Carolina Power & Light Company

Retail Operations Cost Allocation

Study Procedure

The Company presently provides retail electric service under seventeen active individual rate schedules. For purposes of cost allocation studies, these schedules are grouped into four major classes, based on an analysis of the characteristics of the customers and their service, as follows:

Class	Rate Schedules
Residential	R-2, R-3, R-4
Small General Service	G-1, CS-1, CS-2, MP-1
Large General Service	G-2, G-3, GLF
Lighting	TS, AL-1, SL-1, SL-2, SL-3, SL-4, SFL-1

The study undertakes to consider all cost factors involved in providing electric service to the classes of customer analyzed and is complex because many parts of the electrical system are used jointly by all customers. Allocations are necessary to assign to the classes of customers reasonable shares of the total cost of furnishing electric service. The rate of return for each class is determined by deducting the operating expenses of that class from its operating revenues, to determine a net operating income which is then divided by the average net original cost rate base allocated to that class.

The allocation of the cost components to obtain these rate of return results for the retail classes requires several steps. The first is to assign the cost items to functional groups based on the use of the facilities.

Each cost item is classified as demand-related, energy-related, or customer-related. Finally, each cost component is allocated by the appropriate factor to the various customer classes.

COST COMPONENTS

Demand - Costs classified as demand-related are those which vary with the kilowatts of demands imposed on the various segments of the system. These costs include the major portion of the investment and related expenses in production and transmission facilities and a portion of the distribution system.

Energy - Costs which vary with the number of kilowatt-hours generated are classified as energy-related. These costs include the fuel expense, the energy portion of the purchased power expense, and boiler and turbine generator maintenance expenses.

Customer - Costs which are primarily a function of the number of customers are classified as customer-related. These costs are incurred to provide electric service to a customer location and are not dependent on the size of the load or number of kilowatt-hours delivered. Customer-related costs include meter reading expense, customer accounting expense, and a portion of distribution primary and secondary lines, meters, transformers, and services.

ALLOCATION FACTORS

Factors are developed to allocate the cost components to the customer classes. In the development of the required allocation factors a principle of "equivalent level of service" is followed to insure that the customer

classes are allocated cost components for only those levels of the system involved in service to their respective customers. For example, the level of service concept insures that an industrial customer who receives service at a primary distribution voltage is not allocated a portion of the secondary distribution system.

Demand - The principal factors used in the allocation of the demand components of costs are based on the following:

Peak Responsibility (CP) - The peak responsibility demand allocation method is employed to allocate the production and transmission power supply costs. The demands at the time of the system service area peak demand are developed for each of the classes. The development of this data involves the use of system load data, individual customer meter readings, and data from the load survey.

Class Peaks - Demand data are compiled and analyzed to determine the time of the peak demand for each of the classes. These class peak demands are combined to produce factors for the allocation of distribution substations and distribution primary poles and conductors. Factors for the allocation of these facilities to the rate schedules within each class are developed from the demands of the individual rate schedules at the time of the respective class peaks.

Noncoincident Maximum - The demand cost components of the distribution secondary poles, conductor and services are allocated using factors developed from customer noncoincident maximum demands. The use of noncoincident maximum demands for allocation of the secondary system and services recognizes the fact that these facilities are normally designed to serve the maximum demands of individual customers.

Average of Class Peak and Noncoincident Maximum - The demand cost component of the investment in distribution line transformers is allocated by use of factors developed by averaging the class peak and customer noncoincident maximum demands.

Energy - The allocation of the energy cost components is based on kilowatt-hour sales data adjusted for losses to the power supply production level.

Customer - Allocation factors for the customer cost components are developed from the average number of customers connected at the various levels of the system. An analysis is made to determine the numbers of customers utilizing the facilities and incurring the expenses to be allocated by the factors.

RATE BASE

The average net original cost rate base used in the determination of the rate of return consisted of the following components, which are allocated among the classes as indicated:

Electric Plant in Service

Production Plant - The production plant in service is allocated between classes of service by KW demand allocation factors developed from system load data, adjusted to the production level. The allocation factors are derived from each class demand at the time of the system service area peak demand.

