

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

OPINION NO. 82-7

CASE 28059 - Proceeding to inquire into the financial and  
economic cost implications of constructing the  
Nine Mile Point No. 2 Nuclear Station

OPINION AND ORDER CONCLUDING  
INQUIRY INTO FINANCIAL AND ECONOMIC  
COST IMPLICATIONS OF CONSTRUCTING THE NINE  
MILE POINT NO. 2 NUCLEAR STATION

Issued: April 16, 1982

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STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

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CASE 28059 - Nine Mile Point No. 2

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STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

At a session of the Public Service  
Commission held in the City of  
Albany on April 6, 1982

COMMISSIONERS PRESENT:

Paul L. Gioia, Chairman  
Edward P. Larkin  
Carmel Carrington Marr  
Harold A. Jerry, Jr.  
Anne F. Mead, dissenting  
Richard E. Schuler  
Rosemary S. Pooler, dissenting

CASE 28059 - Proceeding to inquire into the financial and  
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OPINION AND ORDER CONCLUDING  
INQUIRY INTO FINANCIAL AND ECONOMIC  
COST IMPLICATIONS OF CONSTRUCTING THE NINE  
MILE POINT NO. 2 NUCLEAR STATION

(Issued April 16, 1982)

BY THE COMMISSION:

INTRODUCTION

On September 2, 1981, we initiated a proceeding to  
review two reports that had been issued concerning the construction  
costs and schedule for completion of the Nine Mile Point 2 Nuclear  
Power Plant (NMP-2), and the economic and financial implications  
likely to result from the continuation of this project.<sup>1/</sup> In July 1981,

<sup>1/</sup> Order Establishing Proceeding, issued September 2, 1981. This  
proceeding was established in the context of three cases:  
Case 27709 - Proceeding on Motion of the Commission as to the  
Investigation of Nine Mile Point No. 2 Nuclear Power Plant Con-  
struction Costs; Case 27984 - Niagara Mohawk Power Corporation -  
Electric Rates; and Case 28059 - Proceeding to Inquire into the  
Financial and Economic Cost Implications of Constructing the  
Nine Mile Point Unit No. 2 Nuclear Station.

Theodore Barry and Associates (TB&A) and its subcontractor Canatom Inc. issued their independent assessment, prepared at our request, of the participating utilities' estimates of the construction costs and schedule. And in September 1981, a team of engineering and financial specialists on our staff issued their report comparing the economic and financial implications of continuing the Nine Mile project against several alternatives.

To focus this proceeding, we requested that the parties direct their attention to the staff's analyses and conclusions, and consider the relative strengths and weaknesses of the methods staff had used, as well as the reasonableness of the assumptions included in the staff study. And we also asked them to explain the need for any study, alternatives or assumptions -- other than the ones staff had employed -- that they would have us consider.

Public hearings began on December 1, 1981 and continued through December 11 before Administrative Law Judge Stewart C. Boschwitz, Commissioner Richard E. Schuler and Commissioner Rosemary Pooler.<sup>1/</sup> The record in this proceeding consists of a transcript of about 4,250 pages, 105 exhibits, and briefs and replies submitted by the various parties. The parties actively participating were the electric companies involved in the Nine Mile project;<sup>2/</sup> Department of Public Service (DPS) staff; a coalition

1/ Chairman Paul L. Gioia was also present at several hearings.

2/ Niagara Mohawk Power Corporation, Long Island Lighting Company, New York State Electric & Gas Corporation, Rochester Gas & Electric Corporation, and Central Hudson Gas & Electric Corporation -- collectively referred to as the utility co-tenants.

of parties represented by the Consumer Protection Board (CPB); the Environmental Defense Fund (EDF); the Capital District Anti-Nuclear Alliance (CDANA); Mr. John J. Mavretich, representing Assemblyman Maurice D. Hinchey; The Business Council of New York State, Inc. with the Greater Syracuse Chamber of Commerce and the Chamber of Commerce of Oswego; and Central Hudson Gas & Electric Corporation.<sup>1/</sup>

Our consideration of this proceeding began on January 26, 1982 when Judge Boschwitz presented to us a report summarizing the record and the positions taken by the various parties. On February 3, 1981, we heard the parties' oral arguments and we provided them an opportunity to respond to our questions concerning their presentations and positions.

From our investigation in this proceeding, and our review of the record developed, we have concluded that the TB&A/Canatom and staff studies provide reasonable and fair assessments of the probable consequences of proceeding with NMP-2, and are generally well supported analyses that fulfill their intended objectives. We have also concluded that the arguments raised by the parties in response to these studies, which in some cases might lead to somewhat different conclusions on individual issues than those reached in the staff and TB&A reports, are not sufficient

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<sup>1/</sup> Central Hudson participated both individually and as a member of the group of utilities.

either individually or collectively to disturb their common conclusion -- that continuation of the Nine Mile Point No. 2 project is warranted. We have further concluded that, as the Nine Mile project continues, we should take various administrative steps and actions designed to facilitate the project's early completion in an efficient and cost effective manner. We now turn to a discussion of the two studies, the parties' submissions in this proceeding, the numerous issues in contention, the analysis leading to our conclusion that continuation of the project is warranted and, finally, the measures being taken to encourage the expeditious and cost-effective completion of the Nine Mile project.

THE TB&A/CANATOM REPORT

In July 1980, we selected Theodore Barry & Associates and Canatom Inc. to assess independently the Nine Mile co-tenants' most current estimate of the cost and time needed for completing the project. In September 1980, the co-tenants issued a revised cost and schedule estimate prepared by Stone & Webster, which showed that the plant could be completed and placed in commercial operation in October 1986 at a cost of \$2.4 billion excluding an allowance for funds used during construction (AFUDC) or \$3.7 billion including AFUDC. Since the time this project began, there has been a series of increased cost estimates. We felt it important, therefore, to obtain an independent and objective assessment of the co-tenants' most current projected cost and schedule, and we commissioned TB&A/Canatom to perform that task. And we

directed TB&A and Canatom to assess, as well, the co-tenants' ability -- primarily that of Niagara Mohawk Power Corporation, which owns a 41% share of the plant and has lead responsibility for its construction -- to manage the project and exercise proper control. We also identified aspects of the technical design to be evaluated; directed study of Niagara Mohawk's ability to respond to changes that might be required by the Nuclear Regulatory Commission; and directed an assessment of the quality control measures being used on the project.

As a result of their study, TB&A and Canatom concurred with the co-tenants that a 1986 commercial operation date for the Nine Mile plant is possible; nevertheless, they observed that construction slippage of about one year was likely and that a 1987 in-service date was more probable. In this regard, they pointed out that action by management could mitigate possible slippage but that adoption of new regulatory requirements might further delay the plant's commercial operation date. As to the plant's cost, TB&A/Canatom noted that construction slippage, cost escalation, and changes in applicable AFUDC rates and regulatory requirements could increase the total cost of the project significantly beyond the co-tenants' \$3.7 billion estimate. They observed that economic and regulatory uncertainty plays a large role in the ultimate cost of the Nine Mile plant.

From this assessment of the co-tenants' managerial ability, TB&A/Canatom concluded that, if the companies dedicated themselves through the remainder of the plant's construction to

implementing the various recommendations and improvements offered in the report, management would be able to see the project through to completion and commercial operation. And the TB&A/Canatom team was satisfied that management and the project contractor have the ability to handle the technical aspects of the project.

STAFF'S ECONOMIC AND FINANCIAL STUDIES

To complement the TB&A study, staff assessed the economics of providing additional generation capacity in various ways either including or excluding a completed Nine Mile plant. Staff's study sought to identify the more economic of the several plans it considered. Staff also examined the potential financial impact that some of its generation expansion plans would have on each of the electric companies participating in the Nine Mile project and, consequently, the effects the plans would have on the rates the companies would charge their customers. From its economic and financial evaluations, staff has concluded that the completion of Nine Mile is warranted and that the project can be reasonably financed. But it emphasizes that management for this project must give proper attention to controlling costs and meeting the schedule established to ensure the earliest possible date for commercial operation of this plant.

Economic Studies

Essentially, staff posited six plans for providing additional generation capacity through the mid-1990's. Three included the Nine Mile facility, and three assumed the plant would not

be completed but that a comparable amount of capacity would be obtained from the construction of new coal-fired generating stations. In each instance, staff considered the costs of constructing new plants, the cost of producing electricity throughout the period studied, and the cost of either completing or abandoning the Nine Mile project. To perform its study, staff had to make various assumptions and estimates of future conditions. For instance, staff estimated future fuel costs, the amount of generation capacity needed to serve customers throughout the State, capacity factors for nuclear and coal facilities, inflation and cost escalation, and the AFUDC rate through the period. With regard to Nine Mile, staff assumed a 1987 in-service date and a construction cost of \$4.9 billion (including AFUDC) in each of the three cases that contemplated completion of the plant. In the other cases, recovery of amounts already spent on this project and amounts needed to cancel the project were assumed.

As a result of its study, staff found that each of the three plans that included a completed Nine Mile plant had significant economic advantage in comparison to its alternative.

#### Financial Studies

Staff's financial analysis explored the possible effects that completion of Nine Mile could have on each of the co-tenants. As in the case of staff's economic analysis, certain assumptions and estimates were necessary. Of significance were staff's assumptions that each co-tenant would earn its allowed rate of return and that the currently high cost of debt and equity financing would decline gradually. Staff acknowledged that increases in

electricity prices could be expected between now and 1987, and that the co-tenants would require large amounts of new capital to be able to finance Nine Mile and other construction projects to which they are committed. Staff's study points out, however, that Nine Mile should provide substantial net economic benefits to ratepayers in the long run.

Staff concluded that each of the utilities should continue to participate in the project because the additional capital could be raised on reasonable terms and conditions so long as there is adequate and timely rate relief.<sup>1/</sup>

#### SUMMARY OF THE PARTIES' PRESENTATIONS

As we have already noted, this proceeding was established to provide interested parties an opportunity to present to us what they perceive to be the strengths and weaknesses of the TB&A/Canatom and staff reports, as well as other approaches for considering the Nine Mile project and alternatives to it. The co-tenants considered the staff study to be generally acceptable even if they did not necessarily agree with each of the assumptions and estimations staff made. And, as pointed out below, they have acted to carry out the recommendations suggested by TB&A/Canatom.

The coalition headed by CPB presented a set of critical assumptions -- differing from the ones staff employed -- that, when used with other elements of staff's economic study, assertedly showed that the advantage staff found in a generation expansion

<sup>1/</sup> Staff reserved judgment as to Central Hudson pending completion of Case 28026, where that utility's participation in NMP-2 is being separately considered.

plan including a completed Nine Mile facility could disappear. In its variation of the staff study, CPB altered assumptions for the cost of capital, nuclear capacity factors, sunk costs on the Nine Mile project, capital costs for new coal-fired units, the cost to complete the Nine Mile facility, and the time for installing new coal plants. CPB also presented a list of other assumptions and estimates staff had made that, in its view, can be debated, reasonably altered or placed into question. Another portion of the CPB presentation attempted to compare the cost of completing the Nine Mile unit with the cost of three coal-fired units as an alternative.

The Environmental Defense Fund (EDF) presented, as an alternative for us to consider, a program of energy conservation measures and alternative energy sources that if successfully implemented could produce additional energy and energy savings equivalent to the amount of energy the Nine Mile facility would provide. EDF suggested that, at a cost less than that needed to complete Nine Mile, the utility co-tenants could implement measures designed to increase the efficient end use of electricity by residential and commercial customers, develop cogeneration and small hydroelectric facilities, and conserve energy through the reduction of voltage levels on the companies' distribution systems to minimum acceptable levels.

The Business Council of New York State and the Syracuse and Oswego chambers of commerce have commented on the employment

and local community economic benefits that would ensue from completing the Nine Mile project. The Capital District Anti-Nuclear Alliance (CDANNA) has expressed its opposition to the continuation of this project and its doubts about the cost and schedule estimates that have been presented by the utility co-tenants.

Mr. Mavretich's presentation on behalf of Assemblyman Hinchey and Central Hudson's individual presentation focused primarily on Central Hudson's involvement in the Nine Mile Project. That subject is being considered separately in Case 23026 and will not be dealt with further in this decision.

DECISIONAL ANALYSIS

At the outset, we think some general observations about the efforts of TB&A and staff are in order.

We consider the TB&A/Canatom study of the Nine Mile project to have been a worthwhile undertaking that has provided us with useful insights and important recommendations for improving the performance of those responsible for this project. As to the schedule and cost for completing the project, the study has provided a helpful analysis of some of the cost changes experienced while this plant has been in progress and, more importantly, has focused attention on factors -- both within and outside of the cotenants' control -- that can significantly affect the plant's ultimate cost and completion date.

The study finds that the completion of Nine Mile late in 1986 remains a possibility that the cotenants should continue to strive for; but we must also acknowledge the possibility it raises that completion of the project may slip into 1987, and the additional possibility that currently unknown and unpredicted events could have a further impact on the schedule. Nevertheless, we find sufficient reason to believe that the schedule and cost estimates now before us are, in several important respects, more reliable than those previously prepared; for the plant is now further along than it was when earlier estimates were made; most materials have already been procured; and the cost estimation process itself has been improved by including an appropriate allowance for contingencies, etc.

The TB&A/Canatom study points out -- significantly in our view -- that through effective management action some potential slippage can be mitigated and costs curtailed. To assist management, the study provided a list of detailed recommendations designed to improve project supervision, control costs, and fulfill the project schedule. The co-tenants have made considerable progress in implementing the TB&A/Canatom recommendations and we expect substantial benefits to ensue from that effort.

