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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.) DOCKET NO. 6998
)
For Approval of Rate Increases and)
Revised Rate Schedules and Rules)
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DECISION AND ORDER NO. 11699

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Henry Tsuyemura

Chief Clerk of the Commission

ATTEST: A True Copy
HENRY TSUYEMURA
Administrative Director
Public Utilities Commission
State of Hawaii

Henry Tsuyemura

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DECISION AND ORDER

I.

INTRODUCTION

Hawaiian Electric Company, Inc. (HECO) seeks approval of a general rate increase and revisions to its rate schedules and rules, designed to produce additional revenues in the amount of $137,875,000. Pursuant to rule 8-1 of the Rules of Practice and Procedure Before the Public Utilities Commission of the State of Hawaii, HECO notified the commission on May 22, 1991, of its intent to file an application for a general rate increase. On July 29, 1991, HECO filed its application for the general rate increase.

HECO proposes that the commission grant the company's rate relief in five steps:

1. Interim step: an interim increase in the amount of $33,782,000, pursuant to Hawaii Revised Statutes (HRS) § 269-16(d).

2. AES-BP step: a step increase effective with the commencement of energy purchase by HECO from AES Barbers Point, Inc. (AES-BP) in September 1992 in an amount equal to the additional costs the utility

will incur under its purchased power contract with AES-BP.[1]

3. Bargaining unit wage step: a step increase to reflect the amount of additional labor expenses HECO will incur pursuant to a new collective bargaining agreement to be negotiated with IBEW Local No. 1260 for effectuation in November 1992.

4. Postretirement benefits step: a step increase to reflect the additional expense HECO will incur to account for postretirement benefits other than pensions on an accrual basis, beginning in January 1993, pursuant to the Statement of Financial Accounting Standards No. 106 (SFAS No. 106) issued by the Financial Accounting Standards Board (FASB).

5. General step: a general step increase in the commission's final decision and order in this proceeding to provide for the amount of the total revenue increase requested by HECO, but not included in the other steps.

HECO served copies of the application upon the Division of Consumer Advocacy (Consumer Advocate) of the Department of Commerce and Consumer Affairs and the mayor of the city and county of Honolulu. On August 20, 1991, the Consumer Advocate informed the commission that it had no objection to the completeness of HECO's application.

Hawaii Revised Statutes § 269-16 requires that the commission hold a public hearing on HECO's application, with notice given as required under HRS § 269-12. The commission held the requisite hearing on September 26, 1991, in Honolulu, Hawaii.

The Department of the Navy, the other military departments of the Department of Defense, and all federal executive

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[1]By Decision and Order No. 10296, filed on July 28, 1989, in Docket No. 6177, the commission approved HECO's contract with AES-BP. In Decision and Order No. 10448, filed on December 29, 1989, the commission approved an amendment to that contract. The contract involves the purchase by HECO of electrical energy and firm generation capacity from the cogeneration facility.

agencies (collectively, the DOD) and Airco Industrial Gases (Airco)[2] sought intervention in this proceeding. HECO opposed Airco's intervention, but expressed no opposition with respect to the DOD. The commission granted intervention status to both the DOD and Airco in Order No. 11323, issued on October 24, 1991. The parties to this proceeding were directed to submit a prehearing order setting forth the issues and a schedule for this proceeding.

Although the parties could not agree to a prehearing order, they proceeded with discovery. Concerned about potential scheduling conflicts among the four major rate cases[3] before it, the commission called all of the parties in the four rate cases to a prehearing conference on February 5, 1992. At the prehearing conference, HECO and the Consumer Advocate disclosed that the parties had reached accord on the schedule for this proceeding. On February 12, 1992, the commission approved Stipulated Prehearing Order No. 11473, which sets forth the issues, procedure, and schedule for this proceeding.

The commission held evidentiary hearings over a period of nine days, from March 10, 1992, to March 23, 1992. On the last day of hearings, the parties presented oral argument with respect to HECO's request for interim rate relief.

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[2]Airco is a division of the BOC Group, Inc., doing business in Hawaii as Gaspro.

[3]In addition to HECO's application for a general rate increase, the applications of the following utilities are pending before the commission: (1) Hawaii Electric Light Company, Inc. (HELCO), in Docket No. 6999; (2) Maui Electric Company, Limited (MECO), in Docket No. 7000; and (3) Kauai Electric Division of Citizens Utilities Company, in Docket No. 7003.

In Interim Decision and Order No. 11559, filed on March 31, 1992, the commission allowed HECO to increase its rates to such levels as will produce, in the aggregate, $28,044,000 in additional revenues for test year 1992. The commission granted this increase on an interim basis, from April 1, 1992, pending a final decision in this docket.

The parties submitted simultaneous opening briefs on May 4, 1992. Reply briefs were filed by all parties on May 18, 1992.

On May 20, 1992, HECO requested approval of a stipulation regarding cost recovery of the nonfuel portion of energy charges under the AES-BP purchased power contract. HECO proposes cost recovery through a surcharge for energy received by HECO during acceptance testing of the AES-BP generating unit prior to commercial operation. The commission disposes of HECO's request in this decision and order.

The commission now issues its final decision and order in this docket.

II.

ISSUES

A.

All parties have accepted calendar year 1992 as the appropriate test year in this rate proceeding. This decision and order discusses the following issues set forth in Stipulated Prehearing Order No. 11473:

1. Is HECO's proposed general step increase reasonable?

a. Are the proposed tariffs, rates, charges, and rules just and reasonable?

b. Are the revenue forecasts for test year 1992 under current effective and proposed rates reasonable?

c. Are the projected operating expenses for test year 1992 reasonable?

d. Are the properties included in rate base used or useful for public utility purposes?

e. Is the rate of return requested fair?

2. What is the amount of the interim rate increase, if any, to which HECO is probably entitled under HRS § 269-16(d)?

3. Is HECO's proposed AES-BP step increase reasonable?

a. Is annualization of the effect of AES-BP into test year 1992 reasonable?

b. What revenue requirement increase is reasonable as a result of the normalization of AES-BP into test year 1992, including, but not limited to, the normalization of purchased energy and capacity costs, generation efficiency, and related expenses such as revenue taxes, fuel inventory, and working cash?

4. Is HECO's proposed bargaining unit wage step increase reasonable?

5. Is HECO's proposed postretirement benefits step increase reasonable?

B.

The ultimate issue in this docket is whether HECO's proposed rate increases are just and reasonable, and, if not, what increases, if any, may be granted pursuant to HRS § 269-16. In its application, HECO estimated its total revenue requirement for test year 1992 at $684,913,000. The estimate was based on fuel oil and purchased energy prices in effect on July 1, 1991, and on a rate of return on common equity of 13.5 per cent and a rate of return of 10.38 per cent on HECO's average, adjusted test year rate base.

In rebuttal testimony, HECO recalculated its total revenue requirement based on fuel oil and purchased energy prices in effect on January 1, 1992. Based on these prices, HECO calculated its total revenue requirement at $659,662,000 to produce additional revenues of $137,875,000, the amount requested in its application.

HECO asserts that, based on the evidence it has presented in this docket, the company has justified a rate increase that would produce additional revenues in the amount of $147,424,000, or $9,549,000 more than it asked for in its application. Based on fuel oil and purchased energy prices in effect on January 1, 1992, and a 10.3 per cent rate of return on HECO's average, adjusted test year rate base, the company's estimate of the total revenue requirement that it says it has justified is $669,211,000. HECO claims that its estimated total revenue requirement was understated in its application, because it underestimated revenues under the rates that were in effect at the time of the filing of the company's application. However, HECO represents that, although the company has justified an increase greater than that asked for in its application, it will limit its request to the $137,875,000 set forth in its application.[4]

[4]HECO notes that the maximum rate increase that the commission can allow in a ratemaking proceeding and the relationship between the increase requested in an application and the amount a utility can justify in the course of a ratemaking proceeding are legal questions that have not been determined. By adhering to its initial request for an increase of $137,875,000, HECO has chosen not to have these legal issues resolved in this docket.

The Consumer Advocate proposes a revenue increase of $116,464,000, based on a rate of return on common equity of 12 per cent and a rate of return on the adjusted test year rate base of 9.59 per cent. The DOD recommends a revenue increase of $121,129,000,[5] based on a rate of return on common equity of 12 per cent and a rate of return on rate base of 9.54 per cent.[6]

Airco makes no recommendation with respect to HECO's application in general. Rather, this intervenor limits its arguments and proposals to the design of those rate schedules of HECO under which Airco purchases electricity.

The difference among the parties in their proposals arises from disputes concerning, among other things, estimated expenses for the test year, estimated average adjusted depreciated plant in service, fuel inventory estimates, unamortized contributions-in-aid-of-construction (CIAC), working cash estimates, the cost of common equity, cost of service estimates,

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[5]In its opening brief, the DOD recommends a "step 1" increase in revenues of $28,601,000. The commission is not certain what portion of HECO's five-step request for rate relief is covered by the DOD's recommendation.

[6]HECO's requested revenue increase assumes <u>accrual</u> accounting of postretirement benefits other than pensions pursuant to FASB SFAS No. 106. The Consumer Advocate's recommended revenue increase of $116,464,000 and the DOD's proposed revenue increase of $121,129,000 are based on <u>cash</u> accounting of postretirement benefits other than pensions. HECO calculates its required revenue increase at $136,824,000, if cash accounting of postretirement benefits other than pensions is assumed ($147,424,000 - $10,600,000). Thus, the real difference in revenue requirement addressed in this docket are approximately $20,000,000 between HECO and the Consumer Advocate and about $15,700,000 between HECO and the DOD. We discuss the change from cash accounting to accrual accounting of postretirement benefits other than pensions later in this decision and order.

and rate design. Each of these differences is identified, discussed, and disposed of in the sections that follow.

III.

REVENUES

A. Sales

HECO's initial forecast of test year electricity, or gigawatthour (GWh), sales was 6,787 GWh. HECO based its estimate on the May 1991 forecast of HECO's forecast planning committee.[7] The 6,787 GWh estimate included an adjustment of 19 GWh, for an extra day of sales in the 1992 leap year, and an unspecified normalization adjustment for weather effects.

The Consumer Advocate's initial forecast of test year GWh sales was 6,788.1 GWh. The Consumer Advocate's estimate did not include a 1992 leap year adjustment or a weather normalization adjustment. Neither the DOD nor Airco presented any evidence on projected electricity sales.

In rebuttal, HECO revised its test year sales estimate to 6,753.5 GWh. This estimate reflects the forecast planning committee's November 8, 1991, forecast and the deletion of the weather normalization adjustment. HECO subsequently corrected an error of 4.3 GWh in its schedule P (large power service) forecast and increased its sales estimate to 6,757.8 GWh. This final estimate includes 16.5 GWh for an extra day of sales in the 1992 leap year.

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[7]HECO's forecast planning committee forecasts sales on a semiannual basis.

The Consumer Advocate's final test year sales estimate is 6,790.7 GWh. The Consumer Advocate made a 2.6 GWh correction in its forecast of schedule G (general service-nondemand) and schedule J (general service-demand). The difference between the Consumer Advocate's final estimate and HECO's final estimate of electricity sales is 32.9 GWh.

The amount of projected electricity sales is the product of the number of customers and the average consumption of electricity per customer. The following schedule compares HECO's and the Consumer Advocate's final forecasts of the average number of customers, the average consumption per customer, and the total sales for each schedule in the test year.

	Rate Schedule	HECO	Consumer Advocate	Difference
Number of Average Annual Customers				
R	Residential service	225,976	225,206	770
G	General service	26,260	26,260	0
H	Commercial service	5,419	5,419	0
P	Large power service	486	486	0
F	Public street lighting	325	325	0
	Total	258,466	257,696	770
Average Annual Consumption per Customer - kilowatthours (kWh)				
R	Residential service	7,700	7,816	(116)
G	General service	52,852	52,822	30
H	Commercial service	62,207	62,059	148
P	Large power service	6,691,770	6,721,605	(29,835)
F	Public street lighting	124,923	124,615	308

Total Sales - GWh (kWh x 1,000,000)

R	Residential service	1740.0	1760.1	(20.1)
G	General service	1387.9	1387.1	0.8
H	Commercial service	337.1	336.3	0.8
P	Large power service	3252.2	3266.7	(14.5)
F	Public street lighting	40.6	40.5	0.1
	Total	6757.8	6,790.7	(32.9)

There are three principal areas of disagreement between HECO and the Consumer Advocate with respect to test year sales forecasts: (1) the inclusion of a 1992 leap year adjustment; (2) the calculation of schedule R (residential service) sales and customers; and (3) the calculation of schedule P industrial sector sales.

1. 1992 leap year adjustment

HECO includes an additional day of electricity sales, or 16.5 GWh, to account for the fact that test year 1992 is a leap year. HECO offers little argument in support of its leap year adjustment.

The Consumer Advocate contends that an adjustment for the 1992 leap year would be abnormal because leap year occurs only once in four years. The Consumer Advocate believes it would be unfair to require ratepayers to pay, in non-leap years 1993, 1994, and 1995, rates set on the basis of an extra day in 1992. We agree. In addition, we find that a test year sales estimate without a leap year adjustment will facilitate comparisons of HECO's electricity sales from year to year. Thus, we disallow the leap year adjustment in projecting test year sales.

2. Schedule R

HECO estimates its schedule R sales at 1,740 GWh, with the leap year adjustment, and 1,735.7 GWh, without the leap year adjustment. The Consumer Advocate estimates schedule R sales at 1,760.1 GWh. The estimates differ, because HECO and the Consumer Advocate used different methodologies to estimate the number of residential customers and customer usage of electricity.

HECO utilized projected housing unit construction to forecast the number of customers and a residential end-use model to forecast the usage per customer in test year 1992. HECO's estimate of the number of customers is 225,976, and its estimate of average annual usage per customer is 7,700 kWh.

The Consumer Advocate utilized a demographic model (that estimates the number of residential customers based on growth of households in relationship to population) to project 225,206 residential customers during the test year. Specifically, the Consumer Advocate multiplied the 1991 schedule R estimated count by the 1991 to 1992 growth in households estimated by the model. To determine the average annual usage per customer in the test year, the Consumer Advocate calculated an average annual increase in consumption per customer for the 1985 to 1990 period and applied this average increase to actual 1990 usage of electricity, rather than the more recent actual 1991 usage of electricity. The Consumer Advocate's resultant estimate of usage per customer in the test year is 7,816 kWh.

HECO contends that the Consumer Advocate's projected usage per customer for the 1992 test year is unrealistic. HECO states that, compared to the recorded usage per customer for 1991, the Consumer Advocate's estimate of 7,816 kWh per customer represents an increase of 244 kWh per customer, or 3.2 per cent, over actual 1991 usage per customer. HECO asserts that this projected 3.2 per cent increase in one year, from 1991 to 1992, equals the total actual growth in usage per customer that took place over the two-year period of 1988 to 1990. HECO maintains, moreover, that usage has not increased by more than 3 per cent in a single year since 1973.

The Consumer Advocate asserts that it is misleading to analyze its projected 1992 increase in average usage on the basis of trended data, as HECO does. The Consumer Advocate states that its test year usage projection appears high because 1991 was the first time in recent years that average annual usage declined and the 1991 numbers are abnormally low.

The Consumer Advocate attributes the low 1991 sales results to the Persian Gulf war, the associated transfer of military personnel from the state, and the subsequent general curtailment of travel nationwide. The Consumer Advocate states that these unusual circumstances in 1991 caused it to look elsewhere to determine "normal" schedule R sales. The Consumer Advocate concluded that the 1990 results were more representative of the normal growth pattern of customer usage than the 1991 results. Thus, the Consumer Advocate applied the growth trend for the 1985 to 1990 period to actual 1990 usage, instead of actual 1991 usage.

HECO does not dispute the Consumer Advocate's contention that 1991 was an abnormal year with respect to electricity sales. However, HECO does not propose any normalization of the 1991 sales results. The Consumer Advocate's decision to ignore actual 1991 usage data in projecting usage per customer in the 1992 test year may be somewhat questionable. But absent any feasible method of incorporating the 1991 results, we accept the Consumer Advocate's methodology of projecting test year usage per customer.

We also accept the Consumer Advocate's population-based model, instead of HECO's projected housing construction method, to estimate number of customers. The population-based model appears to provide a normalized growth trend to projected future households and housing. Projected housing construction, on the other hand, does not appear to be a reliable indicator of normal growth in housing. As pointed out by the Consumer Advocate, housing construction is cyclical in nature. HECO has not produced sufficient evidence to refute the Consumer Advocate's position.

As a result, we conclude that the Consumer Advocate's estimates of 225,206 residential customers and 1,760.1 GWh in residential sales in the 1992 test year are reasonable.

3. Schedule P

HECO estimates its schedule P, or large power, sales at 3,252.2 GWh, with the leap year adjustment, and 3,244.3 GWh, without the leap year adjustment. The Consumer Advocate estimates HECO's schedule P sales at 3,266.7 GWh. The difference in the estimates of HECO and the Consumer Advocate is the result of a disagreement regarding projected industrial sector sales. There is no disagreement with respect to all other sectors of schedule P, and HECO accepts the Consumer Advocate's projection of 486 schedule P customers.

The Consumer Advocate's estimate of test year industrial sector sales is 253.8 GWh. HECO's estimate, without the leap year adjustment, is 231.3 GWh. The Consumer Advocate's sales forecast is 22.5 GWh higher than HECO's estimate. The difference in the forecasts results from the use by HECO and the Consumer Advocate of different sales figures in their calculations.

HECO applied a historical growth rate to its 1991 sales, while the Consumer Advocate applied a historical growth rate to HECO's 1990 sales. The Consumer Advocate's rationale for using 1990 sales figures, and ignoring actual 1991 results, is identical to that presented by the Consumer Advocate to justify its reliance on 1990 usage results to project schedule R sales.

For the reasons stated in the preceding section on schedule R, we accept the Consumer Advocate's estimate of 253.8 GWh for industrial sector sales. Accordingly, we conclude that the Consumer Advocate's estimate of 3,266.7 GWh in schedule P sales in test year 1992 is reasonable.

As a result of our acceptance of the Consumer Advocate's position regarding the 1992 leap year adjustment, the calculation of schedule R sales and customers, and the calculation of schedule P industrial sector sales, we conclude that the Consumer Advocate's electricity sales forecast of 6,790.7 GWh in test year 1992 is reasonable.

B. Revenue

HECO, the Consumer Advocate, and the DOD agree on the method of calculating sales revenue at present rates, the method of calculating other operating revenue, and the method of calculating the energy cost adjustment factor.

HECO's final test year electric sales revenue projection, at present rates, is $519,797,000. Its other operating revenue estimate, at present rates, is $1,990,000. HECO's final total revenue estimate, at present rates, is $521,787,000. This estimate is the result of the following factors: revised test year 1992 estimates of 6,757.8 GWh in sales and 258,466 customers; new base rates, effective March 1, 1992, reflecting the reduction in the Kalaeloa firm capacity payment charges; changes in the energy cost adjustment factor resulting from the use of January 1, 1992, fuel prices (to be consistent with the Consumer Advocate); and revised fuel mix and purchased power expense.

The Consumer Advocate's final electric sales revenue forecast for the test year is $522,153,400. Its other operating revenue estimate is $1,992,700. The Consumer Advocate's final total revenue estimate, at present rates, is $524,146,100. The Consumer Advocate's revised revenue estimate is based on total projected electric sales of 6,790.7 GWh and a corrected energy cost adjustment factor of -1.309 cents per kWh.

The DOD has accepted the total revenue estimate of $531,282,000, at present rates, that HECO presented in supplemental testimony. However, this estimate is based on July 1, 1991, fuel prices and does not reflect the reduction in the Kalaeloa firm capacity payment rate that took effect on March 1, 1992.

The difference of $2,359,100 in revenue projections between the Consumer Advocate and HECO is due primarily to the 32.9 GWh difference in their sales forecasts. In the preceding section, we adopted the Consumer Advocate's estimate of 6,790.7 in test year GWh sales. As a result, we adopt the Consumer Advocate's corresponding total revenue estimate of $524,146,100 (consisting of electric sales revenue of $522,153,400, at present rates, and other operating revenue of $1,992,700). We conclude that $524,146,100, at present rates, is a reasonable forecast of total revenue.

The following shows the components of the total sales and operating revenue projection for the test year:

Rate Schedule	Revenue at Present Rates
R	$158,284,600
G	30,426,200
J	89,262,400
H	28,008,900
P	213,106,900
F	3,064,400
Total electric sales revenue	522,153,400
Other operating revenue	1,992,700
Total operating revenue	$524,146,100

IV.

EXPENSES

A. Generally

Before turning to the specific expense issues, we address a major forecasting or budgeting procedural issue raised by the Consumer Advocate. The Consumer Advocate has brought to this docket a new approach titled, "total company analytical approach," to examine HECO's expenditure forecasts. In doing so, however, it has encountered difficulties with the level of detail provided by HECO on information allegedly necessary to enable the Consumer Advocate to make judgments with respect to specific HECO-proposed expenditures. Partly from frustration endured in seeking to reconcile HECO-supplied data in this docket, the Consumer Advocate asks the commission to order HECO to work with the Consumer Advocate to resolve budgeting issues and to develop budgeting and reporting procedures to produce certain enumerated data in HECO's prefiled submissions in subsequent rate proceedings. Before we act on the Consumer Advocate's request, we briefly review, first, HECO's forecasting (budgeting)[8] methodology and, second, the Consumer Advocate's total company analytical approach.

HECO's forecasting is a "bottom-up" process. Budget forecasts are initially made at the lowest level of the company's hierarchical structure and are subsequently aggregated at the responsibility area and at each succeeding higher level. The lowest level is the activity level, which does not necessarily correspond with HECO's functional general ledger accounts. Estimates at the activity level eventually feed into one or more accounts. Activities and the codes assigned to them may vary from year to year. HECO's accounts and account numbers are generally stable over time.

The Consumer Advocate asserts that its total company analytical approach is intended to move away from the approach of

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[8]HECO insists that it does not "budget," but that it "forecasts." Except for the focus implied in the terms, we see no difference, in the context of ratemaking, between the two. HECO asserts that "budget" connotes control and limitation on expenditures; and "forecast" connotes estimating what is needed for performance, without a predetermined expenditure limit.

historical trending at the functional account level in evaluating a utility's forecast and determining the reasonable level of test year expenses. The Consumer Advocate notes major shortcomings in the historical trending approach. The shortcomings are in the faulty assumptions harbored by that approach: (1) that all of the utility's past activities were necessary to provide reliable electric service; (2) that all test year forecasted activities will actually be performed; (3) that the prior year's recorded activity costs were reasonable; (4) that the total projected activity costs are reasonable; and (5) that the distribution of total activity costs to each operations and maintenance (O&M) expense account is reasonable and that the resulting costs reflected in each O&M expense account upon which rates are set are reasonable.

The Consumer Advocate claims that its total company approach addresses all of these shortcomings. Among other things, the total company approach is intended to examine whether the utility actually performs the activity for which funds are budgeted, what the actual expenditures were for an activity, whether an activity needs to be performed during the test year, and whether the amount budgeted for an activity is consistent with historical trends.

In applying this approach in this docket, the Consumer Advocate sought to examine each activity and to flag out for further review, those activities (1) for which HECO budgeted an amount 5 to 10 per cent more ("range of reasonableness") than in the prior year, (2) for which HECO consistently overbudgeted in prior years, and (3) that HECO performs on a "sporadic basis." In this effort, the Consumer Advocate complains that it has not been able to secure from HECO all information at the activity level that it needs to make judgments as to reasonableness of HECO's forecast, including assumptions underlying estimates and reasons for estimates exceeding the prior year's expenses by more than 5 to 10 per cent.

The Consumer Advocate urges that the commission require that the budgeting and reporting procedures developed by HECO and the Consumer Advocate produce the following data, among others: (1) budgeting assumptions, methodologies, and procedures employed, with quantitative analyses; (2) comparative analyses of significant projected individual responsibility area activity costs to historical costs, with explanations of significant cost changes over prescribed thresholds; (3) comparison of the budget submitted by the utility in the last rate case and the actual test period results, with explanations of significant variances, (4) explanations of measures being taken to improve operational productivity, with quantification of productivity savings reflected within the rate case budget for each identified productivity measure; (5) detailed reports on responsibility areas, filed on a quarterly basis; and (6) immediate notification of changes in functional responsibilities and accounting procedures.

HECO asserts that the Consumer Advocate's proposal places an undue burden on the company in terms of time and personnel. It questions the value of the information adduced by the proposal. It, further, complains that the requirements the Consumer Advocate seeks to impose constitutes overregulation.

The commission will not adopt the Consumer Advocate's recommendation at this time. The commission has been extremely concerned in recent rate cases about the focus of rate proceedings and about the adequacy of the information supplied in rate cases. However, the commission is unable at this time to embrace fully the Consumer Advocate's proposal. The Consumer Advocate's approach is focused at HECO's activity level. The Consumer Advocate is concerned with ensuring that proposed expenditures do not vary too far from historical experience, without adequate justification, and it seeks such justification for expenditures at the activity level. The Consumer Advocate, thus, is focused on control.

Control is a legitimate purpose of budgeting. However, budgeting serves other purposes as well. The commission's concern is that an inordinate focus on activities and activity-expenditure detracts from learning about the utility's objectives and the programs by which the utility seeks to achieve those objectives. For instance, viewing a proposed expenditure for a specific activity in training (particularly in light of historical expenditures) tells little about the purpose of HECO's training program and how the proposed expenditures in training, taken as a whole, will advance efficiency in HECO's operations or in increasing productivity. The question is how might the current methodology be improved so that it produces that kind of information needed to satisfy the various purposes of budgeting.

The commission's observation is that there is no agreement at this time as to what ends are to be served by HECO's forecasts submitted in a rate proceeding and where our focus ought to be in determining just and reasonable rates. The Consumer Advocate's proposal brings to the forefront a major issue that requires exploration. In light of the importance of the subject, we will pursue this matter in the interim between this rate proceeding and the next HECO rate case. The parties will be duly notified of the commission's intentions in this matter.

B. Fuel Oil Expense

1. Fuel oil expense

The estimate of fuel oil expense is the product of the estimated fuel oil consumption in the test year and the price of fuel. The consumption estimate depends on the amount of energy or power that HECO is expected to produce in the test year (based on electricity sales estimated for the test year). The consumption estimate does not reflect the amount of energy HECO intends to purchase from independent power producers.

HECO and the Consumer Advocate used essentially the same method in projecting test year fuel oil expense. To determine the amount of fuel likely to be consumed by its generating units to produce the power anticipated for the test year, HECO employed a production cost simulation model, which the Consumer Advocate adopted. Both parties applied fuel oil prices in effect on January 1, 1992, and a total composite heat rate of 10,409 British thermal units (Btu) per kWh.

HECO's final estimate of fuel expense is $140,220,000, based on an electricity sales estimate of 6,757.8 GWh. The Consumer Advocate's final estimate of fuel expense is $141,352,100, based on sales of 6,790.7 GWh. (The DOD accepted HECO's estimate of $147,284,000 in fuel oil expense, as proposed in HECO's supplemental testimony. This earlier estimate is based on fuel oil prices in effect in July 1991.)

The difference in electricity sales forecasted by HECO and by the Consumer Advocate accounts for the difference in their estimates of fuel oil expense. As discussed in the section on sales, we have adopted the Consumer Advocate's test year sales forecast. Thus, the Consumer Advocate's test year fuel oil expense estimate of $141,352,100 is reasonable.

2. Fuel-related expense

HECO estimates $3,631,700 in fuel-related expense for test year 1992. The Consumer Advocate's estimate of $3,509,100 is $122,600 lower than HECO's. The difference in estimates is due to the differences in projecting expenses for pipeline maintenance and in-house fuel handling.

For test year 1992 pipeline maintenance expense, the Consumer Advocate projects $723,400. It calculated its projection by increasing the annualized pipeline maintenance expense for the first eight months of 1991 by 5 per cent. HECO's estimate of $795,200 is based on its projected expense under a maintenance contract with Chevron U.S.A. Inc. (Chevron).

HECO points out that, had the Consumer Advocate used the actual pipeline maintenance expense of $757,730 for 1991 as its calculation base, its projection for test year 1992 would be $795,600, which is $400 more than HECO's estimate. The Consumer Advocate contends that HECO's actual pipeline maintenance expense during the last four months of 1991 was unusually high and should therefore not be used as a basis for projecting test year 1992 expense.

We accept HECO's figure of $795,200 as a reasonable estimate of pipeline maintenance expense for test year 1992. While the actual maintenance expense during the last four months of 1991 may have been unusual, the overall expenditure of $757,730 for 1991 compares favorably with similar expenses incurred by HECO over the previous three years (an annual average of $744,900).

For test year 1992 in-house fuel handling expense, the Consumer Advocate projects $211,100, which is $50,900 lower than HECO's estimate of $262,000. From 1986 to 1990, HECO's expense in this area ranged from $183,300 to $254,400, with no pattern of growth or decline. The Consumer Advocate's estimate is at the lower end and HECO's estimate falls slightly outside the high end of this historic range. As a reasonable estimate we take the midpoint of the two parties' estimates, or $236,550, as the test year 1992 in-house fuel handling expense.

We conclude that the sum of $3,606,250 is a reasonable estimate of HECO's fuel-related expense for test year 1992.

C. Purchased Power Expense

HECO purchases power from certain independent power producers. Purchased power expense consists of two components: payments for purchased energy and payments for firm capacity. HECO projects $121,623,000 in purchased energy payments and $103,501,000 in firm capacity payments, for a total test year purchased power expense of $225,124,000.

HECO's estimated total expense includes capacity payments for the purchase of power under an amendment to HECO's contract with the city and county of Honolulu, as owner of the facility known as the Honolulu Program of Waste Energy Recovery (HPOWER). It also includes energy and capacity payments under HECO's purchased power contract with AES-BP. HECO does not expect to begin purchasing power from AES-BP until September 1992; however, the utility has annualized the estimated payments under the contract for test year 1992.

The Consumer Advocate takes issue with HECO's revised forced outage rate forecast for power purchases under HECO's contract with Kalaeloa Partners, L.P. (Kalaeloa). The Consumer Advocate also opposes the allowance of minimum purchase penalty payments to Kalaeloa. These points of disagreement, if accounted for, would decrease HECO's purchased power expense estimate. The Consumer Advocate, however, proposes no adjustment to HECO's estimate. In fact, the Consumer Advocate uses HECO's estimate of $225,124,000 in estimating revenue requirement and income tax expense; and it leaves the issue of any adjustments to HECO's estimate for the commission to address "when it calculates HECO's purchased power expense at the close of this case." It explains that the issues concerning purchased power expense are "too complex, interrelated, and far-reaching" for the Consumer Advocate to make any adjustment proposal "at this time."

We address three issues: first, the reasonableness of HECO's estimate of firm capacity payments under the HPOWER contract; second, the reasonableness of HECO's estimate of minimum purchase penalty payments under the Kalaeloa contract; and, third, the reasonableness of HECO's estimate of purchased power payments under the AES-BP contract.

1. HPOWER

HPOWER is power generated with waste recovery products as a fuel source. On April 26, 1991, in Docket No. 6983, HECO filed an application for commission approval of an amendment to its contract with the city and county of Honolulu for the purchase of HPOWER. In a decision and order issued concurrently with this decision and order, we approve the amendment. See In re Hawaiian Elec. Co., Docket No. 6983, Decision and Order No. 11700 (June 30, 1992).

The original HPOWER contract required the power producer to provide electricity on an as-available basis. Under the amended HPOWER contract, the power producer agrees to provide HECO with 46 megawatts (MW) of firm capacity during on-peak periods and 58 MW of emergency capacity upon request. HECO, in turn, agrees to make annual capacity payments of $6,945,000 (exclusive of revenue taxes of $659,775), based on a rate of 4.89 cents per kWh. The contract price is based on an availability factor of 90 per cent--that is, on the assumption that power will be available at least 90 per cent of the time.

