ANALYSIS OF THE SAFETY AND COST OF INTERNAL AND EXTERNAL FUNDING FOR DECOMMISSIONING:

A Review of Comments Submitted to NRC on Proposed Amendments Published February 11, 1985 in Federal Register, Vol. 50. No. 28, pp. 5600-5625.

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*The name of The Wharton School is provided for identification purposes only. The Wharton School has not, and will not review or endorse the conclusions reached in this study.

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INTRODUCTION

The NRC issued proposed rules on decommissioning on February 11, 1985. The proposed rule contains four options for electric utilities for providing reasonable assurance of the availability of funds for decommissioning. These options include use of prepayment, external sinking funds, internal reserves, or sureties.

The NRC has received 143 separate letters commenting on the proposed rules. Many of these comments contained substantive and explicitly delineated concerns about allowing internal reserves as a funding method, while others supported the rulings allowing internal funding under certain conditions. In addition, comments were received about the effect of taxation policies on the funding methods contained in the proposed rule.

I have been requested by the NRC to evaluate these comments. In particular, I shall consider changes in the financial health of utilities involved in nuclear power construction that have arisen since the publication of document NUREG/CR-3899, "Utility Financial Stability and the Availability of Funds for Decommissioning," which I prepared and the NRC published in September, 1984. I shall also evaluate the cost of alternative means of funding in light of recent developments, following up on the report by Robert S. Wood, NUREG-0584, "Assuring the Availability of Funds for Decommissioning Nuclear Facilities."

I. Summary of Comments Sent to NRC

The 141 separate letters commenting on the proposed rules touch on many issues. There are two major questions into which these issues can be divided:

(1) Is internal funding a safe method of assuring the availability of funds for decommissioning? The word "safe" in this context means that there is a very low probability that monies would be unavailable for decommissioning by this method of funding and that internal funding provides virtually the same level of assurance as any other method.

(2) Is internal funding a cheaper source of such funding than other methods that may give greater assurance of the availability of monies for decommissioning? Cheaper means that the present value of the monies collected from ratepayers by internal funding is less than that for external or other funding methods.

Those opposed to internal reserves indicate the following potential problems with this source of funding:

(1) Utilities involved in substantial nuclear power construction (henceforth called "nuclear" utilities) may become financially insolvent and nonviable. The ability to diversify utility investments to avoid such potential bankruptcy is questioned. [See commenter Nos. 9, 37, 78, 95, 103, 129 - see Appendix A for identification of commenters].

(2) Serious liquidity problems may arise at the time of decommissioning that prevents the availability of funds to pay for the project. [See commenters Nos. 9, 14, 29, 37, 46, 51, 103, 129].

(3) Since internal reserves do not require segregated funds, at the time of decommissioning there may be insufficient funds to undertake such a project. The lack of sufficient funds could compromise safety and cause delays in decommissioning. [See commenter Nos. 9, 46, 72, 129]

Those supporting the internal reserve funding system indicate that:

(1) Utilities have large cash flows compared to decommissioning costs and the use of internal reserves enhances the financial position of the utility by reducing external financing needs. [See commenter Nos. 61, 63, 104, 118].

(2) Utility insolvency is remote given that utilities are protected by rate regulators which have an obligation to pay for decommissioning. In particular, internal reserves are safe for (single reactor) municipalities because of the creditworthiness of these entities and their broad tax base. [See commenter Nos. 30, 31, 38, 61, 62, 104, 105, 132.]

On the financial side, those supporting the internal reserves from a financial point of view indicate:

(1) Internal reserves earn a higher rate of return and therefore reduce the revenue requirements of the utility.

[See Commenter Nos. 31, 51, 63, 100, 104]

(2) External reserves have financial risks that may in some circumstances exceed those of internal funding. [See Commenter No. 104]

Those opposing internal reserves from a financial standpoint indicate:

(1) Internal reserves can cost more than external reserves when an appropriate adjustment is made for risk. [See Commenter No. 12]

(2) Tax considerations of the Deficit Reduction Act of 1984 argue for the establishment of an external reserve. [See Commenter Nos. 9, 46, 100, and 104]

(3) External reserve funding should be followed on the same principal as done for pension funds. [See Commenter No. 46].

This report analyzes the above questions and positions and makes recommendations regarding the safety and the cost of financing decommissioning by the use of internal and external reserve funding.

