REPORT BY THE

Comptroller General

OF THE UNITED STATES

Construction Work In Progress Issue Needs Improved Regulatory Response For Utilities And Consumers

As of late 1979, 33 State public utility commissions and the Federal Energy Regulatory Commission were allowing privately owned electric companies to include construction work in progress in the rate base for establishing utility rates. Critics of this policy contend that it unfairly boosts utility bills because it allows companies to earn a return on plant and equipment not yet serving the public.

GAO sees the real issue as being whether companies need rate relief to maintain financial integrity, and whether construction programs which depend on such relief are needed to meet future electric energy demands.

The report recommends that the Commission establish a rulemaking proceeding to define criteria for companies seeking permission to include construction work in progress in their rate bases. It also recommends that the Department of Energy provide information for the Commission's rulemaking proceeding by analyzing the effects of the regulatory treatment of construction work in progress on the future availability and cost of electric energy supplies.

EMD-80-75
JUNE 23, 1980

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-198638

The Honorable Max S. Baucus
Chairman, Subcommittee on
Limitations of Contracted
and Delegated Authority
Committee on the Judiciary
United States States

SEP 002518

Dear Mr. Chairman:

As requested in your April 25, 1979, letter, this report discusses the policies of the Federal Energy Regulatory Commission and State public utility commissions regarding the inclusion of construction work in progress in the rate bases of privately owned utilities. Our report also examines the effects of these policies. As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report.

We provided a draft of this report to the Federal Energy Regulatory Commission and the Department of Energy. Neither the Commission nor the Department provided written comments, but they did provide oral comments.

Sincerely yours,

Comptroller General
of the United States

AGC 01452
AGC 00912

COMPTROLLER GENERAL'S REPORT
TO THE HONORABLE MAX BAUCUS
UNITED STATES SENATE

CONSTRUCTION WORK IN PROGRESS ISSUE NEEDS IMPROVED REGULATORY RESPONSE FOR UTILITIES AND CONSUMERS

D I G E S T

Should the cost of facilities under construction, which will provide electric energy to consumers in the future, be included in the rate base of privately owned electric utility companies? Is such an inclusion fair to current consumers?

These questions have received much attention in recent years. Critics contend that inclusion of Construction Work in Progress (CWIP) in the rate base unfairly makes current customers pay higher utility bills and provides investors a return on capital invested in projects that provide no service to current customers.

However, the CWIP issue is really part of a larger issue, namely, the determination by regulators that electric utility companies need rate relief. When regulators determine that a utility company needs rate relief to maintain financial integrity and to finance necessary construction programs, they have several alternatives to achieving that goal--one of which is inclusion of CWIP in the rate base. Regardless of the alternatives chosen, the result will be the same--higher utility bills. Thus, the CWIP issue must be viewed in the context of the effects that other alternatives for providing rate relief would have on utility bills. (See p. 31.)

Most of the decisions made by regulators affecting rates are made at the State level. State public utility commissions regulate intrastate sales of electric energy made directly to ultimate consumers. These sales constitute about 84 percent of electric energy sales by privately owned electric utility companies. The remainder of their sales, which are made to other utilities for resale, are regulated by the Federal Energy Regulatory Commission. (See p. 4.)

THE CWIP ISSUE: NOT SUSCEPTIBLE TO A SINGLE UNIFORM POLICY

Basically, the controversy over CWIP in the rate base involves two issues.

--To what extent must an electric utility use profits as a source of capital for new construction in order to maintain financial integrity?

--When will consumers pay for the financial costs of capital used to construct new facilities?

If regulators allow CWIP in the rate base, they in effect allow utility companies to recover the costs of capital invested in CWIP from current customers before the new facilities actually provide any service. If regulators do not allow CWIP in the rate base, they usually permit utility companies to add the costs of capital invested in CWIP to the direct construction expenditures that go into the rate base after completion of construction. The companies then generally recover the costs of capital through depreciation allowances on plant inservice, and they earn a return on the undepreciated balance of capital costs in the rate base. (See pp. 14, 34, and 46.)

Does the need to maintain utility company financial integrity justify higher utility rates for current customers? Privately owned utility companies, like other large private sector companies, depend significantly on internally generated funds--made up largely of profits and depreciation expenses--to provide reasonably priced funds for meeting financing needs, including new construction programs. These internal funds are generated from customer payments. The ability to finance a large portion of new construction with internal funds is viewed as a measure of financial integrity, which greatly affects a company's cost of funds acquired from new debt or stock issues.

Inability to obtain new capital from these external sources at a reasonable cost may jeopardize construction programs designed to meet future electric energy demand. (See pp. 47 and 48.)

Whether CWIP should be allowed in the rate base is a policy/equitability question which does not necessarily have one "right" answer. Each autonomous regulatory jurisdiction will have to answer the question through the regulatory process, public debate, the legislative forum, and judicial review.

THE STATE ROLE

As of late 1979, 33 State public utility commissions permitted CWIP in the rate base of privately owned electric utility companies, but their policies varied widely on amounts and types of CWIP and on circumstances justifying inclusion. The 27 commissions that provided data on the amounts allowed in the rate base allowed $8.9 billion in 1978 and $7.2 billion during the first 10 months of 1979. (See p. 21.)

THE FEDERAL ROLE

As of early April 1980, the Federal Energy Regulatory Commission had restricted CWIP in the rate base to capital invested in projects for controlling pollution or converting oil and gas-fired plants to other fossil fuels. The Commission allowed inclusion of about $88 million for such purposes during 1978 and $44 million during the first half of 1979. Although Commission policy provides for inclusion of other types of CWIP under conditions of financial hardship, none has been allowed. Three cases now pending before the Commission involve requests to include CWIP in the rate base due to financial hardship. Commission regulations which define financial hardship are too vague and general; the Commission should establish a generic

rulemaking proceeding to define more specific guidelines or criteria concerning financial hardship. (See p. 24.)

The Department of Energy estimates that privately and publicly owned utilities combined will invest about $228 billion in new conventional generating capacity during 1980-90. (See p. 19.) However, as of September 1979, the Department had neither analyzed the CWIP issue nor had it adopted a departmental policy on the issue. Because of its leadership role, the Department should provide input to the Commission's rulemaking process by analyzing the financial and economic questions surrounding the CWIP issue and its potential effect on the industry's ability to meet future electric energy demand. (See p. 30.)

RECOMMENDATIONS

--The Chairman, Federal Energy Regulatory Commission, should propose a generic rulemaking to more specifically define criteria or guidelines concerning the financial conditions which would justify including investments in electric plant CWIP--other than for pollution control and fuel conversion--in the portion of the rate base under the Commission's jurisdiction. The Chairman should institute the rulemaking either immediately after the Commission issues final decisions in the three currently pending financial hardship CWIP cases or by January 1, 1981, whichever occurs first. As part of the rulemaking process, the Commission should request comments, analyses, and the latest information available from all interested parties, including consumer groups, the utility industry, the financial community, State public utility commissions, and Federal agencies. We also recommend that the Chairman encourage State commissions to adopt, to the extent practicable, the criteria and guidelines resulting from the rulemaking proceeding in order to provide as much uniformity as possible in the treatment of CWIP.

--The Secretary, Department of Energy, should provide timely input to the Commission's rulemaking process by analyzing how the regulatory treatment of CWIP affects (1) electric utilities' cost of capital; (2) the long-term, life cycle costs of new electric utility facilities; and (3) continuity of construction programs needed to meet legitimate future electric energy demand.

AGENCY COMMENTS

GAO provided a draft of this report to the Federal Energy Regulatory Commission and the Department of Energy. Neither the Commission nor the Department provided formal written comments, but they did provide oral comments. Both the Commission's and the Department's comments were either technical or clarifying in nature or provided updated information. None of their comments resulted in any substantive changes to the report's content, conclusions, or recommendations.

Contents

ABBREVIATIONS

AFUDC	Allowance for Funds Used During Construction
ARC	Annual Report to the Congress
CWIP	construction work in progress
DOE	Department of Energy
FERC	Federal Energy Regulatory Commission
GAO	General Accounting Office
OPEC	Organization of Petroleum Exporting Countries

CHAPTER 1

INTRODUCTION

The Chairman, Senate Subcommittee on Limitations of Contracted and Delegated Authority, Committee on the Judiciary, asked us to review Federal and State policies on allowing privately owned electric utilities to include construction work in progress (CWIP) in their rate bases. 1/ The Chairman specifically asked that we address the following:

--Total CWIP nationwide and the amount allowed in the rate base.

--Estimated effect on utility bills of CWIP in the rate base during the past 3 and next 5 years.

--Conditions under which the Federal Energy Regulatory Commission (FERC) allows CWIP in the rate base. 2/

--Number of utilities seeking permission at the Federal and State levels to put CWIP in the rate base.

--Whether allowing CWIP in the rate base shifts the burden of paying for new construction from investors to customers.

Recent years have seen a fairly dramatic increase in CWIP investments by the Nation's large (classes A and B) privately owned electric utilities--from 8.3 percent of net capital investment in utility plant in 1967 to almost 25 percent in 1978. 3/ To enable these companies to generate adequate internal funds and to attract expansion capital at a reasonable cost, FERC and many State regulatory commissions have begun allowing them to include CWIP in the rate base, albeit to varying extents and under differing criteria and circumstances.

1/We have issued one prior report on this issue, "An Evaluation of the Federal Power Commission's Rulemaking on Utilities Construction Work in Progress," EMD-77-7, Dec. 2, 1976.

2/Under the Department of Energy Organization Act of 1977, FERC superceded and assumed the duties and powers of the Federal Power Commission on Oct. 1, 1977.

3/As defined by 18 CFR 101 (1979), class A utilities have annual revenues of $2.5 million or more, and class B utilities have annual revenues of at least $1 million but less than $2.5 million.

Regardless of the grounds for including CWIP in the rate base, the effect of such inclusion on consumer utility bills does not lend itself to easy formulation. Though both proponents and opponents can readily marshal arguments to support their positions on the issue of including CWIP in the rate base (see pp. 4-5), the real issue is whether a utility's financial condition actually warrants regulatory commission approval of a rate increase. If it does, CWIP in the rate base is one alternative a commission can use to provide that increase. Banning CWIP from the rate base may simply force the commission to find other revenue sources that can provide the needed rate increase. Whatever the source of revenue, the consumer will pay, perhaps later rather than sooner, but pay nonetheless.

Resolving the CWIP issue should be accomplished through a combination of regulatory process, public debate, the legislative forum, and/or judicial review, but the reader should not expect this process to yield a single policy applicable in all instances. To understand the issue, some familiarity with the ratemaking process is necessary (see ch. 2), as is information on the following factors affecting privately owned electric utilities:

--Historical developments relating to the CWIP issue.

--Regulatory environment within which privately owned electric utilities operate.

--Influence of financial conditions in electric utility regulation.

--Consumer attitude toward the CWIP issue.

HISTORICAL DEVELOPMENTS

United States Supreme Court decisions have established the right of a privately owned utility to a fair return on invested capital employed for the public's convenience. 1/ Such capital investments are commonly referred to as the "rate base." Over the years, public utility regulators usually have applied a "used and useful" criterion to determine how much plant and equipment should go into the rate base. Applying this criterion, they usually permitted capital invested in

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1/(1) Bluefield Water Works & Improv. Co. vs. West Virginia Pub. Service Commission (1923) 262 US 679, PUR 1923 D 11, 67 L Ed 1176. (2) Federal Power Commission vs. Hope Nat. Gas Co. (1944) 320 US 591, 51 PUR NS 193, 88 L Ed 333.

CWIP in the rate base only after the facilities under construction became operational. In other words, regulators generally authorized earnings only on investments in plant and equipment currently serving customers.

By the early 1970s, however, many large electric utilities began facing cash shortages and began having difficulties raising new capital to finance large new construction programs. Seeking ways to alleviate the cash shortage problems, more and more utilities began requesting that the rate base be enlarged by including CWIP, and regulators have approved the requests in increasing numbers. In 1974, a Federal Circuit Court of Appeals ruled in favor of allowing a CWIP in the rate base under the "used and useful" test. The Court pointed out that "funds are not necessarily 'used and useful' only when they are currently invested in completed plants." 1/

One survey in 1978 showed the following trend in rate cases for 45 State regulatory commissions during 1973-77. 2/

Summary of Total Cases Reported

	1973	1974	1975	1976	1977
Number of cases	81	121	203	176	182
CWIP requested	54	71	119	87	112
CWIP allowed	19	22	33	39	62

According to the survey, as of 1978, 34 State regulatory commissions allowed CWIP in the rate base. At the Federal level, the Federal Power Commission (FPC) began allowing some CWIP in the rate base in late 1976.

STATES REGULATE MOST SALES MADE BY LARGE ELECTRIC UTILITIES

Large electric utilities (classes A and B) are the dominant producers of electric energy. In 1978, they owned 80

1/Goodman vs. Public Service Commission of D.C., 497 F. 2d 661 (D.C. Cir. 1974).

2/W.F. Muhs and D.A. Schauer, "State Regulatory Practices with Construction Work in Progress A Summary," Public Utilities Fortnightly, Mar. 27, 1980.

percent of the Nation's installed generating capacity and generated 78 percent of net electric energy produced nationwide. Sales of electric energy directly to ultimate consumers are regulated by the individual State(s) in which the sales are made; sales to other privately or publicly owned utilities for resale in interstate commerce are regulated by FERC.

In 1978, large electric utilities sold about 84 percent of the energy they produced directly to ultimate consumers. Of the 1.561 trillion kilowatt-hours in direct sales regulated by the States, 501 billion went to residential customers, 1.01 trillion to commercial and industrial customers, and 50 billion to public street and highway lighting customers and other miscellaneous customers, such as public authorities and railroads. The other 307 billion kilowatt-hours in sales, regulated by FERC, accounted for about 16 percent of kilowatt-hour sales and went to other utilities. Measured in terms of revenues, the kilowatt-hour sales regulated by FERC accounted for only 10.8 percent of total revenues from sales of electric energy in 1978.

Thus, State public utility commissions play an important role in the life of privately owned electric utility companies, because the commissions regulate a major share of their sales. So important is the role that at least five investment research organizations prepare State commission ratings, which reflect the effect of commission policies on utility company financial health. One factor weighed in the rating process is the treatment of CWIP.

FINANCIAL CONDITIONS OF UTILITIES AFFECT CWIP ISSUE

Financial conditions have prompted some regulatory agencies to reconsider their policies on allowing electric CWIP in the rate base. For example, in 1974, as a result of unfavorable money market conditions, FPC proposed including CWIP in the rate base to lessen cash flow problems faced by electric utilities. The proposal's stated purpose was "to help alleviate the current financing problems being experienced by utility companies." Financial conditions on the State level have also affected regulators' attitudes toward CWIP. For example:

--Since 1971, one State commission has allowed CWIP in the rate base to the extent necessary to produce "reasonable interest coverage and internal cash flow."

--Another commission, which had allowed some CWIP in the rate base since 1955, reexamined and reaffirmed

its policy in 1972. The commission noted that electric utilities were involved in massive generating facility construction programs, which sometimes required 10 years leadtime. One utility company, according to the commission, had delayed completion of a large nuclear facility because of cash shortage problems.

CONSUMER GROUPS OBJECT TO CWIP IN RATE BASE

In November 1979, the Director, U.S. Office of Consumer Affairs, outlined several basic objections to include CWIP in the electric utility rate base:

--If CWIP is in the rate base, current customers' payments to utilities provide a return to utilities on facilities which will serve future customers. However, some current customers may not be among the customers who will benefit from these facilities, and therefore, objectors question the fairness of this procedure.

