DECISIONS AND ORDERS

MASSACHUSETTS ENERGY FACILITIES SITING COUNCIL

VOLUME 3

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In the Matter of Holyoke Gas and Electric Department a member of the Massachusetts Municipal Wholesale Electric Company

2 DOMSC (19 January, 1977)

Docket: EFSC #76-1

Petition for Approval of a 115 kV Transmission Line and Substation

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APPEARANCES: Roger C. Allen, Manager,
George E. Leary, Assistant Manager, and
Francis K. Hoar, Senior Electrical Engineering Aide,
all for the Department, pro se

I. SUMMARY OF PROPOSED LINE AND DECISION

The Holyoke Gas and Electric Department proposes to construct a 115 kV transmission line and substation in the city of Holyoke with in-service dates of 1979 and 1980, respectively. The Energy Facilities Siting Council approves construction of the line and substation subject to certain conditions.

II. CHRONOLOGY OF THE CASE

In July, 1976 the Massachusetts Municipal Wholesale Electric Company filed an Occasional Supplement for a 115 kV Transmission Line and Substation for the Holyoke Gas and Electric Department pursuant to Council Rule 65.3. On April 13, 1977 the Department submitted updated project costs. On June 14, 1977 the hearings officer issued a detailed Order to Provide Information requesting additional documentation for the facility need, cost, and environmental impact. On August 30, 1977 the Council received the Department's Response to the Order which included a history of the development of the Department's electric system, analysis of the need for the line, cost information, cross-sectional views, and photographs of the route with plastic overlays showing proposed pole locations

and design.[1]

An informational hearing was held April 13, 1977 and an adjudicatory hearing was held September 1, 1977. Both were in the City Hall at 7:30 P.M. Notice of the hearings was published in the Holyoke Transcript-Telegram and, for the adjudicatory hearing, consisted of a 1/8 page advertisement. A brief article on the adjudicatory hearing appeared in the newspaper during the week before the hearing.

III. DESCRIPTION OF THE PROPOSED LINE AND ALTERNATIVES

A. Existing Facilities

The Department serves approximately 18,000 customers in the city of Holyoke and has one generating station consisting of hydro, fossil, and gas turbine units with a total capacity of 37.2 MW. The Department's only substation is located at the generating station and is rated 115 kV/13.8 kV. It has two 25 MVA transformers, and a capacity of 50 MW. This substation is the source of all primary distribution lines. A single 115 kV line that was installed in 1968 is the one connection with NEPOOL. This line crosses the Connecticut River from the Western Massachusetts Electric Company Fairmont substation in Chicipee to the Holyoke Water Power Company's Riverside substation and continues to the Department substation. The line has a 60 MW capacity. In addition, there is a 13.8 kV

[1] The Council commends the Department for the detail, organization, and clarity of its Response to the Order to Provide Information. The Response proved essential for determining the need for the line, understanding potential impacts, and creating a comprehensive public record.

interconnection with the Holyoke Water Power Company. All of the Department's bulk power purchases come over the single 115 kV, 60 MW line into the 50 MW substation. See enclosed system map, Exhibit I-4

B. Proposed Line and Substation

The proposed line will provide a second interconnection with NEPOOL. It will be a single 115 kV circuit, will tie into the Western Massachusetts Electric Company System at WMECO's Southampton substation , and will substantially follow secondary roads to the proposed new substation site north of Lower Westfield Rd. The line will continue mainly on railroad right of way from the proposed substation to the existing Department substation. The proposed line will be 7.2 miles long, will use 500 MCM, ASCR conductor, and will be supported by either steel or wood poles. The substation will be rated 115 kV/13.8 kV, will include two 25 MVA transformers, and will serve 13.8 kV distribution circuits. The substation will be approximately 200' x 200' of low profile design.

C. Alternative 1

Alternative 1 is essentially the same as the proposed line except that the circuit between the existing and proposed substation would be normally de-energized and would use a smaller conductor. This alternative would be cheaper than the proposed line, but it would not meet the requirements of NEPOOL planned transmission facilities.