II. Assurance of the Availability of Funds Under Internal Reserves.

II. A. Definitions

The terms "internal funding" and "external funding" are defined as follows in this report. External funding means that monies collected for future decommissioning are used to purchase assets (usually bonds) which are either maintained in a separate "fund" or actually held by an outside agent, or trustee.

Internal funding means that no bonds need be purchased by the utility with the monies collected for decommissioning. Instead these monies are used to reduce the utilities' requirement for outside funds, so that the amount of bonds (and perhaps stock) outstanding are reduced. The reduction in these outstanding liabilities is matched by an increase in the internal decommissioning fund, a liability which must be maintained by the utility as a separate book entry.

In the case of internal funding the utility is therefore saving interest and dividend costs but must stand ready to use internal funds or lines of credit, or obtain funds by the floatation of securities, when the time for decommissioning occurs.

II. B. Utility Bankruptcy

It is this latter possibility that worries those opposed to internal funding. The recent financial crises that have enveloped those utilities involved in substantial nuclear

construction have indeed prevented some utilities from entering into the securities markets to obtain funds for the completion of nuclear power facilities. These difficulties have also threatened the ability of some of the most troubled utilities to make payments on existing financial obligations. If the utility cannot meet its bond or loan obligations, financial bankruptcy is threatened.

Many commenters have implied that bankruptcy, although it has not yet occurred for private utilities, would be tantamount to default on decommissioning obligations. This is not necessarily true. Decommissioning, whether funded by an internal or external reserve, is a liability and obligation which traditionally comes prior to any commitment to pay interest and dividends to any security holder. In other words, in the case of financial difficulties, utilities would be obligated to develop funds to pay for decommissioning, and such funds would come from the withheld interest to the bondholders and dividends normally paid to the stockholders.

To guarantee that there is no question of the obligations of the utilities in these matters, I advocated, in my previous report that the legal obligation of a utility to undertake decommissioning be firmly established and that the NRC seek prior approval of any corporate change which threatens the availability of decommissioning funds.

When these obligations are recognized without question by

all parties, funds could virtually always be generated by the utility in a timely manner without resorting to new security issues in the outside credit markets. These funds would be generated by withholding all interest and dividend payments to current creditors.

Another way of determining whether security holders would be willing to forego receipt of interest and dividends to pay for decommissioning is by comparing the market value of these securities with the estimated decommissioning costs. As long as the market value is higher than the decommissioning costs, then it is clearly in the interest of the security holders to forgo interest and dividends in order to clear their legal obligations to provide for decommissioning. In other words, if the utility reneges on its obligation to decommission a plant, the NRC, or any other concerned party, could file suit against the utility to fulfill this obligation. Legal suits in general must be disposed of before any distribution of assets can be made to security holders.

If a utility does not dispose of its legal obligations, this will result in severe financial loss to the security holders. The value of a utility does not reside solely in the working plant and equipment, but also with the rights granted it by the public utility commission to be the sole or principal provider of energy for a well defined area. These rights cannot be arbitrarily removed by the commission. Even in the extreme case where a utility builds a nuclear plant

that is never used and not recoverable in the rate base, there is still value perceived by investors in the rights and franchise of the utility. As long as these rights exceeds decommissioning costs, security holders would pay these costs rather than forfeiting valuable intangible assets.

II. C. Current Financial Status of Utilities

II. C. 1. Overview

In my previous report, I stated:

> The market value of utilities, even those involved in the most extreme financial crises, is still far in excess of decommissioning costs. Therefore, even if the worst fears of investors are borned out... the value of the remaining assets, both tangible and intangible, are more than adequate to cover future projected decommissioning costs.

In analyzing events relating to utilities involved in nuclear power construction in the eighteen months since the issuance of that report, evidence for the above conclusion is not only confirmed, but even strengthened.

There has been a dramatic improvement in the outlook for the nuclear power industry. Utilities that have been in extreme financial difficulty, such as Long Island Lighting, Public Service of Indiana, Public Service of New Hampshire, and others have finally begun to reach financial accords with both their respective state utility commissions, bankers, and underwriters as to the future source of financial resources for their firms. Although this has frequently involved substantial writeoffs of unused or unneeded plants, it has removed much of the uncertainty which had permeated the

industry two years ago.