--Objectors contend that utilities have overestimated the need for additional future generating capacity. Allowing CWIP in the rate base forces current customers to provide a return on capital unnecessarily invested in new capacity, thereby protecting utilities from the consequences of their own management decisions and encouraging construction of unneeded facilities.

--Objectors also maintain that much of the legitimate expected increase in future demand for electric energy can be met through conservation measures. For example, over the next 15 years the New England Electric System plans to invest $335 million in conservation projects to deal with 90 percent of its expected load growth.

Other indicators of the consumer mood toward CWIP are public referendums or initiatives in two States that have resulted in banning CWIP in the rate base and legislation in six other States that prevents CWIP's inclusion in the rate base.

SCOPE OF REVIEW

We limited our review to the effects of regulatory treatment of investments in CWIP held by large (classes A and B), privately owned electric utilities. Our report is based on the following work.

--On November 7, 1979, we sent a questionnaire to the public utility commissions of 49 States and the District of Columbia (one State, Nebraska, has no privately owned electric utilities). Although not all responses were complete, all 50 commissions responded to our questionnaire; appendix II presents the questions asked and a summary of the responses. The questionnaire focused on the commissions' current treatment of CWIP and the amounts of CWIP they allowed in the rate base during 1977, 1978, and 1979 (through October). Knowledgeable commission staff members answered the questions. Before sending the questionnaire to the commissions, we pretested it by discussing its format and content with commission staff members from five State commissions.

--To determine FERC's policies and practices regarding CWIP, we interviewed numerous FERC officials and reviewed (1) FPC Order No. 555, "Order Adopting In Part Construction Work In Progress Rulemaking and Terminating Proceedings," November 8, 1976; (2) testimony, initial decisions, and/or other documents related to rate cases in which utility companies requested CWIP in the rate base under conditions of financial hardship.

--To determine the amounts of CWIP that FERC allowed in the rate base, we obtained the amounts of pollution control and fuel conversion CWIP which utilities had requested as of June 29, 1979. The data, compiled for 3 test years ending in 1977, 1978, and 1979, represented 48 total requests. We used the amounts requested because FERC ordinarily allows the amount of pollution control and fuel conversion CWIP that a company asks for; as of January 1980, FERC had not allowed CWIP in the rate base for any other purposes.

--To obtain estimates of future amounts of CWIP, we requested the assistance of the Department of Energy (DOE). In December 1979 the Office of Energy Source Analysis, Assistant Administrator for Applied Analysis, Energy Information Administration provided us a prepublication report draft entitled "Estimates of the Electric Utility Industry's Capital Requirements For Construction Work In Progress 1980-1990" (SR/ES/79-20, December 1979), which presents estimated annual capital requirements for construction of new generating capacity. It bases its estimates on the Capital Requirements Estimating Model interfaced with the electric utility industry's capacity expansion projections

generated by the Midterm Energy Forecasting System for the Series C-High Scenario of EIA's Annual Report to the Congress 1978 (ARC 78). This scenario assumes medium energy supply and demand conditions and also uses the highest oil prices of any of the ARC 78 scenarios. However, groundwork for the projections was laid before unexpected events such as OPEC's sharp oil price increase, political upheaval in Iran, and the Three Mile Island accident; these events may require changes to some of the projections. As of April 8, 1980, DOE could provide no firm assessments of the probable changes in the projections, but revised projections are to be included in the 1979 ARC that is due to be issued in July 1980.

--For background information, we reviewed a variety of documents from several sources, for example:

1. Numerous articles from publications such as Public Utilities Fortnightly, Journal of Accountancy, Electric Light and Power, Barron's, and Business Week.

2. Testimony on cost of capital and rate of return presented by FERC and General Services Administration staff witnesses in cases before FERC and/or State commissions.

3. FPC Order No. 561 concerning the "allowance for funds used during construction."

--We also discussed the CWIP issue with and/or obtained data from the staff of the Congressional Research Service, the National Association of Regulatory Utility Commissioners, the Office of Consumer Affairs, and the Nuclear Regulatory Commission.

Time did not permit detailed audit work to validate the data obtained in the questionnaire from State commissions, or the data obtained from officials of Federal agencies. As indicated below, we were unable to respond fully to several items in the congressional request. Specifically:

--Several commissions which said they permit CWIP in the rate base did not provide data on the amounts they allowed during 1977, 1978, and/or 1979; therefore, State commission data on amounts of CWIP in the rate base is only for the States which provided data.

--We estimated increases in utility bills due to CWIP in the rate base during 1977, 1978, and 1979 only for the States which provided sufficient data and for FERC. To estimate the effect, we multiplied the CWIP in the rate base times an assumed rate of return; however, we must caution the reader that such a method is simplistic, and for reasons described in the report, we do not believe the resulting estimates are statistically reliable as measures of the effect of CWIP in the rate base. (See p. 35.)

--We estimated annual increases in utility bills due to CWIP in the rate base for 1980-84. To do this we made a rough order of magnitude estimate of the amounts of CWIP that may be allowed in the rate base during these years. We had to make these rough estimates because the data obtained from DOE represented only the incremental capital expenditures for each year and did not include the carryover of unfinished CWIP from year to year. Therefore, the annual ending balances of CWIP would likely be larger than the incremental expenditures for each year. Also, the data we obtained from DOE was not available on a State-by-State basis; therefore, amounts for States that allow CWIP in the rate base were not identifiable. After making rough estimates of CWIP that may be allowed in the rate base, we then applied an assumed rate of return to the estimated amounts of CWIP. As mentioned above, this method is simplistic and we caution the reader that the resulting estimates are not statistically reliable as measures of the effect of CWIP in the rate base.

--Not all State commissions which permit CWIP in the rate base provided data on pending requests to include CWIP in the rate base. Data on the number of pending requests for FERC to allow pollution control and fuel conversion CWIP in the rate base was not readily available, and because of time constraints and the relatively small amounts of these types of CWIP allowed by FERC in the past, we did not obtain the data.

CHAPTER 2

THE RATEMAKING PROCESS: A FRAMEWORK FOR EXAMINING THE EFFECT OF CWIP ON UTILITY BILLS

Rate increases granted by public utility commissions are usually stated in terms of total additional revenues the increase will enable a utility company to collect from its customers. As the diagram on p. 10 indicates, two basic ratemaking components--operating revenues and cost of service--determine whether a utility needs more revenues. If a utility's cost of service exceeds operating revenues for a specified period of time, or "test period," 1/ the utility needs more revenue. Depending on the individual commission's policy, test period cost and revenue data may be historical and/or estimated for a future period.

Basically, operating revenues, or customer payments, should cover a company's cost of service, which includes (1) operating and maintenance expenses; (2) other costs, such as depreciation on plant in service and income taxes; and (3) a return on invested capital. Basically, an increase in cost of service increases a revenue deficiency, and an increase in operating revenues reduces the deficiency. The ratemaking framework includes two factors--authorized rate of return and allowance for funds used during construction (AFUDC)--that require further explanation.

AUTHORIZED RATE OF RETURN: FAIR RETURN IS A SUBJECTIVE CONCEPT

The authorized rate of return on the rate base is perhaps the most critical and controversial factor in the ratemaking process. Determining the authorized rate is critical because it directly affects a utility company's ability to pay its costs of capital which include interest expenses, preferred stock dividends, and a "fair" return (profit) for common stock investors. It is controversial because methods for determining fairness hinge on assumptions rather than indisputable facts.

All capital, including the capital used to finance construction projects, carries a cost. A company incurs actual

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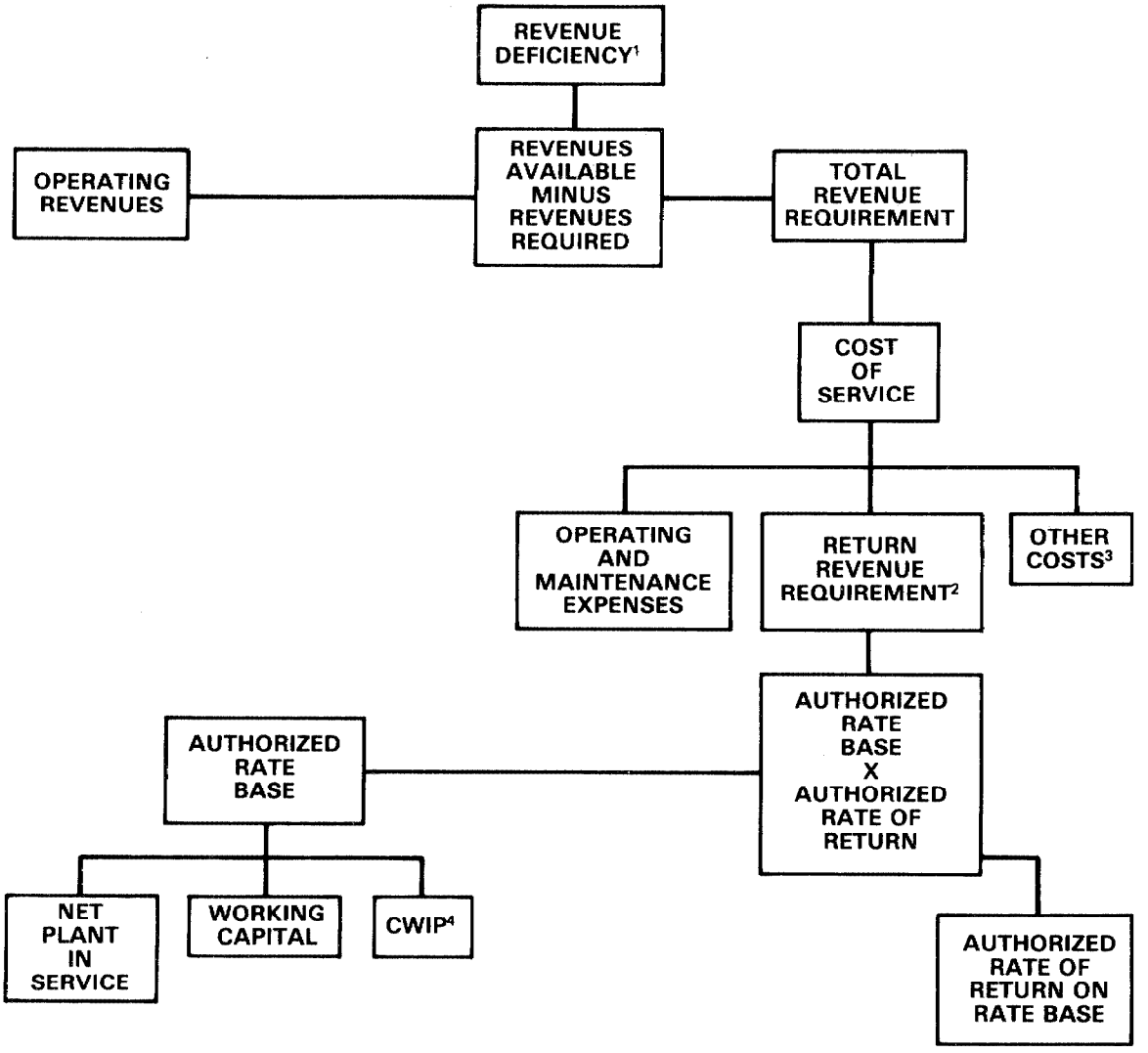
1/In addition to operating revenues, a utility may have other miscellaneous sources of income available to cover some of the costs of service.

GENERAL FRAMEWORK FOR DETERMINING THE ADDITIONAL REVENUES WHICH A RATE INCREASE SHOULD YIELD TO A UTILITY COMPANY



[1]ADDITIONAL REVENUES NEEDED TO COVER REVENUE REQUIREMENTS.
[2]INCLUDES REVENUES NEEDED TO PROVIDE INVESTORS WITH A FAIR RETURN (PROFIT) AFTER TAXES.
[3]INCLUDES SUCH COSTS AS INCOME TAXES, OTHER TAXES, DEPRECIATION ALLOWANCES ON PLANT IN SERVICE AND ALL OTHER COSTS PRUDENTLY INCURRED TO PROVIDE SERVICE TO CUSTOMER.
[4]SOME PUBLIC UTILITY COMMISSIONS ALLOW NO CWIP IN THE RATE BASE.

interest expense on borrowed funds and an imputed capital cost on company funds that include undistributed profits, depreciation reserve funds, and proceeds from common stock sales. From an accounting standpoint, company funds do not entail any actual expense, but the funds could be earning returns if invested elsewhere, and thus, the company does incur capital costs for these funds. Common stock owners expect to earn a certain level of return on their equity, or they will be unwilling to purchase new stock issues when the company needs additional equity capital.

Computing a company's weighted cost of capital is the basic procedure used to determine authorized rate of return (see p. 12). The cost of long-term debt, preferred stock, and common equity largely determine the weighted cost of capital. The following example illustrates the computation for a hypothetical company with a $1 billion capital structure; long-term debt costs 9 percent, preferred stock costs 8 percent, and common equity, 15 percent. Based on the proportion of each component in the capital structure, the weighted cost of capital is 11.3 percent.

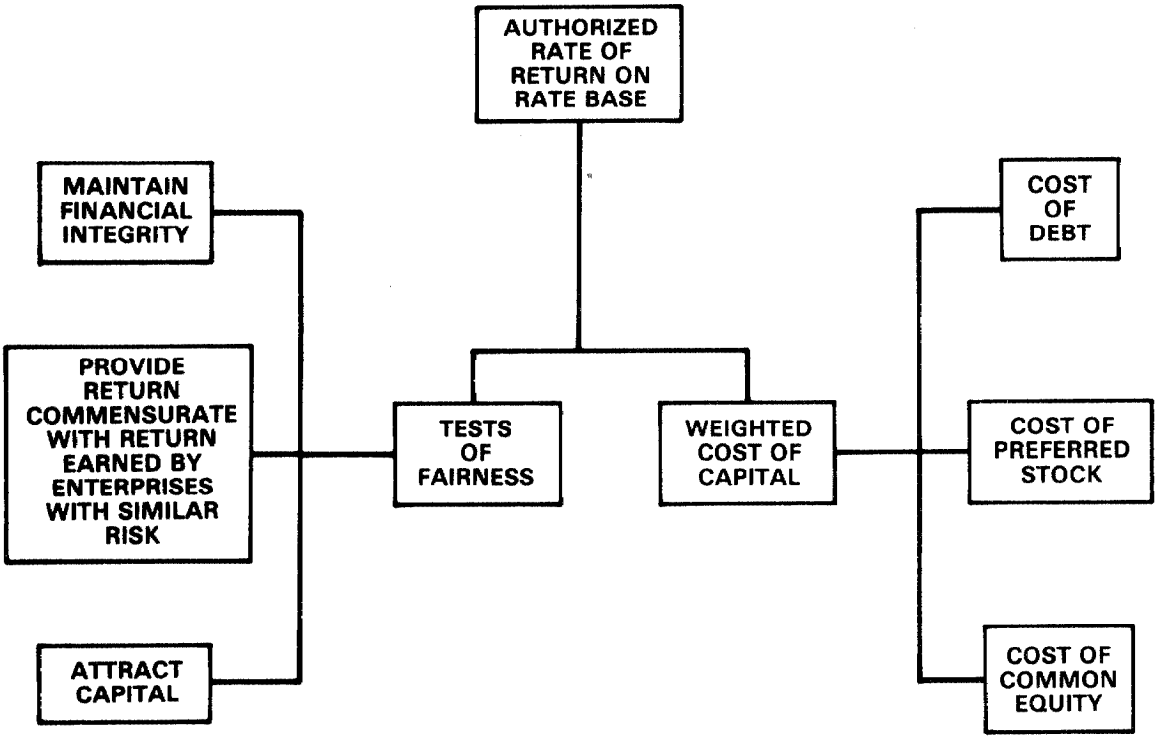
Example of Weighted Cost of Capital Computation

	Capital structure			
Component	Amount	Percent of capital structure	Component cost in percent	Weighted cost in percent
Long-term debt	$ 500,000,000	50	9	4.5
Preferred stock	100,000,000	10	8	0.8
Common equity	400,000,000	40	15	6.0
Total	$1,000,000,000	100		11.3

Determining the cost of outstanding long-term debt (bonds) and preferred stock, which are historically documented and sometimes referred to as "embedded costs," is relatively simple because both carry a contractual rate of return. However, it has been argued that embedded historical costs do not necessarily represent what a utility company would have to pay to attract capital in the current market, and therefore, estimated current costs of debt and preferred stock should be used rather than embedded costs.