In this rate proceeding, HECO projects HPOWER firm capacity payments on the basis of an availability factor of 100 per cent, rather than on the 90 per cent factor contemplated by the contract. At a 100 per cent availability factor, additional kilowatthours will be available during on-peak periods. The firm capacity payment estimate at 100 per cent availability is $7,751,000.

Availability of power at a rate of 100 per cent during the term of the contract is unlikely. The contract's 90 per cent factor reflects what the parties reasonably anticipate would be the availability of firm power from the HPOWER facility. We, therefore, reduce HECO's estimated firm capacity payments under the HPOWER contract by $806,000.

2. Kalaeloa

HECO projects payment of $50,098,000 under the Kalaeloa contract for the test year. The Consumer Advocate questions the inclusion of a minimum energy purchase penalty payment to Kalaeloa.

HECO anticipates a penalty payment of $159,000 and attributes the penalty to its inability to cycle Honolulu units 8 and 9, the availability of power from the AES-BP facility, and the need to curtail energy output from all power sources (Kalaeloa, AES-BP, HPOWER, and HECO's Kahe units) for transmission line overhauls. HECO asserts that concerted efforts in transmission line overhauls to ensure transmission system integrity and reliability are made necessary by the delays in the routing and construction of transmission lines from the Campbell Estate Industrial Park (CEIP) to the Waiau power plant.

The Consumer Advocate asks whether HECO acted in a timely and prudent manner to avoid the transmission constraints that prevent HECO from meeting its minimum energy purchase obligation with Kalaeloa. It notes that HECO was aware of the need to construct new transmission lines through the southern corridor since as long ago as 1984, when Stone & Webster recommended construction of the lines. The Consumer Advocate also notes that HECO must have been aware of the impending violation of its transmission reserve criteria when it applied in 1987 for commission approval to install another generating unit at Kahe (Kahe 7). The Consumer Advocate points to the April 9, 1991, outage as the most recent and most flagrant evidence of the frailty of HECO's transmission system. The Consumer Advocate urges that the responsibility for the delay in implementing the construction of the southern corridor transmission lines not be laid on ratepayers.

At the outset we observe that, although HECO's focus is on $159,000, the evidence in this docket reveals that HECO has included in the $50,098,000 payment to Kalaeloa an additional $2,206,929 in minimum energy purchase penalties.[9] Both the $159,000 and the $2,206,929 arise from the same circumstance--shortfall in the minimum energy purchase prescribed by the Kalaeloa contract. Thus, it would appear that any disposition we make of the $159,000 will apply equally to the $2,206,929.

The Kalaeloa contract provides that HECO shall purchase a minimum of 1,235 GWh annually from Kalaeloa, provided the equivalent availability factor is at least 85 per cent. If HECO fails to purchase the required minimum, HECO must pay Kalaeloa the nonfuel component portion of the energy charge for each kWh of shortfall and .08 cent per kWh of such shortfall. If the equivalent availability factor varies from 85 per cent in any year, the 1,235 GWh minimum purchase for the year is adjusted, upward or downward, proportionately as the actual equivalent availability factor in the year relates to 85 per cent. The current equivalent availability factor is 89.3 per cent; thus, the minimum energy

[9]See HECO-RWP 230 at 17.

purchase requirement for the test year is 1,297.5 GWh. The shortfall anticipated by HECO in the test year is 198.8 GWh.

The $159,000 represents the application of the .08 cent per kWh that HECO is required to pay when a shortfall occurs ($0.0008 x 198.8 GWh = $159,000). This amount represents the fuel component of the energy charge that HECO is required to pay for each kWh of shortfall. The $2,206,929 represents the nonfuel component portion of the energy charge that HECO is required to pay for each kWh of shortfall. The sum is derived by the application of the nonfuel component energy charge of .96 cent (specified in the contract), escalated by the gross national product implicit price deflator factor of 1.16020236. The calculation is: ($0.0096 x 1.16020236) x 198.8 = $2,206,929.

In effect, the "penalty" is to pay Kalaeloa for its fixed expenses that HECO would otherwise pay, if it purchases the minimum required by the Kalaeloa contract. The nonfuel component of the penalty that HECO must pay in case of a shortfall covers Kalaeloa's operations and maintenance expense that Kalaeloa will incur, and the .08 cent per kWh fuel component covers the fuel expense that Kalaeloa must pay to Hawaiian Independent Refinery, Inc. (HIRI), even when HECO fails to purchase the full minimum.

The issue here is whether or not HECO should be allowed to pass on to ratepayers the payments it must make to Kalaeloa for the shortfall in the purchase of the minimum amount of energy prescribed in the Kalaeloa contract. In the event of a shortfall in purchase, there is a negative impact on ratepayers, if ratepayers are required to assume the burden of the penalties.

In Docket No. 6378, the commission approved the Kalaeloa contract. See Decision and Order No. 10369 (Oct. 16, 1989). In doing so, the commission accepted the minimum purchase provision as reasonable. The commission, however, reserved the right to revisit the contract in future rate cases under certain circumstances. One of these circumstances was "that HECO failed to disclose facts known or which should have reasonably been known to HECO at the time of the Commission's decision which bear on the reasonableness and prudency of HECO's decision to enter into the power purchase agreement or on the reasonableness of the terms of the agreement."

In Docket No. 6378, HECO represented that it did not anticipate a shortfall in minimum purchase until the year 2007. It surmised that, by that distant year, it could control dispatch of energy generated by the Kalaeloa facility and avoid any penalty. In this docket, minimum purchase penalties are anticipated in the first full year of Kalaeloa operation, 15 years earlier than projected in Docket No. 6378. The reasons HECO advances in this docket for the early incurrence of penalty consist of circumstances known to HECO at the time of its application for commission approval of the Kalaeloa contract.

As the Consumer Advocate points out, Stone & Webster made its recommendation for the construction of the southern corridor transmission lines in 1984. In addition, HECO applied for commission approval of the AES-BP contract in the same year it applied for approval of the Kalaeloa contract. Further, in HECO's last rate case, Docket No. 6531, HECO reported that it had implemented a live-line maintenance program that allows its personnel to overhaul transmission lines without de-energizing circuits and without the need to curtail generation from its more efficient units, including the Kalaeloa facility.

In fairness to HECO, the Stone & Webster's recommendation and HECO's contract with AES-BP were facts also known to the commission at the time of its approval of the Kalaeloa contract and its penalty provision. However, the question is whether HECO's representation made in Docket No. 6378, that it did not anticipate a shortfall situation until the year 2007, falls within the circumstance of Decision and Order No. 10369 as to justify commission exclusion of the anticipated test year penalties from HECO's expenses.

The record in this docket is unclear as to why HECO made the representation in Docket No. 6378 and whether the representation constituted an honest mistake or was deliberately or intentionally made, HECO knowing it was false, for the purpose of inducing the commission to approve the Kalaeloa contract. None of the parties focused precisely on this issue, and thus, the question was not fully explored. We do not deem it fair to exclude the penalties without according HECO full opportunity to debate the issue. There is time, after this decision and order is issued, to explore this matter. We expect HECO to report to the commission in the event of a shortfall. Upon the filing of such report or at the next rate case, we expect HECO to fully explain any actual or anticipated shortfall and to reconcile such shortfall with its representation made in Docket No. 6378. At such time, we may fashion such remedies as are appropriate and necessary for the protection of ratepayers.

3. AES-BP

The parties and the commission accept HECO's annualized estimate of purchased power payments. However, HECO may not reflect its payments to AES-BP for firm capacity in its revised rate schedules effectuating the rate increase granted by this decision and order until the AES-BP facility is in commercial operation. At that time, HECO must submit revised rate schedules that incorporate those payments.

AES-BP will be performing acceptance tests of its generating unit during May 1992 to September 1992. AES-BP will be able to provide HECO with at least 230,500,000 kWh and as much as 366,300,000 kWh of energy during acceptance testing. The parties have stipulated that, pursuant to its agreement with AES-BP, HECO should accept energy from AES-BP during the tests. Under the AES-BP contract, AES-BP will reimburse HECO for such costs that HECO may incur as a result of HECO departing from economic dispatch in receiving energy during the test period. Among the costs that HECO may incur are penalty payments, shutdown costs, and other expenses arising from HECO purchasing less energy from Kalaeloa.

Pursuant to the stipulation of the parties (filed on May 20, 1992, together with HECO's motion for approval of the stipulation), the commission will allow HECO to recover through a surcharge the nonfuel portion (the fixed and variable O&M components) of its energy payments to AES-BP (net of all AES-BP reimbursements) for energy received by HECO during acceptance testing of the AES-BP generating unit. HECO shall reconcile the actual revenues received through the surcharge with the energy payments to AES-BP and reimbursements by AES-BP incurred during acceptance testing. Upon commencement of commercial operation of the AES-BP facility, the surcharge shall terminate, and HECO shall revise its rates to reflect the payments under the AES-BP contract.

4. Conclusion

An estimate of $224,318,000 in purchased power expense for the test year is reasonable. This sum reflects HECO's estimate of $225,124,000, less $806,000 in firm capacity payments under the HPOWER contract.

D. Fuel Adjustment Factor

HECO's fuel adjustment factor is -1.309 cents per kWh at present rates and zero at proposed rates. The Consumer Advocate accepts HECO's method of calculating the fuel adjustment factor and agrees that the factor should be set at zero under proposed rates. The DOD also accepts the utility's calculation.

We conclude that HECO's method of calculating the energy cost adjustment factor is appropriate and that it is reasonable to set the factor at zero under the rates approved by this decision and order.

E. Projected Growth in Work Force

HECO estimates the test year average (thirteen months) number of employees at 1,566. This is 138 employees more than the average 1991 recorded number of employees of 1,428. Both the DOD and the Consumer Advocate question HECO's ability to fill the additional employee positions. They point to HECO's past difficulties in hiring new workers. The Consumer Advocate proposes a reduction of 60 employees in HECO's projected work force. The DOD proposes a reduction of 80 employees.

Although it recommends a reduction in HECO's work force projection, the Consumer Advocate does not propose any adjustment in HECO's O&M labor expenses proportionate to its recommended reduction in work force projection. The DOD, however, proposes an adjustment in HECO's O&M labor expenses proportionate to its recommended reduction in HECO's work force projection (5.1 per cent).

HECO admits its past inability to fill positions. However, it attributes its past difficulties to conditions it claims no longer apply. It asserts that in 1990 and early 1991, (1) financial constraints required HECO to delay filling certain positions; (2) HECO experienced an increase in early retirements and other employee departures that required HECO to focus on refilling existing positions; and (3) Hawaii faced a tight labor market.

HECO argues against any adjustment to its O&M labor expenses, even if the commission reduces HECO's estimate of work force requirement. The company contends that its test year O&M labor expenses reflect the required level of company operations, regardless of the number of employees on HECO's payroll, and that it is erroneous to assume that a reduction in work force will result in a proportionate reduction in labor expenses. HECO points to data that show that, although HECO's average employee count was below its estimated count by 5.1 per cent during the four-year period 1988 to 1991, its labor cost over the same period was only 1.7 per cent under its forecast. HECO asserts that it must complete the required O&M work, regardless of whether or not it is able to fill all positions. It claims that it meets any manpower shortfall by incurring additional overtime and securing more temporary hires (both of which increase labor costs) and by engaging outside contractors (which increases HECO's nonlabor costs).

We agree with HECO that the level of O&M labor expenses is not entirely dependent on the level of HECO's work force. Thus, it would not be reasonable to automatically reduce HECO's O&M labor expenses in proportion to any reduction in HECO's work force projection as proposed by the DOD.[10] However, we need not reach that issue in this docket for we approve HECO's work force projection.

HECO's track record with respect to work force projections is not stellar. It has consistently overestimated its employee count over the years. However, the commission is concerned about the achievement and maintenance of electrical service at a level of quality HECO's customers are entitled to. HECO asserts that the work force it projects is among the resources it requires to achieve and maintain that level of service. For the purposes of this docket, the commission will accept HECO's representation and adopt HECO's work force projection. However, we condition our adoption of HECO's projection on HECO submitting to

[10]In HECO's last rate case, we adopted the DOD's recommendation to reduce HECO's work force projection and we adjusted HECO's O&M labor expenses in proportion to the reduction in the projected work force. See In re Hawaiian Elec. Co., Docket No. 6531, Decision and Order No. 11317 (Oct. 17, 1991). However, our action there was confined to that rate case and was not intended to establish a general rule.

the commission on or before January 15, 1993, a report on its employee count as of the end of the test year, with an explanation of any variance between its projection and the actual count. Based on the report, the commission may take such actions as necessary and appropriate, including an adjustment in the rate increase granted by this decision.

F. Other Production Expenses

HECO's original test year estimate of other production expenses was $31,257,000. Subsequently, HECO made a negative adjustment of $14,000 to correct the normalization of the cost to soundproof its Waiau 9 and 10 combustion turbines. HECO's revised test year estimate is $31,243,000.

The DOD accepts HECO's estimate, but proposes a 5.1 per cent across-the-board reduction in O&M labor expenses to reflect the DOD's lower forecast of HECO's work force. The DOD's proposal is discussed in part IV, section E, above.

The Consumer Advocate's test year estimate is $30,065,000. The difference between HECO and the Consumer Advocate is $1,178,000. However, the Consumer Advocate's estimate of $30,065,000 does not include HECO's adjustment of $14,000 to correct the normalization of the cost of soundproofing Waiau 9 and 10 combustion turbines. If the adjustment is taken into account, the difference between HECO's estimate and the Consumer Advocate's estimate is $1,192,000.

The Consumer Advocate's estimate of $30,065,000 is the average of the actual 1991 expenses and HECO's test year 1992 estimates. The Consumer Advocate calculated its estimate in this fashion, because of the wide deviations between HECO's forecasted and recorded labor expenses over the past four years and the Consumer Advocate's inability to examine the basis for HECO's "zero-based" forecast or to make an independent forecast of engineering O&M expenses.[11]

HECO cites the following "drivers" (among others) that increase its labor and nonlabor O&M costs: (1) rising wages and salaries; (2) the creation of a division to manage its purchased power contracts; (3) expected inflation; (4) higher operating costs associated with additional plant facilities; and (5) increased costs to maintain aging plants. We acknowledge that HECO requires a reasonable expense allowance to improve and maintain the reliability of electrical service.[12]

Without more in the record, we turn to a historical trending approach to determine the reasonableness of HECO's test year expense estimate. From 1987 to 1991, HECO's recorded expenses reflect an average annual increase of 9.7 per cent. HECO's test year normalized O&M expenses represent an increase of 8.7 per cent

[11]The Consumer Advocate's inability to assess the basis of HECO's forecast is in part due to time constraints, lack of adequate staff, and the engagement of a consultant to advise the Consumer Advocate in this area only after the discovery process began.

[12]The Consumer Advocate expresses concern about the effectiveness of HECO's O&M program in providing reliable electrical service. However, it asserts that it has refrained from recommending a larger reduction in HECO's O&M budget for fear that any large reductions may undermine HECO's efforts to improve the level of service reliability. We share the Consumer Advocate's concerns. We expressed our wariness about the reliability of HECO's system in HECO's last rate case (Docket No. 6531). We will continue to pursue our inquiry into HECO's system reliability in Docket No. 6281, the docket in which we are investigating the cause of the islandwide outage of April 9, 1991.

over recorded 1991 expenses. The Consumer Advocate's test year expense estimate provides only a 4.6 per cent increase. We conclude that HECO's estimate is reasonable and adopt the sum of $31,243,000 for other production expenses.

G. Transmission and Distribution Expense

1. Transmission expense

HECO's forecast of its transmission expense for 1992 is $8,341,000. HECO derived this estimate by adjusting upward its operating forecast of $6,460,000 by $1,881,000. The adjustment reflects HECO's estimate of the additional cost for inspection and maintenance of the four transmission lines emanating out of the Kahe and Barbers Point areas.

HECO asserts that the expenditure of the additional sum is required to maintain the integrity of the four transmission lines. These four lines were the focus of HECO's islandwide outage of April 9, 1991. HECO currently is experiencing transmission capacity deficit, and it will continue to do so until the CEIP-Waiau lines are placed in service. With the addition of the Kalaeloa generating facility, three of the four existing lines are required to transmit power from west Oahu to HECO's load centers. The anticipated operation of the AES-BP facility will exacerbate the problem. This situation requires that, for HECO to perform maintenance work on any of the lines, the line be taken out of service during off-peak hours and on weekends, resulting in overtime costs. Further, more frequent inspections will be required to avoid trips of any of the four transmission lines.

The DOD accepts HECO's test year estimate. The Consumer Advocate's test year estimate, as presented in an exhibit attached to its witness' testimony, is $8,136,000. This sum is $205,000 less than HECO's total projection. The basis for the Consumer Advocate's calculation is not entirely clear. The Consumer Advocate asserts that it did not follow the estimation practice it used in estimating production O&M expenses (i.e., averaging the 1991 actual and HECO's 1992 budget request), because HECO's "1992 budget forecast is less than recorded 1991 expenses."

In its brief, the Consumer Advocate accepts "the company's budgeted figure." However, the Consumer Advocate asks the commission to delete the $1,881,000 HECO included in its total projection to reflect the additional cost for inspection and maintenance of the transmission lines. The Consumer Advocate argues that this additional cost arises principally from HECO's failure to construct in a timely fashion additional transmission lines through a southern corridor as recommended by Stone & Webster in 1984. It contends that ratepayers should not be held responsible for HECO's delay.

Like the Consumer Advocate, we are somewhat troubled by the inclusion of the additional $1,881,000 in HECO's total projected transmission O&M expense. The construction of the CEIP-Waiau transmission lines has been considerably delayed, although the need for the lines has been evident since Stone & Webster's study in 1984. Moreover, in HECO's late rate case, HECO represented that it was then implementing a live-line maintenance program that would enable HECO to work on transmission lines without de-energizing the circuit (i.e., taking the lines out of service). It claimed that the ability to work on energized lines would enable HECO to minimize the use of the less efficient generating units or to defer construction expenditures for additional transmission lines.

Despite our problems with HECO's assertions concerning the additional work required on the four transmission lines, we will approve the expenditure of additional sums, over and above HECO's operating forecast. We are keenly aware of HECO's transmission capacity deficit and of the need to ensure that the four transmission lines are maintained at the highest level possible. Extra effort to preserve the integrity of the lines is justified until the CEIP-Waiau lines are in place. We determine what additional amount is reasonable as follows.

At the outset we note that HECO has provided no detailed explanation or worksheets for the additional $1,881,000. Specifically how HECO intends to expend the $1,881,000 is not contained in the record. In the absence of specific data, we determine what is a reasonable additional amount by first reviewing HECO's historical data. For 1991, HECO projected transmission O&M expense in an amount 27 per cent greater than the 1990 actual expense. The 1991 actual expense, however, was 47 per cent more than the 1990 actual expense. HECO's projection for the test year, with the additional $1,881,000 is 27 per cent more than the 1991 actual expense. Without the additional $1,881,000, HECO's projection for the test year is 1.34 per cent less than the 1991 actual expense. HECO's 1990 actual expense was 3.1 per cent more than the 1989 actual expense. The actual average increase from 1989 to 1991 is 25 per cent. Taking these data into account, we find that an additional amount (over and beyond HECO's operating forecast of $6,460,000) that would produce a total transmission O&M increase of 20 per cent for the test year over the 1991 actual expense is reasonable. We, thus, hold that $1,398,000, which when added to HECO's operating forecast of $6,460,000 would produce $7,858,000 in total transmission O&M expense, is a reasonable upward adjustment.

The resolution of any issue concerning HECO's responsibility for the delay in the construction of the CEIP-Waiau transmission lines and the sanctions, if any, that should be imposed on HECO is better left for HECO's outage docket, Docket No. 6281. In that docket, we will also examine HECO's transmission operations and maintenance program in detail.

2. Distribution expense

HECO's test year estimate of normalized distribution O&M expense is $12,479,000. This estimate includes an adjustment of $154,000 to HECO's operating forecast. This adjustment, like HECO's adjustment of its operating forecast for transmission expense, is to defray the cost of increased inspection and maintenance.

The DOD accepts HECO's test year estimate, but with a 5.1 per cent downward adjustment to account for the DOD's downward adjustment of HECO's work force projection. The Consumer Advocate's estimate is $12,320,000, which is $159,000 lower than HECO's estimate. It is not clear from the record how the Consumer Advocate calculated its estimate. The Consumer Advocate, however, asserts that, as in the case of transmission O&M expense, it did not follow the estimating practice it used in projecting production O&M expense, because HECO's 1992 projection is lower than its actual 1991 distribution O&M expense.

Initially, HECO estimated its distribution O&M expense at $12,599,000. It lowered its estimate by $120,000 after the DOD pointed out an error in HECO's initial estimate concerning the lease rent HECO negotiated with the State for HECO's Lagoon substation site. The Consumer Advocate calculated its estimate before HECO's correction of the lease rent error. It is not certain what adjustment needs to be made to the Consumer Advocate's estimate in light of this correction. However, in its brief, the Consumer Advocate accepts "the company's budgeted figure."

As in the case of its estimate of transmission O&M expense, HECO does not provide any detailed explanation or worksheets justifying the upward adjustment of $154,000. However, the $154,000 is a mere 1.3 per cent of HECO's operating forecast of $12,325,000. Further, even with the upward adjustment of $154,000, HECO's projection of distribution O&M expense for the test year is 2.3 per cent lower than the 1991 actual expense of $12,778,000. The historic trend is checkered. Between 1988 and 1989, distribution O&M expense declined by 5.9 per cent; between 1989 and 1990, it declined by 0.6 per cent; between 1990 and 1991, it increased by 22.9 per cent. Based on this historical record and on the need for a reliable distribution system, we find HECO's projection of additional distribution O&M expense of $154,000 and its projection of total distribution O&M expense of $12,479,000 to be reasonable.

H. Customer Accounts Expense

Customer accounts comprise the following: supervision, meter reading, records and collections, and uncollectibles. HECO projects $6,941,000 in customer accounts expense for the test year. Except for uncollectibles expense, the DOD does not state a position with respect to HECO's projection. For uncollectibles expense, the DOD's estimate is higher than HECO's (see below). The Consumer Advocate proposes to reduce HECO's estimate by $85,000. The reduction reflects the adjustments made by the Consumer Advocate to HECO's estimate of the nonlabor portion of the information service department (ISD) clearing accounts expense, a portion of which expense is charged by HECO to the customer accounts.

We do not accept the Consumer Advocate's recommendation that we adjust the ISD clearing accounts expense. There is inadequate rationale for the adjustment, except that HECO's projection for the test year exceeds what the Consumer Advocate considers as a reasonable level of increase (10 per cent) over the recorded 1991 amount. We earlier commented on the Consumer Advocate's approach.

We make some adjustments, however, to HECO's expense estimate. We accept HECO's expense estimate for supervision, but adjust its estimate for meter reading, records and collections, and uncollectibles.

1. Meter reading expense

HECO projects $1,600,000 in meter reading expense, which includes $1,430,000 in labor costs and $170,000 in nonlabor costs.

Labor costs include the wages of thirty-two meter readers, a clerk, a supervisor, and an allocated 50 per cent share of the customer field operations director's salary. Nonlabor costs cover vehicle operations and maintenance, meter reading devices, and supporting equipment, uniforms, and miscellaneous supplies.

HECO's labor cost projection is $156,000 more than the 1991 forecasted cost of $1,274,000. The major reason given by the company for the increase is the addition of one more meter reader to handle its growing meter reading workload. We do not question HECO's need for an additional meter reader. However, an additional meter reader alone does not justify an increase in labor cost of $156,000. Based on HECO's labor expense forecast for 1991, a very rough indicator of its cost per meter reader is $41,100 ($1,274,000 divided by 31).[13] In the absence of data justifying the total $156,00 increase, we will allow an increase of $45,000, and conclude that an estimate of $1,319,000 for meter reading labor expense is reasonable for test year 1992.

HECO's estimate of meter reading nonlabor expense covers the cost of vehicle operations and maintenance, devices used to record meter readings in the field, support equipment, company identification uniforms, and miscellaneous supplies. We conclude that $170,000 for meter reading nonlabor expense is a reasonable estimate. Thus, a reasonable total meter reading expense for the test year is $1,489,000.

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[13]We err on the side of an inflated cost per meter reader, since the labor cost reflects the wages of meter readers, as well as one clerk and a supervisor, as well as a prorated amount for the director of customer field operations.

2. Records and collections expense

HECO projects $4,633,000 in records and collections expense. Our examination of HECO's actual expenses in this area from 1989 to 1991 reveals an average annual expenditure of $4,400,000. HECO's test year projection is 5.3 per cent more than this 3-year annual average. This increase is reasonable. However, an annual amortization amount on account of HECO's computer system, ACCESS, must be added to HECO's projection.

In Decision and Order No. 11317 (Oct. 17, 1991) in HECO's last rate case, Docket No. 6531, the commission required the total development and implementation cost of ACCESS to be amortized over a 5.5-year period. The commission then allocated to HECO 73 per cent of the sum of the annual amortization amount and the appropriate labor costs as HECO's test year share of the costs associated with ACCESS. The remainder, the commission held, should be spread among HECO's electric affiliates who also benefit from ACCESS.

In this proceeding, HECO's test year records and collections expense projection does not include HECO's test year share of the amortized cost of ACCESS. HECO asks us to reconsider our holding in Docket No. 6531 and allow HECO to treat the development costs of ACCESS as an expense item in the appropriate functional area. HECO essentially revives its earlier arguments concerning the treatment of ACCESS development costs. We reject

HECO's request for reconsideration for the reasons stated in Decision and Order No. 11317.[14]

In Decision and Order No. 11317, the commission allocated $299,800 as HECO's test year share of the costs of ACCESS. In this proceeding, HECO submitted updated cost information on the development and implementation costs of ACCESS. HECO asserts that HECO's portion of the updated costs is $2,104,055. This amount amortized over 5.5 years is $382,600, rounded to $383,000.[15] We add this amount to HECO's test year 1992 estimate of records and collections expense of $4,633,000, for a total of $5,016,000. We conclude that this sum is a reasonable estimate of records and collections expense for the test year.

3. Uncollectibles expense

HECO's projection of uncollectibles expense under present rates is $520,000. The Consumer Advocate's projection is $522,000. The DOD's projection is $531,000. The uncollectibles expense is determined by multiplying projected sales revenue by an uncollectibles factor. All parties used the same uncollectibles

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[14]See, also, in this current decision and order, section J, part IV, on administrative and general expenses. There, we discuss HECO's inclusion of computer system development cost with respect to its work force management system development.

[15]Although HECO represents that the sum of $2,104,055 is that portion of ACCESS development costs chargeable only to HECO, it has offered no data to substantiate this representation. If $2,104,055 is indeed 73 per cent of the total updated ACCESS development cost, the total cost must be $2,882,267. This is $876,267 more than the projection of $2,006,000 we accepted in Docket No. 6531 as the total development cost of ACCESS. None of the intervening parties offered any rebuttal to HECO's representation. In the absence of any further information, the commission accepts HECO's representation.

factor of 0.1 per cent. The projections differ, however, because of the parties' differing sales revenue projections. The Consumer Advocate's and the DOD's sales revenue projections are higher than HECO's.

In Decision and Order No. 11317 in Docket No. 6531, we held that the utility's method of calculating the uncollectibles factor was reasonable, and we adopted its factor of 0.1 per cent. We have no reason to deviate from that holding and adopt HECO's uncollectibles factor of 0.1 per cent for this docket. Based on our revenue projection, the uncollectibles expense for test year 1992 at present rates is $522,000.

4. Summary

In summary, test year 1992 customer accounts expense of $7,215,000 at present rates is reasonable. This sum consists of $188,000 for supervision, $1,489,000 for meter reading, $5,016,000 for records and collections, and $522,000 for uncollectibles.

I. Customer Service Expense

The customer service account comprises a number of expenses that are grouped into four general categories. These categories are supervision, customer and consumer education, information advertising, and miscellaneous. HECO projects $2,294,000 in total customer service expense for the test year. The DOD raises no specific objections to HECO's projection. The Consumer Advocate estimates total customer service expense at $2,227,000.

The Consumer Advocate's estimate reflects two adjustments to HECO's estimate. The first is a downward adjustment reflecting the Consumer Advocate's adjustment of the nonlabor portion of the ISD clearing accounts expense. This adjustment affects the supervision category and the customer and consumer education category. The second adjustment is a downward adjustment of HECO's estimated expenses for cool storage research and development and for heat pump market support included in the customer and consumer education category. We have already disposed of HECO's proposed adjustment to the ISD clearing accounts expense.

1. Supervision expense

HECO projects $165,000 in supervision expense. This sum represents labor and nonlabor costs associated with HECO's marketing department manager and a secretary. For the reasons stated, we reject the Consumer Advocate's proposal to adjust HECO's estimate downward by $3,000 to reflect the Consumer Advocate's adjustment of the ISD clearing accounts. HECO's estimate is an increase of approximately 2 per cent over actual 1991 supervision expense. This increase is reasonable. We accept HECO's estimate of $165,000 in supervision expense.

2. Customer and consumer education expense

HECO estimates $1,696,000 in customer and consumer education expense. The customer and consumer education program provides marketing services, develops customer load management programs, and provides information concerning rate options, energy efficient equipment, and energy management.

The Consumer Advocate would reduce HECO's projection by $64,000 to $1,632,000. It would disallow $9,000 to reflect the Consumer Advocate's downward adjustment of ISD clearing accounts expense. We reject this adjustment for the reasons stated earlier. The Consumer Advocate would also delete $39,000 estimated by HECO for cool storage air conditioning research, development, and promotion and $16,000 estimated for heat pump market support.

The sum estimated for the cool storage air conditioning program is intended for the education of customers about this relatively new technology. HECO's target group consists primarily of engineers and architects who make design decisions that may affect efficient energy usage. The utility wishes to step up its promotion of the cool storage air conditioning technology and increase customer awareness and acceptance of this demand-side management tool.

In HECO's last rate case, we allowed $38,000 for the cool storage program, based on explanations similar to the one HECO makes in this rate case. See <u>In re Hawaiian Elec. Co.</u>, Docket No. 6531, Decision and Order No. 11317. However, as the Consumer Advocate notes, HECO's actual expenditure for this program over the last three years ranged from 7 per cent to 14 per cent of HECO's forecast. In light of past experience, we consider $10,000 to be adequate for the cool storage program. This sum is about 25 per cent of HECO's projected amount. It should give HECO reasonable room to step up its promotion of this new technology.

HECO proposes to use the $16,000 (rounded from $15,629) projected for heat pump market support to educate the public about the benefits of heat pumps and to assist engineers and mechanical contractors in the design, selection, and installation of heat pumps. The Consumer Advocate considers HECO's activities associated with heat pumps as nonregulatory in nature and would disallow the $16,000. We disagree. Heat pump promotion contributes to demand-side management efforts and are appropriate activities for a power utility.

We conclude that $1,667,000 for customer and consumer education is a reasonable test year expense. This sum is HECO's estimate, less $29,000 in cool storage research, development, and promotion expense.

3. Informational advertising expense

Informational advertising expense includes the nonlabor costs of customer communications, alternate energy programs and policy issues, and customer programs and services such as monthly informational bill inserts (Consumer Lines). HECO estimates $258,000 in informational advertising expense for the test year. Neither the Consumer Advocate nor the DOD raises any objection to HECO's estimate.

In HECO's last rate case, we allowed $246,000 in informational advertising expense for test year 1990. A 4.9 per cent increase over our last allowance is reasonable for test year 1992.

4. Miscellaneous customer service expense

HECO estimates $175,000 in miscellaneous customer service expense. This estimate is the sum of the estimated customer needs program administrative expense, education and consumer affairs expense, and printing expense. It includes labor charges of $58,000 and nonlabor charges of $117,000. Neither the Consumer Advocate nor the DOD states any position on this matter.