Transmission Plant - It is necessary to separate the power supply transmission plant into two levels for allocation . Since the step-up transformers at the generating plants perform a production function, these facilities are allocated by using the production KW demand allocation factors. The remaining transmission lines and substations which are interconnected to form a power network and are operated as a closed, integrated system are assigned to power supply transmission for allocation to the customer classes by transmission level KW demand allocation factors.

Distribution Plant - The distribution plant in service is classified into demand-related and customer-related cost components and allocated by the appropriate allocation factors. Since distribution substations are designed and installed based on the load to be served, they are classified as a demand cost. Street lights, area lights, and underground lines are classified as customer costs.

The separation of the overhead lines, line transformers, meters, and services into demand and customer costs requires a detailed analysis of the manner in which the facilities are used to provide electric service. This separation into demand and customer costs recognizes

that poles, conductors, line transformers, and meters are required to serve customers regardless of their load and establishes the customer component as the theoretical minimum costs that would be required. The normal plant accounting records do not provide sufficient information on which to functionalize and classify this distribution investment into demand and customer components.

The separation of the overhead distribution system into primary and secondary voltage levels, and then into demand and customer components, was obtainable from a random sample of distribution lines. By statistical methods, a sampling plan was developed to select geographic service areas and inventory the distribution facilities within the sample areas. Vernon Graphics, Inc., a utility mapping consultant firm, was engaged to assist in the selection of the sample service areas and to conduct the field inventory.

A system map was produced which employed the North Carolina State Plane Coordinate System. These reference coordinates were extended to include the South Carolina service area. Twelve system locations were selected at random by use of the map coordinates. After selection of the sample service areas, personnel from Vernon Graphics conducted an inventory of the distribution facilities located within the selected map locations. The results of this inventory were tabulated on field data sheets and drawn on aerial photographs of the service areas. The inventory produced detailed information on approximately 1% of the poles and circuit miles of the overhead distribution system, including 8,000 pole locations.

The distribution pole and conductor plant accounts were separated into primary and secondary voltage levels based on the analysis of the sample data. The demand and customer cost components were determined by use of the minimum system method. The overhead line investment related to the minimum system was developed using the following components:

Poles	30-foot distribution pole
Conductor	Primary, secondary, and neutral wire - #4 ACSR
	Secondary cable - #4 AL Triplex
	Groundwire - as installed
Line Transformers	3 KVA transformers
Service	75 feet - #4 AL Triplex
Meter	Standard KWH meter

This functional analysis of the distribution plant represents a reasonable separation of the distribution plant into demand and customer cost components for allocation to the retail classes. Consideration was given to the use of other methods, including the zero intercept method. Except for line transformers, insufficient plant accounting data were available to apply the zero intercept methodology. For comparison, a zero intercept cost was observed between the methods. The zero intercept method produced a transformer cost of $126.90, while the 3KVA minimum size transformer showed an average cost of $135.75. This difference was not considered consequential and the minimum system figure was used to be consistent with the method used for poles, conductors, services, and meters.

General Plant - The general plant primary accounts are assigned to functional groups based on an analysis of the type equipment booked in each account. Transportation equipment is assigned to functions on the basis of the vehicle expenses. Communication equipment is assigned on the basis of an analysis prepared by engineering personnel. Office furniture and fixtures is assigned on the basis of the number of employees related to the various functions.

Intangible Plant - This plant item is allocated on the basis of plant in service excluding intangible plant.

Accumulated Provision for Depreciation - The depreciation reserve is assigned and allocated on the basis of the related functional plant account.

Nuclear Fuel Inventory - The nuclear fuel in the reactor less the accumulated provision for amortization is classified as an energy cost item and is allocated by use of power supply energy allocation factors.

Working Capital

Materials and Supplies - The fuel stock is allocated on the basis of energy allocation factors. The fuel stock deferral is assigned to the classes by specific analysis of the fuel deferral expense. Other materials and supplies are related to transmission and distribution, thus they are allocated by a subtotal of these two plant functions.

Prepaid Items - Prepayments are required for certain taxes, insurance, advertising expenses, rents and miscellaneous items. Each of these items is analyzed and allocated on the basis of the related expense or plant function.