Staff's studies have also proven to be valuable analytical tools that have helped us probe both the benefits to be gained from continuing the Nine Mile project and the consequences of turning to alternative means for achieving a comparable amount of capacity to serve developing energy requirements and reducing the use of oil as a generating fuel. We are generally satisfied with the additional perspectives the staff studies have provided us for considering the economics of alternative generation expansion plans and the range of financial consequences that can be expected to develop from proceeding with any program designed to ensure adequate and reliable electric capacity in years to come. We believe that staff performed its studies in a conscientious and professional manner; we are persuaded that it employed, in general, an objective and reasonable perspective for testing and evaluating available data and potential developments bearing upon the continuation of the Nine Mile project and the utilities involved in this effort. And we appreciate, as well, the additional alternatives laid before us by the CPB, EDF and other parties. Besides permitting us to test the sufficiency of staff's analysis, we find, as we discuss below, EDF's proposal of alternative energy sources and conservation incentives merits further consideration in its own right.

In reviewing the TB&A audit, the staff study and the contentions of the various parties, it is important to keep in mind that they all involve projections in a highly dynamic and uncertain economic environment. Moreover, they also necessarily make speculations as to the level of such uncertain elements as fuel cost, capacity factor and load growth over a thirty-year period. It is readily apparent that exact calculations for such long-term projections are not possible, nor in our judgment are they necessary for a reasoned consideration of the issues before us in this case. We have, as a preliminary basis for making these judgments, the independent efforts of TB&A and staff. And we have provided interested parties a full opportunity to challenge these studies. While, as we point out below, several parties have proposed changes in the "most probable" values assigned to specific input assumptions, we are not persuaded that those challenges that might be accepted provide in total a sufficient basis for altering the underlying conclusion of the staff report that the best judgment at this time is that there is likely to be a substantial economic benefit to completion of NMP-2.

This result is supported further, in our view, by the context of our inquiry. We are not deciding at this time whether the utilities ought to embark upon a new venture. The project is well underway and it has been estimated here that approximately \$1.4 billion will have been invested in it by the end of 1981. Thus, there are very real economic implications associated with abandonment -- ratepayers would be required to absorb through

higher rates some \$1.75-2 billion, without receiving any attendant benefit.<sup>1/</sup> It is worth emphasizing that, because it is well underway, NMP-2 can begin providing fuel savings well before any of the other supply alternatives. Furthermore, although projections of the remaining or incremental cost for NMP-2 and the various alternatives are the important factors in evaluating the relative economic benefits, the expenditures to date on NMP-2 are a certainty that must be accorded substantial weight regardless of what alternative is chosen.

We hasten to add that we have provided all parties a full, fair and meaningful opportunity to present their views and that no party has been able to demonstrate to our satisfaction that the completion of NMP-2 would be clearly uneconomic. The opposition parties, at best, have shown that abandonment might be justified on an economic basis only if one adopts a combination of several significant negative plant impacts proposed by intervenors. As we discuss in more detail below, we are persuaded that, in general, the projections made by staff were more balanced and reasonable than those proposed by the parties urging abandonment.

Insofar as the financial implications of NMP-2 are concerned, we find that the opposition parties have failed to refute staff's contention that each of the utilities will be able to finance NMP-2 with reasonable costs and conditions. On the basis of present information, these conditions will not require actions on our part any different from those we have undertaken in the

<sup>1/</sup> This assumes, of course that the expenditures were prudently incurred, and includes cancellation costs and additional AFUDC.

past to provide the utilities with significant construction requirements the resources required to support those undertakings. We note further that the efficacy of various forms of rate and cash flow relief mechanisms are being fully explored in the context of our Generic Financing proceeding.<sup>1/</sup> We are confident that we will be able to reach conclusions in that case that can be implemented prospectively to ensure that the utilities are able to finance construction of NMP-2 at the lowest possible cost to ratepayers.

Turning to CPB's Komanoff alternative, we have evaluated its merits with care but conclude that it does not offer a realistically attainable choice to continuation of NMP-2. As we observe below, it relies heavily, for its asserted economic advantage over NMP-2, upon the early installation of three coal units. We believe that the in-service dates projected for these units by CPB are wholly unrealistic given the approvals that would be necessary and the lead time required for equipment procurement. Moreover, the plan is also heavily dependent upon using a 60% capacity factor for NMP-2 and a much larger 70% capacity factor for coal-fired facilities. We do not consider that differential in factors more probable than others introduced in this case and certainly would not predicate approval on an alternative to NMP-2 on the likelihood

<sup>1/</sup> Case 27679 - Proceeding on Motion of the Commission to investigate the financing plans for major New York combination electric and gas companies. We should also note that cash flow adjustments have little or no impact on the economics of alternative plans. Rate increases required to improve cash flow reduce future revenue requirements.

of its attainment. For these reasons, we are constrained to reject the CPB Komanoff alternative.

The other major alternative we have evaluated in this case was presented by the Environmental Defense Fund. EDF has presented, in our estimation, a very ambitious program of conservation measures and other proposals that is, in several instances, worthy of additional consideration and, if feasible, should be pursued. Nevertheless, the EDF program was presented here as a possible alternative to the inclusion of Nine Mile in a generation expansion plan. As such, we have serious reservations about the ability of this program to achieve not only the energy savings it promises, especially considering the State's dependence on foreign oil, but also capacity savings of the magnitude necessary to abandon plans for making timely additions to the State's available capacity. EDF has identified areas where additional conservation efforts could be of benefit and it has outlined some of the means potentially available for controlling and eliminating various amounts of existing energy usage; but its presentation does not make us sufficiently confident that the program can succeed either substantially or in ample time to provide highly valuable oil displacement and forestall capacity shortages in the co-tenants' service territories. On the contrary, we perceive significant legal, administrative and practical obstacles that stand in the way of achieving the results EDF envisions. Before EDF's plan can be relied on as a basis for avoiding an otherwise needed expansion of non oil-fired generation capacity, the program

must first be shown to be both a feasible and reliable alternative. Since that has not been demonstrated on this record, it must be rejected as an unsuitable alternative to continuation of NMP-2.

This is not to say, however, that a program of ambitious conservation-related undertakings, similar to those suggested here by EDF, would not be desirable for New York utilities, wholly apart from NMP-2. Because we think that EDF's suggestions merit further consideration, we have directed staff to commence an investigation of these measures and we will shortly commence a formal proceeding to evaluate their practicability.

FINDINGS AND DETERMINATIONS

In the paragraphs which ensue we summarize, based on our review of the record and the report presented to us by Judge Boschwitz, the positions taken by the parties on these issues, the principal arguments presented in support of those positions and, where appropriate, our findings. In those cases where we do not reach specific findings, our decisional analysis has fully considered the points raised by the parties. As we have discussed above, we have in these instances, concluded that the range of reasonable results suggested by the record evidence on such issues would not provide a basis either individually or collectively for disturbing the recommendations in the TB&A and staff reports. We will begin with the economic implications of NMP-2, then discuss its financial implications and finally review the other alternatives.

Economic Implications

The principal differences between the parties as to economic implications of NMP-2 concern the following issues:

- A. The Cost of Constructing NMP-2
- B. Capacity Factor
- C. Installation Dates for New Coal Capacity
- D. The Cost of Constructing Coal-Fired Facilities
- E. Sunk Costs
- F. Cost of Capital

A. The Cost of Constructing NMP-2

The issue having the greatest impact on our decision is the projected cost of NMP-2. The co-tenants, as noted above, projected that the plant will be in service in November 1986 at a total cost of \$3.7 billion, of which \$2.4 billion is direct cost, including projected escalation.

Staff and TB&A consider a one-year slippage in the in-service date of NMP-2 to be likely and, in that event, staff projects a total cost of \$4.9 billion, of which \$2.89 billion relates to direct costs, including projected escalation. In

the event the plant is concluded in 1986 as the co-tenants project, staff nevertheless projects a higher cost than the co-tenants, i.e., \$4.3 billion, of which \$2.6 billion is direct cost.

Both CPB and EDF<sup>1/</sup> attack these estimates although neither independently studied them. CPB questions (1) the extent of TB&A's investigation and its reliance on Stone & Webster's (S&W) estimates, (2) the level of contingency allowance for both (a) nuclear, and (b) non-nuclear, related matters, (3) the allowance for "indeterminates", (4) the failure of TB&A to make a productivity adjustment, and (5) the staff's escalation rates.

(1) The Extent of TB&A's Investigation

According to staff, TB&A thoroughly reviewed cost and schedule projections, project management, engineering, contracts and their administration, financial planning, accounting control, and technical factors affecting design and construction for the period 1978-1980. The TB&A findings are set forth in Exh. 1. Although TB&A provided the basis upon which staff found that an increase in project cost of more than 30% over the co-tenants' estimate is likely, CPB nevertheless contended the TB&A audit was flawed.

CPB argued that of six general categories comprising the base estimate, TB&A separately estimated only two, i.e., contingency and escalation, and uncritically accepted the cost calculation of the co-tenants and S&W with respect to the other four. Additionally, CPB questioned the accuracy of S&W's projections in view of its forecasting record at NMP-2 and at Shoreham. And, TB&A is criticized for not having reviewed activities between 1974 and 1978. For those reasons, CPB contends: "TB&A had no

<sup>1/</sup> EDF, which has adopted staff's projected cost for NMP-2 for the purpose of its study, offers relatively minor criticisms which for sake of conciseness, will not be repeated here.

basis for concluding that S&W had succeeded in weeding out the causes of its prior forecasting errors."

Both staff and the co-tenants responded to CPB. Staff pointed to numerous areas where TB&A, in its report, took issue with the co-tenants as evidence of the fact that TB&A did not uncritically adopt the S&W estimates. Further, staff disagreed strongly with CPB's assertion that "TB&A merely spot-checked selected cost parameters." And staff alluded to Exh. 1, Chapter III, of Vol. 1 as evidence of TB&A's more detailed efforts to verify the projected cost of NMP-2.

With regard to the revised estimate of S&W, the co-tenants referred, as evidence that prior forecasting errors were likely to have been weeded out, to the fact that it estimated that the revised estimate required approximately 15,000 hours over six months for its completion. Insofar as the prior forecasts were concerned, the co-tenants also stated that, for the first time in 1980, allowance was made for changing regulatory requirements and for unknown future regulatory contingencies.

We find that a review of the TB&A report (Exh. 1), particularly Vol. 2 thereof, does not support the position of CPB regarding the depth of the TB&A analysis. While it is almost certain that TB&A could have done more work independently, the productivity of such an effort cannot be presumed from CPB's cross-examination of TB&A nor from CPB's arguments. We are satisfied that TB&A conducted a thorough and objective review of all of the critical factors affecting the project and that the report

provides a satisfactory framework for our decisional analysis.

(2) Allowance for Contingencies

TB&A, as Table 1 below reveals, increased the allowance for contingencies by about \$100 million (before adjusting for escalation). The co-tenants, while not agreeing with TB&A, did not challenge that revision. However, CPB challenged several of the component parts of the estimate, principally the allowance for regulatory changes, but also the allowances for so-called indeterminates and work stoppages.

The co-tenants allowed \$30 million in the base cost for unidentified and possible future expenditures for regulatory scope changes (plus \$12 million in escalation). TB&A considered \$100 million in base dollars (plus \$40 million of escalation), representing 10% of the remaining base construction cost, to be more reasonable. Both parties also allowed \$15 million in base dollars for future unidentified quality assurance/quality control requirements. CPB would increase the level of these two items from the \$115 million projected by TB&A to \$390 million.

CPB estimated that new regulatory impacts will occur at approximately the same rate as regulatory impacts in the period 1972-80 (\$56 million in constant 1980 dollars), exclusive of schedule extensions. TB&A and the co-tenants contend, on the other hand, that the rate of new regulatory impacts will decline, given that most new Three Mile Island-related changes have already been introduced and that the number of new regulatory changes issued by the NRC over the past several years has declined sharply.

TABLE I  
ANALYSIS OF ALLOWANCES AND CONTINGENCIES  
(\$000)

	<u>NIAGARA MOHAWK/ STONE &amp; WEBSTER ALLOWANCE</u>		<u>TB&amp;A/CANATOM ALLOWANCE</u>	
	<u>Base</u>	<u>Escalation</u>	<u>Base</u>	<u>Escalation</u>
<u>1. Allowances For Identified And Expected Future Expenditures</u>				
Three Mile Island	\$ 40,000	\$16,000	\$ 65,000	\$26,000
A.T.W.S.	3,300	1,320	3,300	1,320
Residual Heat Removal	3,100	1,240	0	0
Geology	18,600	2,790	2,000	300
Advisory Support Labor	15,000	7,100	15,000	7,100
Craft Labor Attraction	75,000	21,450	75,000	21,450
Manual Labor Training	<u>10,000</u>	<u>2,020</u>	<u>10,000</u>	<u>2,020</u>
	<u>\$165,000</u>	<u>\$51,920</u>	<u>\$170,300</u>	<u>\$58,110</u>
Total Identified And Expected		\$216,920		\$228,490
<u>2. Allowances For Unidentified And Possible Future Expenditures</u>				
Indeterminates (Estimating Inadequacies)	\$25,000	\$ 9,060	\$ 50,000	\$18,120
Work Stoppages	10,000	2,020	10,000	2,020
Future QA/QC Requirements	15,000	4,000	15,000	4,000
Scope Modification Due To Client Request*	15,000	6,000	15,000	6,000
Scope Modification Due To Regulatory Changes	<u>30,000</u>	<u>12,000</u>	<u>100,000</u>	<u>40,000</u>
	<u>\$95,000</u>	<u>\$33,080</u>	<u>\$190,000</u>	<u>\$70,140</u>
Total Unidentified and Possible		<u>\$128,080</u>		<u>\$260,140</u>
GRAND TOTAL		<u>\$345,000</u>		<u>\$488,630</u>

\* NOTE: This item taken as 33% of original total provision for scope modifications.