The nonlabor charges of $117,000 includes $83,000 for HECO's customer needs program, $22,000 for miscellaneous expenses of the education and consumer affair's division, and $12,000 for in-house printing. The $83,000 for the customer needs program is to be expended as follows. HECO intends to implement an employee suggestion program in 1992, and $33,000 will be used to pay for the costs of materials and cash awards in this program. The balance of $50,000 is intended to pay for the cost of conducting customer segment surveys "to assess the specific needs and desires of targeted customer groups in order to enhance customer satisfaction."

The projected $117,000 in nonlabor expense is about 58 per cent more than the company's 1991 actual expenditure of $74,000. However, we have no reason to believe that the programs HECO desires to implement in 1992 would not be of benefit to the company and its customers. We, thus, approve $175,000 in projected miscellaneous customer service expense.

5. Summary

In summary, we hold that the sum of $2,265,000 in customer service expense is reasonable. The allowed amounts for each subcategory are as follows:

Account	Amount
Supervision	$ 165,000
Customer/consumer services	1,667,000
Informational advertising	258,000
Miscellaneous	175,000
Total	$2,265,000

J. Administrative and General Expenses

HECO's projection of administrative and general (A&G) expenses is $51,220,000, based on accrual accounting of postretirement benefits other than pensions, and $41,651,000, based on cash accounting of such benefits. The Consumer Advocate's estimate is $37,687,000. The DOD's estimate is $40,359,000. The areas of disagreement are as follows. ("CA" in the table below refers to the Consumer Advocate.)

Expense Account	Disagreement By
A&G salaries	CA and DOD
Office supplies and expenses	CA and DOD
Transfer to construction	CA and DOD
Transfer to other	CA and DOD
Other outside services	CA
Injuries - employees	CA
Flex plan	DOD
Dental plan	CA and DOD
Group medical and hospital insurance	CA and DOD
Other employee benefits	CA and DOD
Vision plan	CA and DOD

Postretirement benefits	CA and DOD
Pensions - nonfunded	DOD
Pensions - funded	CA
Employee benefits - construction	CA and DOD
Employee benefits - others	CA and DOD
Community service activities	CA and DOD
Research and development	DOD
Regulatory commission expense	DOD
Maintenance of general plant	CA

HECO, the Consumer Advocate, and the DOD agree on the projections of A&G expenses for the categories of accounts listed below. We find these projections to be reasonable, as discussed below, and allow them as expenses for the test year.

Expense Account	Amount (in thousands)
Outside legal services	$ 177
Services from associated companies	1,400
Property insurance	1,868
Injuries - public	1,745
Institutional/goodwill advertising	15
Company membership	208
Conventions and meetings	8
Preferred stock and long-term debt	95
Common stock expense	0
Stock meeting and annual reports	0
Directors' fees and expenses	53
Rent	735

In ratemaking proceedings, the administrative and general expense accounts are ordinarily categorized into five major groups: administrative, outside services, insurance, employee benefits, and miscellaneous accounts. Our discussion below utilizes this grouping.

1. Administrative group

Four functional accounts comprise this group: A&G salaries, office supplies and expenses, A&G expenses transferred to construction, and A&G expenses transferred to others. The parties do not agree on estimates for all these functional accounts. The Consumer Advocate proposes adjustments to (1) A&G salaries and office supplies and expenses based on its analysis at the activity level and (2) A&G expenses transferred to construction and to other parties. The DOD proposes an across-the-board labor expense reduction (based on its rejection of HECO's work force projection) and an adjustment to HECO's estimate of office supplies and expenses.

a. A&G salaries

HECO's test year estimate of A&G salaries is $9,414,000. HECO excludes performance incentive compensation payments from its salary estimate. The estimate also reflects a reduction of $190,000 to exclude certain accounting department costs that the Consumer Advocate recommended should be billed to HECO's affiliates. HECO asserts that increased wages and salaries and increased staffing requirements to perform administrative activities and to implement integrated resource planning and related activities justify its projection.

The Consumer Advocate's estimate is $8,574,000. This estimate, lower than HECO's by $840,000, reflects the Consumer Advocate's proposal to adjust labor costs based on its review of the company's estimates at the activity level. The DOD proposes no specific sum for A&G salaries and relies solely on the general downward adjustment to HECO's test year total O&M costs, proportionate to its recommended 5.1 per cent reduction of HECO's projected work force estimate. The DOD's adjustment to HECO's total projected O&M costs is $2,544,000. On a prorated basis, HECO calculates that this adjustment reduces its test year estimate of A&G salaries by $556,600.

HECO's test year estimate is based on its 1991 A&G salaries forecast of $8,108,000. To this forecast, HECO added: (1) $411,000 for a general pay increase in 1992; (2) $129,000 for corporate intern, summer intern, and co-op student programs; (3) $47,000 for increased overtime by personnel of the rate and regulatory affairs, accounting, and purchasing departments; (4) $194,000 for other reasons that "cannot be identified without a time consuming analysis of the forecasts from the numerous organizations forecasting labor costs"; (5) $352,000 for additional employees to perform administrative activities; and (6) $363,000 for additional employees to perform integrated resource planning and related activities. As mentioned above, HECO reduced the sum derived by $190,000 to accommodate the Consumer Advocate's recommendation to allocate a greater portion of HECO's accounting department costs to HECO's affiliates. We examine here the appropriateness of the additions made by HECO to its 1991 forecast.

HECO's addition of $129,000 in the internship program boosts the cost of the program to $196,000 for the test year. Of this total estimate, $40,000 is intended for the student intern program. This $40,000 is $22,800 more than the 1991 forecast. In this program, the utility assigns college students to professional-level tasks and evaluates their job performance. The program appears worthwhile and of benefit to ratepayers. It develops for the company a pool of potential professional employees. The expenditure of $40,000 for this program is, thus, reasonable.

The remaining $156,000 of the estimated total internship program is for the development of leadership and managerial skills of selected employees by expanding their professional experiences within the company. This sum is $107,000 more than the 1991 forecasted $49,000. Although the immediate beneficiaries of this corporate intern program may appear to be the selected employees, there are tangential benefits to HECO's ratepayers. Improvement in employee skills should lead to greater company efficiency and productivity. The projected increase over the 1991 forecast, however, is inordinately large. The test year projection is more than three times the 1991 forecast. We acknowledge the company's increasing emphasis on the development of managerial skills among its selected employees. However, the increase HECO seeks appears to be more than warranted. We will limit the increase to one-half of that sought by HECO. We approve $100,000 in corporate intern program cost.

HECO's proposed addition of $194,000, for which reasons for the increase "cannot be identified without a time consuming analysis of the forecasts from the numerous organizations forecasting labor costs" is clearly unjustified. Without more than generalities as support, this sum may not be reasonably included in HECO's test year estimate of A&G salaries.

HECO's request for $363,000 to hire additional employees to perform integrated resource planning (IRP) and related activities will not be considered in this docket. In Decision and Order No. 11317 issued in Docket No. 6531, HECO's last rate case, we approved the establishment of an IRP clause through which HECO may recover the costs associated with integrated resource planning from ratepayers. For the reasons stated below, we will leave any appropriate recovery of costs to hire additional employees to perform integrated resource planning to the IRP clause.

In Decision and Order No. 11317, we recognized two classes of integrated resource planning costs: (1) the costs of planning (i.e., the costs associated with the development of integrated resource plans) and (2) the costs of implementing particular resource options. We retained the authority to determine what costs may be recovered through the clause, but established the following parameters for the recovery of the two categories of costs:

> With respect to the first category of costs, we will require HECO to develop an annual budget of the costs it proposes to include in the IRP clause. HECO shall submit this budget to the commission for approval. The utility shall also furnish the commission with an accounting of expenditures and a report on the variance between the budget and actual expenditures before any cost is included in the IRP clause. With respect to the second

category of costs, we will require HECO to present its proposed program or project to the commission for prior approval, together with information concerning the expenses expected to be incurred, in much the same manner as it is required to do, under General Order No. 7, rule 2.3.g.2, for proposed capital expenditures in excess of $500,000.

We acknowledged in the decision that the IRP clause may not be the proper mechanism for the recovery of all IRP costs. We made that acknowledgment particularly with respect to specific IRP project costs and suggested that in some cases IRP project costs may well be included in HECO's rate base. However, that observation is equally applicable to planning costs; certain planning costs may be appropriately included in HECO's base rates. Indeed, in Decision and Order No. 11317, we allowed HECO to include $200,000 as a test year 1990 expense to cover the cost of an IRP consultant and other costs associated with the development of integrated resource planning. And, in this decision we allow, in the section immediately below, $300,000 in ongoing IRP cost for test year 1992. We are not, however, prepared at this time to allow HECO to include as a test year 1992 expense any sum for additional employees HECO asserts it needs to perform integrated resource planning. Integrated resource planning is just beginning, and we do not have before us a comprehensive budget as required by Decision and Order No. 11317. Such a budget should be presented for commission review.

HECO's estimates of the remaining additional increases appear justified. We, thus, accept HECO's estimate of an additional $47,000 for increased overtime by personnel engaged in rate and regulatory affairs, accounting, and purchasing, and

$352,000 for additional employees to perform required administrative activities.

In summary, $8,801,000 is a reasonable estimate of total A&G salaries for the test year. This sum is the result of deducting from HECO's test year estimate of $9,414,000, the following: $56,000 in corporate internship cost; $363,000 in IRP-related expense; and $194,000 for which HECO can give no specific reasons for inclusion in the estimate.

b. Office supplies and expenses

HECO's original estimate of office supplies and expenses was $7,547,000. It derived this estimate by increasing its 1991 estimate of $5,290,000 by $2,257,000, as follows: (1) $1,600,000 for computer systems development and production; (2) $400,000 for IRP-related activities; and (3) $257,000, or a 4.9 per cent upward adjustment of the total $5,290,000 estimate for 1991. HECO's revised test year estimate of office supplies and expenses is $7,408,000. This estimate reflects two downward adjustments of its original test year estimate suggested by the Consumer Advocate: (1) the assignment of $131,000 in accounting department costs to HECO's affiliates; and (2) the exclusion of $7,628 in mail room costs.

The Consumer Advocate's estimate for office supplies and expense is $5,238,000. This estimate reflects three further downward adjustments that the Consumer Advocate made to HECO's projection: (1) the deletion of $1,017,000, resulting from the Consumer Advocate amortizing over five years, the $1,271,000 included in HECO's test year estimate for the development of HECO's work force management computer system (WFMS);[16] (2) the deletion of $300,000 in end-use forecasting expense related to IRP; and (3) the deletion of the ISD clearing accounts expenses allocable to office supplies and expenses.

The DOD's estimate is $6,110,000. The DOD derived this figure by two downward adjustments to HECO's original test year estimate, as follows: (1) the deletion of $1,017,000, resulting from the DOD amortizing the $1,271,000 included in HECO's estimate for the development of WFMS; and (2) the deletion of $420,300 in IRP-related expenses.

We earlier expressed our doubts about the efficacy of the Consumer Advocate's downward adjustment of the ISD clearing accounts expenses and the manner in which the adjustment was allocated by the Consumer Advocate among various functional accounts. We need not repeat them here. We, thus, focus on the two other adjustments that both the Consumer Advocate and the DOD have made to HECO's projection of the costs of office supplies and expenses and on HECO's proposal to increase its 1991 estimate, in addition to the specific increases, by 4.9 per cent.

With respect to the development costs of WFMS, the commission sees no reason why those costs should be treated any differently from the costs of ACCESS. In Docket No. 6531, Decision and Order No. 11317, we amortized the ACCESS costs over five years, and we reaffirmed that holding in an earlier section of this decision, notwithstanding HECO's plea that we reconsider that

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[16] $1,271,000 is included in HECO's projection of office supplies and expenses for the development of WFMS. An additional $293,000 in WFMS development cost is included in outside services. See subsection 2 of section J in part IV below.

holding. The large cost of developing WFMS is not a typical annual computer system expense. Further, the benefits of the new computer system extend well into the future. Thus, the WFMS development cost should be amortized over five years. When so amortized, the annual cost is $254,200. We, therefore, disallow $1,016,800, rounded to $1,017,000, of the $1,271,000 WFMS development cost included in HECO's test year projection of office supplies and expense.

In Docket No. 6531, Decision and Order No. 11317, we allowed $200,000 to be included as "ongoing costs" associated with IRP. In this docket, HECO proposes to increase the IRP "ongoing costs" by $400,000. HECO intends to use the $400,000 for end-use forecasting activities and for outside engineering services. The DOD would have the commission disallow the proposed increase and require HECO to keep the IRP-related ongoing expense at the $200,000 level the commission authorized in Docket No. 6531. The Consumer Advocate recommends that the $300,000 (of the HECO-proposed $400,000 increase) that is earmarked for end-use forecasting be deleted.

HECO defends the inclusion of the proposed increase for IRP-related activities as IRP "ongoing costs" by equating the costs for end-use forecasting and outside engineering services to test year operating expense estimates for ongoing efforts in the areas of sales forecasting, demand-side management, generation planning, load research, cost-of-service studies, rate design, tariff development, and tariff administration. HECO estimates that end-use forecasting will actually cost $302,000 and outside engineering services $120,000.

In the section above, we decided not to allow HECO to include an estimated $363,000 in A&G salaries for the additional employees HECO believes it will need to perform integrated resource planning and related activities. We indicated that that cost is better reviewed as a part of HECO's development of an annual budget for integrated resource planning and recovery of that cost is better left to the IRP clause. We acknowledged, however, that some IRP costs may properly be included in HECO's base rate, and, as indicated above, we included some IRP costs in the base rate in the last HECO rate case. We do so again in this docket. While we believe that the costs of end-use forecasting is probably better addressed in our review of HECO's budget for the planning phase of IRP, we think it is reasonable to include as part of office supplies and expenses, $250,000 of the requested additional $400,000. The $250,000 is to be used to defray the cost of outside engineering services and to pay for such other immediate reasonable expenses that HECO may incur in the development of its initial integrated resource plan, pending approval by the commission of HECO's planning budget.

HECO's proposed general increase of $257,000 over total 1991 estimated office supplies and expenses is without explanation. How the 4.9 per cent factor was determined is not defined. More importantly, why the 4.9 per cent factor should be applied to the total 1991 estimated amount is unclear. In the paragraphs above, the commission has already granted increases for some of the items included in office supplies and expenses. The application of the 4.9 per cent to the total 1991 estimate would further increase the expenses for these items. Taking these matters into consideration, the commission holds that only a minimal increase is justified, if the increase is to be applied to the total 1991 estimate. We will allow a 2 per cent increase over the total 1991 estimate ($105,800, rounded to $106,000). This should account for inflation for the items in office supplies and expense for which we have made no special provision.

In summary, $6,090,000 is a reasonable estimate for office supplies and expenses for the test year. This amount is derived by reducing HECO's revised estimate of $7,408,000 by $1,017,000 in WFMS development costs, $150,000 in IRP-related expense, and $151,000 in unexplained expense.

c. A&G expenses transferred to construction

HECO's original test year estimate of A&G expenses transferred to construction was $906,000. Its revised estimate is $837,000. The transfer serves to reduce A&G salaries and office supplies and expenses and represents that portion of A&G expenses that relates to plant construction. HECO's revised estimate reflects a downward adjustment of the original estimate to account for a shift in labor and nonlabor costs from O&M to the billable accounts for HECO's cost accounting division and for a nominal reduction in HECO's safety division's labor cost. The DOD accepted HECO's original estimate of $906,000. It made no adjustments to reflect those made in HECO's revised estimate. The Consumer Advocate accepts HECO's estimate, with reservations.

HECO computed the transfer amount by (1) determining the amount eligible for transfer (that is, those A&G salaries and office supplies and expenses that relate in part to plant construction); (2) determining the percentage of eligible costs to be transferred, based on the ratio of plant labor cost to total labor cost (exclusive of the labor cost eligible for transfer);[17] and (3) calculating the transfer amount by applying that percentage to the amount eligible for transfer.

The Consumer Advocate adopted HECO's methodology in projecting A&G expenses to be transferred to construction. Its estimate is $832,000. However, during the evidentiary hearing, the Consumer Advocate represented that it would not propose any adjustment to HECO's estimate, because it had not verified the plant labor costs upon which HECO's transfer rate is based. The Consumer Advocate asserted that it will leave to another proceeding any further examination of this issue. The Consumer Advocate believes that further examination is necessary, in light of the fact that amounts transferred to construction-work-in-progress are ultimately passed on to ratepayers when projects are completed and added to HECO's rate base.

We accept as reasonable, for the purpose of this rate case, the general methodology applied by HECO in estimating A&G expenses to be transferred to construction. However, because our estimates of A&G salaries and office supplies and expenses differ from those of HECO, our calculation of the A&G expenses to be transferred to construction will necessarily differ from HECO's estimate of the transfer amount.

To arrive at our estimate of the transfer amount, a strict application of HECO's methodology would require us to

[17]Based on HECO's adjusted estimate, the percentage calculated by HECO equals 24.3 per cent.

recompute the amount eligible for transfer and the percentage (the ratio of plant labor cost to total labor cost) to be applied to the eligible amount. However, the commission lacks the necessary data to make such computation. Particularly lacking are data on labor costs that reflect the commission's adjustments of HECO's estimates of A&G salaries and office supplies and expenses. The commission is not equipped to properly alter labor costs to reflect its adjustments. We, therefore, resort to proxy means of calculating the transfer amount.

We determine the transfer amount by computing the ratio of HECO's estimate of A&G expenses transferred to construction to HECO's estimate of total A&G salaries and office supplies and expenses and apply that ratio to our estimate of A&G salaries and office supplies and expenses. We believe this methodology is reasonable. The methodology lowers or raises HECO's estimate of the transfer amount in proportion to the downward or upward adjustment the commission makes to HECO's estimate of total A&G and office supplies and expenses. Applying this methodology, we calculate a ratio of 0.04975 (HECO's estimate of $837,000 in A&G expenses transferred to construction divided by HECO's estimate of $16,822,000 in total A&G salaries and office supplies and expense). That ratio times our projection of total A&G salaries and office supplies and expenses of $14,891,000 produces $741,000.

d. A&G expenses transferred to others

HECO proposes to transfer $1,507,000 of A&G expenses to others in the test year. Transfer to others represents that portion of A&G expenses that is charged to HECO's affiliates and to third parties. It serves to reduce A&G salaries and office supplies and expenses. HECO's revised estimate is greater than its original projection of $1,431,000, which HECO adjusted in the same way it adjusted its estimate of A&G expenses transferred to construction.

The DOD accepted HECO's original estimate, but made no adjustments to reflect those made by HECO in its revised estimate. The Consumer Advocate proposes no adjustment to HECO's estimate, although the Consumer Advocate's estimate of $1,168,000 is $339,000 less than HECO's projection. The Consumer Advocate asserts that it cannot determine HECO's total charges incurred for services rendered to its affiliates and that it needs this information to compute the rate by which the amount of A&G expenses to be transferred is determined.

Included in transfer to others are charges to affiliates for executive management, accounting, finance, benefits administration, and communication services and charges to third parties for such services as repair of poles and other facilities damaged by third parties and temporary electrical service to contractors and carnival operators. The charges to affiliates and third parties include overhead (primarily corporate administration) labor costs and nonlabor costs. Nonlabor costs to affiliates are allocated on the same percentage by which executive labor costs are charged (i.e., on time spent).

The methodology applied by HECO in estimating A&G expenses transferred to others is reasonable. However, because our estimate of A&G salaries and office supplies and expenses differs from HECO's estimate, our calculation of A&G expenses transferred to others also differs from HECO's. In making our calculation of the transfer amount, we face the same difficulty we encountered in estimating the amount of transfer to construction. We do not have the data reflecting our adjustments to HECO's estimate of A&G salaries and office supplies and expenses. We, thus, adopt the same methodology we used for transfer to construction in estimating transfer to others.

We compute a transfer ratio of .08959 by dividing HECO's estimated transfer amount of $1,507,000 by HECO's estimate of $16,822,000 in A&G salaries and office supplies and expenses. Application of this ratio to our estimate of total A&G salaries and office supplies and expenses of $14,891,000 produces $1,334,000. This is a reasonable sum for transfer to others.

e. Summary of administrative group

In summary, we conclude that the sum of $12,816,000 is reasonable for the administrative group of accounts. The allowed amounts for each account are as follows:

Account	Amount (in thousands)
A&G salaries	$ 8,801
Office supplies and expenses	6,090
A&G expenses transferred to construction	(741)
A&G expenses transferred to other accounts	(1,334)
Total Administrative Group	$12,816

2. Outside services group

This group includes three functional accounts: outside legal services, other outside services, and services from associated companies. Outside legal and other services are services of attorneys, auditors, and consultants. Services from associated companies are services performed for HECO by its parent company Hawaiian Electric Industries, Inc. (HEI), although conceivably such services could include those performed on HECO's behalf by its affiliates.

For outside legal services, HECO's estimate is $177,000. The Consumer Advocate and the DOD accept this estimate. The estimate is 7.3 per cent more than HECO's average of actual annual expenditures over the last three years (average of $165,000). We agree that the estimate is reasonable.

For services from its parent company, HECO originally projected $3,371,000 for the test year. Subsequently, the parties stipulated to an estimate of $1,400,000. The Consumer Advocate negotiated with HECO on this stipulated amount, because time constraints prevented the Consumer Advocate from fully examining HECO's original estimate. The stipulation represents a reasonable estimate for those services that the parties believe, based on the record, HEI would probably provide HECO in the test year. HECO filed a motion on March 3, 1992, requesting commission approval of the stipulation.

In granting an interim rate increase in this docket, we approved the stipulation. For the purposes of this final decision and order, we reaffirm our approval. The record reveals that the services, for which the stipulation is fashioned, will probably be rendered by HEI to HECO and that the amount of the stipulation is within reason. However, we continue to be concerned (we expressed this concern in HECO's last rate case) about the reasonableness of the methodology in calculating HEI's expenses to be charged its subsidiaries and the reasonableness of the manner of allocating such expenses among the subsidiaries. HECO has represented in this proceeding that an outside consultant is now reviewing HEI's methodology. The commission expects that the results of that study will be made available to the commission and to the parties in this docket. We will revisit this issue in another docket or in the next rate case.

For other outside services, HECO estimates $600,000 in test year expense. The DOD accepts this estimate. The Consumer Advocate proposes a downward adjustment of $258,000 in consultant fees: $234,000 for the development of WFMS; $19,000 in the human resources area; and $5,000 in the industrial relations area.

The Consumer Advocate's downward adjustment in consultant fees for the development of WFMS is the result of its amortization (over five years) of all costs associated with WFMS development. Its position here is consistent with its position with respect to those WFMS development costs included in office supplies and expenses. The downward adjustment of $234,000 is derived by dividing the total projected consultant fees of $293,000 by five and subtracting a year's amortization of $58,600, rounded to $59,000. The DOD's acceptance of HECO's projection of consultant fees for the development of WFMS is inconsistent with its position regarding those WFMS development costs included in office supplies and expenses. For the latter, it agreed with the Consumer Advocate and amortized the costs over five years. For the reasons stated above in connection with our review of HECO's estimate of office supplies and expenses, we adopt the Consumer Advocate's adjustment and hold that an annual amortization of consultant fees in the development of WFMS is reasonable.

In the case of consultant fees for human resources and industrial relations, we do not adopt the Consumer Advocate's adjustments. We find HECO's inclusion of the fees in its estimate of the cost of other outside services to be reasonable. In summary, for outside services in total, we approve as reasonable an estimate of $366,000.

3. Insurance group

This group includes three functional accounts: property insurance; injuries and damages--employees; and injuries and damages--public. HECO's estimates for these accounts are $1,868,000, $2,585,000, and $1,745,000, respectively. The DOD accepts the company's estimates. The Consumer Advocate takes issue only with HECO's estimate for insurance with respect to injuries and damages involving employees.

The Consumer Advocate proposes reductions in HECO's estimates for insurance for injuries and damages to employees in ISD[18] and in the human resources, financial services, and engineering areas. The proposed reductions are the result of the

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[18]One of the Consumer Advocate's adjustments in this area involves HECO's proposal to reimburse certain eligible employees who purchase personal computers. We address this issue in section N, part IV, below, where we make a general adjustment with respect to this expense item.

Consumer Advocate's analysis at the detailed activity level. We are unable to follow the Consumer Advocate's reasoning. We appreciate the company's concerns about the volatility of worker's compensation awards and related expenses. The company's estimate is also based on an anticipated 8 per cent increase in insurance premiums during the test year. Upon review of HECO's explanation of the factors that generally influence this insurance expense, we conclude that the utility's test year estimate of $2,585,000 is reasonable.

4. Employee benefits group

The employee benefits group includes twelve functional accounts. As in its last rate case in Docket No. 6531, HECO offers two separate expense projections. One set includes expenses for nonpension postretirement benefits on an accrual basis; the other reflects these expenses on a pay-as-you-go (cash) basis. On an accrual basis, HECO's total estimated expenses for employee benefits is $24,825,000. On a cash basis, the estimate is $15,257,000. Both the Consumer Advocate and the DOD propose we adopt an estimate based on cash payments of nonpension postretirement benefits.

By Order No. 11500, issued on February 25, 1992, in Docket No. 7243, the commission opened an investigation of the impact of the new FASB rule requiring the accrual of the cost of nonpension postretirement benefits in financial statements. That proceeding was consolidated with Docket No. 7233, a proceeding in which HECO, MECO, and HELCO request a generic investigation of the same FASB rule issue. Until we complete a full investigation of the new rulé's impact, we will continue to disallow the use of the accrual basis in calculating the cost of nonpension postretirement benefits. Thus, for this docket, we include in the estimated costs of employee benefits the cash outlay HECO is required to make for nonpension postretirement benefits.[19]

The following summarizes the parties' estimates of the costs of employee benefits, based on the cash basis of accounting for nonpension postretirement benefits. "CA" in the table means the Consumer Advocate.

$ In Thousands (000)

ACCOUNT	HECO	CA	DOD
Flex credits	42	42	118
Pensions - nonfunded	176	176	231
Dental plan	968	941	935
Pensions - funded	11,668	11,604	11,668
Group life insurance	408	408	408
Group med. & hosp. ins.	7,551	7,387	7,277
Other empl. benefits	1,063	528	922
Vision plan	251	247	242
Long-term disability	231	231	231
Post-retirement ben.	0	0	0
Empl. ben. trsf. - constr.	-5,466	-5,457	-5,199
Empl. ben. trsf. - other	-1,635	-1,627	-1,511
Total	15,257	14,480	15,322

We discuss in the sections that follow the expense projections that are in dispute.

[19]Postretirement benefits include medical insurance, reimbursement of Medicare Part B premiums, vision care, dental care, and life insurance.

a. Flex credits

HECO's estimate of $42,000 in flex credit expense represents the amount that the utility expects to pay out to its employees as a result of unused flex credit dollars. The Consumer Advocate agrees with HECO's forecast. The DOD's estimate of $118,000 represents HECO's original estimate. HECO's current estimate of $42,000 reflects more current data on its employees' flex plan elections in 1992. We do not expect any DOD objection to HECO's revised estimate.

HECO's test year estimate of $42,000 is reasonable. It is substantially below the flex credit expense of $200,000 that we approved in HECO's last rate case and substantially below the recorded expenses for 1989 ($84,000), 1990 ($133,000), and 1991 ($92,000). In HECO's last rate case, the commission ordered HECO to monitor flex credit costs. The company's estimate of $42,000 appears to reflect greater control over the accumulation of unused flex credit, while achieving the incentive objective of the flex plan.

b. Pensions-nonfunded

The Consumer Advocate agrees with HECO's revised test year estimate of $176,000 for nonfunded pension expense. The DOD's estimate of $231,000 is HECO's original estimate.

Pensions-nonfunded includes pension payments to retired employees and excess payments of certain plans that are not provided for in the pensions-funded account. The estimate here is based on actuarial calculations. HECO's revised estimate reflects more recent actuarial information. The estimate of $176,000 is reasonable. It compares favorably with HECO's actual expense in 1991 of $175,000. HECO's actual expense in 1989 was $33,000, and in 1990 it was $108,000.

c. Dental plan

HECO, the Consumer Advocate, and the DOD agree on the methodology and the revised premium rates to calculate the test year estimate of dental plan expense. However, the parties' estimates differ because the parties differ in their projections of the count of active employees in the test year. HECO's estimate of dental plan expense is $968,000, the Consumer Advocate's is $941,000, and the DOD's is $935,000.

Earlier in this decision and order, we accepted HECO's work force projection for the test year.[20] Here, we accept HECO's test year dental plan expense of $968,000. The estimate is reasonable, when viewed in light of historical data. HECO's actual dental plan expenses in 1989, 1990, and 1991 were $941,000, $938,000, and $905,000, respectively. The declining costs reflect declining dental premiums over the years. The test year estimate is $63,000 more than the actual 1991 expense. However, the test year estimate represents an increase in average employee count of 138 over that of 1991 and an average cost per active employee of $618 ($968,000 divided by projected employee count of 1,566). The $618 compares favorably with $657 for 1991 and reflects a continuing downward trend in dental premiums.

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[20]See section E, part IV, above.

d. Pensions-funded

Pensions-funded includes expenses related to the company's contribution to an employee retirement plan trust fund. HECO participates in the retirement plan established by HEI for the employees of HEI and HEI's participating subsidiaries (HEI retirement plan). As a participant, HECO is expected to cover the pension liabilities of its own employees. Although the trust fund's assets are commingled, the value of the assets are allocated to participating employers for the purpose of determining pension expense and funding requirements.

Each year, each participating company contributes to the HEI retirement plan an amount equal to the "net periodic pension cost" calculated by the plan's actuary (The Wyatt Company) for the participating company.[21] The actuary determines the "net periodic pension cost" in accordance with Statement of Financial Accounting Standards No. 87 (SFAS no. 87) issued by FASB. The net periodic pension cost consists of the following components: (1) service cost; (2) interest cost; (3) return on plan assets; (4) amortization of gains and losses; (5) amortization of prior service cost; and (6) amortization of the initial net obligation existing at the time of transition to accounting that is consistent with SFAS no. 87.

The actuary computes a participating company's costs based on a host of information. Such information includes: (1) data about the company's employees, such as age, sex, marital

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[21]The contribution is equal to the net periodic pension cost, provided the amount is between the minimum specified by the federal Employee Retirement Income Security Act and the maximum deductible from taxable income under the Internal Revenue Code.

status, years of service, salary rate, classification as a bargaining or nonbargaining unit employee; (2) data about the retirement fund; and (3) assumptions about the applicable discount rate, the expected long-term rate of return on plan assets, and expected growth in compensation levels.

HECO estimates its test year pensions-funded expense at $11,668,000. The DOD accepts HECO's estimate. The Consumer Advocate's estimate is $11,604,000, or $64,000 less than HECO's estimate. The Consumer Advocate's lower estimate reflects a work force projection that is lower than HECO's.

Initially, the Consumer Advocate proposed a downward adjustment of HECO's pension expense estimate proportional to the Consumer Advocate's downward adjustment of HECO's work force projection. HECO objected to this "simplistic method" of adjusting HECO's pension expense estimate to reflect the Consumer Advocate's lower work force projection. It pointed out that its actuary would need to review data pertinent to the employees excluded from consideration before any meaningful adjustment of HECO's estimate can be made.

As an alternative to such actuarial computation, HECO suggested an alternative means of calculating roughly the adjustment that needs to be made to reflect the Consumer Advocate's lower work force count. HECO's suggested method essentially adjusts the service cost component[22] of HECO's projected pension

[22]The service cost component is the "actuarial present value" of pension benefits attributed to the services rendered by employees in the applicable year. The "actuarial present value" of pension benefits is the present value of estimated benefits to be paid to employees under the plan as determined by The Wyatt Company, using its actuarial expertise and the demographic

plan expense proportionately to the Consumer Advocate's reduction of HECO's work force projection. HECO reasoned that a lower estimate of work force count would affect primarily the service cost component of the pension expense.[23] The Consumer Advocate accepted HECO's suggestion and applied the recommended method. Its reduction of $64,000 is the result.