The measurement of the market values of the securities of a nuclear utility has importance in assessing the safety of internal reserves for two reasons. First, the higher the market value, the greater the ability to obtain outside funding. Even Public Service of New Hampshire, the most financialy troubled of all the utilities, has been able to go back in the public market for funds. This has occurred even before reaching an accord with the utility commission on the fate of the Seabrook nuclear reactors.

The second reason why higher market values tends to improve the safety of internal funding is that current market value generally indicates the utilities' potential for long-term profits, and it is these profits that generate the value to pay for decommissioning. The sharp rise of current market values indicates that investors' assessment of the "franchisable" value of utility assets, i.e., the value of the rights to produce and distribute energy to given service areas under an approved public utility commission rate structure has sharply increased. Investors are indicating that even with prospective plant write-offs and rate hikes, utilities are regaining a substantial degree of the stability formally accorded them. This enables the utilities to tap capital markets for any approved ~~much as decommissioning~~ costs, such as decommissioning, with ease.

II. C. 2. Measurements and Changes in Market Values.

In order to measure the impact of decommissioning on the financial health of utilities involved in nuclear power plant construction, six firms are analyzed: Consumers Power Company, General Public Utilities, Long Island Lighting, Middle South Utilities, Public Service of Indiana, and Public Service of New Hampshire. All these utilities have been subject to severe financial distress either by the cancellation and nonrecovery of nuclear plants, the threatened disallowal of substantial CWIP, or the premature shutdown of an operating facility. Short descriptions of the financial condition of each of these utilities is given in Appendix B.

Table B-1 presents the balance sheets of each of these utilities as of the end of calendar 1984. Table B-2 summarizes the relationship between the book value of the assets and their market value as determined by investors. It can be seen that for all these utilities, the market value of their securities as of February 28, 1986 is less than the book value. This represents the judgment of investors that a substantial portion of the plant not yet in service (or taken out of service) does not, and will not, earn profits for the investors. As mentioned above, this is due to either disallowal of substantial portions of CWIP, or outright cancellation of the plant.

However, it can also been seen that there has been a dramatic increase in the total market value of the securities

of these utilities. From their low point low of 1980-1985 (of which most lows were reached in early 1984 during the height of the pessimism surrounding nuclear power utilities), market values have increased on average 76.2%, ranging from 26.9% in the case of Middle South Utilities to 272.3% for General Public Utilities. The current aggregate market value of these six troubled utilities is now almost $24 billion, an increase of over $10 billion over the last eighteen months. This market valuation is, of course, far in excess of any conceivable decommissioning costs these utilities will be forced to undertake. The current valuation of these utilities is over 75% of their book value compared to only 42% percent eighteen months ago. The current figure of 75% represents a higher book to market ratio than experienced by most non-nuclear utilities during the late 1970's and early 1980's.

There are several conclusions that can be drawn from the analysis of these data. First, the dramatic improvement in market values since 1984 means that even with the threat of non-recoverable or cancelled plants, investors believe that the ongoing value of the firm, based on future prospects including all uncertainties, is substantial and increasing. Secondly, the recovery in market values means that these utilities can, if necessary, attract outside funds, a situation which was precluded for them during the height of the financial crisis in 1984. Finally, in all cases, the

value of securities substantially exceed estimated decommissioning costs by a wide margin. This means that the owners and investors in this utility can never "walk away" from the financial responsibility of decommissioning without forfeiting the values of their securities. This conclusion was also reached in my previous report, during the height of the financial crisis, and has even greater validity today.

II. D. Potential for Future Crises

While agreeing that the current position of nuclear utilities has greatly improved, one could inquire whether it is possible that a future crisis could develop so that outside funding could not be obtained.

It is the opinion of this researcher that the likelihood of such a future crisis, although not impossible, is extremely remote. It should be noted that it is not the placement of new generating plants in the rate base that automatically causes rate hikes and the threatened disallowal by utility commissions of full cost recovery. In theory, the construction of a new, more efficient plant should result in a lowering of service rates. The current problems of nuclear utilities have resulted from costs exceeding many times initial estimates, which resulted from an unfortunate confluence of events, detailed in other studies, and unlikely to be repeated.

It is probable that in the future utilities will be extremely conservative (perhaps too conservative) in their

attitude towards incorporating new technologies until proven efficiencies are demonstrated. This low risk attitude may mean to abandonment of experimental, and highly beneficial technologies, but will lead towards lower risk for shareholders. Many financial analysts perceive that investors wish a return to the safety and low volatility that has historically characterized the utility industry.