D. Alternative 2

Alternative 2 would be a single circuit from the WMECO Fairmont

substation to a new substation east of Interstate-91 and south of Lower Westfield Rd. A single circuit from the new substation returns to the existing Department substation.

E. Alternative 3

Alternative 3 would be a single circuit from the WMECO Fairmont substation to the Department substation, and a double circuit line from the Department substation to the substation site proposed in Alternative 2.

F. Substation Sites

Proposed: North of Lower Westfield Rd., near Whitney Ave., and west of Homestead Ave.

Alternative 1: South of Lower Westfield Rd., east of Whitney Farms Rd. Extension, and bordered on the south by the Penn Central Railroad.

Alternative 2: At the intersection of Lower Westfield Rd. and the Penn Central Railroad. Both alternatives would avoid a crossing of Interstate-91.

IV. ANALYSIS OF NEED FOR THE LINE

The Siting Council must determine that a utility proposal will provide "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost," M.G.L. c.164, §69H. The Council finds that there is a sufficient need for the proposed line as a second interconnection with NEPOOL and that it will enable the Department to provide "a necessary energy supply" to its customers.

The Department's need for the line is based on questions of reliability, load growth, increased use of entitlement power, and potential outages in the city of Holyoke. It has only one major tie to the New England grid. If this line fails,

it can expect to receive approximately 2 MW from the Holyoke Water Power 13.8 kV line, and the remaining load must be supplied from the Department's own generators which are expensive, inefficient, and cannot supply the city during peak conditions. The Holyoke peak is expected to be 41.9 MW for 1977 and the Department's generators have a capacity of 37.2 MW. If one of the two transformers fail the Department can import only 25 MW of NEPOOL power and must make up the difference between 25 MW and the load by self-generation.

A. Reliability

The Department's reliability criteria is to be able to withstand a first contingency loss. The system must be designed to continue to supply load with the loss of a single major component, which is the 115 kV line or one of the two 25 MW transformers. At present the Department system does not meet this standard.

Although there is a total system capacity of 50 MW (the transformer capacity being the limiting factor), if the 115 kV line fails, there is no redundant transmission capability, with the exception of the small amount of power that can be brought over the Holyoke Water Power Co. 13.8kV line.[2] If a transformer fails, 25MW in transformer capacity

[2] The interconnection with HWP has existed since 1926 and has a capacity of 10 MW. However, the line is normally open when the 115 kV line is energized and notice must be given HWP before the Department can close the line. In addition, the Department cannot rely on receiving the full 10 MW capacity of the line due to HWP's loading of the circuit. There have been times when the Department has been able to receive only 2 MW over this line. As HWP's load increases, use of the line as a supply option for the Department becomes increasingly untenable.

remains. Because there is no redundant capability for the 115 kV line the Department currently has no firm transmission capability.

B. Entitlement Power

In 1975 the Department became fully dispatched by NEPOOL and therefore was able to take advantage of power purchased from large generating units in New England that is cheaper than power generated by the Department. Between January and August, 1977 and the department's units were dispatched by NEPEX only 91 hours or an average of 2.1% of the time. This means that for 97.9% of the time, Holyoke was receiving all power through NEPEX and was therefore subject to a complete outage if either the 115 kV line or a transformer failed.

A further problem with the present system is that entitlement power is purchased on a take or pay basis. If a transformer fails and the Department is limited to importing 25 MW, the excess over 25 MW that has been contracted for but cannot be used must be paid for. If the line fails, no contracted for power can be utilized.