We have already accepted HECO's work force count for the purposes of this docket. We, thus, adopt HECO's estimate of pension cost, which in effect is the net periodic pension cost calculated by HECO's actuary. The estimate of $11,668,000 is reasonable, when viewed in light of HECO's actual experience in 1989 ($9,007,000), 1990 ($9,740,000), and 1991 ($10,618,000). The test year estimate is $1,050,000, or 9.89 per cent more than the 1991 actual. The increase is attributable to an increase in the number of employees used in the actuarial study (from 1,401 in 1991 to 1,520 in 1992) and to economic assumptions, such as a 5 per cent salary increase for HECO employees and an 8 per cent rate of return on pension fund assets.

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information on employees provided to the actuary by HECO.

[23]HECO appears correct in its observation that the proper amount of an adjustment to reflect a lower work force count is dependent on an actuarial calculation that takes into account pertinent data about the employees included and excluded from the work force count. However, in a ratemaking proceeding, if a downward adjustment of HECO's estimate of pension expense is in order, based on the commission's acceptance of a work force count that is lower than HECO's projection, reliance on actuarial computations may unnecessarily delay the proceeding. In such a case, resort must be had to a reasonable alternative method to calculate the downward adjustment. HECO's suggestion in this docket offers one such possible alternative method. We need not pass on the reasonableness of the suggestion in this docket, since we do not require a downward adjustment of HECO's projection of pension expense.

e. Group medical and hospital insurance

HECO estimates $7,551,000 in group medical and hospital insurance expense for test year 1992. The Consumer Advocate projects $7,387,000, and the DOD estimates $7,277,000. The Consumer Advocate and the DOD used HECO's revised premium rates in calculating their projections. The differences in the estimates result from the use of different employee counts.

We accepted HECO's employee count, and we accept HECO's estimate. HECO's estimate is reasonable. HECO actually expended $4,586,000 in 1989, $5,412,000 in 1990, and $6,129,000 in 1991 for group medical and hospital insurance. HECO's test year estimate is 23 per cent more than the actual 1991 cost. The increase results from the addition in the test year of 138 employees to HECO's work force and an increase in premiums, ranging from 9.5 per cent to 20 per cent.

f. Other employee benefits

HECO's revised estimate of cost for other employee benefits is $1,063,000. HECO lowered its original estimate of $1,227,000 to eliminate costs associated with employee newsletter mailing, employee recreational activities, the credit union, cafeteria subsidy, employee recognition, and other items contested by the Consumer Advocate and the DOD.[24] The Consumer Advocate's estimate is $528,000, and the DOD's estimate is $922,000.

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[24]The company eliminated these items to expedite this proceeding, although it believes that they are an integral part of doing business and are necessary for employee morale and productivity.

The adjustments to HECO's estimate proposed by the Consumer Advocate and the DOD are set forth below ("CA" means the Consumer Advocate):

Account	HECO Forecast	CA Adjust	DOD Adjust
Health activity	$ 69,500	$(24,300)	$ 0
Pre-empl. physicals	22,500	(2,000)	0
Developmental prgm	98,600	(79,100)	0
Pre-empl. testing	19,000	(12,500)	0
Retirement seminars	13,700	(12,200)	0
Special projects	382,900	(379,300)	(250,000)
Trng. development	127,800	(33,500)	0
Labor contracts	12,000	(12,000)	0
Discrimination test	5,000	(5,000)	0
Total	$751,000	$(559,900)	$(250,000)

The Consumer Advocate's adjustments stem from what it perceives to be the failure of HECO to expend much of its forecasted amounts in 1991. The DOD proposes to disallow estimates for HECO's technical training program, because, the DOD asserts, HECO has not furnished a breakdown of the types of training and costs involved.

HECO asserts that the selected employee benefits are appropriate business expenses. It represents that changes made in its procedures will ensure expenditure of forecasted amounts. Specifically with respect to the DOD's adjustment, HECO argues that it provided detailed information on its technical training program.

The other employee benefits category is in essence a miscellaneous benefits account. Expenditures for such benefits may vary widely from year to year, depending on HECO's priorities in the human resources area. Thus, it is appropriate to view other employee benefits in total, rather than reviewing each specific activity.

In HECO's last rate case, Docket No. 6531, we approved $902,000 in other employee benefits expense for test year 1990. The recorded (actual) total expenditures were $973,000 in 1989, $941,000 in 1990, and $808,000 in 1991. Although the 1990 actual expenditure was more than the estimate approved by the commission in Docket No. 6531, we note the declining trend in expenditures for this category. For the purposes of this docket, we find that the amount of the average annual expenditure for the three-year period 1989 to 1991, or $908,000, is a reasonable sum to include in the test year as other employee benefits expense.

g. Vision plan

HECO's forecast of vision plan expense is $251,000. The Consumer Advocate projects $247,000, and the DOD estimates $242,000. The parties agree on the methodology and the premium rates to be used in calculating the estimate. All parties assume a 20 per cent increase in premium rates. However, the projections differ, because the parties differ in the count of active employees for the test year.

We accept HECO's estimate. The estimate reflects an increase of 138 employees (which we have already accepted) and a 20 per cent increase in premium rates in the test year over those of 1991. Based on the employee count and premium rates for the test year, HECO's estimate of test year vision plan expense is not out of line with the actual costs incurred by HECO in 1989 ($149,000), 1990 ($168,000), and 1991 ($191,000).

h. Employee benefits expense transferred to construction

HECO's revised projection of the amount of employee benefits expense to be transferred out of the A&G account to construction is $5,466,000. The Consumer Advocate projects $5,457,000. The DOD's revised projection is $5,199,000. The amounts transferred are reflected as credits in the A&G account, since the result of the transfers is to reduce A&G expense.

The difference of $9,000 between HECO and the Consumer Advocate results from the application of differing transfer rates to differing estimates of the individual employee benefit costs involved. Differing estimates of the individual employee benefit costs are due to the use of a different employee count by each of the parties. HECO utilized a revised transfer rate of 23.6 per cent, which the DOD adopted in its final estimate. The Consumer Advocate used a rate of 25.4 per cent, which HECO and the DOD had also originally used. HECO points out that it revised its original rate of 25.4 per cent to 23.6 per cent to reflect a removal of $425,000 from the transfer account. This reduction reflects the movement of forecasted labor costs from capital expenditures to O&M expenses. The rate change also accounts for the adjustments it made (in rebuttal) to employee benefits accounts and labor costs associated with HECO's safety division.

HECO and the DOD differ in their estimates by $267,000, even though both used the same transfer rate. HECO asserts that the DOD has committed a number of computational errors in calculating its final estimate. Generally, the errors consist of (1) the DOD's failure to adjust its test year estimates of employee benefits to conform to its proposed adjustments of other HECO expense estimates and work force projection, (2) the DOD's use of HECO's figures that HECO revised on rebuttal, and (3) incorrect assumptions by the DOD about the mechanics of transferring benefit costs to construction.

Based on our acceptance of HECO's work force projection, we adopt the ratio of plant labor to total company labor of 23.6 per cent used by HECO to calculate employee benefit costs transferred to construction. We find the test year estimate of $5,429,000 is reasonable. This amount is based on the total employee benefits expense approved in this decision and order.

i. Employee benefits expense transferred to others

HECO estimates that $1,635,000 of the costs of employee benefits will be transferred to others in the test year. The Consumer Advocate's estimate is $1,627,000. The Consumer Advocate utilizes HECO's methodology, but its estimate differs from HECO's, because its projection of individual employee benefits expense differs from that of HECO. (The difference in individual employee benefits expense is the result of a difference in employee count.)

The DOD projects $1,511,000. This estimate differs from HECO's projection by $124,000, because the DOD and HECO differ in their estimates of employee benefits expense, and they use different methods to calculate the transfer amount. HECO is particularly critical of the DOD's application of the method used by the commission in Docket No. 6531 in calculating the transfer amount.

In Docket No. 6531, the commission was without an explanation of the derivation of the ratio HECO used to calculate the amount of employee benefits to be transferred to others and was without cost data needed to recompute a new ratio (a recomputation made necessary by the commission's adjustment to salaries and expenses). The commission, thus, resorted to the method used in prior dockets to determine the amount to be transferred to others, namely (1) the derivation of the ratio of HECO's estimate of the cost of employee benefits to be transferred to others to HECO's estimate of total employee benefit costs, and (2) the application of that ratio to the commission's estimate of total employee benefits.

HECO argues that this method has a serious shortcoming. It assumes that the ratio remains constant, even if revisions are made to the estimates of individual employee benefits expenses and to the distribution of labor costs from O&M to the billable accounts. We do not believe that the use of this method is entirely unreasonable. In the absence of necessary data to recompute the appropriate rate to calculate the amount of the transfer, the method serves as a means to approximate the transfer amount that would result from the application of the appropriate rate. We have used this method earlier in this decision and order. (See section J, part IV.) We need not, however, determine the reasonableness of the use of the method by the DOD in this instance, since we adopt HECO's estimate of the amount to be transferred to others.

HECO's estimate is reasonable. This conclusion follows from our earlier acceptance of HECO's employee benefit estimates (except for other employee benefits).

j. Summary of employee benefits group

In summary, we conclude that the sum of $15,139,000 is reasonable for the employee benefits group of accounts. This sum consists of the following:

$ In Thousands (000)

ACCOUNT	Approved
Flex credits	42
Pensions - nonfunded	176
Dental plan	968
Pensions - funded	11,668
Group life insurance	408
Group med. & hosp. ins.	7,551
Other empl. benefits	908
Vision plan	251
Long-term disability	231
Post-retirement ben.	0
Empl. ben. trsf. - constr.	(5,429)
Empl. ben. trsf. - other	(1,635)
Total	15,139

5. Miscellaneous accounts

Thirteen functional accounts comprise miscellaneous accounts. HECO's estimate of expense for miscellaneous accounts is

$3,542,000. The Consumer Advocate's estimate is $3,434,000. The DOD's estimate is $3,475,000. The parties agree on the estimates for nine accounts, but disagree on the estimates for the remaining four accounts. The nine accounts on which there is agreement are as follows:

Account	Amount (in thousands)
Institutional/goodwill advertising	15
Company membership	208
Conventions and meetings	8
Preferred stock, long-term debt	95
Common stock	0
Stockholders' meeting	0
Directors' fees	53
Rent	735
Abandoned capital projects	0

The commission accepts the estimates for the nine accounts as reasonable. The parties disagree in their estimates of expenses for regulatory commission activities, community service activities, research and development, and maintenance of general plant.

a. Regulatory commission expense

HECO's estimate of regulatory commission expense is $78,000. This sum reflects an amortization over two years of $155,000. The sum of $155,000 is HECO's estimate of the expense it will incur in this rate proceeding. The Consumer Advocate agrees with HECO's test year estimate. The DOD, however, proposes that this rate case expense be amortized over three years and that $52,000 be recognized as expense for the test year.

In most of the past rate cases, we accepted a three-year amortization of regulatory commission expense. We applied a three-year amortization period in the recent HELCO rate case (Docket No. 6432), as well as in HECO's last rate case (Docket No. 6531). We will also apply it in this docket. The periods between rate cases vary in length. We will continue to adhere to a three-year amortization period, unless a pattern of rate filings in the future suggests otherwise. Based on a three-year amortization period, we will accept $52,000 in regulatory commission expense associated with this rate case for the test year. To this sum, we add the annual amortization amount of $12,000 for rate case expenses incurred by HECO in the last rate case, which HECO has not yet recovered. The total sum of $64,000 is a reasonable estimate of regulatory commission expense for test year 1992.

b. Community service activities expense

HECO's revised expense projection for community service activities is $180,000. The Consumer Advocate's estimate is $123,000. The DOD had originally recommended that HECO's original estimate of $237,000 be adjusted downward by $90,000. During the evidentiary hearings, the DOD apparently accepted HECO's estimate after HECO made a downward adjustment of $57,000 to its original estimate. The Consumer Advocate would disallow (1) $48,000 in "other contributions," (2) $7,000 in recreational activities under HECO's executive program, and (3) $2,000 overall.

HECO's justification for the inclusion of the amounts the Consumer Advocate recommends disallowing is that these proposed expenditures represent HECO's effort to be a "good corporate citizen." However, we have consistently denied proposed expenditures to support charities and employee recreational programs. Requiring ratepayers to contribute to causes selected by HECO, and not by ratepayers, is an unwarranted imposition. Thus, we accept the Consumer Advocate's adjustment proposals, except the overall disallowance of $2,000. The disallowance of $2,000 is based on nebulous grounds. We will allow $125,000 in expenses for community service activities.

c. Research and development expense

HECO's test year estimate of expense for research and development (R&D) is $1,912,000. This entire sum is in support of the Electric Power Research Institute (EPRI). EPRI is a nonprofit research organization that conducts research for the electric utility industry. It is funded by members of the electric utility industry, including public, private, and municipal companies.

The Consumer Advocate accepts HECO's estimate. The DOD, however, suggests disallowing $8,000, which, according to the DOD, represents that portion of EPRI dues that will be used by EPRI to support renewable fuels research. The DOD would have us hold that that portion of HECO's R&D expense allocable to renewable fuels research should be borne by HEI, HECO's parent company.

We continue to believe that there is merit in having HEI be responsible for some renewable fuels R&D costs. However, we will not, in this docket as in HECO's last rate case, require any portion of EPRI dues allocable to renewable fuels research to be borne by HEI until we have a firmer basis for such a requirement. The outcome of HECO's integrated resource planning in Docket No. 7257 should provide data that will assist in deciding the matter. We, thus, conclude that HECO's estimate of $1,912,000 in R&D expense is reasonable.

d. Maintenance of general plant

HECO's test year estimate of expense for maintenance of general plant is $258,000. The Consumer Advocate proposes $207,000. The DOD does not object to HECO's estimate.

The Consumer Advocate's estimate is based on its comparison of actual expenses to HECO's budgeted amounts during the period 1989 to 1991. The Consumer Advocate contends that HECO has tended to overbudget over the years.

We find HECO's estimate of expense for maintenance of general plant to be reasonable. HECO took the actual 1991 general plant maintenance expense of $32,657 and added a 5 per cent inflation factor to it ($1,633). To the resulting $34,290, it added the costs of regular maintenance activities that it had curtailed in prior years: $20,000 for painting the King Street office building ($20,000 is the annual amortized cost, with the total painting cost amortized over five years); $10,000 for lighting maintenance; and $20,000 for maintenance due to aging of the building. We, thus, allow $258,000 in general plan maintenance expense.

e. Summary of miscellaneous group of accounts

In summary, for the miscellaneous group of accounts, we approve $2,963,000 for the test year:

Account	Amount (in thousands)
Regulatory commission	$ 64
Institutional and goodwill advertising	15
Community service activities	125
Company membership	208
Conventions and meetings	8
Research and development	1,912
Preferred stock, long-term debt	95
Common stock	0
Directors' fees	53
Rent	735
Maintenance of general plant	258
Stockholder meeting	0
Abandoned capital projects	0
Total Miscellaneous Accounts Group	$3,473

6. Summary of A&G expenses

The following summarizes the test year reasonable A&G expenses.

Account	Amount (in thousands)
A&G salaries	$ 8,801
Office supplies and expenses	6,090
Transfer to construction	(741)
Transfer to other	(1,334)
Outside legal services	177
Outside other services	366
Outside services associated	1,400
Property insurance	1,868
Injuries - employees	2,585
Injuries - public	1,745
Employee benefits - flex credits	42
Pensions - nonfunded	176
Dental insurance	968
Pensions - funded	11,668
Group life insurance	408
Group medical and hospital insurance	7,551
Other employee benefits	908
Vision plan	251
Long-term disability insurance	231
Postretirement - accrual	0
Employee benefits transferred to construction	(5,429)
Employee benefits transferred to others	(1,635)
Regulatory commission expense	64
Institution/goodwill advertising	15
Community service activities	125
Company membership	208
Conventions and meetings	8
Research and development	1,912
Preferred stock/long-term debt	95
Common stock	0
Directors' fees	53
Rent	735
Maintenance of general plant	258
Stockholder meeting	0
Abandoned capital projects	0
Total A&G expenses	$39,569

K. Wage Rollback

Wage rollback normalizes O&M labor costs. It annualizes wage increases that are implemented in the test year. By rolling back the wage increases, the O&M labor expense would reflect these increases as if they were in effect for the entire test year.

Without such a rollback, electric rates would only partially account for wage increases becoming effective during the test year.

HECO, in its projection, rolled back nonunion raises of 5.5 per cent becoming effective on May 1, 1992, and union raises of 3.43 per cent becoming effective on February 1, 1992, and another of 3 per cent it anticipates will be effective on November 2, 1992. This rollback adjusts O&M labor costs and related payroll taxes, but not related employee benefits. HECO estimates the rollback at $1,137,000.

The Consumer Advocate and the DOD accept HECO's methodology in computing the rollback. However, their estimates differ from HECO's projection because they differ from HECO in the estimates of O&M labor costs. The Consumer Advocate proposes a rollback of $1,059,000. The DOD accepts the company's direct testimony estimate, but with the federal agency's work force adjustment.

We find that HECO's method of computing the rollback is reasonable. Since we have accepted the utility's work force projection, its estimate of $1,137,000 (less $9,000 to account for the extra two days included by HECO as its leap year adjustment) is reasonable. We accept the amount of $1,128,000 for a wage rollback in test year 1992. However, the effect of the wage increase we approve in this decision and order is deferred until November 1992. This deferral is reflected in Exhibit A to this decision and order, setting forth our analysis of the approved rate increase. Further, the company shall adjust downward the rate increase we approve in this decision and order to appropriately reflect any decrease in the anticipated 3 per cent wage increase becoming effective in November 1992.

L. Depreciation Expense

HECO's revised estimate of test year depreciation expense is $36,269,000. Both the Consumer Advocate and the DOD agree with this revised estimate. We adopt the estimate as being reasonable.

Originally, HECO estimated the depreciation expense at $36,731,000. The DOD applied an adjustment of $293,000 to this estimate in order to arrive at its own initial estimate of $36,438,000. The $293,000 adjustment was purportedly to account for the DOD's reduction to HECO's 1991 plant additions. However, our review of the DOD's exhibits indicates that the $293,000 adjustment was the result of reflecting not only the DOD's adjustment to 1991 plant additions, but also averaging the 1991 and 1992 depreciation expenses. Such averaging is erroneous, since depreciation expenses are not calculated through the averaging process. The proper calculation methodology is simply multiplying the beginning-year plant balance by approved depreciation rates. The DOD's position, however, is moot, since it has accepted HECO's revised estimate.

M. Interest on Customer Deposits

HECO accrues interest on customer deposits at an annual rate of 6 per cent. In estimating interest on customer deposits for the test year, the annual rate is applied to the average of the amount on deposit at the beginning of the test year and the amount estimated to be on deposit at the end of the test year. HECO proposes interest on customer deposits of $101,000. The Consumer Advocate and the DOD agree with HECO's method of estimating interest on customer deposits and have accepted HECO's estimate of $101,000.

A review of the record indicates that HECO's estimate is based on the company's estimate of customer deposits presented in its direct testimony. Based on that testimony, the average 1991 customer deposits is $1,679,500. The application of 6 per cent on that average yields $101,000. However, in rebuttal testimony, HECO reported customer deposits of $1,547,000 on January 1, 1991, and an estimate of $1,628,000 at the end of the test year. An average of these sums is $1,588,000. The application of 6 per cent on this average yields $95,000.

We accept the figures supplied in HECO's rebuttal testimony and adopt $95,000 as a reasonable estimate of interest on customer deposits for the test year.

N. Computer Subsidy

HECO proposes to include as a test year 1992 expense the cost of reimbursing its eligible management employees a portion of the costs incurred by the employees in purchasing personal computers used by the employees at their homes. HECO estimates $40,000 in computer subsidies for the test year. In accounting for this expense, HECO distributed the cost among the accounts that ordinarily reflect the labor cost of the employees involved. HECO allocated $24,000 to O&M expense. The Consumer Advocate made adjustments to the computer subsidy program through its detailed activity level analysis. The DOD would disallow the expense in its entirety. For simplification, we dispose of HECO's proposal in its entirety in this section.

HECO asserts that the subsidy program encourages long-term productivity, improves effectiveness, and allows for flexibility in the participating employees' work schedules. HECO, however, has presented no evidence showing that the subsidy program will improve efficiency and increase productivity. Indeed, the subsidy proposal is without a frame of reference. No work-at-home program or flexible work scheduling or other program that would be supported by the computer purchase subsidy program has been presented in this docket. Absent more definitive reasons for the need for the subsidy program, the commission is unable to support the proposed expenditure. Without more, the subsidy appears to be of primary benefit to the employees individually; the benefit to ratepayers is obscure. We, thus, disallow HECO's estimated expense for computer subsidy in its entirety.

O. Leap Year Cost

HECO based its test year labor expense projections on 2,096 work hours. In past rate cases, the company used 2,080 work hours as the standard number of annual work hours, based on 365 calendar days. HECO departed from that standard in this docket in two respects. First, it took into account in the calculation of work hours, the additional day in leap year 1992. Second, rather than simply adding another day to the standard, it calculated the actual number of work hours in 1992.[25]

The Consumer Advocate objects to the addition of an extra day in the calculation of labor expenses. The Consumer Advocate contends that a leap year is not a normal year and that adjusting for leap year is unfair to ratepayers. It is unfair to require ratepayers to pay, in non-leap years, rates set on the basis of an extra day in leap year 1992.

We earlier accepted the Consumer Advocate's argument against calculations based on leap year considerations. We also reject HECO's departure from its usual standard of calculating annual work hours on the basis of 365 days. We, thus, reduce HECO's O&M labor expense estimate by $373,000.

P. Vacation Expense

HECO records vacation expense on an accrual basis. However, HECO reduced its vacation expense by $338,000 to conform to the commission's prior ruling.

The commission in <u>In re Haw. Tel. Co.</u>, Docket No. 4588, Decision and Order No. 8042 (Aug. 14, 1984) ruled that accrued vacation expense will not be allowed as expense for ratemaking purposes. We noted that, even though the vacation earned is related to services rendered during the test year, these expenses are not paid during the test year. We held that expenses for accrued vacation may be considered only when employees terminate

[25]During the evidentiary hearings, the commission sought the derivation of HECO's 2,096 work hours. Although HECO gave no explicit explanation, the commission surmises that HECO resorted to a count of the actual work hours in leap year 1992.

service and are replaced immediately or when additional expenses are incurred for the replacement of employees who are on vacation.

HECO disagrees with our ruling, but for purposes of this docket, it conforms to the ruling, reserving, however, a right to pursue this issue in the future. Based on our prior decision, we accept HECO's reduction of vacation expense by $338,000.

Q. Taxes

1. Taxes other than income taxes

HECO pays six types of taxes other than income taxes. Three are payroll-related. The other three are the public service company tax, the public utilities commission fee, and the county franchise tax.

HECO, the Consumer Advocate, and the DOD used the same method and rates in calculating projected obligations for taxes other than income taxes. The parties differ in their results, because they used different revenue and payroll projections in estimating payroll-related taxes, the public service company tax, the public utilities commission fee, and the franchise tax.

The parties' estimates of HECO's tax expenses other than income taxes are as follows (the figures are dollar amounts in thousands; "CA" means the Consumer Advocate; "PSC" means public service company; and "PUC" means public utilities commission):

At Present Rates

TAX/FEE	HECO	CA	DOD
Payroll-related taxes	3,619	3,472	3,455
PSC tax	30,707	30,846	31,266
PUC fee	1,304	1,310	1,328
Franchise tax	12,995	13,054	13,230
Total	48,625	48,682	49,279

At Proposed Rates

TAX/FEE	HECO	CA	DOD
Payroll-related taxes	3,619	3,472	3,455
PSC tax	39,383	*	*
PUC fee	1,673	*	*
Franchise tax	16,677	*	*
Total	61,352	58,768	59,739

*The Consumer Advocate and the DOD did not break down their respective totals.

The method and rates used by all parties in projecting taxes other than income taxes are reasonable and consistent with our prior decisions. We earlier accepted HECO's projection of the test year work force; hence, we accept HECO's estimate ($3,619,000) of payroll-related taxes. We also adopted revenue projections of $524,146,000 (rounded), under present rates. Thus, a reasonable projection of the total public service company tax, public utilities commission fee, and franchise tax is $45,210,000, under present rates. Under new rates authorized by this decision and order, the reasonable estimate is $55,940,000.

The following summarizes the test year estimates we approve as reasonable for taxes other than income taxes (the figures are dollar amounts in thousands):

TAX/FEE	AT PRESENT RATES	AT APPROVED RATES
Payroll taxes	3,619	3,619
PSC tax	30,846	38,161
PUC fee	1,310	1,621
Franchise tax	13,054	16,158
Total	48,829	59,559

2. Income taxes

HECO, the Consumer Advocate, and the DOD agree that the composite rate to be applied to test year taxable income to compute income tax expense is 37.9699 per cent. For ratemaking, taxable income is derived by adjusting operating income as follows: (1) deducting a computed interest expense related to operations, (2) adding a tax depreciation adjustment, and (3) adding adjustments to reflect book and tax timing differences.

The parties differ in their estimates of test year income tax expense as follows (the figures are dollar amounts in thousands):

PARTIES	AT PRESENT RATES	AT PROPOSED RATES
HECO	(26,544)	24,545
CA	(20,762)	19,715
DOD	(21,264)	20,711

The estimates differ, because the parties differ in their estimates of (1) operating income and expenses, discussed in other sections of this decision and order, and (2) interest expense and tax depreciation adjustments to operating income.

a. Interest on debt

HECO's estimate of interest on debt is $19,685,000. The Consumer Advocate's estimate is $19,662,000. The DOD recommends increasing income tax expense by $460,000 to reflect interest synchronization.

In computing its estimate of interest expense, HECO applied the method used by the commission in HECO's and HELCO's last rate cases. See Docket No. 6531 (HECO) and Docket No. 6432 (HELCO). There, we derived our estimate of interest expense (1) by summing the interests on long-term debt and short-term debt on an average-year basis (consistent with our adoption of an average capital structure) and (2) by subtracting from this sum the interest on the gross-of-tax debt portion of the estimated allowance for funds used during construction (AFUDC). The interest on the gross-of-tax debt portion is the estimated interest expense related to the construction of capital assets.

The Consumer Advocate has presented no explanation of how it calculated its estimate, although it submitted a comparison of AFUDC calculations. The DOD utilized the interest synchronization method to calculate interest expense. This method applies the weighted cost of debt to proposed rate base (in this case, the DOD's proposed rate base) to arrive at an estimate of the interest expense deduction.

HECO contends that the DOD's calculation is flawed. HECO notes, at the outset, that the total rate base is financed by unamortized investment tax credits (ITC) as well as by debt and equity. It criticizes the DOD's application of the synchronization method, because the DOD failed to deduct unamortized ITC from the rate base before applying the weighted cost of debt. The DOD's calculation assumes that the rate base is financed solely by debt and equity. The result, HECO asserts, is that the DOD's calculation overstates interest expense.

The DOD replies that United States Treasury regulation § 1.146.6 permits the calculation of interest expense as if ITC do not exist. The DOD also notes that HECO's own witness confirmed that the DOD's method complies with tax normalization requirements of the Internal Revenue Service (IRS).

We acknowledge the validity of the DOD's calculation under the Treasury rule. However, as in HECO's last rate case, we reject the use of the DOD's method because of uncertainties surrounding its application. As we pointed out in the earlier rate case, the interest under the synchronization method is an imputed amount based on various components that make up the rate base. These components include both investor and noninvestor funds. The effect of any significant changes in the components or their make-up over time is unclear. Since the interest is imputed, such changes may detrimentally affect the utility or its ratepayers.

HECO's method of computing interest expense is reasonable. Since we adopt in this docket the average-year rate base, that methodology must be applied to the average-year long-term and short-term debts. HECO's calculation is based on the average-year basis. Based on our adoption of average-year long-term and short-term debt, interest expense of $19,652,000 is reasonable.

b. Tax depreciation adjustment

HECO and the Consumer Advocate disagree on the tax depreciation adjustment to operating income. Depreciation adjustment is that sum by which book depreciation is reduced to arrive at a depreciation amount that is deductible from operating income. The effect of the adjustment is to increase operating income, which, in turn, increases taxable income. HECO's adjustment is $2,762,000. The Consumer Advocate's adjustment is $1,709,000. The DOD adopts HECO's initial adjustment of $2,824,000, which HECO presented in its direct testimony.

There are two basic components in this adjustment. One involves capitalized employee benefits, payroll taxes, and use taxes incurred in the construction of capital assets; the other involves capitalized AFUDC. Capitalized AFUDC consists of both equity and after-tax debt (interest). HECO and the Consumer Advocate disagree on the inclusion of the AFUDC debt component in determining the tax depreciation adjustment. The Consumer Advocate proposes to exclude the debt component.

HECO points out that the Consumer Advocate's position in this proceeding is inconsistent with the position it took in prior rate cases. In HECO's last rate case (Docket No. 6531), the Consumer Advocate adopted HECO's tax depreciation adjustment. In HELCO's last rate case (Docket No. 6432), the Consumer Advocate proposed exclusion of the equity component of AFUDC, but not the debt component, in calculating the adjustment.

In Docket No. 6432, Decision and Order No. 10993, we referred to our Decision and Order No. 9049 in Docket No. 5658. In Docket No. 5658 (a generic docket) we determined that it is appropriate to adjust book depreciation in calculating income taxes for ratemaking purposes. The intent of the decision is the elimination of the double deduction that occurs when an expense is capitalized on the utility's books, but also expensed for income tax purposes. With respect to AFUDC, we held that AFUDC "should not be part of the basis upon which income tax depreciation is calculated and should not be included as part of total depreciable expenses in computing the depreciation deduction for income taxes."

As observed in Decision and Order No. 10993, in Decision and Order No. 9049 we did not distinguish between the equity and debt components of AFUDC. The distinction was not made, because the purpose of adjusting for AFUDC is to recognize that AFUDC is not deductible in computing income tax. We, thus, conclude that a tax depreciation adjustment of $2,762,000 is appropriate.

c. Summary

In summary, we conclude that the income tax amounts of $(21,154,000) under present rates and $21,921,000 under proposed rates are reasonable.

V.

RATE BASE

A. Introduction

The parties' estimates of the rate base at present and proposed rates are as follows.

	Present Rates	Proposed Rates
HECO	$632,105,000	$626,815,000
Consumer Adv.	$607,878,000	$601,091,000
DOD	$615,743,000	$611,411,000

HECO and the Consumer Advocate differ in their estimates by $24,227,000 at present rates and by $25,724,000 at proposed rates. HECO and the DOD differ by $16,362,000 at present rates and by $15,404,000 at proposed rates.

The differences between HECO and the Consumer Advocate mainly concern (1) HECO's two major construction projects--the airport substation and the Waiau-Makalapa transmission line; (2) negative deferred income taxes; and (3) fuel inventory. HECO and the DOD differ chiefly on matters relating to (1) plant additions; (2) property held for future use; and (3) materials and supplies inventory.[26]

[26]The DOD proposes a rate base reduction of $1,494,357 to reflect its estimated "employee benefits expense transferred to construction," which is less than HECO's estimate. The DOD reduced "employee benefits expense transferred to construction" primarily to reflect its disallowance of HECO's proposed employee postretirement benefit adjustment. Since we have decided not to include the adjustment for employee postretirement benefits in this rate case, but to deal with the issue in a separate proceeding, the DOD's proposed adjustment to the rate base to reflect lower estimated employee benefits expense is unnecessary.