The threat to the electric utility industry, to the extent that it exists, comes from sources other than the need for the construction of new plants at the time of decommissioning. Recent decisions by public utility commissions, particularly those in California, have allowed increased competiton for the distribution and production of energy and hence eroded the monopoly position of many utilities. To the extent that utilities are shielded from competition, the limit on utilities' revenues occurs only by the desire and ability of the users to curtail their use of energy. However, if the user can obtain alternative sources of energy, this places limits on the pricing of energy use and hence limits the revenue potential of utilities. For high cost energy providers, particularly the nuclear utilities, this could prove to be a serious threat to future revenues and profits. The loss of customer base may eventually exceed the increase in the rates approved by the utility commissions, resulting in a decline in revenues.

Despite the above warnings it appears unlikely that the

utility commissions will allow the erosion of the customer base to such an extent that the financial viability of the utility is threatened. Furthermore, the franchise rights of the utility to provide customer service are still likely to be substantially in excess of the costs of decommissioning even in the event of increased competition. However, this future uncertainty does argue for the periodic review of the financial condition of these utilities to assess the availability of funds for decommissioning.

III. Financial Costs of Internal and External Reserves

III. A. Correct Accounting for Costs of Internal Reserves.

Many of the supporters of internal reserve indicate that, since the rate of return earned on utilities' physical assets generally exceeds that on bonds purchased for external reserves, internal reserves will necessarily lower the revenue requirements needed to fund decommissioning.

I believe this statement to be incorrect. It is one of the basic tenets of finance theory that, as long as the real investment in plant and equipment of a firm remains unchanged, the funding methods used to finance operations, particularly with regard to internal or external reserves, have no influence on the cost of capital. If the funds collected for decommissioning are accumulated in an internal reserve, then the utility will need to float less bonds. The interest saved will equal the interest that would be

collected on bonds in an external fund. This proposition is demonstrated in more detail in Appendix A. C

There is one circumstance where internal funding would be cheaper, although subject to more risks, than external funding. If under internal funding, the revenues collected for decommissioning were invested in new plant and equipment which earn a higher internal rate of return than government securities, while external funding did not involve such new real investment, then internal funding would be cheaper.

But this situation does not usually prevail. Revenues collected for decommissioning must be geared towards attaining a targetted future liability, not to enhance the physical plant of the utility. The decision to enhance the utilities' real assets is totally separable from the decision on how to fund decommissioning. Revenues collected for decommissioning should be discounted at a lower, "risk-free" rate of the return rather than the higher return allowed on the utilities' physical assets. The discounting factor should be identical for each of these methods of funding decommissioning. In practice, however, public utility commissions have generally allowed the higher internal discount rates to be used to calculate revenue requirements for decommissioning.

III. B. Tax Considerations

A number of commenters have noted that, under current IRS Regulations, funds collected for decommissioning can be

excluded from the taxable income of the utility only if they are placed in an external account. This is a significant distinction which can greatly increase the relative cost of internal funding for a utility which is subject to Federal income taxes.

There is current legislation pending which proposes the equal tax treatment of such revenues for either internal or external funding. However, at the present time, tax considerations significantly argue for the establishment of an external reserve. This is especially so since, as indicated in Section III. A. above, it is my belief that there is no significant difference between the cost of internal and external reserves, net of tax considerations, when proper discounting methods are used.

III. C. Reasons Why Utilities Prefer Internal Funding

Despite the above arguments, there are two reasons why utilities may still prefer to use internal reserves to fund decommissioning. The first is that it is always desirable, from the standpoint of management, to control as many of the funds available to the firm as possible. By designating an internal reserve, the utility has options for the timing of the the funds that it does not have with an external reserve.

A second reason for the preference of internal over external funding is that state utility commissions generally use the higher internal rates of return when calculating the

revenue requirements for decommissioning. Therefore the funds collected from the public from an internal reserve are initially lower than using an external reserve, because of the higher discount rates used by the utility commissions. Recently it has been in the utilities' interest to attempt to keep service rates as low as possible so as to minimize the "rate shock" that occurs when new plants are placed on line. Under these circumstances, internal reserves may assist the utility in this goal. However, if the arguments of sections III.A. and III.B. above are granted, then the discount rate used to calculate the revenue requirement should be identical for both internal and external reserves, so that the revenue requirements would be equal for both methods.