C. Load Growth

Table 1, column 3 shows the Department's projected load growth until 1986. Because the Department's capacity is 37.2 MW it cannot now supply the load during the peak on solely its own generation. With one transformer out of service, 25 MW can still be brought in from NEPOOL, bringing the total capacity of the system to 62.2MW (25 MW from NEPOOL + 37.2 from self-generation = 62.2 MW). Even under these conditions the system load is projected to exceed 62.2 MW in 1986. Before that date it is likely that existing Department units will be retired, so

that the need for additional transmission capacity will become even more acute and may occur before 1986. See Table 1, column 4. Furthermore, load growth in Holyoke will occur in the southern part of the city due to the construction of a shopping center and new residential units and there will be a need for one, and possibly two, new substations in that area to handle the increased load. The proposed line and substation satisfies this geographical requirement.

D. Outages

If a fault occurs in the 115 kV line there will be a complete outage in the city if none of the Department's generators is dispatched. The length of the outage will depend on the system load and the time required to start the Department generators:

Load	Length of Outage
0-12.4 MW (occurs 6% of time)	15 minutes
12.4-22.4 MW (occurs 41% of time)	45 minutes
22.4-32.4 MW (occurs 49% of time)	2 hours
32.4-42.4 MW or peak (occurs 4% of time)	3 hours

E. Conclusion

The existing Department system subjects the city to a complete outage and the high cost of self-generated power if the 115 kV line fails or if a transformer fails and the load is above 25 MW. The proposed line and transformers will provide 50 MW of firm capacity to enable the system to meet the first contingency reliability criteria. Thus, the Department has demonstrated the need for the proposed line and substation.

V. COST

The Council must insure that a facility, if approved, will provide an energy supply "at the lowest possible cost", M.G.L. c. 164, §69H. The costs of the proposed line and three alternatives are as follows:

Proposed Plan (Overhead crossing I-91)	$4,450,000
Proposed Plan (Cable under I-91)	4,474,000
*Alternative 1 (Overhead crossing I-91)	4,365,000
*Alternative 1 (Cable under I-91)	4,708,000
*Alternative 2	5,245,000
*Alternative 3	6,568,000

*exclusive of land costs

The proposed plan is less expensive than Alternatives 2 and 3 because both 2 and 3 require a crossing of the Connecticut River, and Alternative 3 requires double circuit towers. Although Alternative 1 has a lower cost than the proposed plan, this alternative is unsatisfactory because it would not meet NEPOOL planned transmission facility criteria and transmission charges therefore would be higher than for a pool planned facility. The cost of the proposed plan is the lowest among the feasible alternatives.

The Department is unable to accurately quantify the cost of the no-build alternative. However, the major costs associated with not building the line are the following:

a) replacement energy costs for peak loads exceeding the interconnetion capacity.

b) replacement energy costs for energy which could not be brought over the interconnection during outages.

c) economic loss to the City of Holyoke resulting from electric power outages.

d) economic loss to the City of Holyoke resulting from suppressed development caused by unreliable electric service.

from Response to Order to Provide Informaiton, p.16

The Department testified that the proposed line and substation will have no effect on Holyoke electric rates. Holyoke residential rates are 18% less than in 1974-75 due to purchase of entitlement power. According to the Department, rates are predicted to decline in 1978, increase 1.1% in 1980, increase .9% in 1981, and then decrease in 1982 as entitlement purchases sharply increase after 1982. The proposed line will allow greater reliance on this cheaper energy.

The proposed plan is approved at a projected cost of $4,450,000. This cost is, no doubt, subject to reasonable change from a variety of factors including inflation of wage and material costs, construction problems encountered in the field, engineering design changes and other causes beyond the control of the company. The Department is directed to notify the Council if there is such a change in the cost figure.

The Council expects, in future proceedings involving facilities approvals that applicants will present to the Council cost estimates on a current dollar basis with sufficient underlying detail, commensurate with the stage of planning of such facility, to enable the Council to evaluate the reasonableness of such cost estimate and that of alternatives considered or proposed. Approval by the Council of a facility at the preliminary licensing stage should not be construed as a binding determination upon a rate-setting agency. The Council

also recognizes that there may be circumstances where escalation of the cost of a facility could cause an applicant to delay or re-evaluate the need for construction. The Council will expect applicants to inform it of all such changes through Supplemental Forecasts and to inform the Council of the ultimate cost of each approved facility so that the Council may be aided through such experience in evaluating cost proposals.