But most disagreements about the cost of capital have centered around the cost of common equity, that is, the rate of return earned by the owners of the company. According to

GENERAL FRAMEWORK FOR SETTING THE AUTHORIZED RATE OF RETURN ON RATE BASE



Supreme Court decisions, which have established several tests to determine whether the return earned by common equity owners is fair, the rate of return should be sufficient to

--maintain the utility's financial integrity,

--provide a return commensurate with that earned by other enterprises of corresponding risk, and

--attract capital to the utility.

Yet, these tests are difficult to apply because they involve subjective judgments.

For example, the second test is relatively easy to understand and apply in theory. The rationale behind it is that high risk warrants a higher rate of return than lower risk. Investors assess risk before investing capital and require a certain level of expected return before they will assume a perceived level of risk. Two basic risks they must assess are fundamental business risks and financial risks. The former is related directly to the company's operation as well as the effect of economic conditions, natural disasters, competition, and the like. The latter is related to the capital structure of the company, and the use of debt and preferred stock carries increased financial risks for common stock owners, who are paid returns only after the company has paid interest and preferred dividends on its debt and preferred stock. Also, common stock owners are the last to be satisfied upon liquidation, if it occurs. Hence, the higher the percentage of debt and preferred stock in the capital structure, the higher the financial risk for common equity owners.

By comparing a utility to companies with similar risk, an analyst can estimate the return investors require to invest in the utility company. However, actually selecting companies of "corresponding risk" is not simple. For example, in a rate case before FERC in 1979, the administrative law judge rejected the validity of various groups of companies which utility and intervenor witnesses asserted had risks similar to the utility company seeking the rate increase. FERC's staff witness presented yet another group of "corresponding risk" companies, which the utility company claimed was invalid for comparison. The judge concluded that the group of companies presented by the staff witness was reasonable, but admitted that the utility company's arguments against the group were not totally without merit.

Fraught with perhaps even more subjectivity and controversy are complex mathematical models used to determine the

appropriate rate of return on common equity. For example, one financial analyst has said:

> "In gauging a utility's cost of common equity--ordinarily the only capital cost significantly in dispute--rate of return witnesses typically employ formula-type financial models: discounted cash flow estimates, the capital asset pricing model (CAPM), or much less frequently nowadays, earnings-to-price ratios. Consequently, in most rate cases the rate of return controversy winds up as an argument among contending witnesses over the merits of different cost of capital models, and not infrequently over the merits of rival inputs to the same model. * * * The more sophisticated cost of capital models (DCF and CAPM) are derived by rigorous mathematical deduction which is unchallengeable, given the starting assumptions. The problem is that in any practical case, these assumptions can never be fully satisfied." 1/

Risk, as perceived by investors, is one factor in rate-making which requires such subjective assumptions. The higher the assumed risk, the higher the return investors will require to buy common stock.

ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION: A METHOD OF RECOVERING THE COSTS OF CAPITAL NOT ALLOWED IN THE RATE BASE

If all the capital in a utility company's capital structure were in its rate base, the company would recover all capital costs, including the cost of capital invested in CWIP, through the application of the authorized rate of return to the rate base. But when capital invested in CWIP is excluded from the rate base, the company has to recover the cost of capital invested in CWIP through other means. In such a case, a regulatory commission usually will permit the company to recover CWIP capital costs through the computation of an allowance for funds used during construction (AFUDC).

Essentially, the AFUDC procedure works as follows. The computed AFUDC equals the company's approximate cost of capital multiplied by the amount of CWIP excluded from its rate base. The company capitalizes, or adds, AFUDC to direct

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1/G. A. Christy and J. G. Christy, "Does the Capital Attraction Argument Suffice?" Public Utilities Fortnightly, Mar. 29, 1979.

construction expenditures, and AFUDC becomes part of CWIP. When the facility is completed, AFUDC goes into the rate base, and the company depreciates AFUDC over the useful life of the facility and earns a rate of return on the undepreciated balance of AFUDC.

As an accepted practice, during the construction period the company usually reports AFUDC as current income; however, the AFUDC portion is not received as cash in the current period. Cash inflows from AFUDC do not occur until after construction is complete; although reported as current income, AFUDC actually represents future cash flows. In annual statements submitted to FERC for 1978, classes A and B electric utilities reported AFUDC totaling about $2.75 billion.

As an example of how utility companies recover capital costs, the table on p. 16 compares situations in which CWIP is allowed in one case but excluded in another from the rate base. In our example, the company has a total capital structure of $1 billion; its weighted cost of capital is 11.3 percent; and therefore, its annual total dollar cost of capital is $113 million. The company's investments in CWIP total $225 million. Assuming the authorized rate of return is 11.3 percent and the entire $1 billion capital structure is allowed in the rate base, the company would recover the $113 million needed that year to pay interest expenses and preferred dividends and to provide a fair return to investors. 1/

However, as explained on page 1, some commissions disallow capital invested in CWIP as a rate base item until construction is complete and the facility operative and consequently, the utility cannot recover the full costs of capital by applying the authorized rate of return to the rate base. Thus, in our example, by excluding $225 million of CWIP from the rate base, only $775 million of the company's $1 billion capital structure remains in the rate base. Assuming again that the authorized rate of return is 11.3 percent, the utility company recovers only about $88 million, or about $25 million less than the $113 million required that year to pay interest expenses and preferred dividends and to provide a fair return to investors. Under the AFUDC procedure, the company would capitalize the remaining $25 million of capital cost ($225 million of CWIP multiplied by 11.3 percent). After the construction project goes into operation, the $25 million

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1/This example is for illustrative purposes and does not take into account the effect of income taxes on the revenue requirements.

is depreciated over the life of the facility, and generally, the company annually earns a return on the undepreciated balance of the $25 million of AFUDC.

Comparison of Cost of Capital Recovery When All Capital Is in the Rate Base and When Some Capital Is Excluded from the Rate Base

Capital structure			Component cost		Weighted cost	Return on rate base	
	Amount					CWIP in (note a)	CWIP out (note b)
Component	Millions	Percent	Percent	Millions	(Percent)	(Millions)	(Millions)
Long term debt	$ 500	50	9	$ 45	4.5	$ -	$ -
Preferred stock	100	10	8	8	0.8	-	-
Common equity	400	40	15	60	6.0	-	-
Total	$1,000	100		$113	11.3	$113	$87.58

a/Assuming that the authorized rate of return is 11.3 percent and that the entire $1 billion capital structure is in the rate base, the dollar return on the rate base equals 11.3 percent times $1 billion.

b/Assuming that $225 million of CWIP is excluded from the rate base, the rate base is $775 million. Assuming an authorized rate of return of 11.3 percent, the dollar return on the rate base equals 11.3 percent times $775 million.

CHAPTER 3

HOW MUCH CWIP IS IN THE RATE BASE OF LARGE PRIVATELY OWNED ELECTRIC UTILITIES?

In the late 1960s, CWIP constituted a relatively small portion of large utilities' net investment in electric utility plants. By the late 1970s, however, CWIP balances represented almost one-quarter of such investments, and high levels of CWIP appear likely to persist through the 1980s.

Regulatory policies regarding CWIP in the rate base vary greatly. At the State level, 33 public utility commissions allow either part or all of CWIP in the rate base. Some of the commissions that permit CWIP in the rate base did not provide data on the amounts they allowed from 1977 through October 1979. Twenty-six commissions provided data on amounts allowed in 1977, and 27 provided data for 1978-79. The annual average amount of CWIP allowed in the rate base was $8.6 billion. Data provided by 18 commissions showed they had requests pending to include about $9.1 billion of CWIP in the rate base.

At the Federal level, FERC had restricted CWIP in the rate base to expenditures made to control pollution and to convert oil or gas-fired facilities to other fossil fuels; from 1977 to mid-1979, the Commission had allowed an average annual amount of about $69.9 million in CWIP for such projects in the rate base. Although FERC policy provides for inclusion of other types of CWIP for utilities suffering financial hardship, as of January 1980 the Commission had neither approved any requests under this provision nor issued regulations with specific guidance on evidence a utility must present to demonstrate severe financial difficulty. Nor had DOE adopted a policy on the CWIP issue.

INVESTMENTS IN NEW CONSTRUCTION HAVE INCREASED DRAMATICALLY

As shown below, in 1967 the CWIP balances of large electric utilities amounted to about $4.4 billion, or only 8.3 percent of net investment. By 1978, their CWIP balances amounted to over $42.5 billion, almost 25 percent of net investment. At the end of 1977, 6 electric utilities each had CWIP balances of $1 billion or more; at the end of 1978, 10 each had $1 billion or more, with 1 having more than $2 billion. During January-August 1979, gross additions to CWIP totaled about $16.5 billion.

Year-End CWIP Balances of Large
Privately Owned Electric Utilities 1967-78

Year	Electric utility plant CWIP (billions)	Net electric utility plant (note a) (billions)	Percent of net investment
1967	$ 4.4	$ 53.3	8.3
1968	5.9	58.4	10.1
1969	7.7	64.6	11.9
1970	10.3	72.2	14.3
1971	13.5	81.0	16.7
1972	16.6	91.3	18.2
1973	20.2	103.0	19.6
1974	22.8	116.0	19.7
1975	26.3	127.4	20.6
1976	31.7	139.9	22.7
1977	36.5	154.4	23.6
1978	42.5	170.4	24.9

a/Not including nuclear fuel.

Source: Statistics of Privately Owned Electric Utilities in the United States 1978, U.S. Department of Energy, Oct. 1979 [DOE/EIA - 0044(78)].

INVESTMENTS IN NEW CONSTRUCTION WILL REMAIN LARGE IN THE 1980s

Projections prepared by the Department of Energy (DOE) in December 1979 show that privately and publicly owned electric utilities combined will add an estimated 369.5 gigawatts 1/ of conventional generating capacity during 1980-90. 2/ As shown

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1/One gigawatt equals one billion watts. In 1978, the total electric utility industry's installed generating capacity was 560.2 gigawatts.

2/DOE projections reflect the electric utility industry and its relationship to the overall energy environment as perceived when DOE prepared its 1978 Annual Report to the Congress (ARC). Groundwork for the projections had been laid before unexpected events such as OPEC's sharp oil price increase, political upheaval in Iran, and the Three Mile Island accident. These events may have effects which will change some of the projections. As of April 8, 1980, DOE could provide no firm assessments of the probable changes, but revised projections are to be included in the 1979 ARC that is due to be issued in July 1980.

on p. 20, DOE projects that 221.4 gigawatts, or about 60 percent, of the new capacity will be coal-fired and 97.2 gigawatts, or about 26 percent, nuclear. DOE estimated total capital expenditures required for the increase in conventional capacity at about $228 billion (1978 dollars). 1/ In addition, DOE estimates that the industry will spend about $21.5 billion to convert plants from oil or gas to other fuels and to develop emerging technologies. Another $96.7 billion is planned for transmission and distribution facilities.

Assuming that past patterns of investment continue (see p. 4), large, privately owned electric utility companies will probably account for about 80 percent of the capital expenditures made during 1980-90; in other words, they would spend about $182 billion for conventional capacity expansion and about $95 billion for other types of investments.

AMOUNTS OF CWIP ALLOWED IN RATE BASE BY STATES VARY WIDELY

Public utility commissions in 49 States and the District of Columbia regulate the retail (intrastate) rates of privately owned electric utilities. 2/ All 50 of these commissions responded to our questionnaire on the CWIP issue and provided the following information.

--Thirty-three commissions said they allow either all or part of CWIP in the rate base. In 1978, electric utilities serving these 33 States accounted for $33.7 billion of CWIP, which represented 79 percent of the $42.5 billion outstanding nationwide at yearend. Eleven commissions said they usually allow all CWIP in the rate base; the other 22 commissions usually allow at least part of CWIP in the rate base, depending on the circumstances of the individual case. The commissions' policies on allowing CWIP in the rate base have some similarities but, overall, differ significantly.

1/The annual estimates represent only incremental, new capital expenditures made each year. The amounts do not include any carryover of unfinished CWIP from year to year. Therefore, the ending balance of CWIP for each year would probably be larger than the incremental, new capital expenditures for the same year.

2/See pp. 4 and 5.

National Cumulative Conventional Electric Generating Capacity Additions (Gigawatts) Projected for 1980-90

Year	Coal	Oil	Nuclear	All other	Cumulative total
1980	18.34	1.44	6.48	4.79	31.05
1981	28.32	2.87	17.73	9.64	58.56
1982	40.18	4.30	27.46	14.37	86.31
1983	54.38	5.73	34.80	19.18	114.09
1984	68.20	7.17	44.48	23.96	143.81
1985	95.64	7.17	56.41	27.42	186.64
1986	123.09	7.17	65.29	30.86	226.41
1987	150.53	7.17	77.96	34.31	269.97
1988	177.98	7.17	84.81	37.76	307.72
1989	205.42	7.17	89.41	41.21	343.21
1990	221.43	7.17	97.18	43.76	369.54

Note: Excludes plant fuel conversions, plant retrofits, and emerging technologies.

Annual Capital Expenditures Requirements (in 1978 Dollars) for Construction of Conventional Electric Generating Plant Types 1980-90

Year	Coal	Nuclear	Other conventional (note a)	Total conventional (note b)
	----------(billions)----------			
1980	$ 8.37	$ 6.76	$ 1.64	$ 16.77
1981	10.13	7.39	1.54	19.06
1982	13.05	7.72	1.36	22.13
1983	14.84	7.82	1.28	23.94
1984	15.70	7.35	1.17	24.22
1985	15.54	6.72	0.97	23.23
1986	14.21	6.93	0.94	22.08
1987	11.90	8.22	0.87	20.99
1988	10.43	8.70	0.78	19.91
1989	9.69	8.66	0.72	19.07
1990	8.47	7.26	0.69	16.42
Total	$132.33	$83.53	$11.96	$227.82

a/Gas and oil steam capacity accounts for only $1.42 billion of "other conventional" expenditures. The estimates show no capital expenditures for gas and oil steam capacity after 1984.

b/The total capital expenditures include the cost of the capital invested in CWIP. Cost of capital for 1980-90 amounts to about $49.4 billion.

SOURCE: Pre-publication report draft entitled "Estimates of the Electric Utility Industry's Capital Requirements."

--Twenty-seven commissions provided data on CWIP they allowed in the rate base during 1978, the most recent full year for which data were available. At the end of 1978, the electric utilities serving these 27 States had CWIP balances totaling $29.2 billion, which represented about 69 percent of the $42.5 billion outstanding nationwide at year-end. These 27 commissions allowed about $8.9 billion, or 31 percent, of their $29.2 billion in the rate base.

--Seventeen State commissions said they allow no CWIP in the rate base. These 17 States accounted for $8.8 billion, or 21 percent, of the $42.5 billion in CWIP outstanding nationwide at the end of 1978.