III. D. Other Financial Considerations

III. D. 1. Risk of Internal vs. External Reserves

Some commenters have noted that external reserves are themselves not without risk. This is true. Even if they are invested in top quality instruments there is still substantial risk of inflation which, although increasing the costs of decommissioning, will not increase the value of the bonds purchased in an external reserve fund. In this case, internal funding may be slightly cheaper, insofar as the utility will not reduce only bonds from the receipt of decommissioning funds, but also equity. It is my opinion that this is not a major issue in deciding on the relative costs of external and internal funding, because of the

periodic updating of estimated decommissioning costs, but highlights the fact that external reserves are not without their own risks.

III. D. 2. External Reserves and Pensions Funds.

One commenter has noted that reserves for decommissioning should be treated ~~just as~~ reserves for pension liabilities. Since the establishment of the Employee Retirement Income Security Act (ERISA) in 1974 (PL 93-406), government insured pensions liabilities must be funded externally. However, the funds collected for decommissioning are not directly insured by any governmental agency. Although both decommissioning and pension funding are concerned with a future obligation, the obligation to fund decommissioning, unlike pension funding, is similar to the obligation to provide for the safe operation of the nuclear plant. Therefore, the parallel between funding of pensions and decommissioning is limited.

III. D. 3. Internal Reserves for Municipalities

Some commenters have recommended that internal reserves be allowed for municipally owned nuclear power plants because the taxing authority of such municipalities gives greater assurance of the availability of decommissioning funds. This is not necessarily the case. The ability of a governmental unit to raise funds is dependent upon the taxable base of that unit, which depends on the population and commerce in the area under its control. For small municipalities, this base could be quite volatile, and there is a history of

municipalities defaulting on primary securities.

It should be noted that in the post-Depression period there are no recorded bankruptcies of major public stock utilities, while muncipalities have frequently been in financial distress or even in default on their bonds. In fact, the only true default on bonds backed by nuclear power generating plants occurred in the Washington Public Power Supply System, or ~~WPPSS,~~ WNP-2 which in many ways can be interpreted as a municipal default. For this reason it is not correct to arbitrarily classify municipal utilities as less risky than private utilities, or to assume that their internally generated reserves are without risks.

IV. Conclusions and Recommendations

My analysis indicates the following conclusions:

1. The financial health of utilities, especially those involved in substantial nuclear construction, has substantially improved over the past eighteen months. Recent rulings of the public utility commissions indicate that even after substantial writeoffs of nuclear plants are made, investors perceive substantial value in the remaining assets of the utility and can obtain funds without difficulty for decommissioning.

2. Therefore, from a financial standpoint, internal reserves currently provide sufficient assurance of the availability of funds for decommissioning and should be permitted, as proposed by the NRC on February 11, 1985.

3. The true financial cost of internal reserves may not be cheaper and, under current tax laws, may be more expensive to the utility than external reserves. Current methods of determining the revenue requirement for decommissioning may understate the true costs due to the use of an incorrect (too high) discount rate.

The above conclusions lead to the following recommendations:

1. Notwithstanding the fact that under current and future projected financial conditions, internal fundings provides excellent assurance of the availability of funds, the NRC is urged to strengthen the language of provisions which specify

the firm legal obligation of the utility to undertake decommissioning. It is imperative that in the case of the sale or other disposition of utility assets, that no monies are distributed to any security holders until a fund is established to assure payment for decommissioning. Since the NRC probably does not now have this authority, this may take the form of recommending changes in the federal and state bankruptcy laws relating to utilites and the explicit statement of such financial obligations in the prospectuses of newly issued securities of utilities with decommissioning obligations.

2. Because of changing economic and financial conditions, the NRC should conduct periodic reviews of the overall financial health of utilities with ongoing and prospective nuclear generating facilities. If such a review indicates that the financial condition of utilities taken as a whole or individually is such that the funding of decommissioning cannot be assured by use of internal (or even external) funding methods, then additional rulemaking or other steps should be taken to insure the availability of these funds, so that the health and safety of the public, the primary concern and responsibility of the NRC, is not endangered.

Appendix B

Financial Description of Utilities

Consumer Power Co. (CP)

Consumer Power Company supplies electricity and gas to lower Michigan state excluding Detroit. The utility will take an after tax charge of $350 million against 1985 earnings. CP hopes to recover about $3.1 billion of its $4.1 billion investment in the aborted Midland nuclear plant through a two-step rate increase. Now that a workable debt repayment plan and stabilization rate increases are in place, CP appears on the road to recovery and its common stock is up over 200% and its preferred stock over 50% from late 1984.