B. Depreciated Plant In Service

HECO's estimate of depreciated plant in service is $770,302,000 at year-end 1991 and $798,836,000 at year-end 1992, for a test year average of $784,569,000. The Consumer Advocate's estimate is $734,254,000 at year-end 1991 and $798,490,000 at year-end 1992; the test year average is $766,372,000. The DOD's test year average depreciated plant in service is $755,205,000. The bases for the differences are detailed below.

1. Plant additions

HECO's revised estimate of test year plant additions is $104,456,000.[27] The estimate includes the costs of two major projects: the airport substation ($18,613,000) and the Waiau-Makalapa 138 kilovolt (kV) transmission line ($17,435,000). HECO's revised estimate reflects a downward adjustment of its revised forecast. (HECO's revised forecast was $122,482,000.) However, recognizing that historically HECO's recorded plant additions have been less than its forecasts, HECO reduced its revised forecast (after adjusting for joint pole contributions of $2,310,000) by 15 per cent--that is, HECO's estimate of test year plant additions is 85 per cent of its revised forecast.

The Consumer Advocate accepts HECO's estimated plant additions of $104,456,000 less the combined costs ($36,048,000) of the Waiau-Makalapa transmission line and airport substation

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[27]This sum includes $2,310,000 in joint pole contributions.

projects.[28] HECO's estimate reduced by $36,048,000 is $68,408,000. We discuss later HECO's proposal to annualize the costs of these projects. Here, we dispose of HECO's differences with the DOD.

The DOD's estimate of test year plant additions is $89,092,000. This estimate includes $36,048,000 in combined costs of the Waiau-Makalapa transmission line and airport substation projects (the DOD accepts HECO's figures for these projects) and $53,044,000 in other plant additions. The DOD's estimate is 79.24 per cent of what the DOD considers to be the HECO forecast. The DOD asserts that HECO has consistently overprojected its plant additions in the last six years, 1986 to 1991, and that the DOD's estimate adjusts for this propensity to overstate plant additions.

The difference between HECO's and the DOD's forecasts can best be appreciated by comparing HECO's and the DOD's calculations. They are shown in the table below.

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[28]The Consumer Advocate states that it has adopted HECO's beginning-year plant in depreciation reserves, but, due to time and resource constraints, did not perform an independent analysis to corroborate the plant in service forecast.

Calculation of Test Year Plant Addition Estimates
($000)

	HECO Initial	HECO Revised	DOD
Projects $500,000 or less	47,547	65,727	47,547
Projects over $500,000	58,698	56,755	56,755
	106,245	122,482	104,302
Projects completed 1991			(3,279)
Projects deferred to 1992			1,361
		122,482	102,384
Airport/Waiau-Makalapa			(36,048)
Joint pole contribution		(2,310)	(2,310)
		120,172	64,026
		x .85	x.7924
		102,146	50,734
Joint pole contributions		2,310	2,310
		104,456	53,044
Airport/Waiau-Makalapa			36,048
			89,092

The difference in HECO's and the DOD's calculations lies principally in (1) differing forecasts of plant additions costing $500,000 or less, and (2) differing percentages applied to account for HECO's tendency to overforecast. We explore each of these issues.

a. Plant additions costing $500,000 or less

HECO's initial forecast of test year plant additions was $106,245,000. This estimate included $47,547,000 in projects costing $500,000 or less, and $58,698,000 in projects costing more than $500,000 (including the Waiau-Makalapa transmission line and the airport substation projects). No adjustment was made to this forecast to account for HECO's tendency to overforecast. HECO's revised forecast of $122,482,000 includes $65,727,000 in projects costing $500,000 or less and $56,755,000 in projects costing more than $500,000. HECO's revised forecasted total is $16,237,000 more than its initial forecast. An increase of more than $18,000,000 in projects costing $500,000 or less accounts for most of the difference between the original forecast and the revised forecast.

The DOD in its calculation accepted HECO's revised estimate of projects costing more than $500,000. However, it declined to accept HECO's revised estimate of projects costing $500,000 or less; instead, the DOD adopted HECO's initial estimate. The DOD claims that it is unreasonable for HECO to "pump up" its initial forecast of projects costing $500,000 or less by more than $18,000,000 in HECO's revised forecast. The DOD notes that this increase nullifies the impact of HECO's adjustment of its revised forecast by 15 per cent. The DOD further asserts that the increase is 40 per cent over HECO's original forecast of projects costing $500,000 or less and that it represents additions substantially higher than HECO's actual average plant additions for the past several years and substantially higher than any single year in the period 1986 to 1991, with the exception of 1990 (the test year in HECO's last rate case).

We agree that HECO's upward adjustment for projects costing $500,000 or less is substantial and not supported by the record. The amount projected in the revised forecast exceeds greatly the average recorded plant additions over the past several years. HECO's argument that the increase represents projects carried over from 1991 is unconvincing. The DOD in its calculation allows for such carryovers. We, thus, concur with the DOD that the estimate of plant additions consisting of projects costing $500,000 or less should be limited to HECO's initial estimate of $47,547,000.

b. Adjustment for overforecast

HECO's difficulty with forecasting plant additions is one of long standing. Over the years, HECO's actual plant additions have consistently been lower than forecasted. HECO claims that it has instituted new controls for the management of its projects. However, we see no real improvement in its forecast. The issue in this docket is, thus, not whether HECO's forecast should be reduced, but by how much it should be reduced. HECO in its revised estimate of plant additions acknowledges the need to reduce its forecast, based on historical data.

As already observed, HECO's estimate is 85 per cent of the revised forecast, less joint pole contributions. HECO determined the 85 per cent factor by taking the ratio of actual to forecasted plant additions for the years 1990 and 1991. The DOD's estimate is 79.24 per cent of HECO's forecast (adjusted for projects costing $500,000 or less) less joint pole contributions and the costs of the Waiau-Makalapa transmission line and airport substation projects. The DOD determined the 79.24 per cent by taking the ratio of actual to forecasted plant additions for the years 1986 to 1991. For all practical purposes, the chief difference between HECO's approach and the DOD's approach is in the use of different sets of years to ascertain HECO's overforecasting experience.

The DOD's use of HECO's six-year experience is the better approach. HECO's use of only the 1990 and 1991 experience is suspect, since the 1990 experience is an aberration. HECO's experience has been consistent through the years 1986 to 1991, except for 1990. In 1990, the plant addition forecast was only 6.71 per cent over the actual. However, in years 1986, 1987, 1988, 1989, and 1991, HECO's forecast exceeded the actual by 22.64 per cent, 24.61 per cent, 30.10 per cent, 44.49 per cent, and 45.29 per cent, respectively. Thus, it is unreasonable to calculate HECO's experience based simply on 1990 and 1991 data.

We accept the DOD's calculation of test year plant additions. We reject HECO's argument that the DOD, in its calculation, doubled the forecast reduction. HECO claims that the DOD applied its overstatement factor to an amount that had already been reduced by HECO's overstatement factor. We see no evidence of this. The DOD's calculation presented above is straightforward and reveals no double reduction.

2. Annualization of the Waiau-Makalapa and airport substation projects

The Consumer Advocate opposes, as inappropriate, HECO's annualization of the costs of the airport substation and the Waiau-Makalapa 138 kV transmission line projects and would reduce HECO's estimate of plant additions by $18,028,000. (The DOD, however, agrees with the annualization.)

HECO proposes to annualize the costs of the two projects, because the two projects are already under construction and are expected to be completed by November 1992. Annualization of the costs of the projects would treat the projects as if construction had been completed on January 1, 1992. HECO argues that this treatment would afford the company with a fair opportunity to earn a return on its investments in the projects. HECO complains that, if the proposed annualization is disallowed, HECO would in effect be limited to earning a fair rate of return on only half ($19.5 million) of its $39 million investments.

The Consumer Advocate notes that HECO's proposed annualization results in the inclusion of the full cost of both projects in the beginning and ending plant in service balance. It argues that annualization of the expenditures of the two projects is inconsistent with the company's use of an average-year rate base. It asserts that, just as a full year's depreciation is not allowed on property during the year in which it is put into service, the two projects' expenditures must be averaged. The Consumer Advocate would recognize the inclusion of the projects in the year-end balance, but not in the beginning-year balance. The Consumer Advocate's proposal to deduct $18,028,000 from HECO's estimate of plant additions is intended to reach this result.

The commission will not permit the annualization of the costs of the two projects. The commission does not accept HECO's assertion that without annualization the company would earn a return on only one-half of its investments. HECO does not apply this argument to all projects constructed during the test year. As the Consumer Advocate notes, annualization of these costs does violence to the concept of an average-year rate base.

HECO's proposal also contradicts the important accounting and ratemaking principle of "matching"--i.e., the measuring of revenues, expenses, and rate base over the same period and conditions. In this rate case, all components are estimated on the same basis. Annualizing the Waiau-Makalapa and airport substation projects creates a mismatch between revenue and cost. HECO's estimated average plant additions is reduced by $18,028,000. We find the plant additions estimate of $89,096,000 reasonable.

3. Accumulated depreciation

HECO's estimate of the test year beginning and ending accumulated depreciation is $372,750,000 and $405,456,000, respectively. The beginning balance is the actual recorded amount and the ending balance reflects $39,972,000 for depreciation expense, $323,000 for salvage, $2,731,000 for cost of removal, and $4,858,000 for retirements in 1992.

Both the Consumer Advocate and the DOD accept these estimates. We agree with the parties that these test year estimates are reasonable.

C. Property Held for Future Use

HECO's revised estimate of property held for future use (PHFU) for test year 1992 is $4,649,000. The estimate is an average for the year. HECO includes among the properties held for future use the fully constructed Barbers Point pipeline ($441,000) and four substation properties HECO expects to acquire in 1992: Keawe substation ($4,900,000), Fort Weaver substation ($100,000), Leilehua substation ($90,000), and Ewa Nui substation ($1,800,000) sites. At issue are the reasonableness of the inclusion of (1) properties to be acquired in 1992, and (2) properties acquired more than 10 years ago, but not contemplated to be put in use by the end of the test year.

1. Inclusion of properties to be acquired in the test year

We will allow the inclusion of the Barbers Point pipeline among the properties held for future use. HECO explains that it installed the pipeline to enable the company to import directly its fuel oil. With the pipeline, the company will be able to access the lowest worldwide fuel costs and not be limited to local oil companies' prices. HECO installed the pipeline in conjunction with the construction of the State's deep draft harbor project at Barbers Point. HECO asserts that it was prudent to install the pipeline at that time, since the State's laying of a 15-inch thick concrete slab makes it infeasible to lay the pipeline at a later date. The Consumer Advocate and the DOD agree that this project should be included in the PHFU account.

HECO's accessibility to fuel at the lowest possible cost is of utmost importance to the commission and the company. Considering the company's expectation of fuel need within the next 10 years and the economic factors unique to Hawaii, we find the construction of the pipeline and the timing of the construction to be prudent.

The inclusion of the four substation properties expected to be acquired in the test year is another matter. We adopt the DOD's posture that these properties should not be included, since they are not yet owned by the utility. This position is consistent with past commission holdings.

HECO urges the commission to reverse its stance that only properties owned by the utility may be included in PHFU. It contends that this position is inconsistent with the future test year concept. HECO argues that the future test year concept requires the use of the best available estimates for the test year and not just the recorded information as of the date of the utility's application.

The inclusion of property expected to be acquired in the test year in PHFU introduces an additional element of uncertainty in the ratemaking procedure that is not necessary. As it is, the ratemaking procedure, based on a future test year, is imbued with uncertainty. We deal with projections and estimates, and, as mentioned many times before, HECO's projections and estimates have often been wide off the mark. Expectations of property acquisition introduce uncertainties that can verge on speculation. Allowing the inclusion of expectations in PHFU could lead to abuse. We, thus, see no reason to depart from our past practice of requiring ownership before inclusion in PHFU.

2. Property included in PHFU for more than 10 years

As suggested by its name, property held for future use means property not yet in use for utility purposes, but held in anticipation of use in the future. The inclusion of PHFU in rate base means that consumers are required to pay for the costs of properties not yet being used for utility purposes. Properties held for future use are acquired based on the utility's requirements projected at the time of their acquisition. An early acquisition of property projected to be required in the future allows the utility to take advantage of prices that are lower at the time of acquisition than at a later date.

Among the properties held for future use included in HECO's proposed rate base are four substation sites that HECO acquired more than 10 years ago. The location, acquisition date, and service date of each of these sites are as follows:

Site	Acquisition Date	Service Date
Waianae	1963	1995
Ohua	1973	1995
Wilder	1972	1996
Kuliouou	1972	1997

Although these parcels were acquired 10 to 29 years ago, HECO includes them as PHFU, because HECO intends to put them into service within 10 years of the commission's decision and order in this docket. HECO apparently relies on our Decision and Order No. 7678 in Docket No. 4536 (Sep. 16, 1983).

In Decision and Order No. 7678, the commission allowed HECO to include among PHFU those parcels HECO had acquired more than 10 years before the decision, but which HECO represented would be placed in service within 10 years of the decision. HECO misreads our decision. That decision, in effect, established 10 years as the reasonable time period for holding properties for future use. The commission, however, considered the immediate application of the new 10-year criterion to be unfair to HECO, since HECO had no prior notice of it.

The commission, thus, for the purposes of the docket, and only for the purposes of the docket, measured the 10-year period prospectively from 1983 (the year of the decision) as to those properties then held by HECO as PHFU and removed from PHFU only those properties that HECO had indicated it would not place in service within 10 years from 1983. The commission's decision does not espouse measuring a 10-year period anew each time it decides a rate case for property then held by HECO for future use. Such a reading of our decision would permit a perpetual inclusion of property in PHFU, no matter how long ago it may have been acquired, by HECO simply changing the property's proposed service date.

The four substation sites described above were among the properties held by HECO as PHFU at the time the commission issued Decision and Order No. 7678. They were allowed to remain as PHFU only because of HECO's then representation that they would be placed in service by 1993. The commission fully expected that these parcels, if not placed in service within 10 years of Decision and Order No. 7678, would be removed from PHFU. The "countdown" of the 10-year period *for properties* then held for future use began from the time the commission issued Decision and Order No. 7678. HECO was put on notice by the decision that the properties would be removed from PHFU, unless put in service by 1993.

Thus, notwithstanding HECO's representation that the four substation sites would be placed in service within the next 10 years, the commission will require the removal of the sites from PHFU. More than ample time has expired since the acquisition of the properties for HECO to place them in service; and there is nothing to indicate that HECO's new projected service dates for these sites are any more reliable than HECO's old projections.

The commission is not unmindful of the fact that this order may compel HECO to dispose of the sites and that HECO may later incur a greater cost to reacquire them or to acquire other sites. However, the 10-year criterion is meant to balance the risk of future higher acquisition cost or nonavailability of property against the burden that ratepayers will need to bear by the inclusion of the property in PHFU for an extended period of time.[29]

3. Summary

Based upon the reasoning set forth above, the commission finds reasonable the inclusion of $441,000 in property held for future use. This sum excludes the costs of the four substation sites HECO contemplates acquiring in 1992 and the costs of the four substation sites that have been on HECO's books for more than 10 years.

D. Unamortized Contributions-in-Aid-of-Construction

Contributions-in-aid-of-construction are nonrefundable funds paid to the company by customers to defray the costs of installing facilities (generally, underground line extension facilities) needed to provide service to the customers. The facilities constructed with these contributions are not financed by the company with debt or equity. Thus, ratepayers should not have to pay a return on these plant investments. CIAC are, therefore, deducted from rate base.

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[29]In Decision and Order No. 7678, the commission acknowledged the prescription of periods shorter than 10 years in other jurisdictions, but, in light of limited land space in this island state, deemed it reasonable for Hawaii to allow the holding of property for future use for a longer period. We see no reason to change the 10-year criterion at this time.

HECO's revised 1991 year-end unamortized CIAC is $71,110,000. To that figure, HECO added $4,778,000 (net of taxes) to reflect annualization of the cost of the airport substation, resulting in a test year unamortized CIAC beginning balance of $75,888,000. HECO estimates 1992 CIAC receipts for projects other than the airport substation at $7,698,000. In addition to those receipts, HECO estimates $31,000 in transfers from advances and amortization of $3,095,000. The addition of the estimated 1992 CIAC receipts and transfers from advances to the test year beginning balance and the subtraction of the amortization amount results in a test year unamortized CIAC ending balance of $80,522,000. HECO's estimated average balance for the test year is, thus, $78,205,000.

The DOD accepts HECO's test year estimate of the average balance. The Consumer Advocate rejects the annualization of the costs of the airport substation, but insists that the CIAC related to the airport substation should be included in the 1992 year-end balance. The Consumer Advocate, thus, adopts HECO's actual 1991 year-end balance of $71,110,000 as the test year's beginning balance and $84,447,000 as the year-end balance, for an average test year balance of $77,778,500.

The parties' positions are consistent with the positions they took concerning annualization of the costs of the airport substation in calculating HECO's test year average plant in service. Consistent with our decision there, we reject HECO's inclusion of CIAC related to the airport substation in both the test year beginning and ending balances. We agree with the Consumer Advocate, however, that it is reasonable to include the contributions for the substation only in the test year year-end balance.

We reject HECO's argument that to do so will result in an overstatement of the unamortized CIAC that are to be deducted from rate base. Adding the contributions related to the airport substation to the year-end balance allows for a normalization adjustment offsetting the company's capital expenditure for the substation that is included in the year-end plant in service. We, thus, adopt the Consumer Advocate's estimates of $71,110,000 and $83,447,000 for the beginning and end of the year balances, respectively.[30]

E. Customer Advances

Customer advances, like CIAC, are funds paid to the company by customers to defray the costs of installing facilities

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[30]Although we have accepted the Consumer Advocate's position, we note that HECO has failed to provide adequate explanations for its revised calculation of unamortized CIAC. HECO initially estimated $77,653,000 in unamortized CIAC at the end of 1991, including 1991 CIAC receipts of $16,097,000 (exclusive of any amount on account of the airport substation project). In its revision, HECO reduced its estimate of the 1991 year-end unamortized CIAC balance to $71,110,000. Assuming no change in transfers from advances and 1991 amortization, this reduction reflects $6,543,000 in estimated CIAC that was not received in 1991 as anticipated. The record is devoid of reasons for the decline in estimated receipts of CIAC. HECO's revision also reflects a reduction in estimated CIAC receipts for the test year from $12,595,000 to $6,698,000. HECO attributes the reduction of $4,897,000 to delays by the State in completing the Kalanianaole Highway (phase I) project, pushing the receipt of contributions for the project to 1993. But, the record reveals that HECO never had any expectations that the project would be completed in 1992. Its workpapers project zero dollars in plant additions on account of the Kalanianaole Highway (phase 1) project for 1992. We expect HECO in future rate cases to exercise greater care in providing adequate and correct explanations of its revisions and calculations.

(generally overhead line facilities) needed to provide service to them. Unlike CIAC, however, customer advances are refundable. Customer advances are obligations of the utility. Since facilities constructed with customer advances, like CIAC projects, are not financed by the utility with debt or equity, ratepayers are not required to pay a return on such plant investments. Thus, customer advances, like CIAC, are deducted from rate base.

HECO's estimate of customer advances at the end of the test year is $3,012,000. This estimate is based on a 1991 year-end balance of $2,643,000. To the 1991 year-end balance, HECO added estimated test year customer advance receipts of $800,000 and subtracted both estimated test year refunds of $400,000 and estimated transfers to contributions of $31,000. HECO's average test year customer advances estimate is $2,828,000.

All parties accept HECO's estimates. The commission's own examination supports acceptance of HECO's estimates. We adopt the estimates as reasonable.

F. Materials and Supplies Inventory

HECO's revised estimate of the average test year 1992 materials and supplies inventory is $7,630,000. The Consumer Advocate agrees with HECO's estimate; the DOD does not. The issue is whether, for rate base calculation, materials and supplies supported by accounts payable are properly excludable from the materials and supplies inventory.

There are $534,909 worth of materials and supplies that are supported by accounts payable. The DOD contends that these materials and supplies have not yet been paid for by HECO. Thus,

$534,909 should be deducted from HECO's estimate of materials and supplies inventory. The DOD acknowledges that cash payment lag associated with accounts payable is reflected in HECO's lead-lag study, but it asserts that the lag is applied only to expenses and not to items remaining in inventory.

HECO argues against the DOD's proposed adjustment.[31] HECO asserts that, although there is only one payment lag, the DOD's adjustment accounts for the materials and supplies payment lag twice, once in the inventory calculation and again in the working cash calculation. HECO believes that the DOD's position penalizes investors by failing to recognize their investment for the full amount of time of the investment.

HECO notes that there are three types of materials and supplies situations: some materials and supplies are expensed immediately and do not go into inventory at all; some are in inventory for a short time (less than the number of days in the payment lag); and some are in inventory for a long time (longer than the payment lag). HECO argues that in all three cases, the proper determination of the total net investment can be obtained by including the entire payment lag in the working cash calculation and by including the full book value of the inventory in rate base. Reflecting the payment lag in the working cash calculation, without adjusting the inventory balance, is simpler than dealing separately with the three situations.

[31]HECO also opposed the DOD's adjustment in Docket No. 6531, HECO's last rate case. HECO in this docket asserts that it failed to fully explain the problem with the DOD's approach in the last rate case.

We are unpersuaded by HECO's arguments. We see no reason to depart from our previous holdings. We agree with the DOD that materials and supplies inventory supported by accounts payable should be excluded from the inventory that forms a part of rate base. Materials and supplies supported by accounts payable are, in effect, materials and supplies supplied by vendors and not by HECO's investors. HECO's investors are not entitled to earn a return on funds that they have not provided.

The commission does not agree with HECO's argument that the DOD's adjustment accounts for materials and supplies payment lag twice. As observed by the DOD, HECO's lead/lag appropriately captures the payment lag associated with materials and supplies that are expensed, but it does not capture the lag associated with materials and supplies that are not expensed.

For the reasons stated above, we adopt as reasonable the DOD's adjustment of $535,000. Therefore, we find the test year beginning and ending balances of $7,004,000 and $7,185,000 reasonable.

G. Unamortized Gain on Sale of Waipahu Baseyard Property

In Decision and Order No. 10247, Docket No. 6395, filed on June 21, 1989, the commission ordered HECO to place into the "other deferred credits account" the net gain resulting from the sale of a certain Waipahu baseyard property. The commission further instructed HECO to offset that net gain against any subsequent land purchase prices. The commission ordered that, pending final disposition, any interest earned on such net gain shall accrue to the benefit of ratepayers at a rate equal to HECO's principal bank loans.

HECO represents that the balance in the deferred gain account is being applied as an offset to the price of subsequent land purchases made by the company. Imputed interest is being accrued monthly on the remaining balance in the deferred gain account. The estimated total amount to be applied as an offset to subsequent land purchase prices is $2,566,600, consisting of $2,237,800 in net gain on the sale of the Waipahu baseyard property and $328,800 in total imputed interest.

HECO asserts that its test year rate base estimate already reflects the offset of $2,566,600 in total offsets against plant additions in 1991. The Consumer Advocate and the DOD agree with HECO on the reduction of $2,566,600 to HECO's rate base. The commission has reviewed Decision and Order No. 10247 and analyzed the proposed reduction. We conclude that HECO's proposed reduction is reasonable.

H. Customer Deposits

Customer deposits are moneys paid by customers at the start of service to be held by HECO to ensure payment of bills for electric service. Deposits are required of those who are unable to meet HECO's credit criteria. Customer deposits are provided under rule 5 of HECO's tariff. HECO holds each customer's deposit until the customer has had one year of prompt payment experience or until the customer closes the customer's account or until HECO terminates service to the customer for nonpayment of bills. Customer deposits are not funds supplied by HECO'S investors and are, therefore, deducted from rate base.

The Consumer Advocate and the DOD accept HECO's calculations of the customer deposit balance of $1,547,000 at year-end 1991 and $1,628,000 at year-end 1992. We find these calculations to be reasonable and accept them for this rate proceeding.

I. Unamortized Lease Premium

Unamortized lease premium is deducted from rate base. It represents the unamortized portion of a lease rental premium received from a condominium developer for the joint use of land at HECO's Kamoku substation. The company received a total of $1,500,000 in two installments. Beginning July 1980, HECO has been amortizing the lease rental premiums over a period of 30 years ($50,000 per year).

The unamortized balance as of year-end 1991 was $913,000. HECO estimates the balance to be $863,000 at year-end 1992. The Consumer Advocate and the DOD agree with these balances. Our review of the payment schedules confirms the correctness of the balances. As a result, we accept as reasonable the amounts of $913,000 and $863,000 as the balances at year-end 1991 and 1992, respectively.

J. Working Cash

Working cash (or cash working capital) is the amount of money provided by HECO's investors, over and above the investment in plant and other specifically identified rate base items, to bridge the gap between (1) the time service is rendered until revenues for that service are received (collection lag) and (2) the time that expenses for labor, materials, fuel, and other resources used in providing service are incurred until they are paid for (payment lag). The gap between collection lag and payment lag is referred to as the "net collection lag."

The working cash requirement is calculated for various items: fuel oil purchases, purchased power, O&M labor, O&M nonlabor, revenue taxes, and income taxes. Fuel oil purchases, purchased power, O&M labor, and O&M nonlabor require working cash, because HECO must pay for these items before its customers pay for the services produced by these items. Revenue taxes and income taxes reduce the working cash requirement. These items represent funds that HECO may use temporarily, since its customers pay these items before HECO has to pay them to governmental authorities.

The working cash requirement is calculated by multiplying the average net collection lag by the average daily operating expenditure amount. HECO's estimate of the working cash requirement for the test year is $6,191,000 at present rates and $346,000 at proposed rates. The Consumer Advocate's revised estimate is $7,330,000 at present rates and $543,000 at proposed rates. The DOD's revised estimate is $5,451,000 at present rates and $1,119,000 at proposed rates. Neither the Consumer Advocate nor the DOD oppose HECO's estimated collection and payment lag days. The parties differ in their estimates, because they differ in their projections of affected test year expenses, detailed elsewhere in this decision and order.

In the attached Exhibit B, we reflect the level of expenses approved by this decision and order and the net lag days. As presented there, we adopt as reasonable, the working cash requirement of $5,573,000 at present rates and $5,082,000 at proposed rates.

K. Fuel Oil Inventory

1. Low sulfur fuel oil

HECO's estimate of fuel oil inventory for the normalized 1992 test year is 737,528 barrels of oil, valued at $13,996,000. This estimate includes 705,635 barrels of low sulfur fuel oil (LSFO), valued at $13,203,000, and 31,893 barrels of diesel oil, valued at $793,000. The company's estimate for LSFO is based on a 35-day inventory and on January 1, 1992, fuel oil prices.

The Consumer Advocate's estimate for LSFO is $9,135,500, based on a 24-day inventory of 488,256 barrels and on January 1, 1992, fuel oil prices. The DOD's estimate is $13,676,700, based on a 35-day inventory (as presented in HECO's supplemental testimony) and on July 1, 1991, fuel oil prices. The DOD used a weighted average of Chevron and HIRI fuel oil prices. HECO in its initial and rebuttal estimates had used Chevron's prices only, ignoring the lower HIRI prices, although it purchases LSFO from HIRI as well as from Chevron. HECO's latest revised estimate is based on both Chevron and HIRI prices, thus obviating any dispute between HECO and the DOD.

The dispute between the Consumer Advocate and HECO centers on the number of days of inventory. In HECO's last rate case, the commission adopted a 30-day inventory. HECO's primary argument for a 35-day inventory is the need to have sufficient fuel for HECO's own generating unit, should AES-BP be affected by a long-duration outage. HECO notes that the difference between a 30-day inventory and a 35-day inventory is 100,805 barrels of fuel oil. Since each day of an AES-BP outage would increase HECO's fuel consumption by 5,737 barrels, the additional 100,805 barrels would only provide enough fuel for about 18 days of an AES-BP outage. HECO calculates that an AES-BP forced outage would reduce a 35-day inventory to 27 days (705,635 barrels/25,898 barrels per day) and a 24-day inventory to 19 days. The Consumer Advocate urges a 24-day inventory in part on HELCO's use of a 24-day inventory. HECO rejects this argument, noting that there are substantial differences between HECO and HELCO. Finally, HECO argues that a 35-day inventory is in keeping with the State's objective of increasing energy security.

The Consumer Advocate dismisses as spurious HECO's assertion that it needs a 35-day inventory to ensure the availability of sufficient fuel for its own generating units in the event of an AES-BP forced outage. It argues that any risk associated with HECO's purchase of power from AES-BP is or should have been adequately considered in calculating avoided cost for the purposes of the AES-BP contract. The Consumer Advocate also argues against the 30-day inventory ordered by the commission in Docket No. 6531.[32] It asserts that there is no empirical evidence that supports a 30-day inventory. It notes that there is no record of

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[32]In Decision and Order No. 11317, Docket No. 6531, our reasoning was, in part, based upon the Consumer Advocate's agreement to a 30-day LSFO supply inventory.

a fuel supply disruption lasting anywhere close to 30 days and that no evaluation has ever been undertaken of a disruption scenario premised on a 30-day supply of fuel oil. The Consumer Advocate concludes that a 24-day inventory better balances ratepayer and company interests.

The commission accepts neither HECO's 35-day inventory nor the Consumer Advocate's 24-day inventory. It sees no reason to change from the current standard of a 30-day supply. A 30-day inventory has been the norm since 1980 when the commission, in Decision and Order No. 6275, Docket No. 3705 (Jul. 9, 1980), with the agreement of the Consumer Advocate, adopted HECO's proposed 30-day standard. The 30-day inventory was adopted upon consideration of HECO's total dependence on oil, Hawaii's isolated location, the lack of energy interties, and developments in world oil conditions. A 30-day inventory was deemed both necessary and adequate under the circumstances. We reiterated our support for a 30-day inventory in Decision and Order No. 7678, Docket No. 4536 (Sep. 16, 1983),[33] in Decision and Order No. 8570, Docket No. 5081 (Dec. 12, 1985), and in the last HECO rate case. The 30-day inventory has withstood the test of time.

HECO does not make a plausible case for increasing the number of days of inventory from 30 to 35. We agree with the Consumer Advocate that a possible scenario of AES-BP experiencing a forced outage should not require a change in the inventory from

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[33]In Decision and Order No. 7678, Docket No. 4536, we took HECO to task for failing to maintain a 30-day inventory in the face of its continued assertion of the need to maintain a 30-day supply. HECO was then keeping a 25-day inventory of fuel oil, despite the commission's decision in Docket No. 3705.

30 days to 35 days. Such a scenario should have been contemplated in determining avoided cost for the AES-BP contract. As the Consumer Advocate states, when independent power producers are paid avoided costs, it is with the understanding that the service provided by the independent power producer is a complete substitute for that which the utility would otherwise have furnished.

Although we reject HECO's proposal, we find its calculation of the impact of an AES-BP outage on a 30-day supply vis-a-vis a 24-day supply to constitute sufficient cause to retain the 30-day standard rather than adopt the Consumer Advocate's more modest 24-day standard. In case of an AES-BP outage, a 30-day inventory would be reduced to about 23 days, and a 24-day inventory would be reduced to about 19 days.

In setting the level of inventory for HECO, we must balance the impact of the inventory on ratepayers and the need to ensure continuous and reliable electrical service. We believe that a 30-day inventory of LSFO achieves that balance. As noted, a 30-day inventory has been the norm for a number of years, and the record does not disclose an urgency to alter that norm. Based on January 1, 1992, fuel oil prices we adopted earlier in the discussion on fuel oil expense, we calculate a 30-day LSFO inventory at $11,419,300 (610,320 barrels at $18.7104 per barrel).