Policies differ greatly among commissions which allow CWIP in the rate base

Commissions that allow CWIP in the rate base vary widely in their approaches to the issue. They differ on test periods used, on the ratemaking treatment of AFUDC, and on types of CWIP allowed. 1/ The differences among the commissions' policies are illustrated on pp. 22-23.

State commissions have allowed significant amounts of CWIP in the rate base

As shown on p. 24, for commissions that provided data, the amounts of CWIP allowed in the rate base totaled $8.1 billion, $8.9 billion, and $7.2 billion in 1977, 1978, and 1979, respectively. We roughly estimated the percentage of CWIP they allowed in the rate base in 1977 and 1978. To do this, we compared the amount of CWIP they allowed in the rate base against the total CWIP in their States as reflected in year-end balances compiled by DOE. 2/ In 1977, 26 States that provided data allowed 33 percent of their total CWIP in the rate base, and in 1978, 27 States allowed 31 percent.

1/As discussed in chapter 4, to a great extent the treatment of AFUDC determines the actual effect on utility bills of CWIP in the rate base. (See p. 34.)

2/This methodology yields a "rough" estimate because the 1977 and 1978 data reported by the commissions were not necessarily for test periods ending on the last day of 1977 or 1978. Complete 1979 data were not available.

Examples Showing Differences Among the Basic Policies of the State Commissions Which Allow CWIP in the Rate Base

Number of commissions	Description of basic policy
7	Commission allows full CWIP in the rate base. AFUDC income is used to offset revenue requirements.
2	Commission allows full CWIP in the rate base. AFUDC income is used to varying degrees to offset revenue requirements, depending on the company's financial condition and/or effect on consumers.
1	Commission allows only the CWIP which is to be placed in service in a reasonable period of time, which is defined from case to case.
1	Before June 1979, commission allowed full CWIP in rate base, but capital invested in CWIP after June 1979 is not allowed in rate base, except for pollution control CWIP which is allowed in full.
1	Commission allows all "reasonable and prudent" CWIP expenditures made after June 1979.
3	Commission allows an amount of CWIP based on the financial condition of the company at the time of the rate case.
1	Commission allows only the CWIP which is to be placed in service within 2 years.
1	Commission generally allows only the CWIP which is to be placed in service within 6 months.
1	Commission allows CWIP in the rate base only when a cash flow insufficiency threatens the company's ability to obtain outside financing.
1	Commission allows full pollution control CWIP and other CWIP which is to be placed in service within 12 months. Remaining CWIP may go into the rate base, but AFUDC income must be used to offset revenue requirements.
1	State statute permits a "reasonable" amount of CWIP in the base, provided the CWIP is 75 percent complete and the amount of CWIP in the rate base does not exceed 20 percent of the total value of utility plant allowable in the rate base.

Types of CWIP Allowed in the Rate Base by State Commissions

Type of CWIP	Number of commissions
Production	26
Transmission	25
Distribution	24
General plant	24
Pollution/environmental control project	28
Fuel conversion projects	16
Nuclear plant	18
Other	6

Note: Some commissions have not allowed some types of CWIP, such as fuel conversion projects or nuclear plant, in the rate base either because none exists in their States, or these types have not been addressed in a rate case.

Types of Test Periods Used in Rate Cases by State Commissions to Determine Amount of CWIP Allowed in Rate Base

Type of test period	Number of commissions
Historical 12-month average	5
Historical 13-month average	7
Ending balance for a past period	18
CWIP to be placed in service within a given period	12
Projected level of CWIP during a future test period	8
Other	4
Did not answer	1

Note: Some commissions have used more than one type of test period.

Amounts of CWIP Allowed in the Rate Base
By Public Utility Commissions 1977-79

Year (note a)	Number of States which provided data	Amount of CWIP in rate base (billions)	Total CWIP at year-end (billions)	Percent of year-end CWIP in rate base
1977	26	$ 8.102	$24.831	33
1978	27	8.931	29.201	31
1979	27	7.199	b/	b/

a/Data provided by State commissions for 1979 is for January-October.

b/As of January 1, 1980, data for 1979 were not available.

FERC HAS PERMITTED RELATIVELY LITTLE CWIP IN THE RATE BASE

Until late 1976, FPC (now FERC) did not allow any electric CWIP in the electric utility rate base. But FERC regulations now, upon application, permit CWIP for pollution control and fuel conversion (oil/gas to other fossil fuels) to enter the rate base somewhat routinely. Other CWIP may go into the rate base only if a utility can demonstrate "severe financial difficulty." As of April 8, 1980, however, the Commission had approved no requests to put CWIP in the rate base under the severe-financial-difficulty test. FERC has not analyzed the CWIP issue since 1976 with a view toward publishing regulations with specific criteria or evidence requirements for meeting the test.

Financial conditions influenced Commission's decision to allow CWIP in rate base

FPC Order No. 555 established the new policy on CWIP in November 1976. In the order, the Commission noted that, until recently, the construction period for new electric plants had been fairly short, construction costs low, and financial conditions such that the accounting and ratemaking treatment of CWIP had not been a serious financial concern to utilities. Amounts of money tied up in CWIP had been small, and the proportion of income represented by AFUDC had not been large.

However, according to the order, due to significant increases in CWIP and AFUDC in recent years, the accounting

and ratemaking treatment had become a serious financial concern. Disallowance of CWIP in the rate base had resulted in inadequate cash flow to finance expansion and raised questions about whether utilities could obtain necessary expansion capital through new bond and/or stock issues at reasonable cost. The Commission concluded that, under certain circumstances, CWIP in the rate base would be justifiable. However, it also recognized that allowing CWIP in the rate base raised the issue of "intergenerational" equitability, that is, should current consumers be required to pay for costs associated with new construction which may not serve some current consumers after it goes into operation?

Pollution control and fuel conversion CWIP go into rate base routinely

The Commission decided that the intergenerational equity question should not prevent the inclusion of pollution control and fuel conversion CWIP in the rate base. In these cases, according to Order No. 555, the "profligacy" of the present generation is causing the need for the new facilities.

Pollution control facilities that qualify under the order include structures or portions of structures designed to reduce pollution produced by an existing generating facility; not included are facilities which lessen pollution by substituting a different, non-polluting method of generation. Concerning fuel conversion facilities, the Commission noted that national policy encouraged conversion of gas- and oil-burning plants to alternative fossil fuels, and it therefore decided that fuel conversion CWIP could be included in the rate base, regardless of the specific reason for the conversion.

As of December 31, 1978, large electric utilities had about $5.1 billion of environmental protection CWIP, which constituted 12 percent of total CWIP. During test years ending from 1977 through June 1979, FERC allowed pollution control and fuel conversion CWIP in the portion of the rate base under FERC's jurisdiction in 38 rate cases. On an annual basis, the average amount permitted in the rate base was only $69.9 million. Order No. 555 projected completion of pollution control retrofitting and fuel conversions in the early 1980s, but FERC had not compiled current estimates of the amounts likely to be spent on these efforts during 1980-85.

Amounts of Pollution Control and Fuel Conversion CWIP Allowed by FERC In Rate Base 1977-79

Test year	Amounted requested in rate base (millions)
1977	$32.9
1978	88.2
1979 (note a)	44.2

a/Data for 1979 were taken from requests submitted to FERC through June 1979.

Note: Amounts shown were the amounts companies requested for inclusion in the rate base; amounts requested ordinarily are the amounts which go into the rate base.

No CWIP has gone into rate base under severe-financial-difficulty test

In accordance with Order No. 555, FERC regulations also provide a procedure for including in the rate base investments made in CWIP for purposes other than pollution control and fuel conversion. A utility must show severe financial difficulty which cannot be alleviated through other means without materially increasing consumers' cost of electricity. The Commission itself must approve the utility's request before rates based on CWIP may go into effect under this provision.

As of April 8, 1980, four utility companies had requested and one company had stated it intended to request CWIP in the rate base under this provision. In the four cases in which requests had already been made, FERC administrative law judges had issued initial decisions recommending approval of one request and disapproval of three. Even though one request had received approval at the administrative law judge level, rates based on CWIP had not gone into effect because the Commission had yet to issue a final order affirming the decision. Furthermore, FERC had not analyzed the CWIP issue since 1976 nor had it published regulations with specific guidance on evidence needed to demonstrate severe financial difficulty.

Four utilities have requested CWIP in rate base due to financial hardships

The four companies that had made financial hardship requests were Public Service Company of New Hampshire, Louisiana Power and Light Company, El Paso Electric Company, and Public Service Company of New Mexico. Another company, Montaup Electric Company, had filed a notice of its intent to request CWIP in the rate base.

An FERC administrative law judge recommended in January 1979 that the Commission approve Public Service Company of New Hampshire's request to include CWIP in the rate base. The judge concluded that the company qualified under the provision because it could not raise additional capital at reasonable rates, and because earnings necessary to attract capital would require a rate of return on common equity substantially higher than the cost of equity for otherwise similar electric utilities.

Since the judge issued the January 1979 initial decision, events have occurred which make it unlikely that rates based on CWIP will go into effect for the New Hampshire company. In May 1979 the New Hampshire legislature passed a statute barring CWIP from the State rate base. Without CWIP in the State rate base, the company concluded it could not finance its 50-percent share in the Seabrook nuclear facility, and the company asked the Commission to suspend the case while it sought to sell part of its interest in Seabrook. On January 22, 1980, the company proposed that the Commission approve rates not based on CWIP. In doing so, the company did not withdraw the CWIP issue but reserved the right for further review by the Commission in the event of future financial distress.

Administrative law judges recommended that the Commission reject the requests by El Paso Electric and Louisiana Power and Light. In the El Paso decision, dated August 3, 1979, the judge concluded that rate relief already provided by the Texas Public Utility Commission had improved the company's financial condition sufficiently to relieve its financial distress. FERC's Office of Opinions and Review has a target date of March 1980 for drafting an opinion on this case. The opinion will be circulated to FERC staff-members for comment, and thereafter, the Office will propose a final decision to the Commission.

In a decision dated December 10, 1979, the judge concluded that Louisiana Power and Light had overstated its financial need and had not explored other methods of financing construction. He also stated that, because FERC has jurisdiction over only 5 percent of the company's total service, the financial relief the company was seeking from FERC could not possibly alleviate its financial problems. Without evidence that relief was forthcoming from retail customers at the State level, the judge said that wholesale customers should not have to pay rates that cannot solve the company's problems anyway. FERC's Office of Opinions and Review has a target date of April 1980 for drafting an opinion on this case.

In the fourth case, involving Public Service Company of New Mexico, an administrative law judge recommended in an initial decision on April 2, 1980, that the Commission deny the request to include CWIP in the rate base. On December 13, 1979, a fifth company, Montaup Electric, filed a notice of its intention to request CWIP in the rate base. The company will seek a final order from the Commission by January 1, 1981.

Shown below are the amounts of CWIP which four companies requested that the Commission allow in the rate base under the financial hardship test.

Amounts of CWIP Which Four Utility Companies Requested That FERC Allow in the Rate Base

Company	Amount (millions)
Public Service Company of New Hampshire	$182.3
Louisiana Power and Light Company	28.9
El Paso Electric Company	1.0
Public Service Company of New Mexico	61.8
	$274.0

FERC's criteria for financial hardship need to be more specific

FERC determines whether electric utility companies meet the financial hardship test on a case-by-case basis, and we believe the case-by-case method is reasonable. Each utility company's situation necessarily involves unique aspects which would make it difficult to establish a detailed set of hard and fast decision criteria that cover all cases. However, we believe that the criteria as they currently exist are too general and that FERC regulations could provide more specific criteria or guidelines about the kinds of evidence companies should present.

As of June 1979, FERC's Office of Regulatory Analysis 1/ had not analyzed the CWIP issue to determine specific criteria

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1/The Office is responsible for technical and analytical studies, policy development, and policy advice.

for the financial hardship test. In July 1979, FERC's chief administrative law judge said the Commission should give FERC staff-members and the public more guidance on the CWIP issue. The only criteria or guidance published in Federal regulations are those set forth in Order No. 555, which said:

> "* * * The financial circumstances that we contemplate are those in which it would be clearly detrimental to utility wholesale customers if some amount of CWIP were not permitted in rate base. In particular, we envision a situation in which the rate of return necessary to enable the utility to maintain its credit and attract capital in accordance with the standards of the Bluefield decision would be materially in excess of the cost of capital for otherwise similar utilities. Such a circumstance might arise, for example, where the exigencies of the utility's construction program are such as to reduce its interest coverage to such an extent that additional capital cannot be raised at reasonable rates and that an amount of earnings sufficient to attract capital would require a rate of return on equity substantially in excess of the cost of equity capital to otherwise similar electric utilities. Under such circumstances, it would be to the benefit of the consumer if the additional earnings necessary to attract capital were permitted by way of a return on CWIP rather than by way of an inflated return on the traditional rate base since the former treatment would eventually be reflected in a lower rate base by way of reduced AFUDC allowance, while the latter would not."

That the above criteria are too general to be relied on as the sole set of criteria is clear from the cases already before the Commission. After receiving the requests to include CWIP in the rate base, the Commission established additional information requirements in three of the four cases. Some of the requirements were the same for each company; for example, the Commission wanted to know:

- --To what extent had affiliated companies participated in financing construction?

- --Under what specific planning requirements had the need for a new generating facility been established?

- --To what extent did the company's construction program reflect either systemwide parent company planning, joint utility planning, pool planning, or reliability council planning?

--What specific reserve considerations and reliability criteria were used in making construction decisions?

--In what specifically quantified manner would the cost and quality of service be affected by deferral of construction projects?

Other information requested from at least two of the three companies included the following:

--What was the company's specific capital expansion program for implementing its construction program and, what amount of additional annual revenues does the company need to implement its capital expansion program?

--For each new generating unit, what amounts of internal funding are expected to come from net income, depreciation, deferred taxes, investment tax credits, and contributions in aid of construction?

--Provide detailed cash flow analyses for each year beginning with calendar year 1978 and continuing through the estimated service lives of the facilities for which CWIP was requested for inclusion in the rate base.

We believe that the commonality of the additional information requested by FERC demonstrates the need for more specific guidelines in FERC regulations. Such criteria or guidelines would clarify and simplify the process of applying for rate increases under the financial hardship test.

DOE HAS NO POLICY ON THE CWIP ISSUE

In September 1979 DOE's Assistant Secretary for Policy and Evaluation said that DOE had no specific policy on whether CWIP should be in the rate base and had not analyzed the broad issue. He also said it would be inappropriate for DOE to try to impose a nationwide approach to the issue because each State autonomously determines its own policy. At the Federal level, he likewise thought each case should be decided on its individual merit.

We agree with the Assistant Secretary's position, but we also believe that, because of its leadership role in the energy field, DOE should analyze, in conjunction with FERC, how the financial implications of the CWIP issue (see ch. 4) may affect future supplies and cost of electric energy.

CHAPTER 4

EFFECT OF CWIP ON CONSUMER UTILITY BILLS IS NOT CLEAR

In the mid-1970s, the financial condition of the electric utility industry received much attention. Many alternatives for bolstering the financial strength of electric utilities were explored, and generally, each alternative would have yielded the same result--higher utility bills for consumers. One alternative considered was including CWIP in the rate base and, as discussed in earlier chapters, many regulatory commissions have adopted some version of it. What these developments make clear is that higher utility bills have not resulted solely from allowing CWIP in the rate base; rather, they have come about because of the determination that electric utilities' financial condition required rate relief in one form or another. Therefore, the real issue is the extent to which utility companies have needed rate relief--through methods such as CWIP in the rate base--to maintain financial integrity.