General Public Utilities Corp. (GPU)

GPU has three operating subsidiaries which sell electricty in Pennsylvania and New Jersey. The idled unit #1 reactor at Three Mile Island was restarted in early October for the first time since the 1979 accident at Unit #2. Cleanup of the damaged nuclear unit is proceeding with completion expected by late 1988. GPU was allowed by the Pennsylvania and New Jersey commisssions to return TMI-1 to the rate base. Common dividends could be reinstated by yearend 1986 at between $1.00 and $1.50 per share. GPU common stock is over nearly 500% from its 1980 low and at levels recorded before the accident occurred.

Long Island Lighting Co. (LILCO)

LILCO supplies electricity to Nassau, Suffock, and portion of Queens county in New York. LILCO has filed an application requesting that the Shoreham nuclear reactor be phased in the rate base over a ten year period. Prospect for the commercial operation of Shoreham has improved as plans for an emergency evacuation drill have been approved. LILCO eliminated its dividends, on both common and preferred in 1984, but common shares have appreciated 200% since then and the preferred shareholders recently gave the directors a vote of confidence.

Middle South Utilities (MSU)

MSU has four subsidiaries that supply electricity to parts of Louisiana, Arkansas, Missouri, and Mississippi. The utility has managed to resolve the serious cash flow problem that it was faced with last summer, which was precipitated by regulators' refusal to allow MSU to recover its investment in the nuclear Grand Gulf #1 and Waterford #3 plants. MSU was barred from entering the securities markets and was forced to omit dividends on its preferred and common stock. But in the last several months, the company has been able to secure rate relief and it has been granted access to the debt and equity markets again. MSU common stock is up 50% from 1985 lows.

Public Service of Indiana (PSI)

PSI supplies electricity to customers in central and southern Indiana. In March, 1986 the Indiana Public Service

Commission approved a plan, first announcei in February, to relieve PSI of the financial burden of its canceled Marble Hill nuclear plant. The write-off of the plant, which will amount to $1.79 billion, is believed to be the largest ever taken by a utility. The utility has said it expects under the plan to have enough cash to continue operating and to cover loan payments and other debt outstanding. The agreement involves the omission of its 25 cent quarterly dividend on common shares and withholding preferred dividends for an undetermined period of time. Despite the announcement of these omission, PSI common and preferred have increased in value under the assumption that the plan restores financial health to the utility.

Public Service of New Hampshire (PSNH)

PSNH provides electricity to three-quarter of the state's population. In early February, the New Hampshire Supreme Court cleared to way for PSNH to raise $260 million of long-term debt. Following the Supreme Court decision, Moody's Investors Service raised its rating on PSNH bonds to single B-3 from Caa, and on its first mortgage bonds to single B-1. PSNH common stock has increased 200% from its 1984 low and there has also been a dramatic recovery in its preferred and bond prices. Of course Seabrook #1 must be finished and placed in service, and the inclusion of the estimated construction costs of $4.6 billion into the rate base must be approved by the Public Utility Commission. PSNH

common stock is up nearly 300% from its low.

Appendix B C

Assume a utility has the following capital structure and required rates of return before decommissioning:

Ponds	$1 billion	12.00%
Equity	$1 billion	16.00%.

Assume the utility incurs a liability, such as decommissioning, which will cost $200 million in 20 years. The rate on U.S. government bonds is 10.00% and this can be funded by collecting approximately $3.49 million per year and investing them in government bonds. There is no change in the average cost rate of capital of 14.00% in the case of external funding.

Under internal funding, the Public Utility Commissions frequently discount by the higher rates of return. For example, at a 12% discount rate, the bond cost rate to the firm, the utility need only collect $2.78 million per year, an annual difference of $710,000.

Although it may appear that funding decommissioning with internal funding is cheaper, there is a fundamental factor fdrequently overlooked:

The existence of a certain future liability which is not externally funded increases the riskiness, and hence the required return of all outstanding bonds and equity.

When a firm has a certain, unfunded liability in the future, there is a smaller cushion against which fluctuations

in earnings and profits can shield bondholders and shareholders from financial distress and therefore bankruptcy. This will lead these security holders to demand an increased rate of return on their funds to compensate them for this increased risk. This increased rate of return will not be necessary if the liability is funded externally since the firm is automatically collecting the funds to increase the shield against profit shifts.