2. Diesel inventory

HECO's estimate of diesel inventory is 31,893 barrels, valued at $793,000, based on January 1, 1992, fuel oil prices. HECO's estimate represents an average of five years' historical levels (1986 to 1990). The Consumer Advocate's estimate is

$641,600, based on 25,791 barrels of oil and a five-day supply at full load. The DOD's estimate is $821,300. This estimate is based on HECO's estimate of the number of barrels, but calculated on July 1, 1991, fuel oil prices.

HECO argues that the Consumer Advocate has not shown that a five-day period is reasonable. HECO asserts that the Consumer Advocate erroneously relies on a HECO exhibit as evidence that the five-day period is the company's standard. HECO points out that that exhibit only illustrates that a 30-day inventory based on average diesel fuel consumption is unreasonable. HECO contends that its estimate is more reasonable because the average five-year level of diesel inventory has been proven to be adequate for actual operation of the diesel generators. Even at full load fuel consumption of 5,157 barrels a day, the company's estimated test year diesel inventory of 31,893 barrels would provide only 6.2 days of inventory.

In estimating diesel fuel inventory, HECO employs the same methodology that we adopted in Docket No. 6531. The Consumer Advocate and HECO are not very far apart in their estimates. The Consumer Advocate's estimate results in a five-day inventory; HECO's estimate is 6.2 days. We believe that the public interest is better protected by HECO's estimate. It provides for 1.2 more days of supply, at full load consumption, in the event of an emergency. We, thus, adopt HECO's estimate of 31,893 barrels of diesel fuel at $793,000.

L. Accumulated Deferred Income Taxes

Accumulated deferred income taxes, like unamortized CIAC and customer advances, are deducted from the company's rate base. HECO's calculation of accumulated deferred income taxes is $98,517,000 as of December 31, 1991, and $94,364,000 as of December 31, 1992. HECO's test year average is $96,441,000. The Consumer Advocate's balance is $103,712,000 as of December 31, 1991, and $99,989,000 as of December 31, 1992.[34] The Consumer Advocate's test year average is $101,851,000. The DOD's 1991 year-end balance is $98,245,000, and its 1992 year-end estimate is $94,943,000. The DOD's test year average is $96,594,000. The DOD's 1992 year-end calculation differs from that of HECO only with respect to the DOD's exclusion of the effects of postretirement benefits. We disregard the effects of postretirement benefits on accumulated deferred income taxes in this docket, since that issue will be considered in the commission's generic docket on accrual of postretirement benefits in Docket No. 7243.

The Consumer Advocate's estimate of the test year ending balance of accumulated deferred income taxes is higher than HECO's, because the Consumer Advocate excludes certain negative deferred income taxes. The negative deferred income taxes at issue are those related to (1) the deferred costs of developing a computer system and purchase of software for the system, (2) nondeductible interests, (3) interest accrued on gain from the sale of the Waipahu baseyard property, and (4) interest capitalized under

[34]The Consumer Advocate subsequently adjusted its beginning balance in accumulated deferred income taxes to correspond with HECO's revision, filed by letter on January 29, 1992.

Internal Revenue Code (IRC) §§ 263A and 189. The retention of negative deferred taxes in accumulated deferred income taxes has the effect of increasing rate base.

1. Deferred computer systems development and software costs

HECO calculates the combined average federal and state negative deferred taxes relating to a computer system development and software costs at $235,173.[35] HECO asserts that the development and software costs are expensed for book and ratemaking purposes, but are deferred and amortized for income tax purposes as required by IRC § 174 and related Revenue Procedure 69-21. It, thus, argues that the negative deferred income taxes associated with these costs should be recognized.

We disagree. In our recent HECO rate case decision in Docket No. 6531, we instructed HECO to amortize its ACCESS computer system development costs over a 5.5-year period. That directive governs here. The reason for amortizing these costs is to recognize that these costs fluctuate from one year to another. Since we are requiring these costs to be amortized, there will be no timing difference between ratemaking and tax treatments.

HECO concedes that the $235,173 should be reduced by $212,092. It acknowledges that $212,092 relates to a timing difference that should have been reversed out before the test year. However, it still maintains that the unreversed amount should be

[35]In HECO's brief, $242,000 is stated as the negative deferred income taxes associated with computer system development and software purchase. We have reason to believe that this figure is in error. HECO RWP 907, updated March 4, 1992, indicates the proper average deferred tax amount is $235,173.

included in rate base. Of course, we disagree for the reasons already stated.

We disallow average negative deferred income taxes associated with the costs of computer system development and software purchase in the amount of $23,081.

2. Nondeductible interest costs

HECO includes in the accumulated deferred income tax balance for year-end 1991, $292 and for year-end 1992, $35,468 in negative deferred income taxes. These sums arise from interest on tax liabilities. The deficiencies in the payment of taxes arose from IRS audits. Under IRS rules, accrued interest on unpaid taxes may not be written off for tax purposes until paid. This requirement creates a book and tax timing difference. HECO asserts that it is justified in including this deferred tax balance in rate base, because the associated tax benefits have been passed on to ratepayers.

We disagree. We do not believe that ratepayers should be burdened with costs associated with the results of tax audits. It is reasonable for ratepayers to rely on utilities submitting correct tax returns. Thus, if a tax return is called into question by federal or state tax agencies, we believe that the company, not the ratepayer, should pay for any costs resulting from the audit. Thus, the negative deferred income taxes of $292 and $35,468 will be excluded from the balance of accumulated deferred income taxes for year-end 1991 and year-end 1992.

3. Waipahu baseyard interest

HECO's calculation of accumulated deferred income taxes includes $129,109 of negative deferred taxes associated with the interest income accrued on the gain from the sale of the Waipahu baseyard. In Decision and Order 10247, Docket No. 6395, the commission required HECO to defer the gain on the sale and to use the gain as an offset against the purchase price of future utility property. The commission also ordered HECO to accrue interest income on the gain for the benefit of ratepayers until the purchase of such replacement property. The interest required by the commission is merely imputed to the ratepayers' benefit and is not recognizable under tax law.

HECO asserts that the interest has been deferred for ratemaking purposes, and the related income tax must also be deferred. It argues that this creates a valid timing difference for which deferred income taxes should be included in rate base. HECO notes that this deferred tax item will reverse when and if the gain on this sale is recognized for book purposes.

The Consumer Advocate argues that HECO has already recognized this gain for book purposes, because the funds related to the gain have been used to purchase property. As a result, it contends that negative deferred income taxes associated with the Waipahu baseyard should not be included in HECO's accumulated deferred income taxes.

We agree with the Consumer Advocate. The interest accrued on the gain of the Waipahu baseyard has no effect on the deferred tax account during the test year, since HECO has already applied all of the gain to the purchase of replacement property.

HECO Exhibit 511 reveals that the gain and accrued interest were applied to the purchase of several substation sites between November 1989 and September 1991. Thus, the gain has already been recognized for book purposes, and there should be no balance remaining in the test year on account of the gain of the sale of the Waipahu property. We deny HECO's proposal to include $129,109 in negative deferred taxes on account of the Waipahu baseyard property.

4. Capitalized interest

The Consumer Advocate proposes to exclude from accumulated deferred income taxes $4,758,772 in negative deferred income taxes arising out of interest capitalization. Interest capitalization here refers to capitalization of interest related to the construction of assets. Inclusion of negative deferred income taxes arising out of interest capitalization in accumulated deferred income taxes effectively increases the company's rate base.

The Consumer Advocate asserts that capitalized interest recorded as negative deferred income taxes is merely a bookkeeping entry that has no bearing on ratemaking and should, thus, be excluded. It claims that HECO's treatment of negative deferred income taxes for book and ratemaking purposes is contrary to its actual tax practice. It contends that, if the interest component is recorded net of income taxes, there should be no deferred taxes related to interest capitalized. The Consumer Advocate maintains that the amounts recorded on the company's book as plant in service include both the cost of the assets and AFUDC capitalized. These are the only amounts, the Consumer Advocate argues, that should be considered for ratemaking purposes and negative deferred taxes should not be included.

HECO responds that the Consumer Advocate's proposal is based on misleading and erroneous assumptions. HECO notes that, effective after 1986, IRC § 263A requires the capitalization of interest related to the construction of assets and the subsequent depreciation of the assets over the tax life of the assets.[36] Section 263A changed the timing of recognizing the deduction for interest related to the financing of self-constructed assets, while the book and ratemaking treatment of interest incurred in financing construction did not change. For book and ratemaking purposes, interest is assumed to be currently deductible for income tax calculation purposes. Thus, section 263A created a bonafide book and tax timing difference for which deferred taxes must be provided. These negative deferred taxes reverse as depreciation is taken for income tax purposes. HECO asserts that the negative deferred income taxes related to section 263A interest should be included in rate base, because they are deducted later for tax purposes than for book and ratemaking purposes, unlike items that are deductible earlier for tax purposes than for book and ratemaking purposes and are, thus, deducted from rate base.

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[36]HECO's description of the workings of IRC § 263A is oversimplified. It is, however, sufficient for present purposes. In summary, section 263A provides that, in the case of any property "produced" by the taxpayer, and to which the section applies, any allocable costs in the case of such property, other than inventory, shall be capitalized. The section defines what is meant by "produce" and describes the property to which the section applies.

The Consumer Advocate applies its proposal to all interest capitalized after 1983. Before section 263A, IRC § 189 governed. Section 189 required the capitalization of interest related to real property construction and allowed a subsequent amortization of such costs over 10 years for tax purposes. HECO asserts that the principles applicable to section 263A interest apply to section 189 interest.

HECO states that the Consumer Advocate is wrong when it contends that HECO merely "changed the name" of AFUDC (which has both an equity component and an interest component) to "interest capitalized" for income tax purposes, thus inflating its rate base. Negative deferred taxes are not provided on book AFUDC; they are provided on section 263A interest. Further, HECO has no control over whether or not section 263A interest will be treated as a book and tax timing difference; section 263A requires it. Thus, HECO asserts that the implementation of section 263A rules was not a mere change in the AFUDC name.

HECO further argues that AFUDC and section 263A interest are treated differently because the constitution of what is capitalized for tax and book purposes is different. AFUDC is a book and ratemaking concept. It determines how and when a utility receives its return on investment. AFUDC is not recognized by the tax code for tax purposes. The result is a permanent book and tax timing difference. Section 263A interest, however, is a tax deduction rule that defers tax recognition of interest deductions. This creates a book and tax timing difference since, for book and ratemaking purposes, interest is treated as if it were currently deductible. Regulatory tax normalization was created to account for this type of difference.

HECO notes that the Consumer Advocate did not propose this adjustment to exclude these negative deferred taxes from rate base in the last HECO rate case in Docket No. 6531. It also notes that the Consumer Advocate conceded that the commission has approved full normalization for all book and tax timing differences and that section 263A creates a book and tax timing difference.

We agree with HECO. Notwithstanding the fact that this ratemaking treatment increases rate base, section 263A interest represents a cost that this commission recognizes in the ratemaking process. Under section 263A, HECO is required to defer the tax recognition of certain interest costs. Thus, under the full normalization theory that this commission has adopted, we recognize the timing difference that is created between taxation and ratemaking. Thus, we will not exclude the $4,972,353 from year-end 1991 and $6,218,353 from year-end 1992 accumulated deferred income taxes.

5. Summary of accumulated deferred income taxes

Based on our rulings above, $98,674,717 at December 31, 1991, and $95,407,664 at December 31, 1992, in accumulated deferred income taxes are reasonable. Our calculation is as follows:

	12/31/91	12/31/92
Balance before adjustments	$98,517,016	$94,364,138
Add:		
Software and system development	28,300	17,862
Nondeductible interest	292	35,468
Waipahu baseyard	129,109	129,109
Postretirement	0	861,087
Revised balance per PUC	$98,674,717	$95,407,664

M. Unamortized Investment Tax Credits

Unamortized investment tax credits taken under the Revenue Act of 1962 and state investment tax credits are subtracted from assets serving customers, pursuant to Decision and Order No. 8179 in Docket No. 4833. HECO's estimate of the balance of unamortized investment tax credits is $4,226,000 at year-end 1991, and $5,733,000 at year-end 1992. HECO's estimated average test year balance is $4,980,000. All parties accept HECO's estimate for year-end 1991.

The Consumer Advocate, after submitting two revised estimates, also agrees with HECO's year-end 1992 estimated balance of $5,733,000. The DOD's estimate of the year-end 1992 balance is $5,696,000. The DOD adopted the first of two revised estimates submitted by the Consumer Advocate. The DOD did not revise its estimate to reflect the Consumer Advocate's second revised estimate and subsequent agreement with HECO. As a result, the DOD's average test year balance is $4,961,000.

HECO's average balance is comprised of $598,000 in unamortized federal investment tax credits and $4,382,000 in unamortized state investment tax credits. Federal investment tax credits that are subject to deductions from rate base are only those taken under the Revenue Act of 1962. Those credits taken in 1971 and in the years following are not deducted in rate base calculation; rather, they are amortized over 30 years as a credit in determining operating income.

Before 1971, federal tax law did not specify the treatment to be accorded investment tax credits. Industry practice, however, has been to pass on the full benefits of the credits to ratepayers through a reduction of rate base (1) through the unamortized balance of the credits, and (2) through a reduction in income tax expense by amortization of the credits. The Revenue Act of 1971 wrought changes in the law. The act requires that benefits of federal investment tax credits be shared by the utility with its customers and provides two optional ways of sharing. Amortizing the credits over the life of the assets is one of these options. HECO elected this option with the commission's approval.

No specific ratemaking treatment is mandated for state investment tax credits. However, HECO has elected to pass on the full benefits of the credits to ratepayers in the same manner it passes on the benefits of pre-1971 federal investment tax credits, i.e., through a deduction of the unamortized balance of the credits in rate base calculation and through a reduction of income tax expense by amortization of state investment tax credits.

HECO's treatment of investment tax credits comports with the methodology accepted by the commission in Docket No. 6531. The record substantiates the reasonableness of the year-end 1991 investment tax credit balance of $4,226,000, the year-end 1992 balance of $5,733,000, and the test year average balance of $4,980,000.

VI.

RATE OF RETURN

HECO submits that a fair rate of return on its rate base for the normalized test year is 10.3 per cent, with a rate of return on common equity of 13.5 per cent. Further, the utility proposes that, for the purpose of calculating HECO's revenue requirement, the commission account for attrition by adding 50 basis points to the rate of return on common equity.

The Consumer Advocate proposes a rate of return on rate base of 9.59 per cent, with a rate of return on common equity of 12 per cent. The DOD proposes a rate of return on rate base of 9.51 per cent, with a rate of return on common equity of 12 per cent.

As we have stated many times before in other rate proceedings, in deciding on a fair rate of return for a utility, we are governed by the guidelines set forth in Bluefield Waterworks and Improvement Co. v. Pub. Serv. Comm'n, 262 U.S. 679 (1923), and Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944). The guidelines prescribe that a fair return must:

(1) be commensurate with returns on investment in other enterprises having corresponding risks and uncertainties;

(2) provide a return sufficient to cover the capital costs of the business, including service on the debt and dividends on the stock; and

(3) provide a return sufficient to assure confidence in the financial integrity of the enterprise to maintain its credit and capital-attracting ability.

HECO, the Consumer Advocate, and the DOD agree that a fair rate of return should be based on HECO's composite cost of capital. This composite cost represents the carrying cost of money received from investors to finance the net rate base. It comprises the earnings requirements on the elements of HECO's capital structure. It is calculated by summing the elements' weighted earnings requirements. The parties agree on HECO's capital structure, but disagree on the cost of each element of the capital structure.

A. Capital Structure

The parties agree that an average test year capital structure should be used, as prescribed by the commission in recent rate cases. See In re Gasco, Docket No. 6434, Decision and Order No. 11564 (Apr. 3, 1992); In re Hawaiian Elec. Co., Docket No. 6531, Decision and Order No. 11317 (Oct. 17, 1991); In re Hawaii Elec. Light Co., Docket No. 6432, Decision and Order No. 10993 (Mar. 6, 1991). HECO's proposed test year capital structure, which both the Consumer Advocate and the DOD accept is:

	Capitalization Amount in Thousands	Per cent of Total
Short-term debt	$ 35,620	5.41%
Long-term debt	250,352	38.04%
Preferred stock	61,396	9.33%
Common equity	310,823	47.22%
Total	$ 658,191	100.00%

This capital structure reflects expected changes in the test year to the net capital structure at the end of 1991. Changes are expected in equity, debt redemptions, and external financing. To satisfy its long-term debt financing requirements, the company intends to ask the State of Hawaii to issue special purpose revenue bonds on its behalf in 1992. In addition, the utility plans to obtain additional common equity from its parent company, HEI.

HECO's declared aim is to manage its capital structure to achieve the following average target ratios: 45 per cent of total capital as debt; 8 per cent as preferred stock; and 47 per cent as common equity. HECO intends to pursue these target ratios to strengthen its credit ratings and to minimize its cost of capital over time.

HECO's proposed capital structure is reasonable. It reflects a progression toward HECO's target ratios, particularly toward an increased percentage of common equity.

B. Cost of Short-Term Debt

HECO estimates its cost of short-term debt at 5 per cent. This cost represents HECO's estimate of the company's commercial paper borrowing rate for test year 1992. Initially, HECO estimated the test year cost of short-term debt at 7 per cent. The company adjusted its estimate downward on rebuttal to reflect HECO's average short-term borrowing cost of 4.4 per cent for the first one and a half months of 1992. The Consumer Advocate adopts HECO's cost of short-term debt of 5 per cent. It had originally proposed a rate of 5.5 per cent.

In testimony, the DOD recommended a short-term debt cost of 4.25 per cent. However, in its brief, the DOD concedes that its recommended rate "may be slightly on the low-side," given the company's actual experience with the cost of short-term debt. It notes that, as of four months into 1992, high-grade commercial paper rates are "hovering around, but are slightly below 4%," and that commercial paper rates actually declined slightly in 1992, contrary to the prediction of a rise in rates by the witnesses for HECO and the Consumer Advocate. The DOD suggests that "[p]erhaps a 4.5% rate is closer to reality than rates proposed by any witness." In its reply brief, HECO summarily dismisses the DOD's suggestion and asserts that the utility continues to believe that the 4.5 per cent rate is unrealistic and that a 5 per cent rate is a more reasonable estimate for 1992.

We acknowledge the uncertainties in the market. However, we foresee a gradual rise in commercial paper rates in the remainder of 1992. We do not find HECO's and the Consumer Advocate's proposed 5 per cent rate to be unreasonable. We will, therefore, adopt 5 per cent as HECO's average cost of short-term debt.

C. Cost of Long-Term Debt

HECO's estimate of the average cost of its projected long-term debt for test year 1992 is 7.79 per cent. This percentage is the embedded composite interest rate for HECO's projected long-term debt. The composite cost of 7.79 per cent reflects (1) HECO's annual interest expense, (2) the annual amortization of debt premiums and issuance expenses for outstanding debt issues, and (3) the annual amortization of the differential between interest earned and the sum of interest expenses and issuance costs related to undrawn proceeds from the sale of special purpose revenue bonds.

The Consumer Advocate's revised estimate of the cost of long-term debt is 7.78 per cent. The DOD's estimate of the cost of HECO's long-term debt is 7.73 per cent. The difference among the parties' estimates is attributable to the difference in their estimates of the cost of special purpose revenue bonds. HECO estimates a rate of 7.5 per cent for special revenue bonds issued in 1992. The Consumer Advocate's revised estimate is 7.25 per cent. The DOD adopts a rate of 6.75 per cent, which was also the Consumer Advocate's original estimate.

HECO envisions that it will draw down almost $34 million of special purpose revenue bond proceeds in 1992, of which almost $18 million will be from the issuance of a new 1992 series at 7.5 per cent. HECO obtained an estimate of the cost of special purpose revenue bonds from one of its investment bankers, Smith Barney, Harris Upham & Co. Based on a recent sale of bonds having the same characteristics as HECO's bonds, the banking firm estimated that a $35 million bond issuance could be sold at a cost of 7.5 per cent with a 30-year maturity.

The Consumer Advocate originally estimated HECO's cost of special purpose revenue bonds to be 6.75 per cent. It revised its estimate based on a revenue bond index of 6.82 per cent reported in the Muni-Week of March 5, 1992. To that index, the Consumer Advocate added .05 per cent, which was the percentage additive to the index rate in effect when HECO revenue bonds were sold in 1990. The Consumer Advocate made a further upward adjustment to account for HECO's reduced bond rating. As a result, it revised its estimate of the cost of revenue bonds from 6.75 per cent to 7.25 per cent. This adjustment raised its estimate of the cost of long-term debt from 7.72 per cent to 7.78 per cent.

The commission adopts the Consumer Advocate's estimate of the cost of special purpose revenue bonds. The method it used in determining its estimate reflects HECO's past sales experience, as well as accounts for HECO's reduced bond rating. Accordingly, we conclude that 7.78 per cent is a reasonable cost of HECO's long-term debt.

D. Cost of Preferred Stock

HECO's estimate of the cost of its preferred stock is 7.41 per cent. The Consumer Advocate and the DOD accept HECO's estimate.

HECO estimated the effective cost of its preferred stock by dividing its preferred stock requirements for 1992 by the average net proceeds of preferred stock outstanding. It calculated its preferred stock requirements for 1992 by adding the annual dividends to the annual amortization of issue expense for series O, Q, and R over the lives of each issue in proportion to the amount of the issue outstanding in each year.

HECO's estimate of 7.41 per cent as the cost of its preferred stock for test year 1992 is reasonable.

E. Cost of Common Equity

HECO submits that the utility should be allowed to earn a return on common equity of at least 13.5 per cent. It argues that any lesser rate of return would not enable HECO to maintain even its currently inadequate financial integrity. The Consumer Advocate and the DOD both propose a rate of return on common equity of 12 per cent.

The parties agree that the cost of common equity should be derived from market information. The parties also agree that multiple methods should be employed to determine a market-based return on common equity, because of the judgment and limitations inherent in all methods. The parties further agree that the methods employed should be expectational and forward-looking.

Based on this approach, HECO, the Consumer Advocate, and the DOD used a number of similar market-based estimation techniques. Differences in the recommended rates of return result from, among other things: (1) the use of different groups of proxy and comparison companies to derive a market-based return for HECO, (2) the use of market data from different sources, (3) the use of market data at different points in time, (4) disagreement about adjustment of the rate of return to reflect issuance costs, and (5) differences in judgment.

1. The proxies used

HECO, the Consumer Advocate, and the DOD all used proxy companies in developing a market-based cost of HECO's common equity, since HECO's common equity is not publicly traded. Under this methodology, the rate of return on common equity for these proxy companies is assumed to be the rate necessary for HECO. Judgmental adjustments are made when the proxy companies' financial, operating, and business profiles incompletely fit HECO's profile.

In Decision and Order No. 11317 in HECO's last rate case, we identified the criteria by which the appropriateness of a proxy is determined:

> The test to determine the appropriateness of a proxy is multiple. The proxy company should be similar to HECO in terms of industry type, size, operations, business environment, and capital attraction characteristics. A proxy company should first have almost all of its revenues derived from electric operations. If the company is primarily an electric utility, then according to additional criteria, such as those HECO used, it may be required to have tradeable common stock and not be a holding company with more than one subsidiary. It should have a common equity ratio of approximately 35 per cent to 50 per cent, be small, be substantially a regulated company, have no major generating plants under construction, and have a stock and bond rating similar to that of HECO.

Citing the criteria thus identified by the commission, HECO developed a set of standards that resulted in the selection of five proxy companies: Atlantic Energy, Inc., Delmarva Power & Light Company, Idaho Power Company, Nevada Power Company, and SCANA Corporation. One of the selection criteria used by HECO was Value Line's stock safety rating of 1 or 2. The safety rating for Nevada

Power was reduced during the course of the proceeding, but HECO still deemed it to be a comparable company.

The Consumer Advocate used as proxies a group of seven "comparable" companies: Central Louisiana Electric Company, DPL Inc., Idaho Power Company, Interstate Power Company, Nevada Power Company, PSI Resources, and Puget Sound Power & Light Company. Two of these companies are also in HECO's group of proxy companies. The Consumer Advocate identified those energy utilities with publicly traded securities and with operating and financial characteristics similar to HECO. The operating characteristics considered by the Consumer Advocate include the nature of operations, fuel mix, revenue size, and sources of revenue. The financial characteristics considered include bond rating, equity ratio, and dividend policy. The Consumer Advocate also considered actual diversification, which has elements of both operating and financial characteristics.

The DOD drew a sample of six companies, based on the commission's criteria set forth in HECO's last rate case: Atlantic Energy, Inc., Central Louisiana Electric Company, Delmarva Power & Light Company, Idaho Power Company, Puget Sound Power & Light Company and SCANA Corporation. Four of these companies are also included in HECO's group of comparables. The DOD, however, concluded that this group of comparables was very small. Therefore, for comparative purposes, the DOD used HEI (HECO's parent company) and a larger group of double-A rated electric utilities from which the DOD had selected the six comparable companies enumerated above. The DOD deemed this larger group to be "reasonably" comparable to HECO. The DOD notes that a parent corporation is often used as an initial approximation when an estimate for a subsidiary is involved, but points out the increased significance of considering comparable companies when the parent owns nonutility subsidiaries.

2. The methodologies applied

HECO used the constant growth discounted cash flow (DCF) method, the equity risk premium (RP) method, and the comparable risk DCF (CRDCF) method in developing an estimate of return on common equity. The Consumer Advocate used the constant growth DCF method and the capital asset pricing model (CAPM). The DOD used the constant growth DCF method, the CAPM, and the RP method. All of the methods used by the parties are market-based and expectational.

The constant growth DCF method is a stock valuation approach to estimating the cost of common equity. In this method, the required rate of return is the sum of (1) the current dividend yield, represented by the ratio of expected next-period dividends to current stock price, and (2) the expected constant dividend growth rate. The theory underlying the constant growth DCF approach is that the market price an investor pays for a share of stock represents the present value of expected future dividend yields, grown at a constant rate. The future flow of dividend yields is discounted at a rate reflecting investor preference for current income and investor assessment of dividend realization risk. The rate of return on common equity capital under the DCF model is, thus, that rate that compensates investors for risk and time, assuming that the security is efficiently priced. Estimation of the DCF rate of return requires estimates of the current dividend yield and the dividend growth rate.

Under the CAPM, the required rate of return is the sum of (1) a risk-free component, which represents a floor on expected returns and is generally measured by the return on riskless securities, such as United States Treasury securities, and (2) a risk premium component, which represents an additional return over the riskless rate required to compensate investors for bearing additional risk. The risk premium is proportional to the "nondiversifiable" (or "systematic") risk of the security in question--that is, the security-specific risk that cannot be eliminated through diversification.

The nondiversifiable risk is obtained by the application of the appropriate beta to the amount by which the average market return exceeds the risk-free rate of return. Beta is a measure of the relative risk of a security compared to the risk of the average market stock. The beta for the market is set equal to 1. A stock with a beta greater than 1 is more risky than the average market stock, and a stock with a beta less than 1 is less risky than the average market stock. The use of the CAPM to determine the rate of return on common equity requires estimates of the risk-free rate, the stock's beta, and the rate of return on the market.

Under the RP method, the required rate of return is the sum of (1) the cost of long-term debt, and (2) a risk premium for the additional risk borne by stockholders, arising from the stockholders' residual claim to assets and earnings. The use of this RP method requires estimates of the cost of long-term debt and the premium for stockholders' additional risk. As we have observed before in earlier rate cases, the CAPM and the RP method used by the parties are two types of a more general risk premium approach to estimating the cost of common equity.

HECO's comparable risk DCF method is a variation of the constant growth DCF method. It determines the cost of capital by comparing a company with similar risk companies across a number of industry groups. The underlying assumption is that investors consider a variety of stocks when investing and they require comparable returns for comparable risks or a fair risk-adjusted return among investments with different risks.

3. The parties' analysis

a. HECO

HECO's estimate of the rate of return on common equity is based on calculations made by its expert witness, Charles A. Benore, first vice-president, Painewebber, Inc. Mr. Benore first used the standard DCF model and concluded the cost range for his group of five comparable companies to be 10.65 per cent to 12.74 per cent, including issuance costs for new common stock of 40 basis points. In light of what Mr. Benore considered to be HECO's higher business risk, Mr. Benore concluded that HECO's common stock cost, using the DCF test, is at the higher end of the range produced by his analysis of his comparables. Initially, he pegged HECO's common stock at 12.6 per cent. Subsequently, on rebuttal, Mr. Benore set HECO's common stock at 12.0 per cent, based on the reduction of Nevada Power Company's safety rank from 2 to 3 by Value Line.

Mr. Benore, then, applied the equity RP and the comparable risk DCF tests. Mr. Benore asserts that resort to these other tests are necessary to more reliably determine HECO's cost of common stock, because a yield bias exists in the market, which favors higher yielding securities, and the standard DCF model has regularly understated investor returns. Mr. Benore's application of the risk premium test, using expected yield to maturity for United States government bonds, initially produced a range of cost of common stock for his comparable companies of 11.75 per cent to 12.62 per cent. Again, to account for the higher risk of HECO stock, ranging from 2.94 percentage points to 3.73 percentage points, Mr. Benore placed HECO's common stock at the higher end of the range, or 12.06 per cent. Subsequently on rebuttal, Mr. Benore placed HECO's common stock at 12.0 per cent, to reflect a lowered current yield on long-term government bonds. Mr. Benore noted that the equity RP test also has a downward bias because of the market's current preference for yield versus growth.

Finally, Mr. Benore applied the comparable risk DCF test, asserting that the use of the test is appropriate, because (1) risk in electric companies has increased (as evidenced by bankruptcy and near bankruptcies that have recently occurred), (2) there is increasing competition in power generation, (3) the volatility of returns (a measure of risk) has been comparable for electric common stocks and common stocks generally, and (4) the return on electric commons stocks has been comparable to the return on common stocks generally. For this analysis, Mr. Benore used the Standard & Poor's (S&P) 500 composite index of common stocks. The application of the comparable risk DCF initially produced a return of 14.68 per cent for HECO's common stock, including issuance cost of 37 basis points. On rebuttal, Mr. Benore revised this rate to 14.6 per cent.

Based on his analyses using the three tests, Mr. Benore concluded HECO's cost of common stock to be in the range of 12.6 per cent to 14.7 per cent. He revised the range to 12.0 per cent to 14.6 per cent on rebuttal. Mr. Benore's recommendation, however, is that the commission allow HECO a return on its common stock equity of 13.5 per cent. Mr. Benore rejects using the average of the three tests he applied in his analysis. He reasons that the rate of 13.5 per cent is justified because the DCF and equity risk premium models are currently providing a downward biased return, above normal regulatory support is needed to finance HECO's large construction program, and the attrition risk in HECO is large.

To bolster the conclusion he reached above, Mr. Benore in rebuttal announced the results he achieved by the application of two other tests. First, he applied an actual equity risk premium test using the S&P electric power companies (having an average bond rating of single A). This test resulted in a cost of common stock of 12.78 per cent with the use of the average yield for long-term United States government bonds for the three months ending December 1991 of 7.85 per cent. Mr. Benore deducted 20 basis points for the higher risk in S&P electrics than his comparable companies and added an adjustment of 37 basis points for issuance cost to derive a cost of common stock of 13.0 per cent (rounded from 12.95 per cent). Second, he conducted an analysis of the cost of common stock, based on comparable risk companies according to the safety rankings by Value Line. This analysis resulted in a cost of at least 13.0 per cent, to which Mr. Benore added 40 basis points for issuance cost.

b. The Consumer Advocate

The Consumer Advocate's proposal on the rate of return on common equity is based on calculations made by its expert witness, J. Robert Malko, professor of finance, College of Business, Utah State University. Dr. Malko computed the rate of return for his group of comparable companies by averaging the DCF (10.67 per cent) and CAPM (12.44 per cent) results, each weighted equally. The computation produced a rate of return of 11.56 per cent.

