May 28, 2003, HAWAIIAN ELECTRIC COMPANY, INC. ("HECO") requests commission approval to commit approximately \$776,383 for Item P0000863, the Kahe 4 Generator Rotor Rewind project ("Proposed Project"). HECO's request is made pursuant to paragraph 2.3.g.2 of the commission's General Order No. 7, Standards for Electric Utility Service in the State of Hawaii ("G.O. No. 7").

HECO served copies of the application on the DIVISION OF CONSUMER ADVOCACY, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS ("Consumer Advocate") (together with HECO, "Parties").

By Order No. 20232, filed on June 13, 2003, the commission granted HECO's request for a waiver of the G.O. No. 7, paragraph 2.3.g.2 requirement that HECO file its application at least 60 days prior to the commencement of construction or commitment for the expenditure of funds.

On June 12, 2003, the Consumer Advocate filed a preliminary statement of position, and on July 3, 2003, served HECO with information requests ("IRs"). On July 24, 2003, the commission issued Protective Order No. 20352 approving the Parties' Stipulation for Protective Order ("Protective Order"). HECO submitted its responses to the IRs, including certain confidential responses provided pursuant to the Protective Order, on July 28, 2003.

On August 19, 2003, the Consumer Advocate filed its statement of position ("SOP"), in which it stated that it would not object to the commission's approval of the instant application.

## II.

### A.

The Kahe 4 is a nominal 90 megawatt reheat steam unit that was commissioned in 1972. The proposed project involves installing new alternating layers of bent copper bars and a thin coating of electrical insulation on the generator rotor. The new bent copper bars will be insulated from each other by insulating paper and from the rotor core by a glass laminate based insulation. This installation is necessary because HECO has determined that bent copper bars in the generator rotor of the Kahe 4 need to be replaced to correct a ground fault problem.

Tests performed by HECO in April 2003 revealed that while the generator rotor is grounded during normal operation, the ground disappears when the unit is off-line, and the rotor temperature decreases and the speed is reduced. While a single ground fault on

an ungrounded system is unable to create a current path and causes no further damage to the unit, a second ground fault provides a current path for DC current to flow, which would cause the generator to fail. Depending on the location of the ground faults, damage to the generator could be catastrophic. For example, the forces of electric current, combined with centrifugal force could tear pieces off the generator rotor. There is also the possibility that a hydrogen explosion could occur. Replacement of the bent copper bars in the generator rotor is required to correct the ground fault problem. It is also needed to correct "foreshorting" of the coils in the generator rotor.<sup>1</sup> HECO has rescheduled its Kahe 4 overhaul from April 2004 to September 2003 to expedite repair of the rotor and installation of new copper bars and insulation with the goal of returning Kahe 4 to normal service as soon as is practical.

B.

The Consumer Advocate does not object to commission approval of HECO's commitment of funds for the Proposed Project. Upon an examination and review of HECO's application and IRs, the Consumer Advocate has concluded that: (1) the replacement of the insulation and bent copper bars of the Kahe 4 generator rotor is reasonable and critical to the continued provision of electricity to consumers; (2) HECO's decision to perform a field, on-site

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<sup>1</sup>HECO states that "foreshorting" of the coils is an inherent design problem for General Electric generators designed and manufactured at the Lynn Plant between 1966 and 1974, which, when combined with various modes of operation, results in shorted copper coils vibration and loss of generator capability.

rewind of the Kahe 4 rotor to resolve the grounding and "foreshorting" problems is reasonable; and (3) the estimated project costs for the Proposed Project are reasonable. However, the Consumer Advocate reserves its right to review the final cost report, to be submitted when HECO completes the Proposed Project. At that time, the Consumer Advocate can pursue any issues regarding the reasonableness of including the actual project costs in rate base in HECO's next rate proceeding.

### III.

Upon a careful review of HECO's application, its responses to the Consumer Advocate's IRs, and the Consumer Advocate's SOP, we find the Proposed Project to be reasonable and in the public interest. The rotor rewind on the Kahe 4 is necessary to correct the current ground fault problem, and the additional "foreshorting" of coils. Correcting these problems is essential to prevent limiting the generation capacity of Kahe 4, or forced outages as a result of excessive vibration. Thus, we conclude that HECO's application to commit funds for the Proposed Project should be approved.

### IV.

#### THE COMMISSION ORDERS:


1. HECO's application, filed on May 28, 2003, to commit \$776,383, for Item P0000863, the installation of the Kahe 4 Generator Rotor Rewind project, in accordance with paragraph 2.3.g.2 of G.O. No. 7, is approved; provided that no part of the

Proposed Project may be included in HECO's rate base unless and until the Proposed Project has been completed, and is used and useful for utility purposes.

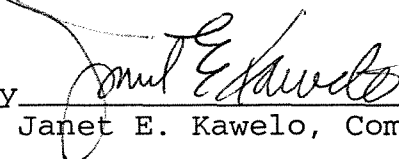
2. HECO shall submit a report within 60 days of the completion of the Proposed Project, with an explanation of any deviation of 10 per cent or more in the Proposed Project's cost from that estimated in the application. Failure to submit the report, as requested by this decision and order, will constitute cause to limit the cost of the project, for ratemaking purposes, to that estimated in the application.

DONE at Honolulu, Hawaii this 25th day of August, 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:

  
Benedyne S. Stone  
Commission Counsel

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03-0154

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Decision and Order No. 20390 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 & COMMUNITY AFFAIRS  
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Honolulu, HI 96840-0001

LORIE ANN NAGATA, TREASURER  
HAWAIIAN ELECTRIC COMPANY, INC.  
P. O. Box 2750  
Honolulu, HI 96840-0001

  
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Karen Higashi

DATED: August 25, 2003