VI. ENVIRONMENTAL IMPACT

The Siting Council must insure that a proposed facility will have "a minimum impact on the environment", M.G.L. c.164, §69H.

An extensive environmental review of this line was not undertaken; however, based on the information provided by the Department, the major environmental impact is visual. Ninety percent of the right of way is along secondary roads owned by the city or Holyoke and Westfield Railroad. Existing wood poles carrying distribution lines will be replaced by taller 115 kV poles which will carry both the new 115 kV line and the distribution lines. Clearing will be required along the route to provide the required clearances for the line. The streets that the line follows are residential, and the line will be constructed at the edge of the city street rights of way. The line will therefore have a significant impact on the views from residences and streets. See Exhibit III(IA-C). At the two public hearings held on the line public participation was small and no objection to the line was raised. The Council considers visual impact to be one of the major environmental effects of a transmission line, but in this case, the Council finds that, due to the lack of any public concern, the visual impact will not be adverse.

The only significant water resource the line crosses is Wright and Ashley Ponds. These ponds are closed to the public, and the Department will not use herbicides on the route of the line due to its proximity to these sources of the city water supply. The Department will use selective clearing and feathering techniques on the right of way to leave as much natural vegetation as line clearance requirements will allow. The Department will use a low visibility conductor for the overhead crossing of Interstate-91 to minimize visual impact.

No water resources exist on the proposed substation site, and vegetation is largely overgrown shrubs. Clearing will be limited to the actual substation site, and vegetation will be used to screen the completed structure. The design will be low profile, and noise barriers will be employed as necessary.

The exact design, location, and type of poles and substation have not been finally determined. The Department may negotiate or enter into agreements with the city of Holyoke or any state or local agency that may be involved with the construction of this line on matters of final engineering and construction.

ORDER

The Siting Council approves the construction of the proposed 115 kV transmission line and substation, subject to the following conditions:

1) The proposed line and substation is approved at a projected cost of $4,450,000. The Department is to notify the Council of any changes in this figure.

2) Selective clearing and feathering will be utilized along the right of way to insure that as much natural vegetation as possible is left in place. Appropriate visual and noise screening will be employed at the substation site.

3) No herbicides will be used for clearing or maintenance of the transmission line right of way.

4) A low visibility conductor will be used for the overhead crossing of Interstate -91.

5) The Department is directed to notify the Council when other required city and agency approvals are obtained, and when actual construction begins.

Robert L. Dewees, Jr.
Hearings Officer

Dated: 19 January, 1977

TABLE I

	column 2	column 3	column 4
Load Year	MW Full Cap.	MW Peak (1)	MW Difference
1977	62.2	41.9	20.3
1978	62.2	43.4	18.8
1979	62.2	44.9	17.3
1980	62.2	46.3	15.9
1981	62.2	48.7	13.5
1982	62.2	51.2	11.0
1983	62.2	53.9	8.3
1984	62.2	56.7	5.5
1985	62.2	59.6	2.6
1986	62.2	62.7	(.5)

(1) Filed by MMWEC for Siting Council

from Response to the Order to Provide Information, p.9.