If we isolate CWIP in the rate base and try to assess its effect on utility bills, we find that the effect is not clear because:

--Some commissions which permit CWIP in the rate base also require utilities to compute AFUDC and count it as revenues available to meet revenue requirements, even though such AFUDC is not actually received as current income. Treating AFUDC as current income reduces revenue requirements and thus offsets the opposite effect of CWIP in the rate base.

--The authorized rate of return, which correlates closely with the cost of capital, may be higher when AFUDC is capitalized in lieu of allowing CWIP in the rate base, because investors and lenders may perceive greater risk. A higher authorized rate of return on the rate base, of course, results in higher revenue requirements, and thus CWIP in the rate base works to reduce revenue requirements to the extent that it results in a lower authorized rate of return on the rate base.

--Capitalizing AFUDC in lieu of allowing CWIP in the rate base may require consumers as a whole to pay higher utility bills over the life of an electric plant than if CWIP had been allowed in the rate base.

CWIP IN THE RATE BASE: ONE ALTERNATIVE FOR DEALING WITH FINANCIAL CONDITION OF UTILITIES

Assume that a public utility regulatory commission determines that a utility company needs a rate increase to maintain its financial integrity. Assume also that the commission has several alternatives for increasing rates, chooses one alternative, and rates go up. Under such circumstances, it is not correct to say that the alternative chosen by the commission caused rates to go up. Another alternative or combination of alternatives would have had the same ultimate result--increased rates for utility customers. The reason rates went up was the commission's determination that the utility's financial condition warranted a rate increase.

This scenario basically describes the circumstances surrounding the CWIP issue. Allowing CWIP in the rate base is an alternative some regulatory bodies have chosen to meet what they determine to be a financial need, but CWIP in the rate base is not the underlying issue. Rather, the real issue is whether a utility company needs rate relief to maintain financial integrity.

In the mid-1970s, the electric utility industry was widely believed to be financially troubled, and many alternatives for bolstering its financial condition were considered. Browne reported that in 1974 construction of some 235 electric powerplants was postponed or cancelled. 1/ In part, these deferrals were the result of revised demand projections, but for many utilities the deferrals reflected an inability to generate adequate funds internally or raise outside capital at an acceptable price. He outlined several policy implications to assure adequate electric energy supplies; he suggested that regulatory agencies (1) allow higher rates of return, (2) base rates on replacement cost rather than historic costs, and (3) reduce regulatory lag.

An FPC staff study in 1974 and the President's Labor-Management Committee in 1975 offered similar sets of alternatives for improving the financial condition of electric utilities. Among them were:

1/L. Browne, "Financing Difficulties of the New England Electric Utilities," In Monetary Conference, Edgartown, Mass., 1975. New England and the Energy Crisis. Available from Public Information Center, Federal Reserve Bank of Boston, 1976.

--Increase the investment tax credit.

--Include CWIP in the rate base.

--Depreciate CWIP.

--Allow accelerated depreciation.

--Use projected future period revenue and cost data to set rates.

--Reduce regulatory lag in processing rate cases.

--Use "attritional" allowances to offset erosion of earnings caused by use of historical test periods and regulatory lag.

--Allow tax normalization for certain items reflecting timing differences in the recognition of expenses or revenues for ratemaking and income tax purposes.

Ways of meeting utilities' financial needs have also been explored in individual rate cases. For example, in an initial decision issued by an FERC administrative law judge in 1979, the judge said that, a number of alternatives other than including CWIP in the rate base had been suggested; higher depreciation charges, elimination of a time lag factor in computing fuel adjustment clauses, and permitting retention of deferred taxes were among them. The judge pointed out that the alternatives proposed would have the same effect as allowing CWIP in the rate base, namely, higher rates.

PRECISE EFFECT OF CWIP ON UTILITY BILLS NOT DETERMINABLE

One might be tempted to determine CWIP's effect on utility bills by simply multiplying the amount of CWIP in the rate base by the authorized rate of return on the rate base. At first glance, this approach seems reasonable, given the ratemaking framework explained earlier (see p. 10). However, while it has the advantage of simplicity, such an approach is unrealistic, because it overstates the effect of CWIP in the rate base. Analysis of (1) the regulatory treatment of AFUDC, (2) the method used to determine the authorized rate of return, and (3) the life cycle costs of new facilities supports this conclusion.

Regulatory treatment of AFUDC may offset effect of CWIP in rate base

A utility incurs capital costs on funds used for construction purposes (see p. 11). Regulatory commissions which disallow CWIP in the rate base normally allow utilities to recover the capital costs of disallowed CWIP through the capitalization of AFUDC. For example, 16 of the 17 State commissions which allow no CWIP in the rate base said they permit the capitalization of AFUDC. The utility depreciates AFUDC over the useful life of the property and earns a rate of return on the undepreciated balance. As an accepted practice, during the construction period the utility reports AFUDC as current income. AFUDC does not represent cash income in the current period but, rather, cash income after construction is completed. For ratemaking purposes, however, AFUDC is not treated as an income item, and therefore, it is not viewed as revenue available to meet current revenue requirements.

On the other hand, some commissions that do permit CWIP in the rate base require utilities to count AFUDC as income available to meet current revenue requirements, even though the AFUDC "income" does not represent actual current cash earnings. Consequently, AFUDC in effect offsets current revenue requirements resulting from CWIP in the rate base. Revenue requirements which current consumers must meet are lowered to the extent that a utility's income includes AFUDC. For example, one State commission that said it allows "all" CWIP in the rate base permitted over $1 billion of CWIP in the rate base in 1978. However, the commission also required that over $64 million of AFUDC be used to offset revenue requirements. Another commission which also said it allowed all CWIP in the rate base permitted about $200 million in the rate base but required that about $20 million of AFUDC be used to offset revenue requirements.

Of the 33 State commissions that allow CWIP in the rate base, 18 use AFUDC to some extent to offset utility revenue requirements. For commissions that provided data on how much AFUDC they used in this manner, it amounted to about $1.1 billion during 1977-79 (see following table). Had all commissions provided this data, the amounts for each year probably would have been significantly higher.

Amounts of AFUDC Used to Offset Revenue Requirements 1977-79

Year	Number of commissions which provided data	Amounts (millions)
1977	10	$ 372.6
1978	12	417.7
1979 (note a)	10	331.3
		$1,121.6

a/The 1979 data are for January-October 1979.

Lower authorized rates of return may offset effect of CWIP in rate base

Much available evidence indicates that investors and lenders may view AFUDC in a company's income statement as low quality "earnings" because it does not represent actual, current receipt of cash. As AFUDC increases as a percentage of income, investors and lenders may conclude that a company's securities carry greater risk; they therefore may require a higher rate of return, which will increase the company's cost of capital. As cost of capital increases, the authorized rate of return on the rate base should also increase and in turn cause higher utility bills for consumers. Therefore, to the extent it reduces the authorized rate of return, inclusion of CWIP in the rate base results in avoiding increased revenue requirements; this effect offsets simplistic computations of increased revenue requirements caused by CWIP in the rate base. We did not have enough data to estimate the overall offsetting effect of potentially lower authorized rates of return.

Comments in FPC Order No. 555 suggest the rationale for arguing that large amounts of AFUDC earnings can raise the cost of capital. The following are examples of the comments:

--AFUDC, as a proportion of dividends paid on common stock, rose to over 50 percent in the 12-month period ending November 1975. Because AFUDC is not cash income, these figures mean a great reduction in cash flow available to finance expansion and a corresponding increase in borrowing and interest charges.

--Diluting "quality of earnings" by relying on large amounts of AFUDC raises serious questions concerning a company's ability to raise external capital.

--Substantial evidence in the records indicates that beyond a certain point the investment community simply does not treat the accounting earnings attributed to AFUDC as the equivalent of actual cash income.

--Because of the lack of current cash flow, potential investors are apt to discount the value of income attributable to AFUDC.

--The New York Public Service Commission has pointed out that investors and bond rating agencies view income that includes interest capitalized during construction less favorably than income derived from the sales of utility services.

--Weakening of "quality of earnings" means that a company with large amounts of CWIP/AFUDC may have to pay more for capital than it would have if it had equivalent amounts of cash earnings from the initially higher revenues caused by inclusion of CWIP in rate base.

An important consideration concerning cost of capital is that small changes in the authorized rate of return can cause large dollar changes in revenue requirements. For example, a 9-percent rate of return applied to a $1 billion rate base yields a revenue requirement of $90 million. Assuming an income tax rate of 46 percent, the revenue requirement, including income taxes, is $166.7 million. 1/ Increasing the rate of return to 10 percent yields a revenue requirement of $100 million, or $185.2 million, including income taxes. Thus, an increase of only 1 percentage point in the authorized rate of return would increase utility bills $18.5 million.

That the authorized rate of return may be lower when CWIP is in the rate base is evident from testimony presented by a financial analyst from FERC's Office of Electric Power

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1/An income tax factor must be applied to determine the actual increase in the cost of service revenue requirement. For example, if the income tax rate is 50 percent, the utility must obtain $200,000 from customers to yield $100,000 after taxes. The tax factor is determined as follows: Tax factor = $\frac{1}{1 - \text{tax rate}}$

Regulation, Division of Rates and Corporate Regulation, in a 1978 rate case involving the Public Service Company of New Hampshire. In this case, the utility had requested permission to include CWIP in the rate base. According to the FERC witness, the utility had financial problems that threatened its ability to make interest payments on its debts and provide a return to preferred and common stockholders. The witness recommended 10.04 percent as the 1978 rate of return if CWIP were allowed in the rate base but 11.01 percent if it were not allowed. The administrative law judge decided on a 10.1 percent rate with CWIP in the rate base. The staff witness estimated the following rates of return on the rate base and on common equity for 1978-82.

Estimated Rates of Return Needed to Yield Adequate Cash Flow for Public Service Company of New Hampshire

	Rate of return on rate base		Rate of return on common equity	
	No CWIP in rate base	CWIP in rate base	No CWIP in rate base	CWIP in rate base
	Percent			
1978	11.01	10.04	15.00	12.75
1979	11.11	10.03	15.00	12.75
1980	13.94	10.22	21.56	12.75
1981	16.39	10.29	27.09	12.75
1982	17.52	10.35	29.48	12.75

Note: Estimates were presented in testimony prepared by a financial analyst from FERC's Office of Electric Power

We recognize that this case may have represented a more severe financial situation than normally encountered in the utility industry, but the example demonstrates one expert's assessment of how, in a specific instance, capitalization of AFUDC in lieu of CWIP in the rate base may affect rates of return.

Similarly, several respondents to our questionnaire made comments indicating that they would expect lower cost of capital, and hence, lower authorized rates of return when CWIP is included in the rate base. The following are examples:

--Several advantages are associated with allowing CWIP in the rate base. First of all, investors and investment analysts regard earnings which consist largely of AFUDC as inferior in quality, and this view is reflected in the form of higher perceived risk and higher costs of obtaining capital for utilities that have an unacceptably large proportion of earnings generated by AFUDC.

--Inclusion of CWIP in rate base in lieu of AFUDC will generally result in higher current rates and lower long-term rates for customers. The increased cash flow should help maintain interest coverage ratios and security ratings and result in lower future fixed charges.

--Although it can be argued that at a particular moment in time a utility's current customers are paying for assets from which they receive no current benefit, the intermediate and long-term cost reduction from stable earnings will result in lower bills.

--If inflation continues to rise, the long-term consequences of not allowing CWIP in the rate base will be riskier equity and a higher future rate base to which a higher overall rate of return must be applied.

--In order to continue financing of such a large amount of new generation facilities without CWIP in the rate base, one company has had to ask for a higher rate of return on common equity than would otherwise be necessary if CWIP were in the rate base. The AFUDC income as a portion of net income has reached the point that investment bankers are questioning the quality of those earnings.

--Current and long-term effects of CWIP in the rate base are improved financial soundness of the companies, improved cash flow, and lowered overall cost of capital.

--Although accruing AFUDC equitably allocates the cost of construction to future customers and should therefore be the norm, the practice may cause financial problems if a utility has a very large construction program. This occurs primarily if, under a utility debt indenture, AFUDC cannot be counted as income available for interest coverage. Cash coverage of dividends can also be a problem.

--In the long run the effect of CWIP in the rate base may be to reduce consumer costs. Two factors may make this possible--lower cost of capital and lower rate base.

--CWIP in the rate base provides a good cash flow, lowers financing costs, and maintains bond ratings.

Life cycle costs may be higher with CWIP out of rate base

Capitalizing AFDUC is lieu of allowing current CWIP in the rate base results in a rate base that includes both direct construction expenditures and capital costs after the construction project is complete and placed in operation. Consequently, the rate base for computing both the return and the depreciation allowances is larger, and consumers as a whole may pay more over the life of the facilities than if CWIP had been in the rate base.

For illustrative purposes, the examples on pages 41 and 42 show that, under certain circumstances, life cycle costs may be higher when CWIP is not in the rate base. 1/ We emphasize at this point that one should not conclude from these examples that life cycle costs are always higher when CWIP is excluded from the rate base. Obviously, the results of such illustrations hinge on the underlying assumptions, and the outcome of this analysis could be very different under another set of assumptions. These examples were designed merely to illustrate that one cannot assume that consumers as a whole will always pay less if CWIP is not allowed in the rate base. One must carefully study the economic and financial factors surrounding each situation before drawing conclusions about the overall costs of including CWIP or excluding it from the rate base.

Both examples assume a $500,000 investment made over a 5-year period in $100,000 increments at the beginning of each year. The facility does not go into service until the beginning of the 6th year and has a service life of 10 years. In the first example, CWIP is not allowed in the rate base, and AFUDC is capitalized at the rate of 8.5 percent compounded annually. The authorized rate of return on the rate base is

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1/The methodology used to develop the examples is based on R.R. Trout's article, "A Rationale for Preferring Construction Work in Progress in the Rate Base," Public Utilities Fornightly, May 10, 1979.

also 8.5 percent. In the second example, CWIP is allowed in the rate base, and no AFUDC is capitalized. In keeping with principles previously discussed (see pp. 35-39), we assumed that the utility's cost of capital would be lower if CWIP were in the rate base, and, that the authorized rate of return would therefore be lower as well. The assumed rate of return in the second example is 7 percent.

Both examples take into account the time value of money paid by consumers, who also have a cost of capital. If they did not have to pay utility bills, they could presumably invest the funds and earn a return. The return foregone on money paid to the utility is the consumers' cost of capital. In both examples, we used 6 percent as the discount rate for computing the present value of the consumers' payments.

In the first example, predicated on no CWIP in the rate base, the cumulative revenue requirement is $1,189,371; whereas in the second example, which includes CWIP in the rate base, the cumulative revenue requirement is $1,060,000. Taking into account the time value of consumers' money, one finds that CWIP in the rate base is still less costly. In the first example, the cumulative present value of consumer payments is $682,772; in the second, $655,862.