Cash Working Capital Allowance - An allowance for cash working capital is included for operation and maintenance expenses excluding purchased power. The allowance for each class is determined as a portion of the expense allocated to that class. Minimum compensatory bank balances are allocated on the basis of total plant in service.

REVENUES

Operating Revenue - Revenues derived from the sale of electricity are assigned directly to the classes. Other operating revenues are either assigned directly or are allocated on the basis of functional plant.

Contract Sales Revenues - Revenues from the contract sale of available capacity to other operating utilities are reclassified as a credit to production expenses. This treatment of the revenues reflects the nature of these sales as cost reduction items and spreads the benefits among the customer classes in proportion to their utilization of the production facilities. The revenues from the sales from generating units are also credited against total production expenses.

OPERATING EXPENSES

Production - Expense incurred in the production of electric energy is classified as demand-related or energy-related. The energy-related expenses include the fuel expenses, energy portion of purchased power, fuel deferral expenses, and boiler, reactor, and turbine generator maintenance expenses. The fuel deferral expenses are assigned by specific analysis. The other energy-related and the demand-related production expenses are then allocated by power supply production allocation factors.

Transmission - Expenses incurred in the operation and maintenance of the transmission plant are separated into substation and line functions and are then allocated on the basis of the related functional plant.

Distribution - Expenses incurred in the operation and maintenance of the distribution plant are assigned to the same functional groups as the plant in service. Street light expense is assigned directly to the lighting class. Meter expense and customer installations expense are assigned on the basis of special studies of the incidence of the expenses involved. The expenses related to substation, distribution lines, and line transformers are allocated on the same demand-customer basis as the respective plant items. Miscellaneous distribution expenses and rents are allocated on the basis of distribution plant.

Customer Accounts - Expenses incurred in customer accounting are allocated on the basis of specific analysis. The meter reading expense is allocated based on an analysis of the difficulty of the meter reading. Customer records expense is allocated on the average number of customers.

Sales Expense - Expenses incurred in connection with customer service and sales activities are assigned to the customer classes on the basis of an analysis performed by the Customer Services Group.

Administrative and General - A & G expenses are analyzed and assigned for allocation on the basis of either payroll labor expenses, jurisdictional regulatory expenses, or functional plant items. A & G salaries are allocated by labor factors; regulatory expenses are

assigned to wholesale and retail jurisdictions and then allocated to rate classes by rate schedule revenues; outside services and property insurance are assigned on the basis of an analysis of the expenses; and the other items are allocated on related plant accounts.

Depreciation Expense - The depreciation expense is functionally assigned and allocated based on the respective functional plant in service.

General Taxes - Taxes other than income taxes are functionalized into revenue taxes, labor taxes, property taxes and KWH-related taxes. The functional tax items are then allocated on the basis of taxable revenues, labor factors, plant in service and KWH sales.

Income Taxes

State - The additional tax deductions including interest and tax depreciation are allocated to the customer classes and then deducted from operating income to determine an income before taxes for each class. The state income taxes are allocated to the classes on the basis of the income before taxes.

Federal - State income taxes are deducted to determine federal taxable income for each class. Federal income taxes are then calculated for each class by application of the tax rate, plus current and prior year adjustments.

Deferred Taxes

The current provision for deferred taxes is functionalized into production, transmission, distribution and general and is allocated on the basis of the respective plant accounts. The deferred taxes due to fuel deferral accounting are assigned by specific analysis.

Investment Tax Credit - The net of the provision and amortization of the investment tax credit is functionalized and allocated on the basis of the functional plant accounts.

Expense Adjustments - Expense adjustments are allocated on the same basis as the base expense item to which the adjustment applies.

NET OPERATING INCOME

The net operating income for determination of rate of return is derived for each rate class by deducting the allocated operating expenses from the class revenues.

RATE OF RETURN

The rate of return is determined by dividing the net operating income for each class by the allocated total rate base. For purposes of retail class cost allocation studies, an average original cost rate base is used in the determination of rate of return. The average original cost rate base includes electric plant in service, accumulated provision for depreciation, nuclear fuel inventory, and working capital.