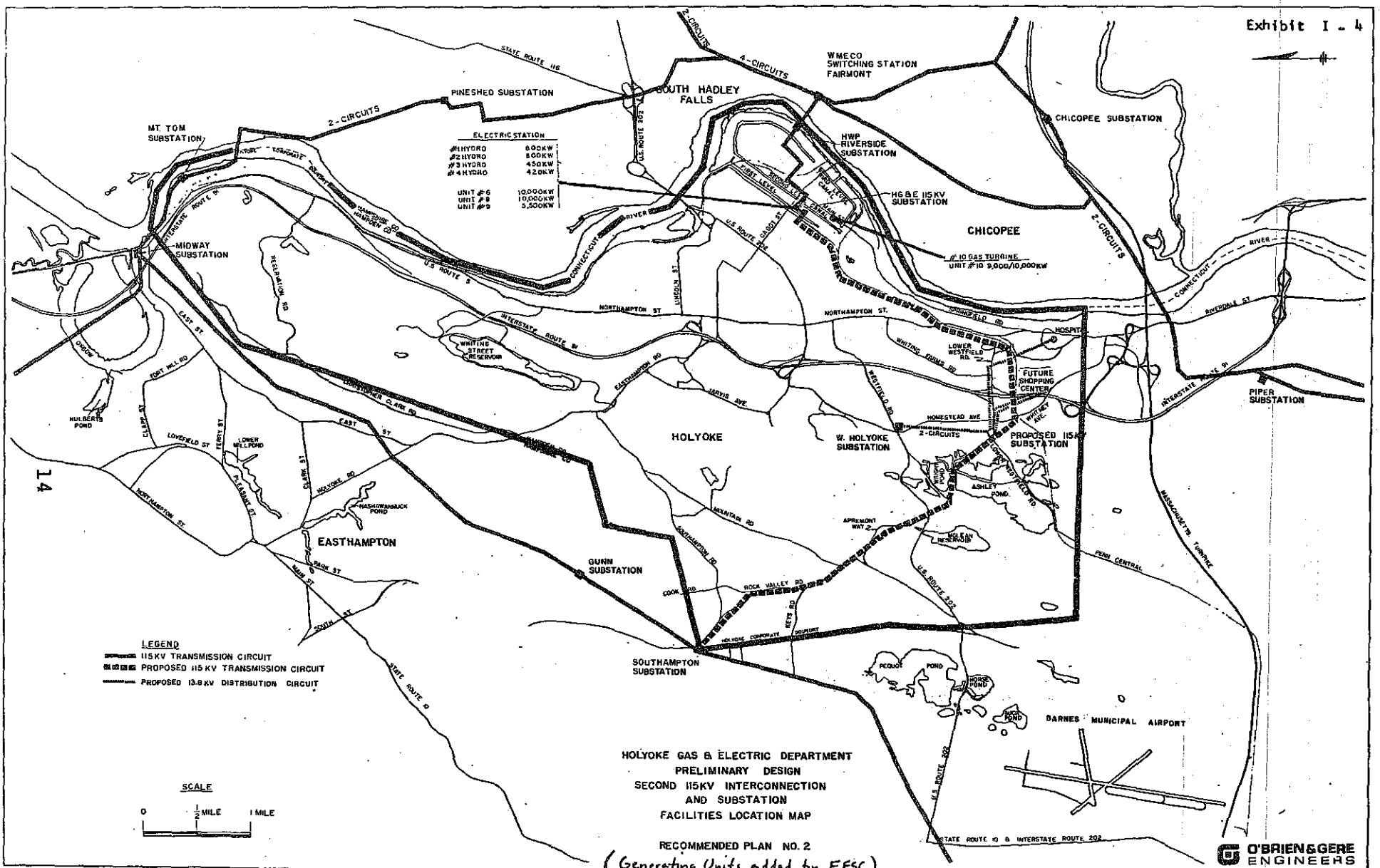
Exhibit I - 4
MT. TOM SUBSTATION
PINESHED SUBSTATION
SOUTH HADLEY FALLS
WMECO SWITCHING STATION FAIRMONT
CHICOPEE SUBSTATION
HWP RIVERSIDE SUBSTATION
HG&E 115KV SUBSTATION
CHICOPEE
#10 GAS TURBINE UNIT #10 9,000/10,000KW
MIDWAY SUBSTATION
HOLYOKE
W. HOLYOKE SUBSTATION
PROPOSED 115KV SUBSTATION
FUTURE SHOPPING CENTER
PIPER SUBSTATION
EASTHAMPTON
GUNN SUBSTATION
SOUTHAMPTON SUBSTATION
BARNES MUNICIPAL AIRPORT
ELECTRIC STATION
#1 HYDRO 600KW
#2 HYDRO 800KW
#3 HYDRO 450KW
#4 HYDRO 420KW
UNIT #6 10,000KW
UNIT #8 10,000KW
UNIT #9 5,500KW
LEGEND
115KV TRANSMISSION CIRCUIT
PROPOSED 115KV TRANSMISSION CIRCUIT
PROPOSED 13.8KV DISTRIBUTION CIRCUIT
SCALE
0 1/2 MILE 1 MILE
HOLYOKE GAS & ELECTRIC DEPARTMENT
PRELIMINARY DESIGN
SECOND 115KV INTERCONNECTION
AND SUBSTATION
FACILITIES LOCATION MAP
RECOMMENDED PLAN NO. 2
(Generating Units added by EFSC)
O'BRIEN & GERE ENGINEERS