Staff attacked CPB's failure to address adequately technical factors which might cause the rate of increase in regulatory requirements from 1972-1980 to abate. Staff argued that a site-specific review of the type conducted by TB&A should have been performed by CPB and further that CPB speculated as to the impact of unresolved safety issues without studying or understanding the design of NMP-2.

In response, CPB argued that staff rejected its extrapolation of historic trends "while at the same time accepting TB&A's analysis that merely assumed a dramatic reversal of past experience without any empirical or statistical support." And, CPB noted that TB&A, two months before TMI, was similarly projecting reduced regulatory requirements. In addition, CPB stated that its goal was only to identify areas in which there were outstanding issues, with potentially serious cost consequences. Finally, CPB argued that if there are outstanding technical issues, no one can be confident as to the impact on NMP-2. And, CPB concluded that these facts merely "highlight the uncertainties attendant on continued construction of Nine Mile 2."

The position of the utilities, which is that \$30 million will be adequate to address future unspecified regulatory requirements, is supported largely by the testimony of three expert witnesses, i.e., Mr. Joseph Hendrie, a former chairman of the NRC, Mr. John Young, a member of the Reagan administration transition team for the NRC and Mr. Saul Levine, a former high-ranking employee of NRC and its

predecessor agency (the AEC) from 1962-1979. The collective judgment of these witnesses is that there will be a substantial reduction in the rate of future regulatory activity and that recent NRC actions indicate its intent to institute safeguards against unnecessary regulatory changes and to promote timely and efficient licensing.

In view of the record evidence, we find staff's site specific projection of the NRC's requirements to be more reasonable than CPB's simple extrapolation of regulatory changes experienced over an historical period.

(3) Indeterminates and Work Stoppages

CPB, on brief, criticized TB&A for increasing the allowance for indeterminates, i.e., inadequacies in estimation and human fallibility, only from \$25 million to \$50 million and for failing to increase the S&W estimate of \$10 million for work stoppages.

CPB criticized TB&A for employing a generic rather than site specific analysis for indeterminates and CPB suggested a total of \$60 million would be more representative. The difference between TB&A and CPB, although large in absolute terms, i.e., \$10 million, is simply not material in the context of this proceeding and need not be considered further.

As for the \$10 million in 1980 base dollars allocated for work stoppages, that amount reflects the cost of the only significant

work stoppage (about 11 weeks) in the five years the plant has been under construction. While each of the fourteen unions involved in the project will be renegotiating its contract before the planned commercial in-service date, there is simply no basis in the record to infer a higher base cost for work stoppages.

(4) Productivity Adjustment

CPB attacked TB&A's failure to adjust productivity downward to reflect the implications of a "man-hour burn rate curve." <sup>1/</sup> While TB&A acknowledged that, if the trend reflected in the burn rate curve does not reverse soon it will be difficult to complete the project within the budget estimate, TB&A stated that a specific productivity adjustment was unwarranted at this stage of completion, particularly in view of the level of the allowance for contingencies.

Although TB&A has, at this stage of completion on other projects, inferred a negative productivity adjustment based on the results of a burn rate curve, there is no basis on the record for questioning its judgment here and CPB, in argument, does not suggest what level of adjustment should be inferred from the curve.

(5) Escalation Rates

CPB criticized staff for employing escalation rates that are too low, particularly since escalation rates are intended to provide for "additional unaccounted for expected costs." Staff used

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<sup>1/</sup> That curve is a fiscal management tool to (1) assess where a project is in relation to its schedule, (2) examine trends, and (3) if necessary, precipitate management action.

direct cost escalation rates of 10.5% for 1980-85 and 9.5% for 1986-90.<sup>1/</sup> These rates were developed based upon examination of the relationship between the GNP implicit price deflator and various Handy-Whitman construction indices, as adjusted. CPB argued that the escalation rate should be 12.5%. That level of escalation was the upper limit of the range suggested by TB&A in its audit report (10-12.5%).

According to CPB, TB&A did not consider the Handy-Whitman index sufficiently reliable for developing escalation rates "because, in recent years, experience indicates that the use of composite or general indices have understated actual cost increases of component costs." A second criticism of CPB was that staff assumed the GNP price deflator will be 8.5% per year from 1980 through 1985 although inflation was -- at the time of its presentation -- still in the vicinity of double digits. Thus, CPB contended "that attaining the average Staff level for these years will be extremely difficult, if not impossible."

The staff projection is based on forecasts for 1980-90 of the GNP implicit price deflator developed by Chase Econometrics and by Wharton Econometrics Forecasting Associates, Inc. Their projections, which suggest that general rates of inflation will increase more slowly over the latter half of the 1980's relative to

<sup>1/</sup> The co-tenants, for the years 1981-86, adopted escalation rates in the range of 7.3-8.8 percent.

the early part of the decade, and the fact that the GNP implicit price deflator increased only at a compound annual rate of 6.9% from 1970-80 led staff to the 10.5% rate for 1980-85, a 9.5% rate for 1986-1990. We find, therefore, that the escalation rates employed by staff are reasonable.

B. Capacity Factor

An issue having a significant impact on the results of the various studies is the level of capacity factor assumed for the Nine Mile plant. For example, the staff projected the net economic advantage of Plan A (its base case) over Plan B (the large coal alternative) of \$1.137 billion at a 68.3% average capacity factor for NMP-2.<sup>1/</sup> If, however, the realized factor is 60% as posited by CPB and EDF, the advantage of Plan A declines to \$574 million. Similarly, the economic advantage of Plan E (NMP-2 only) over Plan F (1085 MW of coal capacity) declines from \$1.98 billion to \$1.28 billion if that adjustment is made.

CPB and EDF base their suggested 60% capacity factor on realized capacity factors through December 1980 for comparably sized nuclear plants. According to those parties, the 20 or so existing commercial size BWR 3 and 4 units have averaged 59%, with larger reactors, akin to NMP-2, having slightly lower capacity factors.

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<sup>1/</sup> For other operating nuclear reactors in the State, staff employed capacity factors ranging from 67-75%.

CPB offered various reasons which tend to either increase or decrease capacity factors and which CPB considered applicable to the issue. Ultimately, CPB presented the 60% factor as its judgmental choice.

Staff assumed a 62% capacity factor at NMP-2 for the first three years of its operation (the immature years), and 69% for the remaining 27 years of the assumed 30-year service life.

Staff appeared to base its projection of a 69% capacity factor (after three years) on the operating experience of NMP-1 and design improvements in NMP-2. Staff asserted that NMP-1, which was the first commercial BWR produced by General Electric, approached a 62% factor in its immature years and has averaged 65%-70% since (the capacity factor fluctuates widely from year to year because NMP-1 is refueled every other year; in the years 1976-80 the respective capacity factors in percent have been 77, 55, 84, 56 and 85). Staff contended that the capacity factor of NMP-2 will be better than NMP-1 because of various design improvements.

In general, CPB and EDF, on brief, attack staff and the co-tenants, whose witness generally concurs with staff, as relying on speculative improvements in design while ignoring the risks and uncertainties associated with the newer design and for failing to make allowance for age in projecting capacity factors.

After all is said and done, the principal difference between CPB and EDF, on the one hand, and staff and the co-tenants, on the other, is that the former would rely on an average of all experience for a given class of reactors while the latter would rely on more recent operating experience and engineering developments. Otherwise, these parties point

to indeterminate countervailing factors which could lessen or improve capacity factors in the future.

We find that staff's capacity factor projection was arrived at on the basis of an assessment of relevant experience and specific design improvements in the NMP-2 design. While no one can project with confidence the actual operating experience of any specific plant over a period of thirty to forty years, we find that staff's projection is not unreasonable.<sup>1/</sup>

C. Installation Dates for New Coal Capacity

As mentioned above, CPB altered the time required for installation of new coal plants in its variation of staff's study. According to CPB, if the design for the Somerset coal-fired station were adopted for the Jamesport and LEGS facilities, which are already certified for coal-fired units, a significant percentage of the plant engineering will have been completed, thus lessening the construction schedule for coal facilities to 4-5 years. In support of that conclusion, CPB stated that Kansas Power and Light is constructing a station which will have four 680 MW units, and that two of the units were completed in less than five years and a third will be completed in about four years.

Both staff and the co-tenants introduced witnesses who challenged CPB's hypothesis. Staff explained that although the LEGS and Jamesport sites have been licensed, a final design and and compliance filing must be submitted to and approved by the Commission, and studies must be made as to the type of coal to be used before preparation of specifications for major items of

<sup>1/</sup> We note also that CPB assumes that the nuclear capacity factor will be significantly poorer than the factor it used for coal plants (60% vs. 70%), whereas staff assumed a much smaller differential (69% vs. 73%). We think staff's differential is more realistic, and it is this differential that affects the relative economics between nuclear and coal-fired facilities.

equipment can commence. However, the critical path for such facilities, in staff's estimation, is the steam generating system; according to staff, an estimated seven years is required from the time that system is ordered to completion of the project. Thus, staff concluded that even if the Somerset design were employed, at least eight years' lead time would be required. And, staff and the co-tenants contended that the need for additional federal permits, and modification of the existing Article VIII Certificate could extend that lead time.

The co-tenants postulated that it was unrealistic to believe that even eight years is adequate lead time for such facilities since a study of air emissions on grapes is necessary at LEGS<sup>1/</sup> and because they believe it unreasonable to assume, as staff does, that the utilities would, in view of their experience in Article VIII, expedite construction by undertaking various tasks on parallel paths. In summary, the co-tenants argue it will take until 1992 to bring a coal-fired plant into commercial operation.

We agree with staff and the co-tenants that the installation dates for new coal capacity assumed by CPB are unrealistic in light of the licensing, design and procurement lead times associated with such ventures.

<sup>1/</sup> Staff does not necessarily agree, based on its interpretation of Siting Board orders in C. 80007, that the "grape study" at LEGS would delay its in-service date.

D. Coal Capital Costs

CPB developed lower construction cost estimates for new coal plants than either staff or the co-tenants. Those estimates were derived from empirical analyses of the costs of constructing 116 coal units in this country from 1972 to 1977, and the results were tested by studying the actual costs incurred to build NYSEG's Homer City Unit 3, modified to reflect incremental pollution control equipment costs. CPB concluded that coal-fired units located in the northeast will cost 14% more than the national average and 26% more if equipped with scrubbers, but that the cost is 9.6% less than the national average if two or more identical units are constructed at a common site. The principal objections lodged to the CPB analyses by staff and the co-tenants are that they fail to account for economies of scale, and misuse a particular formula employed in the study.

Staff based its cost estimates on more site specific data. For the Jamesport unit, staff employed the 1981 § 5-112 report to SEO which contains specific estimates for that unit. For the LEGS units and the "generic units" in the various staff plans, staff adopted the construction pattern of the Somerset unit because it represents the most recent data available and because its "pollution control equipment requirements are approximately equivalent to the expected requirements at the LEGS site."

We find staff's assessment of capital costs for coal plants, which are based on site-specific data developed in connection with the planned construction of coal plants in this State, to be the most credible.

E. Sunk Costs

Staff, in its report, estimated that by December 31, 1981, the direct cost associated with NMP-2 would be \$1.072 billion and that \$290 million in AFUDC would be accrued. These amounts are not at issue. Also, staff estimated that if the project were terminated, cancellation costs would amount to \$373 million, and additional AFUDC, pending resolution of the disposition of costs, would amount to \$322 million, for a total of \$2.057 billion. Each of those latter amounts is in dispute.

Staff arrived at a total of \$373 million of cancellation costs through a process which involved backing out accumulated AFUDC from estimated sunk costs at the time the project might be expected to be terminated (for study purposes, December 31, 1981). The utilities estimated cancellation costs at \$312 million. The details of that estimate are set forth in Table 2 on page 34. That table includes a cost of demolition, certain removals, backfilling and landscaping totalling \$88 million and a contingency allowance of \$60 million.

These amounts were assailed by both EDF and CPB as being excessive. The basic objection to the estimate, voiced primarily by EDF, is that it appears to overstate dramatically demolition and site restoration activities of the partially constructed plant, since it infers that the cost of dismantling a radioactive facility after the end of its operating life (estimated at \$101 million in current dollars) would be less than the cost of removing a non-radioactive facility one-third complete.

A second major objection, offered by CPB, was that the salvage estimate of about 10% of cancellation costs (\$38 million) is understated, in view of, among other things, a year-old report stating that the amount of equipment that could be salvaged for a coal plant was about \$245 million. CPB believed that the tenants gave inadequate weight to the possibility of transferring a number of components to a coal-fired unit, and to the likelihood of sale to other nuclear projects.

We agree that there is a reasonable basis for EDF's argument that staff may have overstated demolition and site restoration costs, particularly in light of the comparison EDF makes between the costs indicated for dismantling a radioactive facility and the estimate employed for demolition and site restoration of a partially completed non-radioactive facility. It is more reasonable, in our view, to expect the costs of dismantling a fully operational radioactive facility to exceed the costs of removing the existing partially completed plant. We also tend to agree with CPB that

the salvage estimate employed by staff may be somewhat understated because it would appear that greater weight should have been given to the possibility of transferral and sale of components to other utilities. However, one can also conclude from this record that dismantling with the goal of maximizing salvage value would be more costly than otherwise--which may offset significantly any gain associated with a more careful salvage effort.