Based on the results for his group of comparable companies, Dr. Malko concluded that the rate of return on common equity for HECO should be 12 per cent. In deriving this rate, Dr. Malko allowed for: (1) HECO's larger business risks, attributable to its planned construction program, its geographic isolation, its fuel sources, and its relative smallness; (2) impact of the national and local economy on the cost of common equity, including the expected increase in interest rates in the second half of 1992; and (3) HECO's previously authorized rate of return on common equity of 13 per cent, established in 1991 during different economic conditions than prevail in the test year, including higher United States Treasury yields. Dr. Malko makes no adjustment to his proposed rate of return on common equity to account for issuance cost.

c. The DOD

The DOD's proposal for HECO's rate of return on common equity is based on calculations made by its expert witness, John B. Legler, professor of banking and financing, College of Business Administration, University of Georgia. Dr. Legler calculated rate of return ranges for HEI, the group of six comparable electric companies, and the larger group of electric companies from which the six comparable companies were selected. By the application of the DCF method, Dr. Legler calculated a range of cost of equity for the six comparable companies of 9.01 per cent to 11.89 per cent, based on average October to December 1991 prices, and 8.71 per cent to 11.58 per cent, based on current December 31, 1991, prices. For HEI, Dr. Legler calculated a range of 11.2 per cent to 11.7 per cent, based on the average October to December 1991, HEI stock price of $36.44, and 11.1 per cent to 11.6 per cent based on the current December 31, 1991, HEI stock price of $65.75. For the larger group of electric companies, Dr. Legler determined a range of 9.66 per cent to 11.15 per cent, based on average October to December 1991 prices, and 9.31 per cent to 10.80 per cent, based on December 31, 1991, prices.

Dr. Legler's application of the RP method to HEI resulted in a required rate of return in the range of 9.46 per cent to 10.80 per cent, based on five-year premiums, and 9.83 per cent to 12.38 per cent, based on longer-term premiums. The RP method applied to the group of six comparables resulted in a cost of common equity ranging from 9.44 per cent to 9.94 per cent, based on five-year premiums, and 9.31 per cent to 10.81 percent, based on longer-term premiums. Under the CAPM, Dr. Legler's calculation produced a range of 10.13 per cent to 12.12 per cent for HEI, and a range of 10.48 per cent to 11.97 per cent for the group of six comparables.

Based on the results of his analyses, Dr. Legler concluded that the cost of equity in this proceeding lies in a range from 11 per cent to 12 per cent. For purposes of computing rate of return, Dr. Legler recommends 12 per cent as the cost of common equity. In arriving at his recommendation, Dr. Legler considered the trend in the stock market, recent interest rates, and HECO's relative riskiness and took into account the commission's decision in Docket No. 6531 to give equal weight to the DCF method and the combined risk premium and CAPM results. Dr. Legler based his recommendation on the results flowing from the use of average prices in the DCF model, discounting to some degree the recent rise in the market. He also rejected the results below the prevailing yield on single-A rated utility debt. In Dr. Legler's opinion, the DCF range is approximately 10 per cent to 11.9 per cent; the risk premium results for the comparable electrics based on longer-term premiums are in a range of 9.3 per cent to 10.8 per cent, and the CAPM produced an estimated range for the comparable electrics of 10.5 per cent to 12.0 per cent.

Dr. Legler observed that the results of the DCF and the risk premium methods are influenced by the recent declines in interest rates and the rise in the stock market. Cost of equity moves generally in the same direction as interest rates, but Dr. Legler believes that the expected decline in the cost of equity is somewhat exaggerated. Dr. Legler asserts that his recommended rate of 12 per cent not only falls within a reasonable range, but is reflective of current market conditions, abstracted for the downward biases embedded in the DCF and risk premium models. Dr. Legler did not adjust his calculations for issuance cost, but recommends that, if the commission decides to allow an issuance expense adjustment, that adjustment be substantially less than the 40 basis points suggested by Mr. Benore. Dr. Legler's own calculation suggests about 10 basis points.

4. Discussion

A primary issue in determining HECO's appropriate rate of return on common equity in this docket is the use by HECO of the comparative risk DCF method. Under this method, the S&P 500 composite index of common stocks and the S&P 23 electric utilities common stocks are used as "comparables." The use of the comparative risk DCF results in an estimate of 14.6 per cent cost of common equity. However, Mr. Benore's results for his group of comparables, selected in the manner prescribed by the commission in Docket No. 6531, is 12.0 per cent under both the constant growth DCF and the risk premium tests. This 12.0 per cent compares favorably with Dr. Malko's 10.76 per cent under the DCF model and 12.44 per cent under CAPM, and with Dr. Legler's range of 10.0 per cent to 11.9 per cent under the DCF method, 9.3 per cent to 10.8 per cent under the RP method, and 10.5 per cent to 12.0 per cent under CAPM. Thus, but for the use by Mr. Benore of the comparative risk DCF, the experts in this docket arrive at substantially the same result.

Mr. Benore defends the use of the comparative DCF and its application to the S&P 500 composite index of common stocks and the

S&P 23 electric utilities common stocks on the basis of perceived increase in risk in electric companies, increased competition in power generation, volatility of returns for electric common stock equal to those for common stocks generally, and returns on electric commons stocks comparable to those for common stocks generally.

We are not persuaded. The use of the S&P 500 composite index of common stocks is a departure from the use of "comparables" as we defined that term in Docket No. 6531. As both Dr. Malko and Dr. Legler observed, the S&P 500 companies operate in an environment where competition is more pronounced than in the environment in which the utilities exist. This means that the S&P 500 companies are significantly more risky than the utilities.

Mr. Benore sought to validate his assumption that utilities' stocks are not any less riskier than common stocks in general by comparing the volatility of electric utilities' stocks with that of common stocks in general. As a measure of volatility, Mr. Benore used the standard deviation and coefficient of variation. He noted that the standard deviation of the annual returns to investors for the S&P 23 electric utilities common stocks exceeded the S&P 500 composite index of common stocks for the last 20, 10, and 5 years, and that the volatility of the annual return to investors measured by the coefficient of variation, or volatility per unit of return, had been moderately higher for the S&P 23 electrics than for the S&P 500 composite over the last 20 years, lower for the last 10 years, and slightly higher for the last 5 years.

As the DOD points out, however, these comparisons are for indexes, not common stocks. We agree with the DOD that a more appropriate measure is beta. Mr. Benore's own evidence shows that the average Value Line beta for his comparable group of companies (those selected pursuant to the commission's prescribed "comparable" definition) is 0.63, considerably less than the average of 1.0 for the market. We are not convinced by Mr. Benore's rationale for the rejection of the Value Line beta as a measure of risk. We know of no other jurisdiction that has adopted Mr. Benore's comparative risk DCF.

In this docket, as in other rate proceedings, experts disagree on the relative merits of the various methods of determining the cost of common equity. In this docket, HECO is particularly critical of the use of the constant growth DCF methodology. It asserts that that method is imbued with downward bias and, thus, its use will understate common equity cost. We are cognizant of the shortcomings of the DCF method. There are, however, shortcomings to be found with the use of CAPM and the RP methods as well. We reiterate that, despite the problems with the use of any methodology, all methods should be considered and that the DCF method and the combined CAPM and RP methods should be given equal weight.

When setting rates for a regulated company, the kind of economic conditions under which the company will be operating merits careful consideration. There is general agreement that 1992 will be a year of mild economic recovery, with relatively mild inflation and rising interest rates. We see no reason why the market-based rate of return models should not be used in this environment.

The determination of a reasonable cost of equity is ultimately a matter of informed judgment. We begin with the range of rates of return on common equity offered by each of the parties' witnesses: from a low of 9.3 per cent to a high of 12.74 per cent. Giving equal weight to the DCF method and the combined CAPM and RP methods suggests a rate of return on common equity that would be less than the high of 12.74 per cent.[37]

However, as we did in Docket No. 6531, due consideration needs to be given to HECO's business risks, arising from its large planned construction program, oil dependence, and narrow economic base, all somewhat mitigated by HECO's relatively favorable debt ratio. It is reasonable to base the rate of return on HECO's common equity on the market data of comparable proxy companies, with some allowance for HECO's business risks. Given HECO's larger business risks and the attendant investment risk, it is also reasonable to establish a rate of return on HECO's common equity that tends to minimize deterioration in its financial profile.

In HECO's last rate case, we approved 13 per cent as a reasonable rate of return on common equity. The economic conditions that now exist suggest that a rate of return on common equity less than 13 per cent is appropriate. Nonetheless, the commission is concerned about HECO's financial health and HECO's access to common capital. Taking all factors into account, including HECO's current bond rating, we conclude that it is

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[37]The rate of 12.74 per cent was the high end of the range derived by HECO's witness under the constant growth DCF method. Applying his judgment to that range, Mr. Benore concluded that a rate of return of 12 per cent was reasonable under the DCF method.

reasonable to allow HECO to retain its current rate of return on common equity of 13 per cent.

Having granted a return on common equity of 13 per cent, an amount higher than suggested by the cost ranges under the DCF, RP and CAPM approaches, we find it unnecessary to consider in this docket the relative merits of allowing for stock issuance costs in common equity cost. We, further, reject HECO's request that we add 50 basis points to the rate of return on common equity for purposes of calculating HECO's revenue requirements.

F. Cost of Capital

As a result of our conclusions regarding the average-year capital structure and the cost of the various component parts of HECO's capital structure, the overall weighted cost of capital for HECO for the test year 1990 is 10.06 per cent.

	Capitalization Amount (000s)	Capitalization %	Cost Rate	Weighted Capital Cost
Short-term debt	$ 35,620	5.41	5.00%	.27%
Long-term debt	250,352	38.04	7.78%	2.96%
Preferred stock	61,396	9.33	7.41%	.69%
Common equity	310,823	47.22	13.00%	6.14%
Total	$658,191	100.00		10.06%

The commission finds, upon weighing all the evidence in this proceeding, that a fair and reasonable return to HECO for its properties actually used and useful for public utility purposes is 10.06 per cent for test year 1992. This return, in the commission's opinion, satisfies the guidelines set forth in Bluefield and Hope.

VII.

COST OF SERVICE, REVENUE ALLOCATION, AND RATE DESIGN

A revenue requirement authorized by the commission must be converted into actual service rates. The parties agree that service rates should be based on costs, and that HECO's ratepayers should pay their proportionate share of the costs associated with the electric service they receive. HECO and the DOD agree on, and the Consumer Advocate in this docket accedes to, the use of the embedded cost of service approach in allocating cost among the various classes of customers and to determine the responsibility of each class for the proposed revenue increases in HECO' revenue requirement.[38] However, the parties disagree on the allocation of the total cost of service among the various rate classes.

The costs of most of HECO's plant facilities and services are incurred on a systemwide basis, rather than recorded by rate classes or customer groups. The embedded cost of service study provides HECO with an approximation of each rate class' fair share of the utility's cost to provide electric service and enables HECO to systematically break down and allocate the total system cost. For this docket, HECO also conducted a marginal cost study, but only to assist it in designing its proposed rates.

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[38]The Consumer Advocate prefers the marginal cost approach, but does not press its use in this docket. It notes that this commission has consistently declined to adopt the marginal cost approach in previous rate cases.

A. Cost of Service

1. HECO's cost of service study

In its embedded cost of service study, HECO followed these three major steps in allocating the utility's total cost to the various rate classes: (1) functionalization of costs and rate base items into the major operating functions of production, transmission, and distribution; (2) classification of these functions into energy-related, demand-related, and customer-related cost components; and (3) allocation of these cost components to the various rate classes, including schedules R, G, J, H, P, and F.

In the functionalization step, HECO assigned all costs associated with generation, including fuel cost and purchased power expense, to the production function. It assigned all costs associated with transferring power from power plants to substations or between switching stations at transmission voltage levels to the transmission function. It assigned all costs associated with delivering power from transmission voltage levels through the distribution system to the customer to the distribution function.

In the classification step, HECO followed the cost classification rationale contained in the <u>Electric Utility Cost Allocation Manual</u> of the National Association of Regulatory Utility Commissioners (NARUC). Following that rationale, HECO assigned the production function-related costs to the demand and energy components, the transmission function-related costs to the demand component, and the distribution function-related costs to the demand and customer components.

In the final allocation stage, HECO allocated the energy cost component to the various rate classes on the basis of the proportion of each class' kWh consumption to the system total. HECO allocated the customer cost component on the basis of the number of customers, weighted to reflect differences in service phase and voltage level, metering requirements, and the complexity of the meter reading, billing, and accounting activities required by the customer classes.

HECO used two different methods to allocate the demand cost component. HECO allocated its distribution demand costs on the basis of the class peak demands at the various distribution voltage levels. It used the average and excess demand (AED) method to allocate its production and transmission demand costs.

HECO prefers the AED method to the peak responsibility method and the noncoincidental peak demand method, the other commonly used methods to allocate demand costs. These other two methods consider only one demand parameter in allocating demand costs.[39] The AED method, however, considers demand requirements and energy consumption of the various rate classes in allocating demand costs. It recognizes other cost-related factors, such as the extent of the use of utility facilities by each customer class. It takes into account the system load factor, the class peak

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[39] The peak responsibility method allocates demand costs using the class demand at the time of the system peak. The system peak for HECO usually occurs in the evening, between November and December. The assumption is that the capacity requirement of the utility system is determined by the peak loads and, thus, demand-related costs should be allocated in accordance with each rate class' respective contribution to the system peak.

The noncoincident peak demand method allocates demand costs using the maximum demands of the rate classes during the year regardless of when they occur. The assumption is that each customer class, if served independently, would require facilities that would meet the class' maximum demand.

demand, and the diversity of demand. It allocates demand cost on the basis of each class' average demand (kWh divided by the number of hours) and excess demand (noncoincident demand minus the average demand).

HECO's marginal cost study was conducted to determine the change in HECO's total costs resulting from a unit change in the system load or in the number of customers served by the system, independent of total revenue requirement. HECO considered the results of the marginal cost study in the rate design process, and it used marginal energy costs as one of the bases to determine the proposed energy charges in the last load factor block of schedules J and P.

Applying the methodology of the National Economic Research Associates, Inc. (NERA), HECO classified marginal costs into energy-related, demand-related, and customer-related cost components. After obtaining the unit marginal cost for each cost component, HECO determined the marginal cost responsibility of each class by applying the appropriate billing parameter to the estimated unit marginal cost for each cost component. The billing parameters used were the test year forecasts of sales, monthly system peaks, and number of customers.

The DOD accepts HECO's cost of service study. The Consumer Advocate, however, questions HECO's embedded cost of service study. Specifically, it questions (1) the reliability of the class load study used by HECO to develop certain allocation factors; (2) the propriety of HECO classifying as demand-related the fixed purchased power payments that HECO will make to independent power producers AES-BP, Kalaeloa, and HPOWER; and

(3) HECO's use of the minimum system, or zero-intercept, method to classify distribution plant, including pole, line, and transformer costs, as demand-related or customer-related.[40] We examine these issues below.

2. Class load study

HECO used its 1985 class load study to develop allocation factors. The Consumer Advocate asserts that the study is obsolete and flawed. The Consumer Advocate acknowledges that its objection to the use of the study does not have any major dollar impact on the case. Nevertheless, it does not believe that too much reliance should be placed on the study in estimating current residential class loads because of the study's deficiencies, as follows.

First, the 1985 class load study includes a sample of only 38 residential customers. The Consumer Advocate claims that customer usage has clearly changed since 1985. As a result, the Consumer Advocate believes the sample of 38 customers may not be representative of 1992 residential usage. Second, the 1985 class load study selected a sample based on December 1983 usage. Since December is the peak month on the HECO system, the Consumer Advocate contends that December is not a representative month of electricity use in Hawaii. Third, relatively few customers are metered to enable measurement of their demand by season and time of day. This metering configuration allows HECO only to estimate the

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[40]The Consumer Advocate also questions aspects of HECO's marginal cost study. It questions certain applications of the NERA methodology to HECO's system and the inclusion of certain items in HECO's study. These concerns, however, have little impact on the ultimate rate design. The Consumer Advocate agrees with HECO's use of the marginal cost study to assist in designing rates.

contribution of a customer or customer class to the system coincident peak, the class noncoincident peak, a subclass noncoincident peak, or peak demands recorded on different parts of the transmission and distribution system.

Since the 1985 class load study is the source of the data used to develop various allocation factors, the Consumer Advocate contends that, if the class load study is an imprecise estimate of 1992 class load characteristics, the allocation of costs based on the study will be equally imprecise. The Consumer Advocate recommends that the commission direct HECO to prepare a new class load study and, at the time of each new application for rate increases, to update the study to reflect changes in customer characteristics.

HECO, in response, insists that its 1985 class load study is a reliable indicator of the utility's class peak loads for test year 1992. HECO counters the Consumer Advocate's criticisms as follows. First, HECO asserts that the sample size in HECO's 1985 class load study was based on generally accepted stratified sampling methods at the desired accuracy levels of 5 per cent/95 per cent and 10 per cent/95 per cent. The equation used to determine the sample size is a widely used equation in applied statistics.

Second, the study's sample determination was purposely based on the December peak month, since a major result sought by such a study is a determination of the classes' contributions to system peak. The Consumer Advocate's claim that the December load may not be representative of electricity use in Hawaii is erroneous and indicates the Consumer Advocate's unfamiliarity with HECO's service area.

Third, the precision levels used in HECO's sampling design are those generally accepted and widely used in statistical sampling techniques. It is reasonable to assume that the classes' load shapes or load profiles do not change significantly with changes in the load levels, while the class load levels may change with changes in the demand determinants. It is the class load shapes or profiles, and not the class load levels, provided by the HECO class load study, that are used in the determination of the allocation factors in HECO's embedded cost study.

We accept, with reservation, HECO's defense of the reliability of the 1985 class load study as an indicator of HECO's class peak loads for test year 1992. HECO's explanations appear reasonable. In the absence of any other class load study, HECO's 1985 study is undoubtedly the most reliable indicator of test year class peak loads that HECO can use.

However, the Consumer Advocate has raised a legitimate concern about the current relevancy of the data underlying the 1985 class load study. While defending the use of HECO's 1985 study to estimate test year class loads, HECO's cost of service witness agreed that it would be desirable to obtain updated information on customer load profile. The Consumer Advocate recommends that we direct HECO to conduct a new class load study. We will not do so, but we urge HECO to reexamine the 1985 class load study to assess the continued reliability of the data in the study, and to update the information, as appropriate, before HECO's next rate case.

3. AES-BP, Kalaeloa, and HPOWER contracts

HECO treats the fixed purchased power payments that HECO will make to AES-BP, Kalaeloa, and HPOWER as demand-related costs. The Consumer Advocate contends that 76 per cent of the payments should be classified as energy-related costs, with only 24 per cent classified as demand-related costs.

The Consumer Advocate's position is premised on the postulate that only a portion of the purchased power payments is associated with meeting peaking demand. The Consumer Advocate argues that the purchased power fixed payments exceed the value of peaking capacity by a factor of between two and six. The payments allow HECO to access on-peak and off-peak energy at variable running costs lower than what HECO would incur with a simple cycle combustion turbine or diesel generator (which could be an economical option if there were only a need for peaking capacity). The Consumer Advocate labels the payments above those that would result from peaking capacity only as "energy reservation and buydown" charges, or "fixed energy" payments. It urges that the "demand-related" portion of the payment should not exceed what HECO would otherwise have to pay for a peaking resource.

HECO asserts that the classification of the purchased power payments to AES-BP, Kalaeloa, and HPOWER as demand-related is proper, based on the definitions of energy-related and demand-related costs that both HECO and the Consumer Advocate use. Both HECO and the Consumer Advocate define energy-related costs as costs associated with kWh and demand-related costs as costs associated with kW load. Thus, energy-related costs vary with kWh usage, and demand-related costs vary with kW demand on the system.

HECO observes that its purchased power payments to AES-BP, Kalaeloa, and HPOWER do not vary with kWh usage; it will incur these payments, regardless of its kWh sales. Thus, HECO states that the payments cannot be considered energy-related. HECO, further, argues that even if a part of the payments is energy-related, the Consumer Advocate's determination that only 24 per cent is demand-related and 76 per cent is energy-related is biased. HECO claims that the bias reflects the Consumer Advocate's intention to increase energy-related costs relative to the "fixed" demand-related and customer-related cost components of HECO's costs of providing service.

HECO also questions the Consumer Advocate's use of the simple cycle combustion turbine as the peaking unit. HECO asserts that the use of a simple cycle combustion turbine peaking unit to determine demand-related costs is a marginal costing concept. The embedded cost of service study is concerned with the allocation of the company's total revenue requirement or total costs of providing service, not the marginal cost or the cost of incremental change in the company's total revenue requirement. Further, HECO points out that the AES-BP, Kalaeloa, and HPOWER facilities are not peaking units and are not designed or operated only to meet HECO's peaking load.

HECO contends that its classification of purchased power costs as demand-related costs and its allocation of these costs among the rate classes using the AED method recognizes any energy component of these production plant costs. HECO asserts that its use of an energy allocator prescribed by the AED method is consistent with the 1992 NARUC cost allocation manual.

HECO also takes issue with the method by which the Consumer Advocate allocated the 24 per cent of purchased power costs, which the Consumer Advocate classified as demand-related, to the rate classes. HECO's method of allocating production and transmission demand costs considers both the classes' demand requirements and energy consumption and recognizes other cost-related factors (such as the extent to which the different classes use utility facilities and class diversity of demand). HECO maintains that its AED allocation method is consistent with the NARUC's electric utility cost allocation manual.

HECO asserts that the Consumer Advocate incorrectly interprets and applies the energy weighting methods presented in the 1992 NARUC cost allocation manual. By HECO's reading, the manual describes two ways to incorporate energy weighting into the treatment of production plant costs when energy loads are a major determinant of production costs. One way is to classify part of the utility's production plant costs as energy-related and to allocate those costs to the rate classes on the basis of class energy consumption. The other way is to classify these costs as demand-related and use an energy allocator to allocate part of the production plant costs among the rate classes.

HECO represents that the second method is the same as the AED method used by HECO. HECO states that the Consumer Advocate used both methods, resulting in (1) the allocation of the entire production and transmission plant costs only on the basis of the classes' kWh consumption, and (2) the overallocation of production and transmission plant costs to those rate classes with high kWh consumption, such as schedule P, the large power class.

HECO's arguments are persuasive. We conclude that HECO properly classified as demand-related costs the test year estimates of the fixed purchased power payments to AES-BP, Kalaeloa, and HPOWER.

4. Minimum system, or zero intercept, method

The minimum system, or zero intercept, method used by HECO treats the costs of basic distribution infrastructure (poles, conductors, and transformers) as primarily customer-related. (Customer-related costs are apportioned among the various customer classes on the basis of the number of customers in each class.) Only the "extra" costs (i.e., the costs over and above those of the minimum system) are treated as demand-related costs.

The Consumer Advocate opposes the use of the minimum system method. It believes that method is flawed. It asserts that that method (1) fails to recognize that the distribution plant is installed to facilitate energy sales throughout the year, not simply to connect hypothetical customers who use no power to the grid and to service peak demand; (2) doublecharges small customers for the distribution capacity that serves them; (3) ignores the fact that the utility's line extension policy, the basis for constructing distribution circuits, is tied directly to the expected annual volume of sales the line extension will facilitate; and (4) counts as customer-related, many costs that do not vary with any change in the number of customers. The Consumer Advocate cites decisions in Illinois, Iowa, and Washington as supporting its position to reject the minimum system method of classifying distribution plant costs.

The Consumer Advocate recommends that the costs of service drops, meters, meter reading, and billing be classified as customer-related and the remaining costs be classified between demand and energy. The Consumer Advocate would treat the costs of the basic infrastructure (which HECO classified as customer-related) as energy-related.

HECO asserts that its classification of the costs of the basic infrastructure is consistent with the NARUC cost allocation manual and that the Consumer Advocate's proposal to allocate a portion of the costs as energy-related is inconsistent with the manual. The company states that its classification of a portion of the distribution system as customer-related is based on the rationale that these facilities, while sized to meet customers' expected load or kW demand, are required and necessary to serve and connect customers to the utility system, regardless of the kW load of customers.

HECO disagrees with the Consumer Advocate's claim that the minimum system method leads to doublecharging or over-allocation of costs to small customers. It maintains that the distribution costs that are classified as demand-related only reflect the costs of the distribution plant required to meet customers' expected kW demand and are allocated to customers only once, based on the composite class noncoincident peak demand. To the extent that an individual customer's expected kW demand is small or close to the minimum system load, such low demand is reflected in a class composite noncoincident demand, and a class is accordingly allocated a smaller share of the distribution demand costs proportionate to the class' noncoincident peak demand.

Similarly, the distribution plant costs that are classified as customer-related only reflect the costs of the distribution plant required to connect the customer to the utility system whether or not the customer's kW demand is equal to or different from the minimum load size and are allocated to the rate classes only once, proportionate to the number of customers by rate class.

HECO contends that the possibility of doublecharging is avoided by using the zero intercept method to determine the customer-related component. Under this method, the customer-related component is derived on the basis of the zero-load intercept of the cost curve so that the customer cost of the particular distribution plant has no demand cost in it whatsoever.

HECO points out that, although the Consumer Advocate criticized HECO's use of the minimum system method, the Consumer Advocate, in effect, used the minimum system method when it classified as energy-related the distribution plant costs that HECO had classified as customer-related. This resulted, since HECO's classification of the distribution plant costs as customer-related was based on the minimum system method. Thus, the portion of the distribution plant costs classified by the Consumer Advocate as energy-related and allocated on the basis of the classes' kWh consumption in the Consumer Advocate's cost study is not related in any way to the classes' kWh usage and has no bearing whatsoever on the classes' kWh energy usage.

HECO contends that the Consumer Advocate's claim that HECO's line extension policy is driven by HECO's kWh sales is incorrect. It maintains that it is obligated by its franchise to provide electric service to any customer who requests such service.

HECO's line extension rules do not grant HECO the right to refuse service to any customer on the basis of the customer's kWh usage nor to control where to install distribution facilities, based on expected sales volume. HECO asserts that the line extension rate that the company charges the customer is based on the cost of installing a line extension facility required to connect and serve the applicant, and the determination of this cost is not in any way based on the customer's anticipated kWh usage. HECO asserts that the reclassification of the HECO-classified customer-related costs as energy-related costs will adversely impact those customer classes with high kWh usage, such as schedule P.

HECO's use of the minimum system method to classify portions of its distribution plant costs as demand-related and customer-related is reasonable and consistent with NARUC cost allocation guidelines. We are persuaded by HECO's arguments that the minimum system method does not lead to doublecharging or overallocation of costs to small customers. We also agree with HECO that the Consumer Advocate is incorrect in its belief that HECO's line extension policy is driven by HECO's kWh sales. Thus, we conclude that the portion of HECO's distribution plant costs that the Consumer Advocate classified as energy-related costs should be classified as customer-related costs.

B. Revenue Allocation

1. HECO's proposal

Of its proposed total additional revenue requirement of $137,875,000, HECO designated $151,000 as miscellaneous or other operating revenues and allocated the remaining $137,724,000 to the various rate classes. HECO allocated this remainder to the various rate classes with the following as primary considerations: (1) the rate of return generated from each rate class (as determined by the embedded cost of service study) relative to the system average rate of return, and (2) the relationship of the percentage increase in revenues for each class relative to the total system revenue increase.

HECO's long-term objective is to move toward equal rates of return for all of the rate classes by allocating the appropriate portion of any revenue increases to the various classes. However, in this rate case, HECO also sought to avoid drastic and sudden rate increases for certain classes of customers (particularly residential customers) and to hold the rate increases for these rate classes at a reasonable level. Thus, HECO allocated the total proposed revenue increases to the various rate classes in such a manner that the rate of return produced by each rate class as well as the class' per cent revenue increase fell within "reasonable ranges" relative to the respective system averages. The result is that HECO's allocation of its proposed revenue requirement does not reflect equal rates of return for all rate classes, but nevertheless, manifests a gradual movement toward equality.

HECO followed two criteria in its allocation of the revenue increase to the various rate classes: (1) no rate class would receive an increase of more than 25 per cent above the overall system percentage increase, or less than 25 per cent below the overall system percentage increase; and (2) the corresponding range with respect to the class rates of return is defined as plus-or-minus 50 per cent of the proposed system average rate of return. When it was not possible to satisfy both criteria, HECO asserts that it gave priority to the first criterion.

The following table displays the results of HECO's allocation of the total system revenue requirement:

Rate Class[41] (Rate Schedule)	Rate of Return: Present Rates	Rate of Return: Proposed Rates	Proposed Increases: Revenue Increase ($000)	Proposed Increases: Revenue Increase (%)
R	-4.72%	4.73%	43,894.8	28.00
G	7.84	16.94	6,035.3	20.12
J	2.71	15.84	20,574.9	22.93
H	-3.89	7.55	7,850.4	27.97
P	-5.10	11.71	58,432.1	27.58
F	-8.12	4.86	936.5	30.49
Total Sales Revenue			137,724.0	26.51
Other Operating Revenue			151.0	7.59
Total	-3.00	9.40	137,875.0	26.44

2. The Consumer Advocate's proposal

The Consumer Advocate calculates that HECO is entitled to a revenue increase of $116,934,600 and allocates the amount as follows:

[41] R = residential
G = general service-nondemand
J = general service-demand
H = commercial cooking, heating, air conditioning, refrigeration
P = large power service
F = public street lighting

Rate Class	Proposed Increase ($000)	Per Cent Increase
R	36,425.0	23.0
G	3,500.0	11.5
J	20,535.3	23.0
H	6,439.9	23.0
P	49,076.3	23.0
F	705.1	23.0
Total Sales Revenue	116,681.6	22.35
Other Operating Revenue	253.0	13.77
Total Revenues	116,934.6	22.32

Apart from the amount of revenue to be allocated, the primary difference between the Consumer Advocate and HECO centers around schedules G and R. The Consumer Advocate notes that schedule R and schedule G customers are already paying the highest rates in the HECO system. For schedule G, the Consumer Advocate proposes approximately 50 per cent of the increase applied to the other schedules. Under HECO's allocation, schedule G customers receive approximately 75 per cent of the increase applied to the other schedules.

The Consumer Advocate is mainly concerned with residential customers. It contends that residential customers already pay their full share of the cost of service, and it sees no reason to increase the schedule R rates by a larger percentage than the rates of other classes, as HECO proposes. Although HECO is limiting its schedule R adjustment due to concern over rate shock and customer acceptance, the Consumer Advocate concludes that HECO's proposed revenue allocation to schedule R is still larger than average on a percentage basis, and considerably larger than average on a cents per kWh basis.

The Consumer Advocate notes that the other major classes, schedule J and schedule P in particular, are currently paying their fair share or less than their fair share of the cost of service, and will continue to do so under HECO's proposed revenue allocation. The Consumer Advocate believes these two rate schedules should be assigned at least the average system increase.

The Consumer Advocate suggests that, in future rate cases, the commission may wish to consider revenue allocation on the basis of a "cost of growth" approach. Under this approach, the commission would look at the cause of the growth in the utility's revenue requirement and the relative contribution of each customer schedule to that growth. Each class would be assigned a portion of the costs of growth on the basis of that class' growth, so that the relatively stable classes will not be allocated revenues required to pay for resources that are being added to serve the more rapidly growing customer classes. In this rate case, the Consumer Advocate attributes the need for a rate increase on the addition of new power resources to meet HECO's growing loads, and concludes that not all customer classes have contributed equally to the increase. The Consumer Advocate analyzes that the sales growth rate for schedules G and J have increased much faster than any of the other customer classes--by 57 per cent, as compared to 16 per cent for schedule R and 27 per cent for schedule P.

3. The DOD's proposal

The DOD does not propose a specific allocation. However, the DOD believes the revenue increase that the commission awards should be allocated to the customer classes on the basis of cost of service, giving due consideration to customer impacts.