Life Cycle Cost—Example 1
No CWIP in Rate Base—AFUDC Capitalized

(1) Year (t)	(2) Direct additions to CWIP	(3) AFUDC at 8.5 percent compounded	(4) Year-end CWIP/net plant (4)-(5)	(5) Annual depreciation	(6) Average net plant in rate base	(7) Required return and taxes (6) x .085 x 2	(8) Total revenue requirement (5) + (7)	(9) Present value at 6 percent (8) / (1.06)t
1	$100,000	$ 8,500	$108,500	-	-	-	-	-
2	100,000	17,722	226,222	-	-	-	-	-
3	100,000	27,729	353,951	-	-	-	-	-
4	100,000	38,586	492,537	-	-	-	-	-
5	100,000	50,366	642,903	-	-	-	-	-
6			578,613	$ 64,290	$610,758	$103,828	$ 168,118	$118,523
7			514,323	64,290	546,468	92,900	157,190	104,531
8			450,033	64,290	482,178	81,970	146,260	91,705
9			385,743	64,290	417,888	71,040	135,330	80,115
10			321,453	64,290	353,598	60,112	124,402	69,416
11			257,163	64,290	289,308	49,182	113,472	59,800
12			192,873	64,290	225,018	38,254	102,544	50,964
13			128,583	64,290	160,728	27,324	91,614	42,967
14			64,293	64,290	96,438	16,394	80,684	35,662
15			-	64,293	32,146	5,464	69,757	29,089
Total	$500,000	$142,903		$642,903		$546,468	$1,189,371	$682,772

Assumptions:

1. A $500,000 investment is made over 5 years in $100,000 increments at the start of each year.
2. AFUDC is capitalized at the rate of 8.5 percent compounded annually during the construction period. No CWIP is included in the rate base.
3. The rate of return on rate base is 8.5 percent, and consumers' cost of capital is 6 percent.
4. The project goes into service in the 6th year and has a service life of 10 years.
5. Depreciation is calculated on a straight-line basis during the service life.
6. The firm's capital structure is all equity, and the tax rate is 50 percent.
7. There is no tax reduction for the excess depreciation resulting from capitalization of AFUDC.

Note: The methodology used in this example is based on an article by R.R. Trout, "A Rationale for Preferring Construction Work in Progress in the Rate Base," Public Utilities Fortnightly, May 10, 1979.

Life Cycle Cost--Example 2
CWIP in Rate Base--No AFUDC Capitalized

(1) Year (t)	(2) Direct additions to CWIP	(3) Year-end CWIP/net plant (3)-(4)	(4) Annual depreciation	(5) Average CWIP/ net plant in rate base	(6) Required return and taxes (5) x .07 x 2	(7) Total revenue requirement (4) + (6)	(8) Present value at 6 percent (7) / (1.06)t
1	$100,000	$100,000	$ -	$100,000	$ 14,000	$ 14,000	$ 13,202
2	100,000	200,000	-	200,000	28,000	28,000	24,920
3	100,000	300,000	-	300,000	42,000	42,000	35,280
4	100,000	400,000	-	400,000	56,000	56,000	44,352
5	100,000	500,000	-	500,000	70,000	70,000	52,290
6		450,000	50,000	475,000	66,500	116,500	82,132
7		400,000	50,000	425,000	59,500	109,500	72,817
8		350,000	50,000	375,000	52,500	102,500	64,267
9		300,000	50,000	325,000	45,500	95,500	56,536
10		250,000	50,000	275,000	38,500	88,500	49,383
11		200,000	50,000	225,000	31,500	81,500	42,950
12		150,000	50,000	175,000	24,500	74,500	37,026
13		100,000	50,000	125,000	17,500	67,500	31,657
14		50,000	50,000	75,000	10,500	60,500	26,741
15		-	50,000	25,000	3,500	53,500	22,309
Total	$500,000	-	$500,000	-	$560,000	$1,060,000	$655,862

Assumptions:

1. A $500,000 investment is made over 5 years in $100,000 increments at the start of each year.
2. Full CWIP is included in the rate base. No AFUDC is capitalized.
3. The rate of return on rate base is 7 percent, and consumers' cost of capital is 6 percent.
4. The project goes into service in the 6th year and has a service life of 10 years.
5. Depreciation is calculated on a straight-line basis during the service life.
6. The firm's capital structure is all equity, and the tax rate is 50 percent.

Note: The methodology used in this example is based on an article by R.R. Trout, "A Rationale for Preferring Construction Work in Progress in the Rate Base," Public Utilities Fortnightly, May 10, 1979.

SIMPLISTIC ESTIMATES OF INCREASES IN UTILITY BILLS DUE TO CWIP IN THE RATE BASE

The simplistic estimating method focuses only on two factors in the ratemaking framework: CWIP in the rate base and the authorized rate of return. If $1,000,000 of CWIP is allowed in the rate base and the authorized rate of return is 10 percent, the apparent increase in the revenue requirement is $100,000, not including income taxes.

Some of the 33 State commissions which said they allow CWIP in the rate base did not provide data on amounts allowed. As shown in the following table, for States which provided data, application of the above estimating method to their data indicates that CWIP in the rate base increased revenue requirements by about $1.5 billion in 1977, $1.6 billion in 1978, and $1.3 billion in 1979 (first 10 months).

Estimated Increases in Utility Revenue Requirements Due to CWIP in Rate Base at the State Level 1977-79

Year (note a)	Number of States which provided data	Amount of CWIP in rate base	Rate of return (note b)	Tax factor (note c)	Increase in utility bills due to CWIP in the rate base
		(billions)	(percent)		(billions)
1977	26	$8.102	9.5	1.923	$ 1.480
1978	27	8.931	9.5	1.923	1.632
1979	27	7.199	9.5	1.852	1.267

a/The 1979 data were as of October 1979.

b/The assumed rate of return is an approximate overall rate based on questionnaire data.

c/Tax factor assumes a 48-percent tax rate for 1977-78 and a 46-percent tax rate for 1979.

We also estimated the increases in utility bills that may occur during 1980-84 due to CWIP in the rate base. (See table on p. 44) As described in the scope section of this report (see p. 5), we had to make rough order-of-magnitude estimates of the amounts of CWIP that may be allowed in the rate base

Estimated Increases in Utility Revenue Requirements Due to CWIP in the Rate Base at the State Level for 1980-84 (Billions of Dollars)

	Estimated direct capital expenditures for privately and publicly owned electric utilities (note a)					Estimated year-end CWIP					
1	2	3	4	5	6	7	8	9	10	11	12
Year	Generating plants	Transmission and distribution (note b)	Plant conversions and emerging technologies (note c)	Total expenditures (2)+(3)+(4)	Estimated amount for private utilities (note d) (5)x.8	Private utilities nationwide (note e) (6)x1.8	In 33 States that permit CWIP in rate base (note f) (7)x.79	Amount allowed in rate return (note g) (8)x.31	Assumed rate of return (note h)	Tax factor (note h)	Estimated increase in utility bills due to CWIP in rate base (9)x(10)x(11)
1980	$13.35	$8.10	$1.96	$23.41	$18.73	$33.71	$26.63	$ 8.26	9.5%	1.852	$1.45
1981	15.43	8.10	1.96	25.49	20.39	36.70	28.99	8.99	9.5%	1.852	1.58
1982	18.05	8.10	1.96	28.11	22.49	40.48	31.98	9.91	9.5%	1.852	1.74
1983	19.30	8.10	1.96	29.36	23.49	42.28	33.40	10.35	9.5%	1.852	1.82
1984	19.10	8.10	1.96	29.16	23.33	41.99	33.17	10.28	9.5%	1.852	1.81

a/ The source of capital expenditure data is the DOE report referred to on pp. 6, 19, and 21 of this report. The expenditure amounts (in 1978 dollars) used in this table are the direct capital expenditures and do not include capital costs.

b/ DOE estimated direct capital expenditures of $89.07 billion for transmission and distribution during 1980-90, or a yearly average amount of $8.1 billion. We used the yearly average amount in this estimate.

c/ DOE estimated direct capital expenditures of $21.54 billion for plant conversions and emerging technologies during 1980-90, or a yearly average amount of $1.96 billion. We used the yearly average amount in this estimate.

d/ Based on the fact that large privately owned electric utilities owned about 80 percent of installed generating capacity in 1978 (See p. 4), we assumed that they would account for 80 percent of total capital expenditures during 1980-84.

e/ During 1977-78, the ratio of large privately owned electric utilities' year-end CWIP balances to their annual construction and plant expenditures (not including AFUDC) was about 1.8 to 1. We used this ratio to estimate year-end CWIP balances for 1980-84.

f/ The 33 States that permit CWIP in the rate base accounted for 79 percent of the $42.5 billion of CWIP outstanding nationwide at the end of 1978. (See p. 25.) We assumed that these 33 States would account for 79 percent of the year-end balances during 1984.

g/ Twenty-seven States provided data showing that they allowed about 31 percent of the total CWIP in their States in the rate base in 1978. (See p. 25.) We assumed that this percentage would apply to all 33 States during 1980-84.

h/ Rate of return is the same used in the table on page 45 and the tax factor assumes a 46-percent tax rate.

during 1980-84. Using these rough estimates, we projected annual increases in utility bills of $1.45 billion, $1.58 billion, $1.74 billion, $1.82 billion, and $1.81 billion during 1980-84, respectively.

The following table shows estimates of increases in utility revenue requirements due to pollution control and fuel conversion of CWIP that FERC permitted in the rate base. Increased revenue requirements amounted to $6.1 million in 1977, $16.6 million in 1978, and $7.9 million in 1979. The next table shows that total potential increases in revenue requirements due to four "financial hardship" requests pending before FERC came to about $54.2 million.

Estimated Increases in Utility Revenue Requirements Due to Pollution Control and Fuel Conversion CWIP Allowed in Rate Base by FERC 1977-79

Test year (note a)	Amount requested in rate base	Rate of return (note b)	Tax factor (note c)	Estimated revenue increase
	(millions)	(percent)		(millions)
1977	$32.9	9.6	1.923	$ 6.1
1978	88.2	9.8	1.923	16.6
1979	44.2	9.7	1.852	7.9
				$30.6

a/The 1979 data were as of June 29, 1979.

b/Rate of return is based on rates requested by the utility companies.

c/Tax factor is based on 48-percent tax rate for 1977-78 and 46-percent tax rate for 1979.

Estimated Potential Increases in Utility Revenue Requirements Due to CWIP Which Utilities Have Asked FERC to Allow in Rate Base Under Financial Hardship Test

Company	CWIP requested in rate base	Rate of return (note a)	Tax factor (note b)	Estimated revenue increase
	(millions)	(percent)		(millions)
Public Service Company of New Hampshire (note c)	$182.33	10.88	1.852	$36.74
Louisiana Power and Light Company	28.89	9.96	1.852	5.33
El Paso Electric Company	1.04	10.06	1.852	.19
Public Service Company of New Mexico	61.84	10.45	1.852	11.97
				$54.23

a/Rate of return is the rate requested by the company.

b/Tax factor is based on a 46-percent tax rate.

c/On January 22, 1980, the company asked the Commission to approve rates that are not based on CWIP but reserved the right to pursue the CWIP issue should financial hardship again develop (see p. 28).

CHAPTER 5

DOES ALLOWING CWIP IN RATE BASE SHIFT THE BURDEN OF PAYING FOR NEW CONSTRUCTION FROM INVESTORS TO CONSUMERS?

Usually customers of private businesses "pay" for costs incurred by the businesses to construct facilities. Indeed, no private business can survive over the long term if it cannot recover from customers the full costs of doing business. Likewise, customers of privately owned utility companies must expect to pay for utility plant construction costs. Utility customers do not pay for direct construction costs until construction is complete, because utility companies recover these costs through depreciation allowances on the completed construction. 1/ Once depreciation begins, consumers begin paying for direct construction costs. Therefore, allowing CWIP in the rate base cannot be said to "shift" the burden of paying for construction from investors to consumers. Consumers have always borne these costs--after construction is finished.

What then gives rise to the impression that consumers "pay" for new construction when CWIP is in the rate base but do not pay when CWIP is excluded from the rate base? The issue of consumers "paying" for new construction really involves the following questions:

--When will consumers pay for the cost of capital used to finance construction of new facilities?

--To what extent must an electric utility use internal funds, which include profits, as a source of capital for new construction in order to maintain financial integrity? Does the need to maintain financial integrity justify higher utility rates for current consumers?

SHOULD CURRENT CONSUMERS PAY FOR COST OF CAPITAL--A POINT OF CONTROVERSY

As discussed earlier, a utility incurs capital costs on funds used to construct new facilities (see p. 9). Large, privately owned utility companies, like other large private sector businesses, have three basic sources of capital to

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1/In our review, we found only one State commission which allowed electric utilities to depreciate CWIP.

finance new construction: (1) common and preferred stock issues, (2) short or long-term debt issues, and (3) profits not distributed to common stockholders. Generally, electric utility customers pay for the costs of capital in one of two basic ways: capitalization of AFUDC or inclusion of CWIP in the rate base.

Under the first basic alternative, AFUDC is computed and capitalized in lieu of allowing CWIP in the rate base. After new construction is completed and entered in the rate base, the utility depreciates the AFUDC and earns a return on the undepreciated balance. Under this method, current consumers do not pay for the costs of capital incurred on facilities that are under construction; rather, consumers actually served by the completed facilities do.

Under the second alternative--including CWIP in the rate base--current consumers pay for the cost of capital on facilities under construction. They pay an amount equal to the amount of CWIP in the rate base multiplied by the authorized rate of return. 1/ This procedure serves the same purpose as the computation of AFUDC--it provides funds needed to pay interest expenses and also provides profits needed to pay preferred stock dividends and a fair return on common equity. However, it switches the timing of the payment from the future to the present.

Some parties oppose CWIP in the rate base on the basis of intergenerational equity (see pp. 4 and 25.) But some utility commissions have concluded that utility companies may need CWIP in the rate base in order to generate sufficient current cash earnings to meet capital costs. Otherwise, the utilities may not be able to maintain financial integrity and attract outside capital needed to finance new construction.

INTERNAL FUNDS: A COMMON SOURCE OF FUNDS TO MEET FINANCING REQUIREMENTS

Privately owned corporations historically have relied heavily on internal funds to meet financing requirements. Comprised largely of depreciation allowances and undistributed profits, internal funds are generated through operations as opposed to external funds garnered from new debt and equity security issues. As a noncash "expense" related to previous capital investments in plant and equipment, the depreciation

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1/This assumes no other ratemaking factors offset the effect of CWIP in the rate base. (See p. 34).

allowance provides a source of funds in the current period. Depreciation shows up as an expense on a company's income statement, but no cash actually flows out of the business during the period to meet that expense. Therefore, operating revenues absorbed by depreciation on the income statement are actually available to meet current financing requirements. Undistributed profits, the second major source of internal funds, are often referred to as retained earnings. After interest expenses and preferred dividends are paid, remaining profits are available either to pay out in the form of dividends to common stockholders or to retain for use in the business.

According to one business periodical, investment analysts generally contend that electric utility companies should finance at least 50 percent of new construction from internal funds to maintain financial integrity. 1/ To the extent that depreciation could not provide enough funds to meet the 50-percent goal, a utility company would have to rely primarily on undistributed profits for the additional internal funds. Revenues collected from customers are the primary source of profits for utility companies; and consequently, undistributed profits used to meet financing requirements are derived largely from customer payments, hence the concept that customers are "paying" for new construction when CWIP is in the rate base.

It is not unusual for a company to turn to internal funds, which include undistributed profits, as a source of funds. As shown on p. 50, private sector corporations historically have depended on internal funds as a major source of funds. For example, during 1946-1977, internal funds comprised about 58 percent of the total funds available to corporations in the United States. During that period, the ratio of internal funds to expenditures on physical assets was about 83 percent. Consequently, it is clear that customers of private sector companies, including utility companies, have served as a source of funds to meet financing needs that included new construction programs. Some of these customers may not have benefitted from the new facilities after they were completed; nonetheless, they served as a source of funds. As a result, one could conclude that the intergenerational equity question could be raised for private sector companies in general--not for utility companies alone.

1/"A Dark Future For Utilities," Business Week, May 28, 1979.