CAROLINA POWER & LIGHT COMPANY

Retail Operations Cost Allocation Study
June 30, 1976

Description	System Operation		
	Per Books	Adjustments	Adjusted
(1)	(2)	(3)	(4)
	$	$	$
Operating Revenues	645,386,940	90,758,736	736,145,676
Contract Sales	(9,045,232)	-	(9,045,232)
Net Operating Revenues	636,341,708	90,758,736	727,100,444
Operating Expenses			
Operation & Maintenance	337,521,920	23,509,303	361,031,223
Contract Sales	(9,045,232)	-	(9,045,232)
Net Operation & Maintenance	328,476,688	23,509,303	351,985,991
Depreciation Expense	55,782,236	16,140,000	71,922,236
Taxes Other Than Income	49,163,147	6,463,203	55,626,350
State Income Taxes	5,252,661	1,702,394	6,955,055
Federal Income Taxes	37,153,014	12,802,001	49,955,015
Deferred Taxes	7,476,286	12,697,000	20,173,286
Investment Tax Credit	22,244,185	-	22,244,185
Total Operating Expenses	505,548,217	73,313,901	578,862,118
Operating Income	130,793,491	17,444,835	148,238,326
Average Rate Base			
Electric Plant in Service	1,632,513,094	604,172,464	2,236,685,558
Accumulated Prov. for Depreciation	(300,872,440)	(16,140,000)	(317,012,440)
Net Plant in Service	1,331,640,654	588,032,464	1,919,673,118
Net Nuclear Fuel	20,242,898	21,052,565	41,295,463
Materials & Supplies	86,686,334	(4,279,386)	82,406,948
Prepaid Items	2,170,004	-	2,170,004
Cash Working Capital	50,128,407	6,278,426	56,406,833
Total Rate Base	1,490,868,297	611,084,069	2,101,952,366
Rate of Return	8.773		7.052

CAROLINA POWER & LIGHT COMPANY

Retail Operations Cost Allocation Study - June 30, 1976

Summary of Revenue, Operating Expenses, and Rate Base Adjustments

Adjustment	Revenue	O & M	Deprec. Expense	Taxes Other Than Income	State Income Taxes	Federal Income Taxes	Deferred Income Taxes	Plant In Service	Deprec. Reserve	Nuclear Fuel	Materials and Supplies	Cash Working Capital
Adjust for annual effect of retail rate increases	55,561,782			2,635,639	3,175,569	23,880,276						
Adjust for annual effect of resale rate increase	29,845,271			1,726,522	1,687,125	12,687,180						
Adjust for fuel to base of fuel charge	58,631,459	55,593,624		3,037,835								6,949,203
Adjust fuel charge revenue to reflect addition of Brunswick	(53,279,776)			(2,754,790)	(3,031,499)	(22,796,874)						
Adjust fuel expense to annualize addition of Brunswick		(44,047,500)			2,642,850	19,874,232						(5,505,937)
Adjust other O & M Expenses to reflect addition of Brunswick		6,353,592			(381,216)	(2,866,740)						794,199
Adjust for test fuel - Brunswick		2,155,823			(129,349)	(972,708)						269,478
Adjust purchased power expense to reflect addition of Brunswick		(7,366,106)			441,966	3,323,587						
Adjust for Management audit		300,000			(18,000)	(135,360)						37,500
Adjust for amortization of Craven County Plant Site		78,407			(4,704)	(35,377)						9,801
Adjust for amortization of Madison County Plant Site		187,816			(11,269)	(84,743)						23,477
Adjust for normalization of hydro generation		899,394			(53,964)	(405,806)						112,424
Adjust wages and fringe benefits at March 31, 1977		5,471,044			(328,263)	(2,468,535)						683,880
Adjust for nuclear property insurance		1,419,151			(85,149)	(640,321)						177,394
Adjust for Postage increase		147,449			(8,847)	(66,529)						18,431
Adjust for research and development expense		1,979,102			(118,746)	(892,971)						247,388

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CAROLINA POWER & LIGHT COMPANY