TABLE 2Nine Mile Point II Cancellation Costs Through 1980(\$ millions)

Invoices in progress	\$ 35
Contract cancellations	15
Remove reactor pressure vessel	3
Remove stator	1
Fill lake tunnels and screenwall	2
Remove permanent plant equipment and demolish buildings	75
Backfill and landscape	7
Cherry Hill purchase order cancellations	90
Cancel contracts with General Electric, Nuclear Steam Supply System, Power Generation Control Complex	10 30
Shutdown Stone and Webster headquarters	15
Contingency	60
Niagara Mohawk and Co-Tenant costs	<u>7</u>
Total:	\$350
Total Salvage Value	<u>38</u>
Net Total:	<u><u>\$312</u></u>

The staff estimate of cancellation costs may have been somewhat overstated in other respects as well. For example, "Cherry Hill purchase order cancellations" (See Table 2, above) were originally estimated at \$90 million, but it is acknowledged by the co-tenants that, since more of the material and equipment covered by these orders has been delivered to the site and paid for since the estimate was prepared, the amount should be about \$50 million. Also, it appears clear that the estimated cost of cancelling contracts with GE will be lower than the \$40 million indicated because of progress made on the project.

Although the co-tenants argued that increases in the amount of invoices in progress and contract cancellations might offset these reductions, a contingency allowance of \$60 million was, as EDF pointed out, provided to account for unforeseen increases of this nature. And, at this stage of the project, it is not contended that those increases will approach \$60 million.

With respect to the estimated AFUDC accruals, if the project is abandoned, CPB argues that, given its ability to process complex rate cases in 11 months, and the likely inclination of all parties to minimize AFUDC accruals, the Commission is capable of deciding the issue of cost allocation between shareholders/ratepayers by the end of 1982. This procedure would cut the projected additional AFUDC in half. We think it is unlikely, however, that such a proceeding--which would entail a detailed analysis of complex issues--could be completed as quickly as CPB suggests.

After considering all of these factors, we conclude that staff's estimate of cancellation costs is somewhat overstated, but the degree of error in the staff figure is not sufficiently significant to disturb our ultimate conclusion as to the overall validity of the staff analysis.

F. Cost of Capital

The CPB calculation of the cost of capital (12.79%) hinged largely on a study of the term structure<sup>1/</sup> of United States Treasury Bonds and the yield relationship between these securities and A-rated utility bonds between 1972-80. The analysis developed a relationship between yield and maturities and was predicated on the tenet that "investors' expectations about the future determine the future capital costs today".

Staff, which computed an average cost of capital of 11.61%, accepted the capital costs developed by CPB for study purposes, but faulted CPB's analysis on the grounds that the technique CPB adopted overestimated the cost of capital. Further, staff asserted that the technique is sensitive to interest rates and that those rates have fallen since CPB prepared its testimony; thus, the results the technique infers are lower than those claimed. More important, according to staff, is the fact that accepting CPB's claims, the effect of higher costs of capital increases the cost of NMP-2, assuming a 1987 in-service date, only from \$4.89 billion to \$5.03 billion or less than three percent, a relatively minor change.<sup>2/</sup>

<sup>1/</sup> Term structure refers to the structure of yields for bonds with different terms to maturity and reflects the yields and maturities for a class of bonds.

<sup>2/</sup> We note that this change would also increase the costs of the coal alternative so its effects on the economics of NMP-2 vs. that alternative are small.

Other Economic Issues

Aside from the issues developed above, CPB and, to a lesser extent EDF, have presented other qualitative and quantitative arguments which they developed, to a lesser or greater extent, in the record. Among these arguments are the following:

1. The staff study is biased towards completion of NMP-2;
2. Staff improperly accounted for the impact of the conversion of coal-fired units to oil;
3. Staff failed to reflect the existence of a risk premium associated with investment in NMP-2;
4. Decommissioning costs were understated;
5. Operation and maintenance costs for nuclear plants used by staff were disproportionately low in comparison to those costs for coal-fired plants;
6. The impact of the extended first outage of NMP-2 identified in the Three Mile Island Action Plan Item 42 should be considered; and
7. Staff incorrectly computed total plant construction costs in nominal rather than in constant dollars.

We have carefully examined the record concerning these matters, including Judge Boschwitz' analysis, and we find that these arguments are either incorrect, de minimus, or inadequately developed. For this reason, they would not affect our decisional analysis to any significant degree and, consequently, do not warrant further discussion.

Financial Implications

Staff undertook a financial analysis to explore the major effects upon each of the co-tenants that would ensue from completion of AMP-2. Using the financial forecasting models of the utilities, staff projected increases in electric revenues, unit cost of electricity, capitalization and outstanding securities for two of the plans it studied.<sup>1/</sup>

Staff concluded that each of the utilities should continue to participate in the project because projected growth rates in electric revenues, unit cost of electricity and capitalization are not unreasonably high, although there would be some upward pressure on these parameters, and because the additional capital which would be necessary could be raised on reasonable terms.<sup>2/</sup> The co-tenants agreed that each utility can raise capital on reasonable terms and conditions (assuming no major disruption in the financial markets) as long as the following criteria are met: (1) there is adequate and timely rate relief; and (2) the Commission permits (a) normalized tax accounting; (b) CWIP in rate base for certain of the co-tenants; and (c) utilization of a net-of-tax basis AFC rate.

Based on the staff report the co-tenants estimated, as set forth in Table 3 below, the following average annual

1/ Plans A & B, Exhibit 6. Plan A includes Nine Mile, Jamesport and LEGS I. Plan B excludes Nine Mile but provides the same capacity as Plan A with coal plants.

2/ As we observed above, staff reserved judgment as to Central Hudson pending completion of Case 28026.

percentage growth in the unit cost of electricity, including the impact of inflation and projected fuel costs.

TABLE 3

<u>PERIOD</u>	<u>NIAGARA MOHAWK</u>	<u>NYSEG</u>	<u>LILCO</u>	<u>RG&amp;E</u>	<u>CENTRAL HUDSON</u>
1981-87	7.1%	10.5%	8.5%	8.8%	6.9%
1981-90	8.4	8.8	6.1	9.8	7.0

These rates of growth, as the co-tenants noted, are in line with staff's projection of inflation, i.e., 8.5% from 1981-85 and 7.5% from 1986-90.

Both CPB and EDF faulted staff's financial study. CPB criticized staff for routinely applying a number of remedies to the co-tenants' cash flow problems which it claimed are normally reserved for extremely serious conditions.

Staff found that the aggregate long-term financing requirements of Plan A, which includes NMP-2, and Plan B, which is the alternative coal generation scenario, were about equal after accounting for cancellation costs and the additional AFC accrual, pending Commission disposition of the sunk costs in the event of abandonment. Staff further found that the primary difference between the two plans related to the timing of security issues. Thus, staff provided for similar ratemaking options under both plans and introduced CWIP under both plans in those years when financial difficulties arose.

This methodology, CPB contended, does not disclose how financial parameters necessary to maintain an A-bond rating could best be met and thus allows Plan B's revenue requirement to rise to unnecessarily high levels while minimizing that of Plan A.

CPB contended that staff should have constrained Plan B's revenue requirement in the same manner it constrained Plan A's and then should have measured the difference between the two results.

CPB replicated the staff study substituting its cost of capital (12.89% instead of staff's 11.66%), its construction costs, a 60% capacity factor from 1987-1994 for all nuclear plants, a one-year Commission proceeding to determine the disposition of sunk costs and \$196 million less sunk costs than staff. CPB developed from this analysis that the financial implications of Plan B for certain utilities were substantially superior to those of Plan A.

Staff, in response, argued that CPB merely illustrated that during the 1980's, less revenues would be needed to finance Plan A than Plan B, a fact which staff stated was apparent to it when it presented its report. Staff also attacked CPB for making judgments about Plans A and B based on 15 years of study rather than on the economic life of the plant. In addition, staff pointed out that in CPB's analysis of Plan A, fuel costs are \$765 million higher than in staff's Plan A due to the use by CPB of a 60% capacity factor. If comparisons are made employing a common capacity factor, staff asserted that the difference in revenue streams from 1987-1994 is only \$150 million instead of \$915 million as indicated by CPB.

CPB, in addition to reformulating staff's study, questioned four other input assumptions of staff's, i.e., (1) that each utility will earn its allowed rate of return; (2) that there will be no price-induced conservation (elasticity); (3) that the cost of capital is equal in Plans A and B; and (4) that there is no "nuclear risk premium".

Although staff postulated that the co-tenants will each earn their allowed rate of return during the period when NMP-2 is being constructed (because rates are set as if they will), staff does not believe the co-tenants will earn that return, nor for that matter do the co-tenants. Thus, staff also performed a sensitivity analysis assuming a 2.5% shortfall in earnings.<sup>1/</sup> For the companies analyzed, staff found that its overall conclusions would not have been affected given this change.

EDF, on brief, attempted to demonstrate that even if each co-tenant earns its authorized rate of return and interest rates decline, each, in most years through 1987 under staff's assumptions, will have AFC ratios in excess of those the utilities considered acceptable and, further, that Niagara Mohawk's cash interest coverage will be below a level acceptable to the utility (in the vicinity of 2.0 times for 1985 and 1986). Further, EDF criticized staff for virtually endorsing CWIF as a rate base as a necessary means of financing NMP-2.

Turning to its own presentation, EDF alluded to testimony by a co-tenant witness that investor perception of utility securities would be enhanced if the projects they undertook had a

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<sup>1/</sup> This staff analysis was limited to Niagara Mohawk, RG&E and Central Hudson. NYSEG was not analyzed because of problems with its data, while LILCO was ignored because its financial problems related to Shoreham rather than NMP-2.

shorter lead time, to support EDF's belief that the co-tenants would be in better financial health if they adopted the EDF plan. Also, EDF contended that less capital will have to be raised under its plan, e.g., Niagara Mohawk would require \$472 million less from 1983-87. Lastly, EDF argued that lesser capital requirements should have a favorable impact on common stock selling below book value.

Staff responded that a utility may maintain an A rating although its cash interest coverage is below 2.0 times and its AFC ratio is above 50%.

Insofar as the use of CWIP in rate base is concerned, staff stated that the argument that NMP-2 could not be financed without CWIP in rate base "places too much emphasis on form over substance". Staff is of the opinion that NMP-2 will require a reasonable level of revenues and can be reasonably financed. Thus, it contended, "whether the revenues are provided through CWIP inclusion or higher equity return is irrelevant." Moreover, staff pointed out that much of the required CWIP is related not to NMP-2, but to Shoreham or Somerset, insofar as LILCO and NYSEG are concerned.

Our finding is that staff has demonstrated, to our satisfaction, that each of the co-tenants will be able to finance completion of NMP-2 at a reasonable cost and under acceptable conditions.

#### CPB Alternative

In addition to its effort to modify the staff study using revised assumptions, CPB, like EDF, offered an alternative to NMP, through Mr. Komanoff, i.e., construction of three - 310 MW

coal fired units at either Nine Mile Point or at the LEGS site. These units were projected to be in service at the end of 1988, 1989 and 1990, respectively, and the total costs associated with these plants were estimated to be \$240 million less than that for NMP-2. Moreover, had CPB accounted for tax benefits that ensue as a result of abandonment, that difference would rise to about \$690 million.

In measuring the respective revenue requirements of the coal and nuclear alternatives, CPB incorporated a 60% capacity factor instead of staff's 68.3%, and estimated that nuclear operation and maintenance costs will escalate, in real terms, more rapidly than coal operation and maintenance costs.

On the other hand, CPB incorporated very stringent pollution control equipment in its coal plants, escalated coal costs two percent per year beyond the rate of inflation, whereas staff assumed coal costs would remain flat in real terms after 1985, adopted staff's estimate of cancellation costs\* and its discount rate, and assumed, as does staff, that NMP-2 would go into service in 1987.

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\* For the purpose of this analysis only.

Both staff and the co-tenants were critical of CPB's use of 60% capacity factor for NMP-2 and the projected in-service dates of the coal units. In addition, staff contended that CPB improperly treated sunk costs in its economic analysis and thus biased it in favor of coal because CPB amortized costs over 30 years but truncated its study.

We find, for the reasons stated above in the decisional analysis, that this CPB proposal does not represent a realistic alternative to completion of NMP-2. Its desirability is heavily influenced by plainly unattainable early completion dates for the coal units, a capacity factor for nuclear at the lowest end of the indicated range, and inappropriate treatment of sunk costs.

EDF Alternative

EDF offered an alternative plan to NMP-2, which focused on conservation and renewable resources. The EDF plan stresses improvements in the use of electricity in the residential and commercial sector, conservation voltage reduction, and, also, additional energy from cogeneration and small hydroelectric facilities beyond the level projected by the co-tenants.

In the residential sector, EDF addressed the benefits of additional insulation for water heaters, low flow shower heads, replacement of incandescent lighting with fluorescent fixtures and increased refrigerator efficiency. In the commercial sector, EDF

discussed what it considered to be achievable savings associated with lighting, heating, ventilating and air-conditioning. Finally, EDF analyzed the potential of conservation voltage reduction.

EDF concluded that the utilities ought to be authorized to offer cash rebates, low interest loans or other subsidies to achieve more efficient use of electricity and that it would be in the best interest of the utilities and their customers to do so as long as marginal costs exceed marginal rates. And, EDF contended that the likely energy savings from the measures it proposed (1409 gwh/yr.) plus the additional energy from the cogeneration and small hydro-electric resources it postulates (915 gwh/yr.) would produce an amount of energy equivalent to that expected from NMP-2, annually.

Both staff and the co-tenants argued that the result projected by EDF was unachievable. They offered a host of reasons, some of the more important of which we list below.

- (1) There is no evidence that the financial incentives to be offered consumers will compensate for whatever lifestyle changes they believe they would have to make.
- (2) The assertion that the EDF plan has the same benefits of NMP-2 is unproven since the level of energy use reduction is uncertain and, even if it occurs, it may not occur during system peak periods.
- (3) The level of incentive (financial stimulus) is overstated.
- (4) EDF has provided no specific, workable program.

- (5) The measures EDF advocates will require legislative and/or regulatory approvals.