Privately owned electric utility companies, like other private sector businesses, must rely to some extent on internal funds generated by customer payments to meet financing requirements in order to maintain financial integrity. Regulators must determine the extent to which a utility company needs internal funds, including profits, to maintain financial integrity and whether the need to maintain financial integrity justifies higher utility bills for current customers.

Sources of Corporate Funds 1946-77
($ billions)

Period	Sources			Physical asset purchases (note c)
	Total	Internal (note a)	External (note b)	
1946-1949	$ 93.4	$ 58.5	$ 34.9	$ 69.8
1950-1954	163.3	103.3	60.0	126.1
1955-1959	234.9	152.5	82.4	170.4
1960-1964	299.0	206.2	92.8	214.6
1965-1969	514.4	301.9	212.5	372.2
1970-1974	783.7	367.8	415.9	524.6
1975-1977	587.7	366.8	220.9	405.7

a/Capital consumption allowances, undistributed profits, and foreign branch profits.

b/Stocks, bonds, mortgages, and short-term credit.

c/Plant and equipment, residential structures, inventory investment, and mineral rights from U. S. Government.

Note: Data are for nonfarm, nonfinancial corporations.

Source: Economic Report of the President, U.S. Government Printing Office, Washington, D.C., 1979.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

In general, the reason for allowing CWIP in the rate base relates to the financial condition of electric utilities. Indeed, FERC's stated purpose for allowing CWIP in the rate base is to alleviate financial problems experienced by electric utilities. So strong is FERC's focus on financial condition that utilities must demonstrate "severe financial difficulty" before FERC will allow CWIP, other than pollution control and fuel conversion expenditures, in the rate base. Similarly, evidence shows that State commissions have allowed CWIP in the rate base for reasons relating largely to financial conditions.

However, inclusion of CWIP in the rate base is only one of a number of alternatives for alleviating utilities' financial problems. Both the FPC staff study which preceded the Commission's decision to allow CWIP in the rate base and the President's 1975 Labor-Management Committee made this point. Some alternatives they mentioned were to

--allow accelerated depreciation,

--depreciate CWIP,

--increase the rate of return,

--use future test periods,

--increase investment tax credit,

--reduce regulatory lag, and

--include CWIP in the rate base.

All these alternatives tend to have the same basic effect--higher utility bills. Therefore, banning CWIP from the rate base does not mean that utility bills will not go up. To the extent that a utility must have additional revenues to maintain financial integrity and attract outside capital, regulators cannot indefinitely prevent the utility from charging rates which will yield the needed revenues. Otherwise, necessary and timely additions to generating capacity may not be forthcoming.

Some who object to CWIP in the rate base contend that utilities have overestimated the need for new generating

capacity and that therefore CWIP in the rate base protects them from the consequences of their management decisions and encourages construction of unneeded facilities. To the extent that utility mismanagement might result in new construction that clearly is unnecessary, we agree that CWIP should not go into the rate base. But, if mismanagement results in new construction that is not necessary, perhaps other alternatives for increasing revenues should also be prohibited. On the other hand, it must also be recognized that construction of excess capacity may not be the result of mismanagement; it could also occur because of unforeseen events beyond the control of the utility. Thus, the issue is much broader than merely whether CWIP should go into the rate base. The real issue is the reliability of current systems for forecasting future needs for new capacity. With a reliable system in place, this specific argument against CWIP in the rate base should no longer exist.

However, a reliable forecasting system would not resolve the question of intergenerational equity, that is, should current customers have to pay for costs associated with new construction which might not benefit them after completion? To the extent that a utility needs increased revenues to finance legitimate construction needs, current customers may have to serve as a source of funds. Whether accomplished through CWIP in the rate base or some other rate-increasing alternative, the result would be the same--higher utility bills. In some instances, allowing CWIP in the rate base may result in lower plant life cycle costs to be borne by utility customers as a whole. However, potentially lower life cycle costs do not remove the intergenerational equity issue.

In view of the above considerations, the CWIP issue can perhaps best be resolved through the regulatory process, public debate, the legislative forum, and judicial review. One "right" answer to the CWIP issue may not exist; it may not be possible to find an ideal answer, which, because of its undeniable logic, every utility commission in the Nation will apply in every situation. Variations in economic and financial circumstances from jurisdiction to jurisdiction and from company to company make it unlikely that one uniform treatment of CWIP can be applied in every case, regardless of circumstances. However, two basic options for handling CWIP are available. The options and their pros and cons are as follows.

Alternative 1: Allow no CWIP in the rate base but permit capitalization of AFUDC

Pros

--Current customers do not pay for AFUDC on funds invested in new construction while construction is underway.

--Current customers do not pay for AFUDC on funds invested in new capacity that was unnecessary, if due to mismanagement.

--Consumers do not appear to be providing capital for construction of new facilities.

--Refusal to include CWIP in the rate base could influence utilities to invest more in conservation measures.

Cons

--If CWIP is not in the rate base, regulators may authorize higher rates of return or use other alternatives which translate into higher utility bills.

--If revenues are not sufficient to maintain financial integrity and attract outside capital, a utility may have to cancel or delay construction programs needed to meet legitimate needs for future generating capacity.

--Under certain conditions, consumers as a whole may pay more for new generating capacity when AFUDC is capitalized, because capitalization results in a larger rate base.

Alternative 2: Allow CWIP in the rate base and no capitalization of AFUDC

Pros

--Consumers as a whole may actually pay less for new generating capacity when AFUDC is not capitalized, because it results in a smaller rate base.

--Helps utilities maintain financial integrity, attract outside capital, and continue construction programs needed to meet legitimate future demand for electric energy.

--If additional revenues are needed to finance a construction program, CWIP in the rate base accomplishes this goal in a forthright fashion, rather than through less obvious or otherwise more palatable methods.

Cons

--Current customers pay for capital costs on funds invested in new construction which may not benefit them.

--Current customers pay for capital costs on funds invested in new construction, which, if it proves unnecessary, may have occurred because of mismanagement.

--Raises the objection that consumers are providing capital for the constrution of new facilities.

--May not exert influence on utilities to invest more in conservation measures.

Those who consider and weigh the options' pros and cons will find themselves confronted by questions such as the following.

--Should current consumers pay for the financial costs of capital used to construct new facilities which may not benefit some current customers?

--In what situations will the life cycle costs of new generating capacity be less if CWIP is in the rate base? Would lower life cycle cost justify putting CWIP in the rate base?

--How reliable is the forecasting system used for estimating future demand for electric energy? To the extent that future demand is not overestimated, should CWIP be allowed in the rate base?

--If construction currently underway appears to be unnecessary in light of current knowledge, was it caused by utility mismanagement or by unanticipated events beyond management's control?

--To what extent do regulators use alternative methods of increasing a utility's internally generated funds when CWIP is not permitted in the rate base?

--What proportion of new construction should be financed from internal funds, including profits, in order to maintain financial integrity?

--To what extent does the need to maintain financial integrity justify the use of profits to finance new construction if it means higher utility bills for current customers?

--To what extent are the legitimate needs for future generating capacity jeopardized if CWIP is not allowed in the rate base or if alternative methods of generating more internal funds are disallowed?

FERC and DOE could do more in studying CWIP as a generic issue

FERC now determines whether utilities meet the financial hardship test for including CWIP in the rate base on a case-by-case basis. Because of unique circumstances that apply in many cases, this method is reasonable. However, as currently set forth in Federal regulations, the criteria for meeting the financial hardship test are too vague and general. In three of four rate cases involving the financial hardship test, FERC has had to establish additional information requirements for the applicants, and many of the additional requirements were the same in each case.

In three of the hardship cases hearings have been completed. Two of these three are ripe for Commission 1/ decision. The other will be ripe for Commission decision in less than 2 months. 2/ In reviewing the records and preparing its opinions in these cases, the Commission will have the opportunity to formulate and articulate its policy and give further consideration to the types of information that it finds most useful in deciding such matters. It therefore appears advisable that the Commission complete these proceedings before attempting to further define its filing requirements.

Upon completion of these three proceedings, FERC should establish a generic rulemaking on the issue to rewrite the

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1/Louisiana Power and Light Company, Docket No. ER77-533 (Phase II) and El Paso Electric Company, Docket Nos. ER77-488 and ER78-520 (Phase I).

2/Public Service Company of New Mexico, Docket Nos. ER78-337 and ER78-338 (Phase I).

regulations to more specifically define the criteria or guidelines for meeting the financial hardship test. By establishing a generic rulemaking, FERC could become a national focal point for the latest available data, studies, and points of view relating to the CWIP issue. As a national focal point, FERC could serve as a source of comprehensive information on the issue for other public utility regulatory commissions.

DOE has no specific policy on the CWIP issue and has not analyzed the issue. Like FERC, the Department believes each case should be decided on its own merit. However, DOE, in conjunction with the FERC generic rulemaking process, could shed light on the issue by initiating studies of how the treatment of CWIP affects cost of capital, life cycle costs of new facilities, and continuity of necessary new construction.

RECOMMENDATIONS

--The Chairman, FERC, should propose a generic rulemaking to more specifically define criteria or guidelines concerning the financial conditions which would justify including investments in electric plant CWIP-other than for pollution control and fuel conversion--in the portion of the rate base under FERC's jurisdiction. The Chairman should institute the rulemaking either immediately after the Commission issues final decisions in the three currently pending financial hardship CWIP cases or by January 1, 1981, whichever occurs first. In this process, FERC should request comments, analyses, and the latest information available from all interested parties, including consumer groups, the utility industry, the financial community, State public utility commissions, and Federal agencies. We also recommend that the Chairman encourage State Commissions to adopt, to the extent practicable, the criteria and guidelines resulting from the rulemaking proceeding in order to provide as much uniformity as possible in the treatment of CWIP.

--The Secretary, DOE, should provide timely input to FERC's rulemaking process by analyzing the effect of the treatment of CWIP on (1) electric utilities' cost of capital; (2) the long term, life cycle costs of new utility facilities; and (3) continuity of construction programs needed to meet legitimate future electric energy demand.

AGENCY COMMENTS

We provided a draft of this report to to FERC and DOE. Neither the the Commission nor the Department provided formal

written comments, but they did provide oral comments. Both the Commission's and the Department's comments were either technical or clarifying in nature or provided updated information. None of their comments resulted in any substantive changes to the report's content, conclusions, or recommendations.

April 25, 1979

Honorable Elmer B. Staats
Comptroller General
General Accounting Office
Washington, D. C. 20548

Dear Mr. Comptroller General:

For a number of years, Construction Work In Progress (CWIP) has been an expense sustained by investor-owned utilities that has usually not been included in the rate base of these utilities for the purpose of charging the public for power. Recently, a number of utilities have begun to seek permission to insert all or part of their CWIP in that rate base, usually by application to the Federal Energy Regulatory Commission (FERC) or to state utility commissions. It is essential that Congress have a better understanding of this situation. Therefore, I seek a report from the General Accounting Office that will answer the following questions:

1. Approximately how much CWIP is there at any given time in the nation (in billions of dollars and number of projects, if possible)?

2. How many utilities are seeking such permission from FERC at this time?

2a. How many are seeking such permission at the state level?

3. Under what conditions has FERC allowed such CWIP into the rate base of a utility? Where has this taken place?

4. Approximately how many dollars worth of CWIP has been allowed into the rate base in each of the last three years?

5. What effect has this had on utility rates?

6. If present applications and permissions continue, how many billions of dollars will be added to utility bills around the country in the next five years (by year)?

7. Does including CWIP in a utility's rate base shift the burden of paying for new construction from investors in the utility to the general consumers of its product?

This is a little noted area of substantial potential increases in the utility prices around the nation. It is also in the jurisdiction of an extremely influential Federal agency of which Congress knows relatively little. Therefore, I deem this an important study, and hope to hear from GAO shortly. Please acknowledge this letter, directing it to my Subcommittee on Limitations of Contracted and Delegated Authority of the Senate Judiciary Committee. Thank you.

Sincerely,

Max Baucus, Chairman
Subcommittee on Limitations of
Contracted and Delegated Authority

APPENDIX II

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

November 7, 1979

In response to a Congressional request, the United States General Accounting Office is reviewing the issue of construction work in progress (CWIP) for electric utilities and will report its findings to the Congress. The request basically is threefold: (1) determine past and projected annual CWIP balances of electric utilities, (2) determine how much CWIP Federal and State regulatory agencies have permitted in electric utilities' rate bases, and (3) determine the effect on consumers' utility bills.

The enclosed questionnaire has been developed to obtain the information we need to respond to the request. We realize that much of the information asked for in this questionnaire is public information which we could have obtained by sending our staff to review each State agency's records. However, such a procedure would not allow a timely response to the request. Consequently, we need your assistance.

Not all questions in the questionnaire will have to be answered by every State agency. Some questions regard policy, and others ask for data on amounts of CWIP and allowance for funds used during construction for privately owned class A and B electric utilities in your jurisdiction. Some questions relate to other factors that can affect the cash flow needed to finance a construction program.

We will send a copy of our report to each State agency which provides information to us. Our published report will not identify specific policies or practices of specific states. Please complete and return the questionnaire in the enclosed postage paid envelope within the next 10 days. If you have any questions, please call Ira Spears on (404) 221-4616 or Ron Kader on (202) 275-3551.

Thank you for your cooperation.

Sincerely yours,

J. Dexter Peach
Director
Energy and Minerals Division

Enclosures

See GAO note on p. 78.)

APPENDIX II

SUMMARY OF RESPONSES BY 50 STATE PUBLIC UTILITY COMMISSIONS TO THE GAO QUESTIONNAIRE ENTITLED "SURVEY OF STATE AGENCY PRACTICES RELATED TO THE EFFECT OF CONSTRUCTION WORK ON THE SETTING OF ELECTRIC UTILITY RATES"

1. We realize that several people may be involved in filling out this questionnaire. However, we would like the name, title, address, and telephone number of the one person we should contact if further information is needed.

_____
(Name)

_____
(Title)

_____
(Agency)

_____
(Address)

_____
(City) (State) (Zip Code)

_____
(Area Code) (Telephone)

2. Under current policy, does your agency allow class A and B electric utilities to include some amount of "electric plant" CWIP (Construction Work in Progress") in rate base? (Check one)	Number of respondents
1. /_/ Yes (GO TO QUESTION 3)	23
2. /_/ Varies case to case (GO TO QUESTION 3)	10
3. /_/ No (GO TO QUESTION 9)	17

Note: Not all respondents answered every question which they were supposed to answer. Therefore, the total responses do not necessarily match from question to question.

APPENDIX II

Number of respondents

3. For class A and B electric utilities, how much jurisdictional electric plant CWIP did your agency allow in the rate base during 1977, 1978, and 1979? (Insert amounts)

1977 $8.102 billion — 26

1978 $8.931 billion — 27

1979 $7.199 billion (As of 10/31/79) — 27

4. Please describe how your agency determines the amount of CWIP allowed in the rate base of any given class A or B electric utility. a/

5. Does the CWIP which your agency allows in the rate base include any capitalized AFUDC (Allowance for Funds Used During Construction)? (Check one)

1. /_/ Yes (GO TO QUESTION 6)

2. /_/ Varies case to case (GO TO QUESTION 6) b/

3. /_/ No (GO TO QUESTION 8)

6. For class A and B electric utilities in your State, how much AFUDC (estimate if necessary) was capitalized on the CWIP in rate base during 1977, 1978, and 1979? (Insert amounts)

1977 $_____

1978 $_____ c/

1979 $_____ (As of 10/31/79)

a/See pp. 22-23 of this report.

b/This question was intended to determine whether commissions allow compounding of AFUDC on CWIP in the rate base, but the wording was confusing and resulted in inconsistent responses. Therefore, we did not summarize the answers.

c/See note b.