In our example, the $710,000 that appears to be saved by discounting at 12% will actually be dissipated in an increased risk premium to bondholders and equity holders. The equity holders will share most of the risk. A new cost structure, such as would be derived by rigorous risk analysis of the cost of capital, might look like

bonds	$1 billion	12.018%
equity	$1 billion	16.053%.

One can see that the average cost of providing bonds and equity is now 14.0355% as compared to 14.00% before, costing the firm an additional $710,000 per year. Therefore the true cost of decommissioning is $3.49 million annually. This example shows that internal funding for decommissioning is not cheaper than external funding if proper calculations are made for the required rate of return.

TABLE A

CONSUMERS POWER COMPANY
BALANCE SHEETS
12/31/84

ASSETS	(MILLIONS OF $)	LIABILITIES	(MILLIONS OF $)
NET (IN SERVICE) PLANT	3715.9	COMMON STOCK EQUITY	2282.3
CWIP	4295.0	PREFERRED STOCK	1098.7
INVESTMENTS	114.0	LONG TERM DEBT	3419.8
CURRENT ASSETS	14.3	CURRENT LIABILITIES	1411.6
OTHER ASSETS	1072.1	OTHER LIABILITIES	998.9
NUCLEAR FUEL	0.0	TRUST OBLIGATIONS	0.0
TOTAL ASSETS	9211.3	TOTAL LIABILITIES	9211.3

Midland Nuclear Power Plants, Units 1 & 2	100%
Big Rock Point Nuclear Plant	100%
Palisades Nuclear Power Station	100%

GENERAL PUBLIC UTILITIES
BALANCE SHEETS
12/31/84

ASSETS	(MILLIONS OF $)	LIABILITIES	(MILLIONS OF $)
NET PLANT (IN SVC & CWIP)	4228.0	COMMON STOCK EQUITY	1637.4
INVESTMENTS	17.5	PREFERRED STOCK	488.4
CURRENT ASSETS	428.3	LONG TERM DEBT	1797.2
OTHER ASSETS	1417.4	CURRENT LIABILITIES	610.6
NUCLEAR FUEL	124.6	OTHER LIABILITIES	1682.2
TOTAL ASSETS	6215.8	TOTAL LIABILITIES	6215.8

Three Mile Island Nuclear Station, Units 1 & 2	100%
Oyster Creek Nuclear Power Plant	100%

LONG ISLAND LIGHTING
BALANCE SHEETS
12/31/84

ASSETS	(MILLIONS OF $)	LIABILITIES	(MILLIONS OF $)
NET (IN SERVICE) PLANT	1508.4	COMMON STOCK EQUITY	2451.3
CWIP	4317.8	PREFERRED STOCK	749.9
INVESTMENTS	68.6	LONG TERM DEBT	2306.5
CURRENT ASSETS	424.6	CURRENT LIABILITIES	494.5
OTHER ASSETS	122.9	OTHER LIABILITIES	412.4
NUCLEAR FUEL	657.9	TRUST OBLIGATIONS	685.6
TOTAL ASSETS	7100.2	TOTAL LIABILITIES	7100.2

Shoreham Nuclear Power Station	100%
Jamesport Nuclear Power Station Units 1&2	50%
Nine Mile Point Nuclear Station - Unit 2	18%

MIDDLE SOUTH UTILITIES
BALANCE SHEETS
12/31/84

ASSETS	(MILLIONS OF $)	LIABILITIES	(MILLIONS OF $)
NET (IN SERVICE) PLANT	4522.2	COMMON STOCK EQUITY	3472.2
CWIP	6615.4	PREFERRED STOCK	807.9
INVESTMENTS	71.7	LONG TERM DEBT	5877.1
CURRENT ASSETS	959.5	CURRENT LIABILITIES	1314.9
OTHER ASSETS	85.8	OTHER LIABILITIES	55.0
NUCLEAR FUEL	300.9	TRUST OBLIGATIONS	1028.4
TOTAL ASSETS	12555.5	TOTAL LIABILITIES	12555.5

Arkansas Nuclear One, Units 1 & 2	100%
Grand Gulf Nuclear Station, Units 1 & 2	90%
Waterford Generating Station, Unit 3	100%