Further, as staff argued, even if EDF's projections are achieved, NMP-2 would remain economic because of the fuel savings it would provide. For this and other reasons more fully set forth in our decisional analysis above, we find that the EDF proposal is not a satisfactory substitute for completion of NMP-2.

#### CONCLUSION

Within this proceeding we have considered carefully the cost estimates and construction plans for the Nine Mile project, and we have evaluated the economic and financial implications arising from this project and alternatives to it. From our investigation, we have developed a basis for assessing three matters of primary importance: Is the project capable of being managed well and kept within the control of the utility co-tenants who have the responsibility to bring the project to completion in a professional and expeditious manner? Can the project be financed by the co-tenants with the resources available to them? Can the continuation of this project be considered economically sensible and likely to be of benefit to ratepayers in light of the best information available at this time? We have found that the answer to each of these inquiries is yes.

To put our conclusion in proper perspective, we should explain the context within which this proceeding has been conducted and our role and responsibilities as a regulatory body. We have conducted our investigation knowing full well that we are not a licensing authority for new generation facilities. Construction on the Nine Mile project received federal regulatory approval before Article VIII of the Public Service Law was enacted.

State law therefore did not require that this plant receive the approval of the New York State Board on Electric Generation Siting and the Environment, which has been empowered to pass judgment on major electric generating facilities. But we are required, as part of our responsibilities under the Public Service Law, to oversee the financial condition of the utilities we regulate and to ensure that they are capable of providing safe and adequate service in an environmentally compatible manner and at just and reasonable rates. The construction of NMP-2 will certainly have an impact on these factors and we have approached our responsibility in this case with this in mind.

Moreover, our analysis has taken into consideration existing facts that cannot be avoided or dismissed. The Nine Mile project is well underway -- more than two-thirds of the engineering for this project is completed and over 40% of the actual construction has been performed. This information properly played a role in the TB&A/Canatom and staff studies, and this present reality has been factored into our assessment. Since sunk costs must be considered with respect to each of the alternatives under review, the remaining or incremental costs for the various alternatives become the critical factor in evaluating their relative economic benefits.

Finally, as a state agency, we are charged with the responsibility to ensure that our practices conform with the intent, purpose and programs that make up the State's energy policy as embodied in the State Energy Master Plan adopted by the Energy Planning Board. Within this proceeding, we have been fully aware that the completion of the Nine Mile project has been and continues to be an important element of the State Energy

Master Plan, which relies upon this facility as part of a program designed to reduce our current dependence on foreign oil supplies and to fulfill our developing needs for additional generation capacity.

As indicated in the foregoing discussion, we have concluded that continuation of this project is warranted on the basis of our evaluation of the extensive record in this proceeding. But having found no basis for rejecting this conclusion, we remain, like staff, concerned about the utilities completing the project successfully so that the likely benefits it is capable of producing can be realized as soon as possible at the lowest possible cost, consistent with requisite safety standards. We recognize a responsibility, as a regulatory body, to use the resources available to us to promote the public's interest in this endeavor and, to this end, have decided to take certain steps designed to ensure that this project is well managed and progresses as expeditiously as possible.

First, we shall not wait until this plant is ready to be included in rate base to begin a careful review of the actions being taken on the project. We are now taking steps to install on the project site a team of independent and knowledgeable experts charged to stay apprised of the project's status and to report to us the progress the co-tenants are making in reaching the targets and milestones along the project's critical path. Should there develop any circumstances that appear to place the achievement of necessary work on a timely basis in jeopardy,

we will make certain that project management is promptly notified of the circumstances and begins taking suitable remedial action.

Second, we take this opportunity to place the co-tenants on notice that we intend to hold them responsible for the costs they incur on this project. Any inconsistency between the project's final cost and the cost estimates provided in this proceeding will be carefully examined before the co-tenants are allowed any cost recovery in the rates we establish. It is our intent to apply our traditional regulatory powers fully to the Nine Mile project, and we shall allow the companies to earn a return on only those capital investments that have been made prudently. By placing an independent team of examiners on the Nine Mile site, we will have a source of reliable information with which we will be able to carefully evaluate all amounts that are expended on this project.

Finally, while the utility co-tenants have many reasons to complete the project efficiently, we have given serious thought to the adoption of a program of incentives -- both inducements and consequences to be avoided -- that would serve as an additional spur to the companies involved in the project to exercise full and close control over all aspects of the project. We announced our intention to consider the adoption of such a program at our public session on February 9, 1982 and, upon notice to all parties, convened an administrative conference at our offices in Albany the following day, February 10, 1982, to discuss the framework of such a plan with the parties and to seek their input. We turn now to a full discussion of that subject.

INCENTIVE RATE OF RETURN

On February 23, 1982, we issued a Notice Requesting Public Comments on the Establishment of an Incentive Rate of Return for Ratemaking Treatment of Future Construction Costs of the Nine Mile 2 Nuclear Generating Plant (Notice). Essentially, the proposal contemplated a 20% incentive/penalty to be applied to the change in revenue requirement from a \$4.6 billion target level. The target represents the midpoint of Staff's estimate of the project's cost if completed in 1986 (\$4.3 billion) and its costs if completed in 1987 (\$4.9 billion). The plan also provided for exclusions only in the event of extraordinary occurrences beyond the cotenants' control. In addition we invited comments on two alternatives to a 20% sharing of cost savings or overruns. First, we suggested increasing the potential incentive for cost underruns to 40%, while retaining the 20% penalty for overruns, to reflect the fact that large cost underruns are less likely to occur than large overruns. We also asked parties to consider a variable cost sharing plan under which the penalty or reward would be equal to .6 times the percentage overrun or savings.

Pursuant to the Notice, comments were to be submitted to us by March 15; but at the request of the Assembly Special Committee on Nuclear Safety, we extended the comment period until March 30, 1982.

In response to the Notice, we have received comments from Staff, Co-Tenants Assembly Special Committee on Nuclear Safety,

CPB, Assemblyman Angelo Orazio, the Environmental Defense Fund, Dean Witter Reynolds, Inc., Standard & Poor's Corporation, Citizens to Preserve the Hudson Valley, Owners Committee on Electric Rates, Ecology Action of Oswego and Securities Industry Association.

After considering the comments, as well as the earlier comments filed on February 17 by Staff, Co-Tenants, Assemblyman Maurice Hinchey, CPB, EDF, the Association of Investors in New York Utilities, the Pine Hills Student Community Alliance & the Off-Campus Association of the State University of New York at Albany, we have decided to adopt, with the modifications discussed below, the incentive rate of return plan (IROR) set forth in the Notice.<sup>1/</sup> Specifically, the IROR proposal will be applicable to prospective Nine Mile 2 costs, including AFUDC, required to complete the facility; the target completion cost for determining the IROR will be set at \$4.6 billion; and the IROR will be calculated by applying a constant sharing factor of 20% to the change in revenue requirement occasioned by any cost overrun or underrun from the target level.

We intend by adopting this proposal, to establish prospectively a policy which the Commission will follow when we are called upon to approve rates for the co-tenants which reflect Nine Mile 2 expenditures. We recognize that this action is a departure from the traditional regulatory practice of waiting to judge the prudence

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<sup>1/</sup> It should be noted that several commentators raise objections concerning our decision to permit construction of Nine Mile 2 to proceed. We have considered those concerns in other sections of this decision.

CASE 28059

of capital expenditures at the time a plant goes into service, but believe an IROR is justified by the unique circumstances of this case.

As we noted in our Initial Order establishing Case 28059,<sup>1/</sup> the Nine Mile 2 project, since its inception in 1971, has experienced lengthy construction delays and tremendous escalations in estimated costs. From initial estimates of a construction cost of \$357 million and a commercial operation date of December 1977, we are now faced with the co-tenants' latest estimate of a 1986 in-service date and a final cost of \$3.7 billion. Moreover, Staff has presented reasonable estimates of a 1987 in-service date and a final cost of some \$4.9 billion. Other parties have argued that the cost will be still higher.

As this proceeding has demonstrated, any slippage in the in-service date will leave the plant vulnerable to higher escalation rates, contingency allowances and AFUDC rates, as well as to changes in regulatory requirements that could increase the final cost of the project significantly. Thus, TB&A's audit finding, which went uncontested by any party, that maintaining the construction schedule is the single most important factor in controlling the cost of NMP-2 demands a regulatory mechanism to assure management dedication to the efficient and timely completion of the project. We conclude that the proposed IROR offers such a mechanism.

Several commentators have argued that certain aspects of the IROR are either unlawful or unconstitutional. However, the

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<sup>1/</sup> Issued September 2, 1981.

Commission is afforded broad discretion in setting rates and is not limited to the use of any formula or method, so long as the end result is reasonable. F.P.C. v. Hope Natural Gas Co., 320 U.S. 591 (1944); City of New York v. P.S.C., 17 A.D.2d 581 (3rd Dept. 1963), motion for leave to appeal denied, 13 N.Y.2d 594 (1963). Further, the IROR will assist us in meeting our statutory mandates to assure just and reasonable rates for the co-tenants' ratepayers and to encourage the co-tenants to perform their public service responsibilities with the utmost economy and efficiency.<sup>1/</sup>

As discussed, the IROR is a reasonable regulatory response because of both NMP-2's history of delay and escalating costs and the importance of controlling future costs by maintaining the construction schedule. Further, the plan is balanced, for it tends to provide management with significant incentives to control project costs without imposing additional risks on investors that would inordinately increase capital costs or endanger the financial health of the co-tenants. The IROR would only apply to the equity portion of capitalization required to support prospective plant investment and, while shareholders would be asked to bear 20% of the revenue burden of any cost overrun, they would receive 20% of the

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<sup>1/</sup> See, for example, Case 25155, New York Telephone Company, 10 NYPSC 345, 381-88 where the Commission allowed the company a reasonable rate of return but lower than it would have otherwise allowed if the company had been providing more proper and adequate service. See also Case 27014, Rochester Telephone Company 17 NYPSC 448, 458-63 where the Commission allowed the company a modest return premium as an inducement for it to continue its innovative management efforts to hold down costs and provide new benefits for customers.

revenue benefit of any cost underrun. In addition, since NMP-2 construction costs represent only a portion of each co-tenant's rate base, the impact of the IROR on any co-tenant's rate of return would be mitigated.<sup>1/</sup>

Several commentators have also argued for a reduction in the target figure of \$4.6 billion based on the co-tenants' claim of \$3.7 billion completion cost. However, since our own decision to allow completion of the plant was predicated on our belief that a likely cost would range between Staff's 1986 in-service date figure of \$4.3 billion, which Staff found possible, and its 1987 in-service date figure of \$4.9 billion, which Staff found more likely, we feel a \$4.6 billion midpoint figure is a fair and achievable target completion cost. We have seen nothing to change our opinion that Staff's estimates are the most reasonable presented in this proceeding. Further, in order for the IROR to be fair and equitable and not discourage investment in the project, the co-tenants must have a reasonable opportunity to earn a reward. Thus, the target figure must be set at a level sufficient to provide them with such an opportunity. While setting the target figure at such a level will make it possible for the co-tenants to earn a reward even if they exceed their own projections, their ratepayers will be provided with a valuable protection against the multi-billion dollar cost overruns

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<sup>1/</sup> As Appendix A of the Notice demonstrated, wide variations in final construction costs would not have commensurate impacts on overall company returns.

predicted by several parties to this proceeding and by receiving 80% of the actual revenue savings resulting from the underrun in addition to savings in fuel costs.

The co-tenants argue that the Commission must compensate them for the additional risks occasioned by the IROR. They cite as precedent the Federal Energy Regulatory Commission (FERC) decision to allow an additional 1.5% for the risks involved in the IROR plan adopted in the Alaska Natural Gas Transmission System case. However, this argument fails to recognize that any risk premium demanded by investors because of the program will be reflected in the market price of an individual co-tenant's securities. Since Commission determinations as to rate of return on common equity incorporate the price of the utility's common stock, they reflect automatically any risk premium demanded by common stock investors. And, of course, the yields on the co-tenants' debt and preferred stock will likewise reflect any apparent increase in risk.<sup>1/</sup>

Many of the commentators also question the proportion of risk sharing contemplated under the plan. The co-tenants, together with some of the other parties, contend that the penalties are too severe, arguing that the IROR would expose investors to

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<sup>1/</sup> We note that Niagara Mohawk issued \$80 million of debt securities after the Commission's incentive plan was announced, and the IROR proposal was disclosed in its prospectus. The incentive plan had no discernible impact on the price of those securities.

too much risk and that the required premium could outweigh the economic benefits of the plant.<sup>1/</sup> Other commentators, however, charge that the penalties under all three proposals, and especially under the 20% constant risk sharing plan, are so inconsequential that they are unlikely to influence management behavior. Some of these parties suggest that we go beyond simply approving an incentive/penalty program and adopt a plan for allocating at least some of the risk that the project may prove uneconomic to shareholders and also place a cap on construction costs. For example, Assemblyman Orazio, while enthusiastically supporting our effort to introduce incentives into the regulatory process, suggests that we disallow recovery of any construction costs above the level at which alternatives become economically feasible.