In the Matter of Blackstone Gas Company
3 DOMSC ____ (November 15, 1978)

EFSC No. 78-42: Petition For Approval of An Annual Supplement to Long Range Forecast

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Blackstone Gas Company submitted its second annual supplement in early March, 1978. The information contained therein was sketchy but was expanded by communication between the EFSC Staff and the company president, Ralph Warren Sullivan. After a review of all the materials now on file with the Council, the Council APPROVES this company's second annual supplement through July 2, 1979 at which time further information on the adequacy of the company's gas supply should be filed.

Adequacy of gas supply is a primary concern for the Council in reviewing the filing of a gas company. This concern is reflected in an earlier Council decision on Blackstone's filings where approval was given through 1977 only so that the Council could reconsider Blackstone's supply plan in the current filing. 1 DOMSC 299 (July 20, 1977).

The Council has done so and finds that Blackstone's supply plan is relatively straightforward. The company receives all its gas from Tenneco, Inc. under a contract extending to 1987 and allowing for a maximum of 505 MCF daily. Of course, this allotment is subjected to curtailment but the effect of this possibility is offset some by the fact that all of Blackstone's 481 customers are listed as Priority I under the federal curtailment plan and that, at least for this year, any curtailment seems remote. However, while gas supply for the upcoming heating season appears secure, the Council will review its adequacy further in the next filing.

Finally, while approving Blackstone's filing through July 2, 1979, some further concern must be expressed as to the sufficiency of the information provided. The Council appreciates that this company is the smallest gas utility in the Commonwealth and Mr. Sullivan's request for a waiver of filing forms which may be too complex and inapplicable for such a small company is certainly appropriate. However, the Council must continually watch the puzzle presented by the supply of gas state-wide and nationally. The puzzle is never complete unless all pieces, even the smallest, is fully understood and in place. Therefore, the Council will not require Blackstone to file

the myriad forms expected of larger companies, but does require the company to respect and abide by the judgement of its staff as to what information should be filed to help the Council piece the supply puzzle together. One noticeable gap in the Blackstone supply picture is the lack of any data on how the company would meet its customers' needs should a severe winter force its peak beyond expectation.* Such contingency plans, if any, are certainly part of a complete supply picture.

Thus the company's request for a waiver for filing some inapplicable forms is granted, provided that the terms for the filing of historical data and of such information as requested by Council staff are complied with. The Council will direct the Chief Counsel to set out the required data in a letter to Mr. Sullivan so that Blackstone Gas Company may make its filing timely on July 2, 1979.

Energy Facilities Siting Council

by Dennis J. LaCroix
Dennis J. LaCroix, Esq.
Chief Counsel

* The company points out that all its customers are "Priority One" customers under Tenneco's curtailment and that if Tenneco cannot supply such customers, neither will the company be able to. The Council is not really concerned about curtailment; the issue is the possibility of exceeding the daily allotment of 505 MCF on a severe peak day. What the company would do in such a situation is not clear.

Unanimously approved by the Energy Facilities Siting Council on December 6, 1978.