Retail Operations Cost Allocation Study - June 30, 1976

Summary of Revenue, Operating Expenses, and Rate Base Adjustments

Adjustment	Revenue	O & M	Deprec. Expense	Taxes Other Than Income	State Income Taxes	Federal Income Taxes	Deferred Income Taxes	Plant In Service	Deprec. Reserve	Nuclear Fuel	Materials and Supplies	Cash Working Capital
Adjust for additional connect and disconnect charges		337,507			(20,250)	(152,283)						42,188
Adjust to include Brunswick #1 in plant in service			13,998,000		(1,816,260)	(13,658,275)			(13,998,000)			
Adjust to include other plant additions through March, 1977			2,142,000		(128,520)	(966,471)			(2,142,000)			
Adjust property tax to reflect addition of Brunswick				834,000	(50,040)	(376,301)						
Adjust for increases in FICA taxes				66,394	(3,984)	(29,957)						
Adjust for payroll taxes on wage increase adjustment				301,603	(18,096)	(136,084)						
Adjust for property tax on other plant additions				616,000	(36,960)	(277,939)						
Adjust for income tax normalization on Brunswick Plant							12,697,000					
Adjust to include Brunswick #1 in plant in service								331,384,000				
Adjust to include Brunswick #2 in average plant in service								201,578,464				
Adjust to include other plant additions through March 31, 1977								71,210,000				
Adjust to correct posting error										211,565		
Adjust nuclear fuel -Brunswick										20,841,000		
Adjust material and supplies - fuel stock to normal level											(4,279,386)	
Adjust cash working capital for additional accounts receivable												2,419,000
TOTAL ADJUSTMENTS	90,758,736	23,509,303	16,140,000	6,463,203	1,702,394	12,802,001	12,697,000	604,172,464	(16,140,000)	21,052,565	(4,279,386)	6,278,426

CAROLINA POWER & LIGHT COMPANY
RETAIL OPERATIONS COST ALLOCATION STUDY
JUNE 30, 1976
SYSTEM BASIS - CP FOR POWER SUPPLY

LOG NUMBER R105

SUMMARY BY RETAIL CLASS

	CONS	TOTAL RETAIL	RESIDENTIAL	SM GENL SERV	LG GENL SERV	LIGHTING
NET OPERATING REVENUES	REV00	592195103.	228956969.	74857205.	277793899.	11087029.
OPERATING EXPENSES	TO1					
NET OPERATION & MAINTENANCE	OM00	287027461.	110226552.	32956076.	139294724.	4550109.
DEPRECIATION	DPE00	57734490.	25090016.	7308394.	24176994.	1159085.
TAXES OTHER THAN INCOME	OT00	44679982.	18348896.	5731203.	19685661.	914223.
STATE INCOME TAXES	SIT00	5618761.	1693351.	809081.	3014737.	101592.
FEDERAL INCOME TAXES	FIT00	42241938.	10469847.	6488575.	24557387.	726129.
PROV FOR DEFERRED TAXES	DFIT00	15925270.	8127323.	2217837.	4946497.	633613.
INVESTMENT TAX CREDIT	ITC00	17974974.	7934075.	2288595.	7351191.	401112.
TOTAL OPERATING EXPENSES	EXP00	471202877.	181890060.	57799761.	223027192.	8485864.
OPERATING INCOME	RET00	120992226.	46566909.	17057444.	54766707.	2601165.
AVERAGE RATE BASE	TO2					
ELECTRIC PLANT IN SERVICE	P00	1806778309.	796462152.	229814339.	740054403.	40447334.
(ACCUM PROV FOR DEPRECIATION)	DPR00	-264369737.	-124350093.	-34395749.	-96803912.	-8819983.
NET PLANT IN SERVICE	NP00	1542408572.	672112060.	195418590.	643250571.	31627352.
NET NUCLEAR FUEL	NUC00	32441208.	10452714.	3290198.	18398637.	299659.
MATERIAL AND SUPPLIES	WC30	68483653.	25515393.	7526007.	34157203.	1285050.
PREPAID ITEMS	WC75	1830133.	700873.	219618.	889837.	19805.
CASH WORKING CAPITAL	WC90	44082858.	17509895.	5172324.	20600924.	799715.
TOTAL RATE BASE	RT800	1691224782.	727079251.	211859370.	718218028.	34068133.
RATE OF RETURN ADJ	RTRT00	7.154	6.405	8.051	7.625	7.635

Horne Exhibit No. 2
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