We find these criticisms of our proposal unpersuasive. Our decision on the size of any reward or penalty must obviously strike a balance between providing management with a strong incentive to control cost, on the one hand, and, on the other, allocating risks among ratepayers and shareholders in a way that will minimize total project costs. The fact that there is substantial disagreement on whether the penalties are too severe or too lenient by itself indicates that we have taken into account factors that weigh on either side of this issue. More to the point, however, no convincing argument has been raised to lead us to alter our original proposal. The size of the risk premium investors may require to accept some of the risk of cost overruns is of course not subject to precise quantification. But we have no

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<sup>1/</sup> CPB, for example, contends that for maximum savings of \$360 million, and maximum loss protection of \$281 million, we are proposing to spend \$400 million in ratepayer funds. These estimates, however, are incorrect.

reason to believe that it will be as substantial as some of the commentators seem to fear. It bears repeating here that the reward or penalty will come into play only after the plant is completed when the co-tenants' cash flow is much improved, and will apply only to costs incurred after the date of this order.<sup>1/</sup> We are also approving a 20% constant risk sharing factor, which provides for smaller penalties in the event of substantial cost overruns than the variable cost sharing plan. Moreover, there are obviously uncertainties and financial risks associated with continuing the Nine Mile 2 project without a program of incentives in place.

On the other hand, we cannot approve a plan that would impose an absolute ceiling on construction costs, as suggested by Assemblyman Orazio, or that would require investors to assume the risk that the plant may ultimately prove uneconomic, as Assemblyman Hinchey recommends. We have very serious doubts about the wisdom of following such approaches since utilities, which are required to undertake construction projects to satisfy their public service responsibilities, would be reluctant to proceed with necessary projects and would have an extremely difficult time

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<sup>1/</sup> Citizens to Preserve Hudson Valley appears to misunderstand this aspect of our proposal since they assert that the plan would reward the co-tenants for the large overrun that has already occurred.

raising capital under such restrictive terms and conditions. Moreover, it would be improper in our view to deny recovery of costs, the prudence of which can be called into question only with the benefit of hindsight. Thus, we continue to believe that an IROR plan providing for realistic rewards and penalties will better accomplish the objective of motivating the co-tenants to complete the Nine Mile 2 facility at the lowest possible cost.

It has also been suggested by a number of the commentators that the IROR will create "perverse" incentives to complete construction quickly regardless of long-term fuel savings or the safety of the unit. However, this argument fails to recognize that we have decided to monitor construction closely through a team of experts based at the site, who will report to us if the quality of construction deteriorates. Furthermore, the co-tenants are well aware that we expect them to comply with all applicable Federal safety regulations, and that, if shortcuts are taken to meet a particular in-service date, they could delay the issuance of an operating license, which would only increase completion costs. As for long-term fuel savings, we have instituted a proceeding which will investigate the feasibility of tying recovery of fuel costs to operating efficiency.<sup>1/</sup> If the co-tenants sacrificed operating efficiency in order to complete construction quickly, they would run the risk of not being permitted full recovery of all fuel costs. It would not appear to be in the co-tenants' self-interest, therefore, to minimize construction costs regardless of the consequences.

1/ Case 27741, Niagara Mohawk Power Corporation - Phase II.

After consideration of all of the comments, we will, however, amend the IROR plan to provide that any reward or penalty will be implemented through a one-time adjustment to each co-tenant's rate base or through a short term amortization to income. Thus, when the amount of any underrun or overrun is known, and the revenue effect of the IROR determined, we will alter the co-tenant's rate base (or amortize the effects of the penalty to income) accordingly. By doing so, there will be no need to make such adjustments continually in rate cases over the life of the plant.

We also indicated in our Notice that there would be no exclusions to the target completion cost. However, we announced our willingness to consider changes in the target as a result of extraordinary events beyond the control of the co-tenants. After reviewing the comments, we wish to make it clear that we will provide the co-tenants and other interested parties with an opportunity to request a modification of the target figure for costs or savings due to such events.

We will also provide an additional modification. In developing estimates of the completion of Nine Mile 2, Staff used a roughly calculated, overall project AFUDC rate, which was suitable for economic analysis. The co-tenants now argue that if AFUDC is to be included in the estimate for incentive rate of return purposes, individual calculations

reflecting each of the co-tenant's accounting and financing practices should be substituted instead. Staff also argues that Commission actions during the construction period such as including construction work in progress in rate base will have an effect on the AFUDC component of the target figure. To meet these objections, we have calculated individual AFUDC components from the data submitted in the case, which include company-by-company financial plans, and we will make them part of our plan (see Appendix). In addition, if in future rate proceedings we make any ratemaking adjustments that are inconsistent with the assumptions included in this case, we will adjust the target figure accordingly.

We recognize that in providing an exclusion only for costs relating to extraordinary events, the co-tenants will bear a penalty for some potential cost overruns that are not within the control of management. However, we believe that it is proper for several reasons to include such overruns to the extent they are not extraordinary. For example, the in-service date, which is to a great extent under the co-tenants' control, has an impact on costs resulting from changing interest, AFUDC and regulatory requirements. And, the longer a plant is under construction, the greater its exposure to such costs. Routine NRC scope changes also are not directly under management's control. However, the co-tenants have the ability to anticipate and implement

such changes in an efficient or inefficient manner. In fact, the ability to respond to change may have a more important impact on project costs than the cost of the actual change itself. Furthermore, it should be remembered that the IROR target figure also includes contingency allowances substantially larger than those included in the co-tenants' own estimates.<sup>1/</sup> Finally, since the IROR establishes a floor on the amount of any revenue loss to be sustained by a co-tenant, this limit tends to offset the effect of uncontrollable expenditures.

We are confident that there are significant cost areas under the co-tenants' control to justify an incentive/penalty program. Certainly, the quality of general project management will decide whether construction is kept on schedule and costs under control. Further, management decisions will, for better or worse, affect labor productivity, availability, and strikes; materials and equipment procurement; engineering, quality control, acquisition of necessary permits, and the cost of project financing.

In conclusion, we wish to emphasize that the IROR plan adopted today does not represent a significant policy shift from the traditional regulatory policies followed by this Commission. As we indicated in our recent Opinion and Order Prescribing Treatment of Sterling Expenditures in Rates

<sup>1/</sup> The co-tenants, for example, provide \$30 million for NRC-related changes and the target figure includes \$100 million.

(Opinion No. 82-1, January 13, 1982), we will continue to support the recovery of prudently incurred expenditures. Under the particular circumstances of this case, however, we have decided that the public interest requires the kind of prospective incentive/penalty program we are imposing in order to provide management with the strong incentive necessary to complete the plant on schedule and at the lowest possible cost. We believe that the IROR provides such an incentive and will help to reverse NMP-2's past history of delay and cost overruns. After our most careful consideration, we are convinced that while the IROR may not be perfect, it is as fair and equitable as is reasonably possible and is in the public interest.

We have carefully considered all of the comments submitted to us. To the extent any such comments are inconsistent with the IROR proposal discussed herein; we have found them to be unpersuasive and hereby reject them. For example, we do not believe it is necessary to adopt Staff's proposal that there be additional incentives and bonus payments for the timely achievement of milestones on the project's critical path. The construction contracts for NMP-2 were renegotiated recently along the lines suggested by TB&A in its report and they now include bonus payments for specified performances and contractual incentive/penalty provisions. Thus, any additional inducements of this sort would only duplicate actions that have already been taken.

The incentive/penalty plan we adopted is set forth in the attached Appendix.

The Commission Orders:

1. An incentive rate of return plan, as set forth in the Appendix to this opinion and order, shall apply to the ratemaking treatment of future construction costs for the Nine Mile Point Nuclear Generating plant incurred by Niagara Mohawk Power Corporation, Long Island Lighting Company, New York State Electric and Gas Corporation and Central Hudson Gas and Electric Corporation.

2. The utility co-tenants shall file by May 17, 1982, a detailed plan for implementing the Incentive Rate of Return as set forth in this Opinion and the Appendix hereto.

By the Commission,

(SIGNED)

Samuel R. Madison  
Secretary

DETAILS OF INCENTIVE RATE OF RETURN PLAN

The Incentive Rate of Return Plan (IROR) will include the following:

1. The IROR will be applicable to all prospective Nine Mile Point No. 2 (NMP-2) costs, including AFUDC, incurred by the co-tenants from the date of this order that are required to complete and bring into service the NMP-2 facility.

2. The target completion cost will be \$4.6 billion. The co-tenants and other parties will have the opportunity, at the time rates are set that include NMP-2 expenditures, to request modification of the target figure for increased or decreased expenditures resulting from extraordinary events. In addition, if in any future rate proceeding the Commission makes any ratemaking adjustments which are inconsistent with the AFUDC assumptions attached herewith, the target figure will be adjusted accordingly.

3. The IROR will only apply to the equity portion of capitalization. It will be calculated by applying a constant sharing factor of twenty percent to the change in revenue requirement occasioned by any cost overrun or underrun from the target figure. The twenty percent sharing factor will then be allocated among the co-tenants and applied against their respective returns on common equity to either increase or decrease such returns.

4. The target (normal) rate of return for each co-tenant will be set in the co-tenant's rate case immediately preceding plant completion.

5. Any IROR induced reduction in the return on common equity applicable to prospective investments in NMP-2 will not exceed one-half of the normal rate of return.

6. Any reward or penalty resulting from the IROR will be implemented through a one-time adjustment to each co-tenant's rate base or through an equivalent amortization to income. Within 30 days of the date of this order, the co-tenants shall file for our consideration and approval the mechanics of such a plan.

Incentive Rate of Return  
Allocation of Direct Costs and AFC

\$(000,000)

	<u>1986 In-Service</u>			<u>1987 In-Service</u>			<u>Average</u>		
	<u>Cash*</u> <u>Expenditures</u>	<u>AFC**</u> <u>&amp;</u> <u>Trust</u> <u>Interest</u>	<u>Total</u>	<u>Cash*</u> <u>Expenditures</u>	<u>AFC**</u> <u>&amp;</u> <u>Trust</u> <u>Interest</u>	<u>Total</u>	<u>Cash</u> <u>Expenditures</u>	<u>AFC</u> <u>&amp;</u> <u>Trust</u> <u>Interest</u>	<u>Total</u>
LILCO	479.0	312.9	791.9	520.2	385.6	905.8	499.6	349.3	848.9
NYSE&G	479.0	300.0	779.0	520.2	384.0	904.2	499.6	342.0	841.6
RG&E	371.9	215.0	586.9	404.1	265.0	669.1	388.0	240.0	628.0
CHG&E	239.5	145.0	384.5	260.2	182.0	442.2	249.8	163.5	413.3
NIMO	1,090.6	660.0	1,750.6	1,184.3	817.0	2,001.3	1,137.5	738.5	1,876.0
	2,660.0	1,632.9	4,292.9	2,889.0	2,033.6	4,922.6	2,774.5	1,833.3	4,607.8

\*Cash Expenditures obtained from Table A-6 of Staff Report "The Economic and Financial Implications of Nine Mile Point II and Its Alternatives".

\*\*Obtained from each co-tenants projected capitalization determined by the financial computer models submitted in Case 28059 and Case 28026.

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

CASE 28059 - Proceeding to inquire into the financial and economic cost implications of constructing Nine Mile Point Unit No. 2 Nuclear Station.

ANNE F. MEAD and ROSEMARY S. POOLER, Commissioners, dissenting:

We dissent from the findings and determinations reached today because the TB&A/Canatom and staff studies -- studies extensively relied upon by the majority -- provide unreasonable assessments of the costs and consequences of proceeding with Nine Mile Point No. 2. On the basis of the evidence and arguments before us, we conclude that the Nine Mile Point No. 2 project should be cancelled. In fact, we believe the majority's Opinion and Order would not meet the substantial evidence test in a court of law.

We believe that the better alternative is to pursue coal conversions expeditiously and to implement conservation initiatives vigorously so that necessary amounts of energy can be provided with a more acceptable impact on customers' bills.

We now turn to the reasons supporting the conclusions we reach here.

The TB&A/Canatom Report

The majority considers the TB&A/Canatom study of the Nine Mile project to have been a worthwhile undertaking which provided it with "useful insights and important recommendations for improving the performance of those responsible for this project."<sup>1/</sup>

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<sup>1/</sup> Majority Opinion at p. 11.

For various reasons, we believe the TB&A/Canatom report to be unreliable. To begin, co-tenants' prejudices are necessarily reflected in the final report because they reviewed and selectively edited drafts produced from December 1980 through June 1981. The most notable result of this review process was the deletion of TB&A/Canatom's estimated project cost of \$5.6 billion<sup>1/</sup> from the final report. The lack of independence exemplified by this deletion vitiates any conclusions reached by the majority on the basis of this report. Furthermore, TB&A's objectivity is highly questionable, given that it sought and won during the pendency of this audit, in violation of a specific provision of the Department's contract with it, a \$25,000 coal conversion study contract from one of the co-tenants.<sup>2/</sup>

The TB&A/Canatom report is of little value as an independent evaluation of the cost of completing NMP-2 because of its authors' unquestioning acceptance of estimates prepared by the co-tenants and Stone & Webster. Of the six general categories of the base estimated cost for NMP-2, TB&A prepared its own estimates only for two: contingencies and escalation.<sup>3/</sup> For other categories, such as construction costs, TB&A performed a cursory analysis of S&W's construction projections and simply accepted those estimates.

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<sup>1/</sup> This should be compared with Stone & Webster's September 1980 revised cost estimate of \$3.7 billion.

<sup>2/</sup> Long Island Lighting Company.

<sup>3/</sup> As we will discuss later, TB&A's estimates for contingencies and escalation are woefully inadequate.

The reliance upon S&W's estimates for four major cost categories is unreasonable; even the majority here today recognizes TB&A could have done more work independently.<sup>1/</sup> For example, TB&A accepted as "appropriate" S&W's \$10 million allowance for work stoppages as part of the construction budget. That allowance is sufficient only for a stoppage of 11 weeks, which we believe is unrealistically low given that there are 14 craft unions on the site and the contract for each of these unions will be renegotiated two times between 1981 and 1987.<sup>2/</sup> We are further persuaded that 11 weeks is insufficient because co-tenants were unable to negotiate "no-strike" provisions.<sup>3/</sup> A five month work stoppage cost the Washington Public Power Systems (WPPS) \$1 billion.<sup>4/</sup>

Clearly, TB&A's confidence in S&W's numbers for four of the six major base cost categories was misplaced, especially because of the number of unanticipated and substantial cost escalations which have plagued this project. TB&A looked only at the period from 1978 to 1980 to test S&W's projections, instead of evaluating S&W's ability to project NMP-2 costs between 1974 and 1978 or to project costs for LILCO's Shoreham facility, with which S&W is also involved.