The DOD approves of HECO's long-term objective of achieving equal rates of return among the various rate classes. But the DOD is concerned that HECO is not moving in that direction with its proposed revenue allocations in this docket. The DOD maintains that HECO's proposal will cause schedule R to move significantly below cost of service and schedule P to move above cost of service. The DOD asserts that these results are totally at odds with HECO's cost of service study.

The DOD believes that a cost-based revenue allocation can be accomplished without undue customer impact. The DOD suggests a number of options in this regard. They include: (1) an allocation of the increase using HECO's original percentage increase guidelines, where schedule R receives an increase equal to 115 per cent of the average and schedule P receives the average increase; (2) an allocation giving 25 per cent weighting to cost of service and 75 per cent weighting to an across-the-board increase; (3) an allocation giving 33 1/3 per cent weighting to cost of service and 66 2/3 per cent weighting to an across-the-board increase; and (4) an allocation giving 50 per cent weighting to cost of service and 50 per cent weighting to an across-the-board increase.

The DOD admits that, under its options, the gross dollar amount allocated to schedule R would be substantial. However, the

DOD maintains that there are many residential customers; thus, the impact on the average residential customer would be modest.

The DOD recommends that, if the commission grants HECO an increase close to what HECO is requesting, cost of service be weighted in the range of 25 per cent to 33 per cent. If the commission grants HECO an increase toward the lower end of the range of proposals in this docket, the DOD recommends that cost of service be weighted in the range of 33 per cent to 50 per cent.

4. Discussion

The revenue allocation options recommended by the DOD allocate a higher percentage of the total increase to schedule R than HECO's proposal, and a relatively lower percentage of the total increase to schedule P. The Consumer Advocate's proposal allocates a lower percentage of the total increase to schedule R than HECO's proposal.

Adoption of any of the DOD's options would undoubtedly move HECO more rapidly toward its long-term objective of achieving equal rates of return among all customer classes. However, a concomitant result would be rate shock among HECO's residential customers and rate instability.

In previous dockets, we recognized that some disparity in class rates of return may be necessary for certain justifiable reasons, so long as the rates are not unduly discriminatory. See <u>In re Hawaiian Elec. Co.</u>, Docket No. 4536; <u>In re Hawaiian Elec. Co.</u>, Docket No. 3705 (Phase B). We followed that holding in <u>In re Hawaiian Elec. Co.</u>, Docket No. 6531, where we rejected a DOD proposal, similar to the one the DOD advances in this docket, on the ground that it would overly burden HECO's residential class. The DOD's options in this docket would have the same result. We thus reject the DOD's recommendations on revenue allocation.

We also reject the Consumer Advocate's proposal. While the Consumer Advocate's schedule R allocation would have less impact on HECO's residential customers than HECO's proposed schedule R allocation, we are unable to accept the Consumer Advocate's recommendations for lack of sufficient evidence in the record of this proceeding. Our review of the record indicates that the Consumer Advocate has provided only scant justification for assigning rate increases of the same magnitude to all of the classes, except schedule G. Moreover, the Consumer Advocate has provided no explanation as to why it does not accord schedule J the same treatment it gives schedule G.

We agree with HECO that moving to full class cost of service will result in disproportionate rate increases for some rate classes. Upon review of HECO's proposal and evidence on revenue allocation, we conclude that HECO's approach and methodology are reasonable. It is in accord with HECO's long-term objective and with the principles of fairness and nondiscriminatory allocation of the revenue requirement to the various customer classes.

C. Rate Design and Structural Changes

1. HECO's proposals

HECO proposes a number of changes to its rules, schedules, rate schedule charges, and rate structure. These changes will impact customer charges, demand charges, and energy charges. HECO represents that the proposed changes consider: (1) the test year 1992 revenue requirement; (2) cost of service; (3) revenue stability; (4) rate stability; (5) impact on customers; (6) energy conservation; (7) customer load management; and (8) simplicity, ease of understanding, and ease of administration.

a.

HECO proposes modifications in customer charges, demand charges, and energy charges in each of its rate schedules R, G, J, H, P, and F as follows.

(1) Schedule R (residential). HECO proposes to (a) increase the customer charge from $7 per month to $8 per month, (b) increase the nonfuel energy charge from 4.3271 cents per kWh to 6.6096 cents per kWh, (c) decrease the base fuel energy charge from 4.9250 cents per kWh to 3.6880 cents per kWh, and (d) increase the minimum charge from $16 per month to $18 per month.

(2) Schedule G (general service, non-demand). HECO proposes to increase the energy charge from 9.8926 cents per kWh to 10.834 cents per kWh.

(3) Schedule J (general service, demand). HECO proposes to (a) increase the demand charge from $4.50 per kW to $5.50 per kW, (b) increase the base energy rates from 8.169 cents, 7.031 cents, and 6.012 cents per kWh to 8.324 cents, 7.120 cents, and 6.102 cents per kWh, respectively, for the three load factor blocks, (c) change the demand ratchet in the determination of demand clause to be the same as the ratchet provision in schedule P.

(4) Schedule H (commercial heating, cooking, and air conditioning). HECO proposes to (a) increase the customer charge from $30 per month to $35 per month for three phase service, (b) increase the demand charge from $4.50 per kW to $6 per kW, (c) increase the energy charge from 7.6343 cents per kWh to 8.0953 cents per kWh, and (d) close the schedule K option to new customers.

(5) Schedule P (large power). HECO proposes to (a) decrease the customer charge from $350 per month to $300 per month, (b) eliminate the last kW demand block (over 5,000 kW) in the demand charge, and increase the demand charges for the various kW demand blocks from $6.65, $6.15, $5.80, and $5.60 per kW to $8.00, $7.50, $6.50, and $6.50 per kW, respectively, and (c) increase the energy charge for the three load factor blocks from 7.106 cents, 6.308 cents, and 6.001 cents per kWh to 7.4100 cents, 6.5570 cents, and 6.2481 cents per kWh, respectively.

(6) Schedule F (street lighting service). HECO proposes to revise schedule F to increase the energy rates from 10.882 cents per kWh to 11.162 cents per kWh and from 7.067 cents per kWh to 8.699 cents per kWh for the two load factor blocks.

b.

HECO proposes to revise schedule Q and its fuel adjustment clause, as follows.

(1) Schedule Q. HECO proposes to decrease the rate for energy delivered to the company by customer from 5.10 cents per kWh to 3.87 cents per kWh.

(2) Fuel adjustment clause. HECO proposes to (a) change the title of the fuel adjustment clause to "energy cost adjustment clause," (b) decrease the base generation cost from 407.24 cents per million Btu to 303.96 cents per million Btu, (c) increase the system generation efficiency factor from .010816 million Btu per kWh to .011097 million Btu per kWh, and (d) decrease the base purchased energy cost from 4.527 cents per kWh to 3.153 cents per kWh.

2. The Consumer Advocate's position

The Consumer Advocate recommends that any rate increases be applied to the demand and energy blocks of HECO's rates. In general, the Consumer Advocate recommends that the demand and energy blocks be flattened to eliminate what the Consumer Advocate describes as "the erroneous decreasing cost message that current rates send." The Consumer Advocate's specific objections to HECO's proposed changes are as indicated below. The Consumer Advocate either agrees with or has no objection to HECO's other proposals.

a. Schedule R

The Consumer Advocate opposes HECO's proposal to increase the customer charge from $7 per month to $8 per month. It contends that the current $7 customer charge already exceeds both embedded and marginal customer costs. The Consumer Advocate also opposes HECO's proposal to increase the minimum charge from $16 per month to $18 per month. It argues that HECO's embedded and marginal customer costs are both lower than HECO's customer costs and that the minimum charge is not cost based, and, thus, the proposed increase is totally unjustified.

b. Schedule J

The Consumer Advocate opposes the increase in the base energy rates for the three load factor blocks. The Consumer Advocate recommends that the three load factor blocks be flattened, with time-of-use components implemented directly, if desirable.

The Consumer Advocate acknowledges that HECO's proposal to lower rates for customers using power throughout the day, week, and month at a steady rate attempts to incorporate a time-of-use component into the energy rate. The Consumer Advocate contends, however, that HECO's approach is not very effective, because it rewards a customer, whose usage characteristics cause it to impose its own noncoincident demand during an off-peak or shoulder peak period, to continue to use power on-peak as well. The Consumer Advocate claims that HECO's proposal will treat one user with both morning and evening activities more favorably than two separate, adjacent customers with identical combined usage characteristics; while the two will have the same combined costs as the one, HECO would give the one lower rates.

The Consumer Advocate also opposes any change in the schedule J demand ratchet. It proposes to maintain the demand ratchet at its present level. The Consumer Advocate contends that a schedule J demand ratchet is likely to destroy customer incentives to control peak demand outside the customer's peak month, as the customer will have to pay the demand charge throughout the year on the basis of one month's peak, even if that peak demand occurs at a time other than the system peak. The Consumer Advocate claims that only the customer-specific demand-related distribution costs covered by rider M should be subject to a ratchet.

c. Schedule H

The Consumer Advocate proposes that schedule H be consolidated into schedule J and be eliminated altogether. The Consumer Advocate believes that customers with demand in excess of the levels allowed by schedule G should pay schedule J rates.

d. Schedule P

The Consumer Advocate opposes HECO's proposed revisions to the schedule P block demand and energy charges. It recommends instead that the block demand and energy charges be flattened and customers with high off-peak use be encouraged to take advantage of rider T.

e. Employee discount

Schedule E provides residential service rates to HECO employees at two-thirds the schedule R residential rates. It is a discount program that HECO provides its employees.

HECO proposes no change to schedule E. The Consumer Advocate suggests converting the current discount to a uniform dollar per employee discount. However, the Consumer Advocate is willing to leave schedule E unchanged in this docket on HECO's representation that HECO will consider the Consumer Advocate's proposal in its collective bargaining negotiations. The Consumer

Advocate trusts that HECO will follow the commission's directive in <u>In re Hawaiian Elec. Co.</u>, Docket No. 6531, and <u>In re Hawaii Elec. Light Co.</u>, Docket No. 6432, that the employee discount should be discontinued.

3. The DOD's position

The DOD's concerns are only with respect to certain specific aspects of schedules J and P. In all other respects, the DOD either agrees with HECO's proposals or has no objection to HECO's proposals.

The DOD would retain the existing rate structures for schedules J and P. It asserts that the multi-step demand charge in these schedules is designed to reflect the economies of scale associated with larger loads--i.e., as load size increases, the per kW cost of facilities, such as transmission or distribution lines and substations, decreases. For schedule P, the DOD asserts that a significant spread in the demand blocks is required because of the schedule's wide range of customer sizes, from 300 kW to over 50,000 kW.

The DOD, however, is concerned about the increases in demand charges and energy charges proposed by HECO for schedule P and schedule J. It asserts that HECO has not sufficiently increased the demand charges. The DOD notes that at the time of the rate case in Docket No. 5081, 28 per cent of HECO's costs were demand-related and 64 per cent were energy-related. Today, energy-related costs constitute only 39 per cent of the total, and the percentage of the cost that is demand-related has essentially doubled. The DOD asserts that, while HECO agrees with the DOD that it is appropriate to increase demand charges by a larger percentage than energy charges, HECO has done the opposite. Of the proposed 27.6 per cent increase in schedule P, HECO proposes a below-average 18 per cent increase on demand charges and an above-average 30 per cent increase on energy charges. Moreover, within the individual load factor steps, HECO proposes to increase the first step by about 28 per cent, the second step by 31 per cent, and the high load factor (predominantly off-peak) step by about 33 per cent. This pattern, the DOD asserts, is at odds with cost of service and gives the wrong price signals to customers. It contends that HECO should be proposing above-average increases to demand charges and below-average increases to energy charges.

The DOD recommends a uniform 34.3 per cent increase to the demand charges and to the portion of the energy charges that recovers demand-related costs. The DOD contends that, when the variable costs are added back to the energy charges, the result will be a pattern of increases consistent with the changes that have occurred in HECO's cost structure. The largest percentage increase will be on the initial hours use block (which recovers the largest amount of demand-related cost) and the smallest percentage increase will be on the high load factor, or off-peak energy block (which recovers the smallest amount of demand cost).

The DOD is also concerned with the number of steps in schedule P's demand blocks. The DOD opposes HECO's proposal to eliminate the last kW demand block (over 5,000 kW). It dismisses HECO's rationale for the elimination of the block as invalid. HECO's explanation is that the proposed elimination is in consideration of HECO's increasing demand costs and the need to encourage customer load management and conservation by providing customers with the appropriate price signal.

The DOD contends that the number of demand blocks has nothing to do with the increase in demand costs. The DOD notes the absence of any evidence to suggest (1) that the demand costs for larger customers have gone up more than the demand costs for smaller customers on the same schedule, (2) that larger customers on schedule P are less sensitive to conservation and load management than smaller customers on the schedule, or (3) that the growth of schedule P demand is uneconomical.

4. Airco's position

Airco's primary interest in this docket is to obtain a revision to HECO's interruptible rate program. Airco seeks an increase in the credit contained in rider I, from a 30 per cent reduction of the monthly billing kW demand to a 50 per cent reduction of the monthly billing kW demand.

Airco contends that HECO's existing interruptible rate program has proven ineffective in attracting the appropriate amount of interruptible load needed by a system that has an ongoing need for additional peaking capacity. Airco states that, at a time when HECO's reserve margins are far below its target levels, a mere 1.35 per cent of HECO's system peak load is attributable to interruptible load. Airco claims that these factors, combined with HECO's own forecast of further rapid demand growth and an acknowledgement that HECO has a less than optimal generation mix with a minimal amount of peaking capacity, make interruptible load an attractive option for HECO at minimal cost.

Airco maintains that a increase in the interruptible credit from 30 per cent to 50 per cent would place HECO's interruptible rate program close to the mainstream of other utilities and would also place the interruptible credit into a more meaningful relationship to HECO's demand costs. Airco notes that HECO's monthly firm capacity payments to AES-BP, Kalaeloa, and HPOWER are $30.136 per kW, $14.209 per kW, and $15.061 per kW, respectively. These rates are far greater than HECO's interruptible credit, which ranges from $1.95 per kW to $3.38 per kW. Airco contends that this disparity shows the extent to which HECO has undervalued interruptible power. Airco states that HECO's interruptible credit is the lowest among Airco's sister plants in other jurisdictions, where the credit ranges from over 50 per cent to as high as 75 per cent.

5. Discussion

We discuss here only those HECO proposals that are in dispute and those issues raised by the intervenors. We accept as reasonable, all other proposals made by HECO.

a. Schedule R

HECO argues that the proposed increase in customer charge from $7 per month to $8 per month is a very moderate increase of only $1, which considers the commission's ruling in Decision and Order No. 10993, issued in Docket No. 6432, In re Hawaii Elec. Light Co., and the impact on the small residential user. The proposed customer charge of $8 per month recovers approximately two-thirds of schedule R's full unit customer cost of $12.72 per month. HECO has embedded the difference between total customer costs and revenues collected from the proposed customer charge in the proposed nonfuel energy charge.

We recognize HECO's effort in this docket to bring customer charge closer to customer cost. We stated in Docket No. 6432, the last HELCO rate case, that moving customer charge close to customer cost is an appropriate objective, provided achievement of the objective is accomplished gradually. In that docket, we approved a $1 increase. However, we do not think a $1 increase is justified in this instance. By Decision and Order No. 11317, filed on October 17, 1991, in Docket No. 6531, we approved a $1 increase in HECO's schedule R customer charge. That increase went into effect only in October 1991, less than eight months ago. To grant HECO another $1 increase at this time, in our opinion, would be too soon. Thus, we reject HECO's proposal to increase the schedule R customer charge from $7 per month to $8 per month.

We also reject HECO's proposal to increase the residential minimum charge from $16 per month to $18 per month. HECO represents that the increase is necessary to reflect increases in demand-related and customer-related costs and because the customer-related and demand-related costs are fixed costs that HECO incurs regardless of the customer's kWh consumption. HECO asserts that the Consumer Advocate is incorrect when it contends that HECO's minimum charge for schedule R is not based on cost.

We are not convinced that any increase in the minimum charge is merited at this time. HECO has not presented sufficient evidence to justify the increase nor has it adequately addressed the Consumer Advocate's concerns.

b. Schedule J and schedule P

(1)

HECO urges us to reject the Consumer Advocate's recommendation that schedule J's three load factor blocks and schedule P's block demand and energy charges be flattened. Its argument is as follows.

First, the load factor block rate form used in the energy charge for schedules J and P provides customers with strong incentives to reduce their peak demand and manage their usage evenly throughout the day. Second, the load factor block rate form is a proxy for time-of-use pricing and reflects the cost differentials between on-peak and off-peak periods. The use of the load factor block energy rate form as a proxy for time-of-use pricing provides similar price signals indicated by time-of-use rates but without the additional metering costs of implementing a mandatory time-of-use rate schedule for all schedules J and P customers. Third, the Consumer Advocate does not take into account the impact of its proposal on customers--i.e., on rate continuity, maintenance of the existing rate relationships, and avoidance of rate shock (all important considerations in rate design). Fourth, the Consumer Advocate does not take into account the impact of its proposal on cost recovery and revenue stability. Revenue instability or revenue loss to HECO is a possible outcome of the proposal inducing customers to transfer from one rate schedule to another.

We believe HECO makes a valid point. We, thus, reject the Consumer Advocate's recommendation to eliminate the load factor block energy rate form from schedules J and P.

(2)

Conceptually, HECO agrees with the DOD's proposal to increase demand charges. It acknowledges that the DOD's proposal to increase recovery of demand costs from demand charges and from the initial load factor block energy rates is based on HECO's increasing demand-related costs and is premised on recovering demand costs from demand charges. However, HECO explains that it needs to take into account the concern raised by the commission and the Consumer Advocate in Docket No. 6432 and in Docket No. 6531 that HECO seems to assign more of the increases in revenue required to fixed charges than to charges associated with energy use. HECO maintains that its proposed demand and energy charges in schedule J and schedule P address this concern.

Concerning the DOD's opposition to HECO's proposal to eliminate the last demand block in schedule P's demand charges, HECO notes first that the DOD's objection is at odds with its position of proposing cost-based rates and increasing recovery of demand costs from demand charges. HECO asserts that the declining demand rates in schedule P are no longer reflective of HECO's increasing demand costs, and that HECO's proposal to eliminate the last kW demand block is a step toward providing the appropriate price signal to its customers. HECO states that its proposal attempts to balance the effect of increasing demand costs and the benefits of economies of scale.

HECO's arguments concerning its proposed increases in demand charges in schedules J and P and proposed elimination of schedule P's last demand block are reasonable. We, thus, reject the DOD's position on these issues.

(3)

HECO's proposal to change schedule J's demand ratchet to make it the same as schedule P's demand ratchet is endorsed by the DOD. The Consumer Advocate, however, is not in agreement. The Consumer Advocate recommends no change in schedule J demand ratchet.

We have reviewed the arguments on this issue and conclude that the present schedule J demand ratchet should not be changed. We agree with the Consumer Advocate that increasing the demand ratchet is likely to affect adversely consumer incentive to reduce demand.

c. Schedule H

HECO urges rejection of the Consumer Advocate's proposal to eliminate schedule H entirely by consolidating it into schedule J. HECO explains that the schedule H rate design is complementary to the demand-side management option of encouraging the installation of heat pumps. In addition, HECO states that its proposal to close option K to new customers represents a gradual movement toward the Consumer Advocate's proposal, while taking into consideration the cost impact on the transition of existing customers to other rate schedules.

HECO claims that, while existing customers could combine their load under one meter, such a change is not without costs to these customers. Combining customers' loads under one meter would require rewiring each customer's load at the customer's expense. Moreover, the cost of such rewiring would depend on the size of each customer's load presently served under a separate meter.

HECO advances reasonable arguments. We, therefore, reject the Consumer Advocate's proposal.

d. Rider I

We find persuasive the arguments pressed by HECO in opposition to Airco's proposal to adjust the level of credit for interruptible service in rider I from a 30 per cent reduction of the monthly billing kW demand to a 50 per cent reduction. First, Airco has not provided substantive justifications or analyses to support its claim that the proper credit for its 2.1 MW of interruptible load is 50 per cent. Second, the issue of load management rider pricing is better considered on a comprehensive basis as part of HECO's integrated resource planning. In that planning process, Airco's proposal should be subjected to more thorough study and analysis and evaluated against other resource options available to the utility.

VIII.

ULTIMATE FINDINGS AND CONCLUSIONS

1. The operating revenues, operating expenses, and operating income for the test year, as set forth in Exhibit A, are reasonable.

2. The use of an average test year rate base is reasonable.

3. The test year average depreciated rate base under present rates is $603,167,000. The test year average depreciated rate base under approved rates is $598,085,000. See Exhibit B.

4. Under existing rates, HECO's income for the test year would provide a rate of return of (1.69) per cent on the average rate base.

5. The capital structure for the test year is as follows: short-term debt, 5.41 per cent; long-term debt, 38.04 per cent; preferred stock, 9.33 per cent; and common equity, 47.22 per cent. The costs of capital are 5 per cent for short-term debt, 7.78 per cent for long-term debt, 7.41 per cent for preferred stock, and 13 per cent for common equity. A fair rate of return for the test year is 10.06 per cent.

6. HECO is entitled to a final total rate increase that will produce a revenue increase of $124,298,000, subject, however, to the following:

a. HECO's total rate increase shall be adjusted appropriately to reflect payments under the AES-BP purchased power contract when the AES-BP facility becomes commercially operational. HECO shall submit rate schedules revised appropriately to reflect such payments within fifteen days from the date the facility becomes commercially operational.

b. HECO's total rate increase shall be adjusted appropriately to reflect the bargaining unit wage increase expected to occur in November 1992, if the wage increase is less than the anticipated 3 per cent. The adjustment may be reflected in revised rate schedules together with any adjustment for nonpension postretirement benefits expense as may be ordered by the commission in Dockets No. 7243 and No. 7233 (consolidated).

c. HECO's total rate increase shall be adjusted appropriately to reflect the commission's decision in Dockets No. 7243 and No. 7233 (consolidated) with respect to nonpension postretirement benefits expense. HECO shall submit rate schedules revised appropriately to reflect such adjustment within fifteen days from the date the commission issues its decision and order in Dockets No. 7243 and No. 7233 (consolidated).

d. HECO shall submit to the commission by January 15, 1993, its employee count as of the end of the test year. If HECO fails to reach its projected work force count of 1,566 employees, the commission may take such actions as necessary and appropriate, including an adjustment in the rate increase granted by this decision.

7. HECO's recovery of the nonfuel portion of energy payments to AES-BP for energy received during acceptance testing of the AES-BP generating unit through a surcharge is reasonable.

8. The interim increase of $28,044,000 granted under Interim Decision and Order No. 11559, effective April 1, 1992, was necessary, just, and reasonable. No refunds are required.

9. An additional increase of $2,322,000 over and above the interim increases is necessary, just, and reasonable.

IX.

THE COMMISSION ORDERS:

1. HECO may increase its rates to produce a final total annual sales revenue increase of $124,298,000, as shown on Exhibit A, or a rate of return of 10.06 per cent on the rate base for the test year. The effective date of the rate increase is July 8, 1992. This increase supplants the increases previously approved by the commission on an interim basis in this docket and is subject to the following:

a. HECO's total rate increase shall be adjusted appropriately to reflect payments under the AES-BP purchased power contract when the AES-BP facility becomes commercially operational. HECO shall submit rate schedules revised appropriately to reflect such payments within fifteen days from the date the facility becomes commercially operational.

b. HECO's total rate increase shall be adjusted appropriately to reflect the bargaining unit wage increase expected to occur in November 1992, if the wage increase is less than the anticipated 3 per cent. The adjustment may be reflected in revised rate schedules together with any adjustment for nonpension postretirement benefits expense as may be ordered by the commission in Dockets No. 7243 and No. 7233 (consolidated).

c. HECO's total rate increase shall be adjusted appropriately to reflect the commission's decision in Dockets No. 7243 and No. 7233 (consolidated) with respect to nonpension postretirement benefits expense. HECO shall submit rate schedules revised appropriately to reflect such adjustment within fifteen days from the date the commission issues its decision and order in Dockets No. 7243 and No. 7233 (consolidated).

d. HECO shall submit to the commission by January 15, 1993, its employee count as of the end of the test year. If HECO fails to reach its projected work force count of 1,566 employees, the commission may take such actions as necessary and appropriate, including an adjustment in the rate increase granted by this decision.

2. HECO shall provide to the commission revised cost of service studies, rate design changes, rules, rate schedules, and appropriate work papers (collectively, rate revisions) reflecting the increases authorized by this decision and order. The rate revisions shall be served on the parties and shall be filed with the commission by July 6, 1992.

3. The stipulation by the parties regarding HECO's recovery of the nonfuel portion of energy payments to AES-BP for energy received by HECO during acceptance testing of the AES-BP generating unit through a surcharge as proposed in HECO's motion is approved. Such cost recovery will be reconciled to actual revenues received through the surcharge and to any reimbursements by AES-BP of costs and expenses incurred by HECO as a result of purchasing less energy from Kalaeloa. Any overcollection through the surcharge shall be refunded to HECO's ratepayers. The surcharge shall be terminated upon commercial operation of the AES-BP facility.

DONE at Honolulu, Hawaii this 30th day of June, 1992.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By ______________________
Yukio Naito, Chairman

By ______________________
Clyde S. DuPont, Commissioner

By Patsy K. Young
Patsy K. Young, Commissioner

APPROVED AS TO FORM:

Sandra Y. Takahata
Sandra Y. Takahata
Commission Counsel

DOCKET NO. 6998

HAWAIIAN ELECTRIC COMPANY, INC.

RESULTS OF OPERATIONS
($ IN 000'S)

	PRESENT RATES	ADDITIONAL AMOUNT	APPROVED RATES
Operating Revenues:			
Electric	522,153	124,147	646,300
Other	1,993	151	2,144
Total Operating Revenues	524,146	124,298	648,444
Operating Expenses:			
O&M:			
Fuel	144,958		144,958
Purchased Power	224,318		224,318
Production	31,243		31,243
Transmission	7,858		7,858
Distribution	12,479		12,479
Customer Accounts	7,215	124	7,339
Customer Service	2,265		2,265
Administrative & General	39,569		39,569
Wage Rollback	1,128		1,128
Computer Subsidy	(40)		(40)
O&M Labor Adjustment	(373)		(373)
Vacation Adjustment	(338)		(338)
Total O&M	470,282	124	470,406
Depreciation & Amortization	36,269		36,269
Taxes, Other than Income Tax	48,829	10,729	59,559
Interest on Customer Deposit	95		95
Income Taxes	(21,154)	43,075	21,921
Total Operating Expenses	534,321	53,928	588,250
Net Operating Income	(10,175)	70,370	60,194
Average Depreciated Rate Base	603,167	(5,082)	598,085
Rate of Return	-1.69%		10.06%

DOCKET NO. 6998

HAWAIIAN ELECTRIC COMPANY, INC.

ANALYSIS OF RATE INCREASE
($ IN 000'S)

	AMOUNT	% INCREASE
RATE INCREASE:		
ELECTRIC REVENUES	124,147	23.78%
OTHER REVENUES	151	7.58%
TOTAL INCREASE	124,298	23.71%
LESS:		
AES - BP	92,804	17.71%
WAGE ROLLBACK	1,128	0.22%
TOTAL REDUCTION	93,932	17.92%
AUTHORIZED RATE INCREASE	30,366	5.79%
LESS: INTERIM RATE INCREASE	28,044	5.35%
FINAL INCREASE	2,322	0.44%

DOCKET NO. 6998

HAWAIIAN ELECTRIC COMPANY, INC.

TAXES OTHER THAN INCOME TAXES

($ IN 000'S)

	PCT.	PRESENT RATES	APPROVED RATES
Electric Revenues		522,153	646,300
Other Revenues		1,993	2,144
PUBLIC SVC CO TAX	5.885%	30,846	38,161
PUC FEES	0.250%	1,310	1,621
FRANCHISE ROYALTY TAX	2.500%	13,054	16,158
		45,210	55,940
PAYROLL TAXES		3,619	3,619
		48,829	59,559

DOCKET NO. 6998

HAWAIIAN ELECTRIC COMPANY, INC.

COMPUTATION OF INCOME TAX EXPENSE
($ IN 000'S)

	PRESENT RATES		APPROVED RATES
Income:			
Operating Revenues	522,153	124,147	646,300
Other	1,993	151	2,144
Total Income	524,146	124,298	648,444
Deductions:			
Fuel Oil & Purchased Power	369,276		369,276
Other O&M Expenses	101,006	124	101,130
Depreciation	36,269		36,269
Taxes, Other than Income	48,829	10,729	59,559
Interest on Customer Deposit	95		95
Total Deductions	555,475	10,853	566,329
Tax Adjustments:			
Interest Expense	(19,652)		(19,652)
Depreciation Adjustment	2,762		2,762
Meals & Entertainment	37		37
Keyman Insurance	0		0
Total Tax Adjustments	(16,853)	0	(16,853)
Taxable Income	(48,182)	113,445	65,263
Income Tax:			
Tax Rate: 37.9699%	(18,295)	43,075	24,780
Less Amortization of:			
Federal ITC	(1,193)		(1,193)
State ITC (Net of Tax)	(123)		(123)
Excess Deferred Taxes	(1,543)		(1,543)
Total Income Tax	(21,154)	43,075	21,921

DOCKET NO. 6998

HAWAIIAN ELECTRIC COMPANY, INC.

AVERAGE DEPRECIATED RATE BASE
($ IN 000'S)

	1/1/92	12/31/92
Utility Plant in Service	1,107,004	1,196,100
Less Accumulated Depreciation	(372,750)	(405,456)
Net Plant in Service	734,254	790,644
Additions:		
Materials & Supplies	7,004	7,185
Fuel Oil Inventory	12,212	12,212
Property Held for Future Use	441	441
Total Additions	19,657	19,838
Deduct:		
Unamortized Contributions	71,110	83,447
Customer Advances	2,643	3,012
Customer Deposits	1,547	1,628
Deferred Income Taxes	98,675	95,408
Unamortized ITC	4,226	5,733
Unamortized Lease Premium	913	863
Deferred Gain on Sale	0	0
Total Deductions	179,114	190,091
Depreciated Rate Base Before Working Cash	574,797	620,391
Average		597,594
Add Working Cash		5,573
Average Depreciated Rate Base - Present Rates		603,167
Less Change in Working Cash		(5,082)
Average Depreciated Rate Base - Approved Rates		598,085

DOCKET NO. 6998

HAWAIIAN ELECTRIC COMPANY, INC.

COMPUTATION OF WORKING CASH ITEMS
($ IN 000'S)

	Collection Lag Days	Payment Lag Days	Net Lag Days	Net Lag Days/365
Expenses Requiring Cash:				
Fuel Oil Purchases	38	21	17	4.6575%
Purchased Power	38	39	(1)	-0.2740%
O&M - Labor	38	10	28	7.6712%
O&M - Other	38	20	18	4.9315%
Expenses Providing Cash:				
Revenue Taxes	38	95	(57)	-15.6164%
Income Taxes	38	85	(47)	-12.8767%
Interest Expense	0	0	0	0.0000%
Preferred Dividend	0	0	0	0.0000%

	Present Rates		Approved Rates	
	Expense	Working Cash	Expense	Working Cash
Expenses Requiring Cash:				
Fuel Oil Purchases	141,352	6,584	141,352	6,584
Purchased Power	224,318	(615)	224,318	(615)
O&M - Labor	48,438	3,716	48,438	3,716
O&M - Other	59,793	2,949	59,917	2,955
Expenses Providing Cash:				
Revenue Taxes	45,210	(7,060)	55,940	(8,736)
Income Taxes	0	0	26,504	(3,413)
Interest Expense	0	0	0	0
Preferred Dividend	0	0	0	0
Total		5,573		491
Change in Working Cash				5,082