PUBLIC SERVICE OF INDIANA
BALANCE SHEETS
12/31/84

ASSETS	(MILLIONS OF $)	LIABILITIES	(MILLIONS OF $)
NET (IN SERVICE) PLANT	1734.9	COMMON STOCK EQUITY	1470.1
CWIP	26.4	PREFERRED STOCK	330.0
INVESTMENTS	1.6	LONG TERM DEBT	1450.4
CURRENT ASSETS	253.0	CURRENT LIABILITIES	419.2
OTHER ASSETS	2098.9	OTHER LIABILITIES	17.4
NUCLEAR FUEL	230.0	TRUST OBLIGATIONS	657.7
TOTAL ASSETS	4344.8	TOTAL LIABILITIES	4344.8

Marble Hill Nuclear Generating Station, Units 1 & 2 83%

PUBLIC SERVICE OF NEW HAMPSHIRE
BALANCE SHEETS
12/31/84

ASSETS	(MILLIONS OF $)	LIABILITIES	(MILLIONS OF $)
NET (IN SERVICE) PLANT	464.7	COMMON STOCK EQUITY	915.1
CWIP	1691.5	PREFERRED STOCK	313.9
INVESTMENTS	31.9	LONG TERM DEBT	999.6
CURRENT ASSETS	353.1	CURRENT LIABILITIES	272.3
OTHER ASSETS	24.1	OTHER LIABILITIES	64.4
NUCLEAR FUEL	0.0	TRUST OBLIGATIONS	0.0
TOTAL ASSETS	2565.3	TOTAL LIABILITIES	2565.3

Seabrook Nuclear Power Station, Units 1 & 2 35.2349%

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TABLE B

CONSUMERS POWER

	BOOK VALUE 12/31/84	LOWEST VALUE 12/84 (MILLIONS OF $) Market Value	CLOSE 2/28/86
COMMON STOCK EQUITY	2282.3	363.4	1068.2
PREFERRED STOCK	1098.7	557.4	968.0
LONG-TERM DEBT	3419.8	1932.2	2913.7
TOTAL CAPITALIZATION	6800.8	2853.0	4949.9

GENERAL PUBLIC UTILITIES

	BOOK VALUE 12/31/84	LOWEST VALUE 3/80 (MILLIONS OF $) Market Value	CLOSE 2/28/86
COMMON STOCK EQUITY	1637.4	206.8	1226.6
PREFERRED STOCK	488.4	146.0	350.7
LONG-TERM DEBT	1797.2	754.8	1439.6
TOTAL CAPITALIZATION	3923.0	1107.6	3016.9

LONG ISLAND LIGHTING COMPANY

	BOOK VALUE 12/31/84	LOWEST VALUE 7/84 (MILLIONS OF $) Market Value	CLOSE 2/28/86
COMMON STOCK EQUITY	2451.3	572.7	1239.8
PREFERRED STOCK	749.9	316.6	612.7
LONG-TERM DEBT	2306.5	1542.6	2101.2
TOTAL CAPITALIZATION	5507.7	2431.9	3953.7

MIDDLE SOUTH UTILITIES

	BOOK VALUE 12/31/84	LOWEST VALUE 8/85 (MILLIONS OF $) Market Value	CLOSE 2/28/86
COMMON STOCK EQUITY	3472.2	1662.4	2455.2
PREFERRED STOCK	807.9	433.0	638.2
LONG-TERM DEBT	5877.1	4425.5	5177.7
TOTAL CAPITALIZATION	10157.2	6520.9	8271.1

PUBLIC SERVICE CO. OF INDIANA

	BOOK VALUE 12/31/84	LOWEST VALUE 1/84 (MILLIONS OF $) Market Value	CLOSE 2/28/86
COMMON STOCK EQUITY	1470.1	383.4	559.2
PREFERRED STOCK	330.0	162.4	187.8
LONG-TERM DEBT	1450.4	956.1	1226.4
TOTAL CAPITALIZATION	3250.5	1501.9	1973.4

PUBLIC SERVICE CO. OF NH

	BOOK VALUE 12/31/84	LOWEST VALUE 4/84 (MILLIONS OF $) Market Value	CLOSE 2/28/86
COMMON STOCK EQUITY	915.1	134.1	399.8
PREFERRED STOCK	313.9	81.0	327.3
LONG-TERM DEBT	999.6	450.3	1057.4
TOTAL CAPITALIZATION	2228.6	665.4	1784.5