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<sup>1/</sup> Majority opinion, p.20

<sup>2/</sup> SM 1340-41

<sup>3/</sup> TB&A audit at VII-9

<sup>4/</sup> SM 402.

On the basis of the TB&A/Canatom study, the majority unreasonably finds "sufficient reason to believe that the schedule and cost estimates before [it are], in several important respects, more reliable than those previously prepared; for the plant is now further along than it was when earlier estimates were made; most materials have already been procured; and the cost estimation process itself has been improved by including an appropriate allowance for contingencies, etc."<sup>1/</sup> This conclusion is unreasonable because of our experience with projections made when Shoreham was at a comparable level of completion (34%). At that time (May 1977), LILCO and S&W estimated a completion date of May, 1979. Now Shoreham is expected to be completed by March 1983. The majority's general conclusion is, therefore, not supported by actual recent events.

Even where TB&A's investigation discerned clear deviations from S&W's 1980 estimates, TB&A made no adjustment to S&W's figures. For example, TB&A emphasized that for projections of cost to be realized, the cumulative burn rate curve must cross the budget line between 15% and 30% into the project, and TB&A acknowledged that the NMP-2 burn rate exhibited a disturbing trend. Yet TB&A declined to adjust its estimated costs and completion date and, thus, understated the costs used by staff in its economic comparisons.

Additionally, the TB&A/Canatom study should be given less weight than that accorded it by the majority because other allowances for contingencies and escalation used by TB&A are

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<sup>1/</sup> Majority Opinion at p. 11.

much too small. For example, the majority concludes staff's projections of \$115 million for unidentified and possible future expenditures for regulatory scope changes and future unidentified NRC quality assurance/quality control requirements are "more reasonable than CPB's simple linear extrapolation of regulatory changes experienced over an historical period."<sup>1/</sup> In reaching this conclusion, the majority relies, in part, on the collective judgment of Messrs. Hendrie, Young and Levine "that there will be a substantial reduction in the rate of future regulatory activity and against unnecessary regulatory changes...."<sup>2/</sup>

We are persuaded by CPB that the allowance for these two items should be increased to \$390 million. TB&A admits that the project experienced a 6.2% average rate of increase in base costs per year and that extrapolation of this rate of change into the future yields \$365 million in 1980 dollars and we fail to see why CPB's linear extrapolation for these items is any less reasonable than the numerous other extrapolations relied upon by the majority. We believe TB&A's estimate erroneously reflects the industry's optimism, which has been continually shown to be excessive. And we believe our view has record support because Mr. John C. Young had initially testified for the co-tenants that the NRC would loosen its regulation of nuclear power plant construction in part because of statements by NRC Chairman Nunzio Palladino<sup>3/</sup>

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<sup>1/</sup>Majority Opinion page 24.

<sup>2/</sup>Id.

<sup>3/</sup>SM 1606.

but Mr. Young later conceded he believed the NRC "would tighten the quality assurance program for all licensees in the United States"1/ in light of later statements by Mr. Palladino. And Mr. Hendries opinion on future regulatory action is hardly persuasive because he admitted he didn't anticipate the accident at TMI.2/

We find both TB&A's and co-tenants' witnesses' testimony singularly unpersuasive in showing that regulatory impacts will diminish in the future as compared with the recent past. Two months before TMI, TB&A was similarly projecting reduced regulatory requirements, and their expectations now are no more valid than they were then.

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1/ SM 1766

2/ SM 1743

STAFF'S ECONOMIC AND FINANCIAL STUDIES

We also dissent from the findings and determinations reached today because staff's economic and financial studies do not support continuation of NMP-2.

As a result of its economic study, staff found that each of the three plans which included a completed NMP-2 had significant economic advantages in comparison to other alternatives. In light of its financial study, staff also concluded that each of the co-tenants should continue to participate in the project because the additional capital needed could be raised on reasonable terms and conditions so long as there was timely and adequate rate relief. The majority apparently adopts these conclusions as its own because it today concludes continuation of the project is warranted.

As we will detail below, staff's and the majority's conclusions are based on scenarios having no connection with reality; for many of staff's assumptions have already been proven to be grossly inaccurate and because many of staff's other assumptions are supported neither by the weight of the evidence nor by the current and recent past experience of the electric power industry.

Staff's Economic Study

Given the number of flaws and poor assumptions incorporated in staff's economic study, we cannot join in the majority's conclusion that continuation of NMP-2 is warranted on the basis of that study.

To begin, staff has made a fundamental error in comparing plans that result in the addition of equal amounts of new generation capacity. Staff should have compared plans with equal levels of system reliability.

Second, staff's estimates for fuel costs, capacity factors, inflation, cost escalation and AFUDC rates through the applicable period are either wrong or insufficiently conservative in light of the magnitude of this project. The majority is not persuaded that the challenges to staff's input assumptions provide a sufficient basis for altering staff's general conclusion that there is likely to be a substantial economic benefit in the completion of NMP-2.<sup>1/</sup> We disagree.

Staff's projected 69% capacity factor for NMP-2 is one of many flawed assumptions that critically weakens this conclusion of the majority, for a 69% capacity factor is inconsistent with the actual operating experience of the utility industry and a reduction of this one variable to 60% reduces the net benefit to Plan A revenue requirements by about \$.55 billion.<sup>2/</sup> Only recently four of the State's five nuclear units were out of operation; and the cumulative capacity factor for NMP-1 from December 1, 1969 through March 1982 is 62.4%, which will be reduced to 57.6% if the unit is shut down for one year (until March 31, 1983) as the utility claims it will. Additionally,

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<sup>1/</sup> Majority Opinion, P. 13

<sup>2/</sup> Exhibit 6, VII-3.

we are not persuaded that the age of a nuclear generating unit has no measurable impact on capacity factors, for the record suggests the average capacity factor for units operating longer than 10 years has only been 46% in the 11th and 12th years of operation.<sup>1/</sup> In a decision of such importance, it seems clear to us that protection of ratepayers requires us to use the most conservative, likely capacity factor in finding the generation unit economical. The majority here not only fails to adopt a conservative estimate; it adopts a figure which is completely unsupported by the record. Accordingly, the majority's general conclusion that NMP-2 should be completed is further suspect.

Third, staff's projected 30 year life is equally unsupported, for evidence of generic problems, pipe brittleness, among others, suggests to us that it is no longer reasonable to project 30 year useful lives for nuclear generating units.

Fourth, we are persuaded by CPB that staff's estimated cost of capital of 11.61% is understated, and we consider CPB's 12.79% cost rate more realistic. Moreover, in our view, cancellations of nuclear power plants have led to an increased cost of capital for investor owned utilities, reflecting a risk premium associated with any long term construction project. By failing to adjust its economic comparison for this phenomenon,

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<sup>1/</sup> SM 3866, Exhibit 95.

staff has produced a study that is less reliable in comparing alternatives to NMP-2.

Finally, staff and the majority have both emphasized the enormity of the estimated \$1.4 billion invested in NMP-2 by the end of 1981.<sup>1/</sup> We do not accord this level of sunk costs the same importance as the majority, for we do not believe the previous expenditures warrant the expenditure of a total project cost that may be as high as \$8 billion. We believe our view is supported by a recent report of the Tennessee Valley Authority (TVA) where it said:

The interest on the \$2.1 billion which has been spent is reflected in current TVA rates. There are no decisions today or in the future that can change the fact that money has been spent. The past investment, of course, means that finishing the plant will cost less than starting a new nuclear plant. But if the plants are not needed or are too expensive on the basis of the remaining costs, then the fact that money has already been spent is not a good reason to go ahead. Thus, these past investments are irrelevant to consideration of alternative options. The decision whether to continue to invest \$8.2 billion in these plants does affect future rate levels and is relevant to consideration of alternative options.<sup>2/</sup>

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<sup>1/</sup>Majority Opinion, pp. 13-14.

<sup>2/</sup>"Review of the TVA Load Growth/Plant Construction Situation", TVA, January 1982, Report at p. 23 of text. (In Tennessee, this report led to the cancellation of two projects.)

STAFF'S FINANCIAL STUDY

Staff's financial study does not support continuation of NMP-2 because many of staff's assumptions in that study have already been proven wrong. For example, in projecting the financing costs for the co-tenants, staff assumed a return on common equity for 1982 of 15.5%, but only recently the majority in this case awarded Niagara Mohawk Power Corporation a return on equity of 17.1%,<sup>1/</sup> and in Central Hudson's current rate case staff is recommending a 17.5% return on common equity. Staff also assumed that all the co-tenants would have an A bond rating but currently Moody's and Standard and Poor's services have rated several of the co-tenants below an A rating:

	<u>Moody's</u>	<u>S&amp;P</u>
Central Hudson Electric	Baa	A-
Long Island Lighting Company	A	BBB
New York State Electric & Gas	Baa	BBB+
Niagara Mohawk Power Corporation	A	A-
Rochester Gas & Electric	A	A-

<sup>1/</sup> Cases 27984-27986, Niagara Mohawk Power Corporation - Electric, Street Lighting and Gas Rates, Opinion No. 82-4 (Issued March 8, 1982 at mimeo p.83).

Staff also assumed a certain level of CWIP would be placed in the rate bases of several of the co-tenants, but recent events have, again, showed staff's estimates to be much too conservative. For example, staff assumed Central Hudson would not need CWIP in rate base until 1984; it assumed \$30 million of CWIP in 1984, \$60 million in 1985 and \$85 million in 1986. In Central Hudson's current rate case, staff has recommended that \$59 million of CWIP be included in the company's rate base in 1983. Staff assumed LILCO would only need \$155 million of CWIP in rate base in 1983 but LILCO now estimates it will need \$400 million in that year. Additionally, NYSEG now estimates it will need \$450 million of CWIP in rate base in 1983, or \$55 million more than estimated by staff.

We also disagree with the conclusions reached by the majority on the basis of staff's financial study because we are unwilling to adopt -- as the majority does today -- a policy of equating awards of extraordinary rate relief with financing construction of NMP-2 under reasonable terms and conditions. Staff assumes we will routinely apply a number of remedies that have normally been reserved for extremely serious conditions -- such as normalization of the AFC debt component for all construction, normalization of the tax effect of all construction, capitalization

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of overheads and CWIP in rate base -- and we oppose the routine application of these devices because of the resultant crushing burden on New York ratepayers. The majority's statement that NMP-2 can be financed at reasonable terms and under acceptable conditions<sup>1/</sup> simply does not make it so, and we believe future events will show the majority is simply wrong in reaching this conclusion.

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<sup>1/</sup> Majority Opinion, P. 43.

OTHER COMMENTS AND RESPONSES  
TO THE OPINION AND ORDER OF THE MAJORITY

In addition to relying unreasonably on the studies of TB&A/Canatom and staff, the majority today reaches conclusions that are unsupported, procedurally infirm, or otherwise unreasonable.

To begin, we believe the majority's rejection of CPB's Komanoff alternative, as well as its rejection of a plan to immediately implement alternative energy options and conservation alternatives, rests in no small measure upon the current lack of demonstrated willingness on the part of the utilities to proceed with these alternatives. But this lack of willingness to pursue these alternatives is itself attributable to the continuation of NMP-2, for the companies have neither the money, the management time, nor the need for these options while NMP-2 is being constructed. We believe the unwillingness to pursue these options would quickly change if NMP-2 were abandoned. Further, the majority is unfair in its analysis of CPB's coal alternative and in its conclusion that CPB's installation dates for new coal capacity are "unrealistic in light of the licensing, design and procurement lead times associated with such ventures."<sup>1/</sup> All of the discussion of new coal capacity takes place in an environment that is completely dominated by NMP-2. In our view,

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<sup>1/</sup>Majority Opinion, pp. 15 and 30.

abandonment of NMP-2 would immediately lead to more serious and effective pursuit of coal conversions and coal additions. The majority's conclusions seem to have their foundation in momentum to complete NMP-2 rather than in a fair analysis of the alternatives that have been presented.

That the majority's analysis and conclusions are unsupported is also evidenced by its rejection of EDF's "very ambitious" conservation proposal because of perceived "significant legal, administrative and practical obstacles that stand in the way of achieving the results EDF envisions."<sup>1/</sup> In our view, the majority simply sweeps aside a very conservative alternative to NMP-2 using general rationales that are not supported by the evidence in this case. For example, EDF offered a detailed list of conservation incentives already offered by electric utilities in Arkansas, California, Idaho, Michigan, Minnesota, Oregon, Tennessee, Texas and Washington.<sup>2/</sup> And the co-tenants "do-both" proposal--made in rebuttal to EDF--implicitly supports the achievability of EDF's proposal.<sup>3/</sup> The majority's perceptions of legal, administrative and practical obstacles are thus without foundation.

Another example of the majority's tendency to generally disregard arguments with which it does not agree appears at page 38. Here, the majority summarily rejects seven specific criticisms of

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<sup>1/</sup>Majority Opinion, p. 16.

<sup>2/</sup>Exhibit 56, Appendix E

<sup>3/</sup>SM 2563

staff's studies and conclusions finding the "arguments [supporting the criticism] are either incorrect, de minimis, or inadequately developed." We disagree, but the majority's opinion does not explain the reasoning that led it to a conclusion different from ours.