APPENDIX II

	Number of respondents
7. How does your agency determine the amount of AFUDC which a utility may capitalize and include in the rate base?	
1. /__/ Uses Federal Energy Regulatory Commission formula	a/
2. /__/ Other (Please explain. If a formula is used, please show it and define the variables.)	
8. Under current policy, does your agency allow class A and B electric utilities to include all electric plant CWIP in the rate base? (Check one)	
1. /__/ Yes (GO TO QUESTION 12)	11
2. /__/ Varies case to case (GO TO QUESTION 9)	3
3. /__/ No (GO TO QUESTION 9)	19
9. Does your agency allow electric utilities to capitalize some amount of AFUDC on CWIP which is not allowed in the rate base? (Check one)	
1. /__/ Yes (GO TO QUESTION 10)	32
2. /__/ Varies case to case (GO TO QUESTION 10)	1
3. /__/ No (GO TO QUESTION 12)	6
10. For class A and B electric utilities, how much AFUDC (estimate if necessary) was capitalized on CWIP which was not allowed in rate base during 1977, 1978, and 1979? (Insert amounts.)	
1977 $636.0 million	15
1978 $860.3 million	16
1979 $682.4 million (As of 10/31/79)	12

a/See note b on p. 61.

APPENDIX II

		Number of respondents
11.	How does your agency determine the amount of AFUDC which a utility may capitalize on CWIP not allowed in rate base?	
	1. /__/ Uses Federal Energy Regulatory Commission formula	20
	2. /__/ Other (Please explain. If a formula is used, please show it and define the variables.)	13
12.	Does your agency allow electric utilities to recover some portion of AFUDC by including it in current expenses? (Check one)	
	1. /__/ Yes (GO TO QUESTION 13)	1
	2. /__/ Varies case to case (GO TO QUESTION 13)	0
	3. /__/ No (GO TO QUESTION 15)	48
13.	For class A and B electric utilities in your State, how much AFUDC (estimate if necessary) was included in current expenses during 1977, 1978, and 1979? (Insert amounts)	
	1977 $ Not answered	0
	1978 $ Not answered	0
	1979 $ Not answered (As of 10/31/79)	0
14.	Please describe how your agency determines the amount of AFUDC which may be included in an electric utility's current expenses. If a formula is used, please show it and define the variables.	

The State which said "Yes" to question 12 allows no CWIP in the rate base. However, it allows utilities to capitalize AFUDC at a 7 percent rate on the portion of

APPENDIX II

Number of respondents

CWIP that exceeds 10 percent of the net investment rate base. Any capital costs that exceed 7 percent on that portion of CWIP and all interest expenses on the remaining portion of CWIP are treated as current expenses.

15. Does your agency allow class A and B electric utilities to recover from current customers some portion of AFUDC through methods other than including some AFUDC in current expenses or allowing CWIP in rate base? (Check one)

1. /_/	Yes (GO TO QUESTION 16)	1
2. /_/	Varies case to case (GO TO QUESTION 16)	0
3. /_/	No (GO TO QUESTION 18)	49

16. For class A and B electric utilities in your State, how much AFUDC (estimate if necessary) was recovered from current customers through methods other than including AFUDC in current expenses or putting CWIP in the rate base? (Insert amounts)

1977	$53.9 million	1
1978	$71.8 million	1
1979	$55.8 million (As of 10/31/79)	1

APPENDIX II

Number of respondents

17. Please describe how these other methods permit recovery of AFUDC from current customers.

The State which said "Yes" to question 15 said it "uses a 'net' method of calculating the AFUDC rate for borrowed funds. The tax savings from interest expense deductions applicable to AFUDC for borrowed funds is not reflected in our income tax allowance for ratemaking purposes."

18. For ratemaking purposes, does your agency require or allow electric utilities to include any AFUDC in income as an offset against revenue requirements? (Check one)

1. /_/	Yes (GO TO QUESTION 19)	17
2. /_/	Varies case to case (GO TO QUESTION 19)	2
3. /_/	No (GO TO QUESTION 21)	31

19. For class A and B electric utilities in your State, how much AFUDC (estimate if necessary) was included in income as an offset against revenue requirements during 1977, 1978, and 1979? (Insert amounts)

1977	$372.6 million		10
1978	$417.7 million		12
1979	$331.3 million	(As of 10/31/79)	10

APPENDIX II

	Number of respondents
20. Please describe how your agency determines for ratemaking purposes the amount of AFUDC to be used as an offset against revenue requirements?	a/
21. Does your agency allow class A and B electric utilities to include some amount of electric plant CWIP in rate base? (Check one)	
1. /__/ Always or sometimes (GO TO QUESTION 22)	33
2. /__/ Never (GO TO QUESTION 35)	17
22. In what year did your agency first allow an electric utility to include some amount of electric plant CWIP in rate base? (Insert the year)	
Before 1970	6
1970-1975	14
1976-1979	6
(Year)	
23. How many pending rate increase requests are before your agency in which a class A or B electric utility is requesting to include electric plant CWIP in rate base? (Insert number)	
43	22
(Number of requests)	
24. Please estimate how much total electric plant CWIP the utilities are asking to put in rate base in these pending requests. (Insert amount)	
$9.1 billion	18
(Amount of CWIP)	

a/Not summarized; see p. 22 of this report.

		Number of respondents
25.	Under current policy, what types of jurisdictional electric plant CWIP does your agency allow in rate base, at least some of the time? (Check all that apply)	a/
	1. /_/ Production	26
	2. /_/ Transmission	25
	3. /_/ Distribution	24
	4. /_/ General plant	24
	5. /_/ Pollution/environmental control projects	28
	6. /_/ Expenditures to convert oil or natural gas fueled plants to other fuels	16
	7. /_/ Nuclear plant	18
	8. /_/ Other (specify) _____	6
26.	Under current policy, which of the following test periods may electric utilities use to determine the amount of electric plant CWIP allowed in rate base? (Check all that apply)	b/
	1. /_/ Historical 12-month average of CWIP	5
	2. /_/ Historical 13-month average of CWIP	7
	3. /_/ Ending balance of CWIP for a given past period	18
	4. /_/ CWIP which is to be placed in service within a given time period (specify period) _____	12
	5. /_/ Projected level of CWIP during a future time period (specify period) _____	8
	6. /_/ Other (specify) _____	4

a/See note on p. 24.

b/See note on p. 24.

APPENDIX II

	Number of respondents
27. Under current policy, is the approved rate of return on electric plant CWIP in rate base lower than the approved rate of return on plant in service? (Check one)	
1. /_/ Yes	1
2. /_/ Varies from case to case	4
3. /_/ No	26
28. Assume that your agency did not permit any electric plant CWIP in rate base. Would your agency tend to allow a utility's approved cost of common equity in the cost of capital computation to increase? (Check one)	
1. /_/ Yes (GO TO QUESTION 29)	3
2. /_/ No) (GO TO QUESTION 30)	7
3. /_/ Uncertain)	21
29. Estimate the number of percentage points the approved cost of common equity would increase if your agency did not permit any electric plant CWIP in rate base? (Insert estimate)	
2 (Number of percentage points)	1
30. Assume again that your agency did not permit any electric plant CWIP in rate base. Would your agency tend to allow a utility's approved overall rate of return to increase? (Check one)	
1. /_/ Yes (GO TO QUESTION 31)	3
2. /_/ No) (GO TO QUESTION 32	7
3. /_/ Uncertain)	22

Number of respondents

31. Estimate the number of percentage points the approved overall rate of return would increase without electric plant CWIP in rate base? (Insert estimate)

1
(Number of percentage points) 1

32. In light of the Three Mile Island nuclear plant incident at Harrisburg, Pennsylvania, has your agency made, or is it considering, changes in its policy toward including nuclear electric plant CWIP in rate base? (Check one)

1. /__/ Yes (explain) _____ 0
2. /__/ No 30
3. /__/ Changes under consideration (explain) _____ 1

33. Under current policy, does your agency require that a utility provide load forecasts which justify the need for new construction, before you allow any electric plant CWIP in rate base? (Check one)

1. /__/ Yes 16
2. /__/ No 12
3. /__/ Varies case to case 4

34. How much CWIP does your agency allow an electric utility to include in the rate base? (Check one)

1. /__/ All CWIP (GO TO QUESTION 39) 11
2. /__/ Some CWIP (GO TO QUESTION 35) 11
3. /__/ Varies from case to case (GO TO QUESTION 35) 11

APPENDIX II

		Number of respondents
35.	Assume that your agency permitted all electric plant CWIP in rate base. Would your agency tend to reduce a utility's approved cost of common equity in the cost of capital computation? (Check one)	
	1. /__/ Yes (GO TO QUESTION 36)	5
	2. /__/ No)	8
	) (GO TO QUESTION 37)	
	3. /__/ Uncertain)	29
36.	Estimate the number of percentage points the approved cost of common equity would be reduced if all CWIP were permitted in rate base? (Insert estimate)	
	2 (Number of percentage points)	1
37.	Assume again that your agency permitted all electric plant CWIP in rate base. Would your agency tend to reduce a utility's approved rate of return? (Check one)	
	1. /__/ Yes (GO TO QUESTION 38)	6
	2. /__/ No)	7
	) (GO TO QUESTION 39)	
	3. /__/ Uncertain)	23
38.	Estimate the number of percentage points the approved rate of return would be reduced if all CWIP were permitted in rate base? (Insert estimate)	
	.76 and .80 (Number of percentage points)	2

	Number of respondents
39. What is the basis for your agency's current policy on the inclusion or exclusion of CWIP in rate base? (Check all that apply)	
1. ☐ State statute (specify) _____	12
2. ☐ Court decision (specify) _____	2
3. ☐ Public referendum or initiative (specify) _____	2
4. ☐ Your agency's decision/orders (specify) _____	37
5. ☐ Other (specify) _____	2
40. Has your agency written any regulations, rules, orders, policy statements or other guidelines which set forth the current criteria and procedures used to determine the amount of CWIP allowed in rate base? (Check one)	
1. ☐ Yes (specify) _____	14
2. ☐ No	35
41. Do you expect your agency's current policy on CWIP in rate base to change in the foreseeable future? (Check one)	
1. ☐ Yes (specify) _____	1
2. ☐ No	31
3. ☐ Uncertain	16

APPENDIX II

		Number of respondents
42.	Tax treatment of some costs may differ from book treatment and result in deferred taxes. In what cases does your agency allow normalization of deferred taxes? (Check all that apply)	
1.	☐ None	1
2.	☐ Excess tax depreciation resulting from accelerated depreciation or Class Life Asset Depreciation Range	39
3.	☐ Taxes capitalized in the cost of utility plant	15
4.	☐ Pension costs capitalized in the cost of utility plant	16
5.	☐ Removal cost feature of the asset guideline class of the Revenue Act of 1971	18
6.	☐ Repair allowance feature of the asset guideline class of Revenue Act of 1971	16
7.	☐ AFUDC (interest on debt portion only) capitalized in the cost of utility plant	14
8.	☐ Fuel expenses deferred for book purposes	12
9.	☐ Amortization of extraordinary property losses	17
10.	☐ Amortization of research and development expenditures	11
11.	☐ Deferred gains or losses from disposition of utility plant	10
12.	☐ Other (specify) _____	12

APPENDIX II

	Number of respondents
43. For rate making purposes, does your agency allow electric utilities to use depreciation methods which yield depreciation charges higher than straight-line method depreciation? (Check one)	
1. /_/ Yes (specify) _____	5
2. /_/ No	44
44. Does your agency allow depreciation of CWIP? (Check one)	
1. /_/ Yes	1
2. /_/ No	49
45. What method of rate base valuation does your agency use? (Check one)	a/
1. /_/ Original cost	44
2. /_/ Fair value	7
3. /_/ Replacement cost	0
4. /_/ Other (specify) _____	2
46. Some electric utilities have divested themselves of investments in electric plant CWIP, before the property was placed in service. Which, if any, of the following divestiture actions have privately owned class A or B electric utilities in your jurisdiction taken, or plan to take? (Check all that apply)	
1. /_/ Sold electric plant CWIP to rural electric cooperatives	6
2. /_/ Sold electric plant CWIP capacity to municipalities	7
3. /_/ Sold electric plant CWIP to an affiliated utility company	2

a/Some commissions checked more than one answer for question 49.

APPENDIX II

		Number of respondents
4.	/__/ Sold electric plant CWIP to a non-affiliated privately owned utility	5
5.	/__/ Sold electric plant CWIP to a financial institution(s) and leased back the capacity	7
6.	/__/ Other (specify) _____	3
7.	/__/ None (GO TO QUESTION 48)	29

47. For the period 1977 to present, please provide the following information about final sales of electric plant CWIP which took place before the property was placed in service. (Insert data below)

			Number of respondents
1.	Number of generating units in which an interest was sold	23 (Number of units)	13
2.	Total combined megawatts of the units in which an interest was sold	12,943 (Total megawatts)	11
3.	Total combined megawatts sold	4,516 (Megawatts sold)	10
4.	Number of utility companies which sold generating capacity	17 (Number of utilities)	13
5.	Types of buyers, (i.e., co-ops, municipals, affiliated utilities, non-affiliated utilities, etc.)	a/ (Types of buyers)	a/

a/See question 46.

APPENDIX II

Number of respondents

48. Does your agency regulate the rates of production/ transmission municipal electric utility companies? (Check one)

1. /__/ Yes (GO TO QUESTION 49) 11

2. /__/ No (GO TO QUESTION 51) 34

49. Is your policy on the inclusion of CWIP in rate base the same for municipal utilities as for privately owned class A and B utilities? (Check one)

1. /__/ Yes 9

2. /__/ No (explain) _____ 2

50. Does your agency regulate the rates charged by rural electric cooperatives?

1. /__/ Yes (GO TO QUESTION 51) 18

2. /__/ No (GO TO QUESTION 52) 26

51. Is your policy on the inclusion of CWIP in rate base the same for rural electric cooperatives as for privately owned class A and B utilities? (Check one)

1. /__/ Yes 16

2. /__/ No (explain) _____ 2

52. Have any class A or B electric utilities in your jurisdiction entered into lease arrangements for new operating units and made lease payments before the generating units were placed in service? (Check one)

1. /__/ Yes (GO TO QUESTION 53) 1

2. /__/ No (GO TO QUESTION 55) 45

APPENDIX II

Number of respondents

53. Does your agency allow an electric utility to recover from current customers the lease payments made on generating units not yet in service? (Check one)

1. /__/ Yes (GO TO QUESTION 54) 0

2. /__/ Varies from case to case (GO TO QUESTION 54) 0

3. /__/ No (GO TO QUESTION 55) 1

54. How does your agency allow these lease payments to be recovered from current customers? (Check all that apply)

1. /__/ Lease payments are capitalized and put in the rate base 0

2. /__/ Lease payments are included in current expenses 0

3. /__/ Other (please explain) _____ 0

55. Think of the most recent final rate increase your agency has granted to each class A and B electric utility. Please provide the following information about each rate increase. If your State has more than 10 class A and B companies, please provide data for the 10 with the largest amount of revenues collected in your State. (Insert data on table below)

56. From your viewpoint, what are the current and long-term effects of your agency's treatment of CWIP and AFUDC on the revenues collected by electric utilities? (Use this sheet to describe current and long-term effects.)

Not summarized

57. If you have any comments you would like to make about specific questions, the questionnaire in general, or other matters relating to the CWIP issue, please do so on this sheet.

Not summarized

GAO note: Page references in this appendix have been changed to correspond to pages in final report.

(309331)

* U.S. GOVERNMENT PRINTING OFFICE: 1980 - 620-386/182

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