We also object to the majority's failure to adhere to more rigorous procedural standards in its deliberative process. For example, we do not agree the majority can discharge its fact-finding responsibility simply by listing various estimates of the cost to complete NMP-2. If the majority is correct in its assertion that the "issue having the greatest impact on [ics] decision is the projected cost of NMP-2"<sup>1/</sup> then the majority should have made specific findings on the cost of completing NMP-2 so its comparisons of NMP-2 with other alternatives could be tested.

Additionally, we dissent from the decision reached today because proceeding with NMP-2 conflicts with a steadily growing stream of announcements that similar projects are being cancelled or abandoned. Over the past two years 11 nuclear reactors that had received construction permits have been abandoned, and 10 units for which construction permits had been sought have been cancelled.<sup>2/</sup> As recently as March 8, 1982, NRC staff reported that its "best estimate" is that 19 additional reactors under construction, including NMP-2, will be cancelled, as will five units for which construction permits are sought.<sup>3/</sup>

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<sup>1/</sup> Majority Opinion, p. 18

<sup>2/</sup> See Attachment 1.

<sup>3/</sup> See Attachment 2.

We agree that the majority was correct in finding persuasive EDF's argument that staff overstated demolition and site restoration costs,<sup>1/</sup> but we do not believe the majority goes far enough in examining the evidence supporting the EDF argument it adopts. Our examination of that evidence --which the majority implicitly relies upon in adopting EDF's argument--establishes another, independent reason for rejecting the cost estimates of S&W, staff's studies (to the extent they rely on S&W estimates), and the majority's conclusions (to the extent they rely on both staff and S&W).

In its discussion of cancellation costs, the majority fails to mention that staff's estimate for cancellation costs of \$312 million was provided by S&W and not reviewed by staff. S&W engineer Reese estimated that the cost of demolition and site restoration activities for this non-radioactive facility--which is only one-third complete--equaled or exceeded the cost of decommissioning a nuclear plant after 30 years of operation as estimated by Mr. LaGuardia.

We believe this discrepancy further damages S&W's credibility with respect to estimating costs and, therefore, that the conclusions reached by the majority on the basis of S&W's projections are unreasonable.

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<sup>1/</sup>Majority Opinion, p. 33.

INCENTIVE RATE OF RETURN

The majority, admitting that the Nine Mile 2 Project has experienced "lengthy construction delays and tremendous escalations in estimated costs" since its inception in 1971, has adopted an Incentive Rate of Return proposal (IROR) as one of three steps designed to promote the efficient and timely completion of the project. We dissent from the majority's decision because its incentive rate of return plan provides insufficient incentives to complete NMP-2 at or below \$3.7 billion.

The purpose of the IROR is to provide an incentive to management by offering economic rewards for holding down costs, and economic penalties for cost overruns. The majority would accomplish this by providing an incentive return on the incremental investment for bringing the plant in below \$4.6 billion and a reduced return on overruns in cost.

While we applaud the serious effort of the majority to develop an incentive mechanism to insure the efficient and timely construction of the Nine Mile 2 Project, we believe the proposal as constructed does not provide sufficient incentives and penalties. It is noteworthy that only two commentators, staff and Assemblyman Angelo Orazio, supported the IROR plan adopted here by the majority. In addition, legal and policy problems with the plan make it likely that it will not be effective.

At the outset, the majority has adopted a target completion cost which is \$900,000,000 greater than the co-tenants' current \$3.7 billion estimate of the completion cost. We join some parties to this proceeding, including staff, in doubting that the co-tenants estimated completion cost is correct. It is, nevertheless, their estimate and one they have tenaciously defended. It is, therefore, the proper target completion cost

to use in determining when the incentive/penalty rates of return will be triggered. As the Environmental Defense Fund observed in their comments, "The purpose of an IROR is to encourage improved performance. Thus, it is essential that the target completion cost for such a plan be based on the cost estimate supplied by the party whose performance the plan seeks to affect."<sup>1/</sup> The cushion of \$900,000,000 provided by the IROR weakens the whole notion of an incentive for management to complete the plant in an efficient and timely manner.

Moreover, the IROR proposal as adopted by the majority does not equitably share the risks between ratepayers and stockholders. The IROR will be calculated by applying a constant sharing factor of 20% to the change in revenue requirement occasioned by cost overruns or underruns from the target level. But the 80% ratepayer/20% stockholder risk sharing envisioned by the majority will not actually come about, for the plan fails to account for the impact of taxes. The sharing actually produced by the IROR proposal is 80% ratepayer/10% stockholder/10% taxpayer. The ratepayers' risk is thus far too great in proportion to the shareholders'. The proportion of risk sharing by the stockholders should be significantly increased.

The IROR proposal further provides that "The co-tenants and other parties will have the opportunity, at the time rates are set that include NMP-2 expenditures, to request modification of the target figure for increased or decreased expenditures resulting from extraordinary events."<sup>2/</sup> While the majority, in their findings, discuss exclusions and provide several examples of events that will not be considered extraordinary within the above provision in the proposal, the term extraordinary event

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<sup>1/</sup>Comments of the Environmental Defense Fund on Incentive Rate of Return Plan for Ratemaking Treatment of Future Construction Costs of the Nine Mile 2 Nuclear Generating Plant, March 29, 1982.

<sup>2/</sup>Appendix, Incentive Rate of Return, Opinion and Order Concluding Inquiry Into Financial and Economic Cost Implications of Constructing the Nine Mile No. 2 Nuclear Station, NYSPSC, Issued April 16, 1982.

is never sufficiently clarified to assure that all significant risks are shared under the IROR. The door is therefore open for co-tenants to argue later for the exclusion of significant unforeseen cost increases from the amount to be shared. The term "extraordinary event" should be defined to avoid any ambiguity.

The IROR proposal focuses entirely on the construction costs of Nine Mile 2 and does not take into account the multitude of other cost factors that may render the project non-economic, such as fuel costs and capacity factors. To protect ratepayers from these risks, and to assure that they are factored into the co-tenants' decision to proceed with the construction of the project, a risk sharing proposal similar to that proposed by John J. Mavretich on behalf of Assemblyman Maurice Hinchey should be adopted by the Commission.

We also cannot agree with the IROR proposal because it may require higher returns to investors to compensate them for the higher than usual perceived risk associated with such a proposal. The co-tenants argue that this risk premium could result in an aggregate present value increase in revenue requirements in excess of \$400 million. It is very probable that a risk premium will be imposed because of the IROR, as predicted in the comments of Standard and Poor's Corporation: "Furthermore, the imposition of an incentive penalty program at this point could have the harmful effect of weakening investor confidence in these utilities and subjecting them to risks, over and above those inherent in a heavy nuclear construction program; particularly since the NRC looms as an immense exogenous variable."<sup>1/</sup> Such a risk premium will lead to higher electric rates and compound the already burdensome rates imposed on ratepayers.

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<sup>1/</sup>Standard and Poor's Corporation, Comments on Incentive/Penalty and Risk Sharing Mechanisms, Case 28059, dated March 29, 1982.

The IROR proposal presents difficult legal and policy issues, such as whether we may, for incentive purposes, allow a rate of return higher or lower than that otherwise found fair. The co-tenants in their comments argue that "Section 7(a) of Article I of the Constitution of New York and the Fifth and Fourteenth Amendments of the United States Constitution forbid any taking of private property for public use without "just compensation" and "due process of law." These constitutional provisions require that any IPOR plan adopted by the Commission provide a just and reasonable return to the co-tenants on the full extent of the prudent investments which they have risked in this enterprise." They comment further that "If any IROR plan is to pass constitutional muster and meet basic requirements of fairness and reasonableness, it must include a mechanism for modifying the predictions of inflation and uncontrollable delay in light of actual experience. Any IROR plan that fails to afford this irreducible minimum of protection to the legitimate interest of investors may not withstand constitutional scrutiny."<sup>1/</sup> Other parties including Speaker of the Assembly Stanley Fink, the New York State Consumer Protection Board, Dean Witter Reynolds Incorporated, and Standard and Poor's Corporation question the legal basis of the IROR plan in their comments and conclude that there are serious legal barriers to implementation of the plan.

Yet another legal problem arises because it is well settled that the present Commission cannot bind future Commissioners. Accordingly, anything this Commission proposes today,

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<sup>1/</sup>Co-tenants' comments on Establishment of an Incentive Rate of Return for Ratemaking Treatment of Future Construction Costs of the Nine Mile 2 Nuclear Generating Plant, Case 28059, dated March 30, 1982.

constitutional issues aside, can be overturned, revised, re-examined or ignored in the future. We are thus placed in the disturbing position of having ratepayers pay higher rates due to the risk premium required by investors under an IROR plan, with the possibility that the protections afforded by the IROR plan--such as they are--will never be implemented. As Standard and Poor's Corporation has so aptly put it in their comments,

However, the binding ability of the PSC to allow the sponsors an opportunity to earn returns in excess of their cost of capital seems problematic. There is an underlying question as to whether the PSC has the authority to make binding decisions on future Commissions. Presently, there is no guarantee that the "reward" could not be given back through legislative action or an adverse court ruling, which would not be unlikely given the precedent setting nature of the proposal. Even assuming legal sanction, investors would question whether regulators would "come through" with an incentive return at a time when rates need to be raised to accommodate the new plant in rate base.<sup>1/</sup>

Finally, we dissent because the majority's plan only considers capital and interest costs of the NMP-2 project. We are afraid the majority, in attempting to create incentives for timely completion of the project below the projected cost, has created incentives for co-tenants to cut capital expenditures with resultant higher operation and maintenance expenses. The majority's plan simply fails to account for this problem.

For all the above reasons we believe the IROR proposal is inadequate, legally questionable, and, in the final analysis, cosmetic in nature. To describe this as offering ratepayers a measure of protection against cost escalation is nothing less than deception.

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<sup>1/</sup>Standard and Poor's Corporation, Comments on Incentive/Penalty and Risk Sharing Mechanisms, Case 28059, dated March 29, 1982.

CONCLUSION

We have shown the work of TB&A/Canatom to be unreliable because of its unquestioning acceptance of substantial portions of co-tenants' cost estimates and because of its failure to assess accurately increased costs for contingencies and escalation. We have also shown that many of the assumptions in staff's economic and financial studies are grossly inaccurate or otherwise unsupported by the weight of evidence in this case.

At this writing interest rates are above the levels forecast by staff. Four of the five nuclear plants in the State were recently closed down, (Nine Mile 1 may be out of service for an entire year), thus calling into question even more forcefully the capacity factor projections in the staff report. Falling oil prices cast doubt on the fuel cost projections used by staff and the savings to be derived. The new members of the Nuclear Regulatory Commission have given no present indication that there will be a substantial reduction in regulatory activity as propounded by the majority in its decision.

Finally, we have shown the Incentive Rate of Return proposal to be inadequate, legally questionable, and, in the final analysis, cosmetic in nature.

Given the enormity of the risks in proceeding with construction of the Nine Mile 2 Project, the only sane course to follow is cancellation of the plant. The best protection we can provide the ratepayers now and in the future can only be derived from alternative generation capacity, coal conversions and sound conservation programs. The risks are too great, the benefits--if any--are too ephemeral, and the consequences are too damaging to continue down the road chosen by the majority.

EXHIBIT 7: NUCLEAR POWER PROJECT  
 CANCELLATIONS SINCE  
 1979

• Cancellations announced:

1979

Greene County	Power Authority of State of New York
NEP-1	New England Power Company
NEP-2	New England Power Company
Palo Verde 4	Arizona Public Service Company
Palo Verde 5	Arizona Public Service Company
Tyrone 1	Northern States Power Company

1980

Davis-Besse 2	Toledo Edison Company
David-Besse 3	Toledo Edison Company
Erie 1	Ohio Edison Company
Erie 2	Ohio Edison Company
Forked River 1	Jersey Central Power & Light Company
Greenwood 2	Detroit Edison Company
Greenwood 3	Detroit Edison Company
Haven 1	Wisconsin Electric Power Company
Jamesport 1	Long Island Lighting Company
Jamesport 2	Long Island Lighting Company
Montague 1	Northeast Nuclear Energy Company
Montague 2	Northeast Nuclear Energy Company
New Haven 1	New York State Electric and Gas
New Haven 2	New York State Electric and Gas
North Anna 4	Virginia Electric and Power Company
Sterling	Rochester Gas and Electric Company

1981

Bailly	Public Service of Indiana
Callaway 2	Union Electric Company
Hope Creek 2	Public Service Electric and Gas Company
Pilgrim 2	Boston Edison Company
Shearon Harris 3	Carolina Power & Light Company
Shearon Harris 4	Carolina Power & Light Company

1982

Black Fox 1	Public Service of Oklahoma
Black Fox 2	Public Service of Oklahoma
Hartsville A1	Tennessee Valley Authority
Hartsville A2	Tennessee Valley Authority
Yellow Creek 1	Tennessee Valley Authority
WNPS-4	Washington Public Power System
WNPS-5	Washington Public Power System

Source: Testimony and Exhibits of  
 Karen Burstein Before the  
 Assembly Special Committee on Nuclear Power Safety.

EXHIBIT 8: FURTHER NUCLEAR CANCELLATIONS  
EXPECTED

The Staff of the U.S. Nuclear Regulatory Commission estimates that the following projects will be cancelled or placed on an indefinite deferral:

Cherokee 1  
Cherokee 2  
Cherokee 3  
Clinton 2  
Grand Gulf 2  
Harris 2  
Hartsville B-1  
Hartsville B-2  
Limerick 2  
Marble Hill 2  
Nine Mile Point 2  
North Anna 3  
Phipps Bend 1  
Phipps Bend 2  
River Bend 2  
Seabrook 2  
South Texas 2  
Vogtle 2  
Yellow Creek 2

Source: Testimony and Exhibits of Karen Burstein  
Before the Assembly Special Committee on  
Nuclear Power Safety