Evelyn F. Murphy
Acting Chairman

In the Matter of the Chester Municipal Light Company et al.
3 DOMSC (November 16, 1978)

Petitions of the Chester Municipal Light Company, Wellesley Municipal Lighting Plant and Norwood Municipal Light Department for Approval of Annual Supplements to their Long Range Forecasts

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This decision concerns the most recently filed annual supplements for the municipal light companies of the towns of Chester (EFSC No. 78-30), Wellesley (EFSC No. 78-40), and Norwood (EFSC No. 78-41). In all three cases, the Council DISAPPROVES the supplements as inadequate for Council review. All three filings by the companies were lacking in sufficient data when filed and attempts by the Council staff to obtain further information proved futile.

The dockets in these three cases have several facts in common which led to this decision. None of the companies filed an annual supplement in 1977, despite the mandate of G.L.c. 164, §69I and each of the companies was late in filing the 1978 supplements by at least two months. Upon review of the 1978 filings by Council staff, each company was contacted by letter in which more information was requested; these letters were sent in mid-May, 1978.

No response from any of the companies had been received by mid-June, 1978. At that time, telephone contact was made by EFSC staff with an individual from each company. The staff's needs were explained and in each case, the company indicated that more material was being or had been prepared and would soon be sent to the Council. Letters confirming these conversations were sent to each company and copies placed in each docket. To date, no material has been received from any of the three companies nor any communication explaining any delay. Thus, the present state of the filings of these companies is such that no adequate review can be done of each company's electric supply/demand situation since the material provided is insufficient.

The Council is aware that these three companies are relatively small municipal departments with small and often overworked staffs. In fact, the Council realizes that both Norwood and Wellesley are presently engaged in litigation with their all-requirements supplier, Boston Edison Company (all of Chester's power requirements are supplied by Western Massachusetts Electric Company). But despite their size, they each are an integral part of the energy supply picture with which the Council must

be familiar in order to discharge its duties. Even when no facilities are involved in a licensing procedure, the Council must keep aware of the Commonwealth's energy needs through its review of the utilities' long range forecasts and annual supplements. Each company in the state, no matter what its size, must assist the Council by providing the appropriate information in its filings.

As to the form, method and/or manner of these filings, the Council is willing, and has so instructed its staff, to attempt to accommodate the companies as much as possible. This is especially true for the small companies such as Wellesley, Norwood and Chester; the Council feels that the dockets in these particular cases reflect such an attempt.

The Council needs data from all utility companies to discharge its duties and therefore must insist on compliance with the statutory filing requirements of G.L.c. 164, §69I. When, as in the instant cases, the needed information is not provided by the company, the Council has no alternative but to disapprove its filing as incomplete, inadequate and insubstantial. Since at present, the Council statutes contain no enforcement or penalty provisions for such non-compliance, this disapproval may seem

to be without any effect. This is especially true where the companies may adequately comply in their next filing due April 2, 1979. But the Council cannot let this situation pass without comment. The Council also intends to send copies of this decision to the Boards of Selectmen in each town and to the Department of Public Utilities for whatever action the DPU deems appropriate pursuant to its supervisory authority under G.L.c. 164, §76.

One final point: given the size of these electric companies, it is understood that the Council should not expect the sophistication in forecasting methodologies such as is outlined in the recent EFSC Administrative Bulletin 78-3. In fact, the Council appreciates that the forecasts and annual supplements of small companies are largely judgemental in nature. However, no judgements are made by companies without some basis, some substance underlying them. Essentially it is this basis for judgements made in forecasts that the Council seeks to have quantified and explained so it might understand the rhyme and reason thereof. Again, the small companies should freely consult with Council staff to avoid the aggravation and bother they may now experience in meeting EFSC filing requirements. It is hoped that these three companies in

particular will ask the staff's assistance for their next filing due on April 2, 1979 pursuant to EFSC Administrative Bulletin 78-4.

Energy Facilities Siting Council

by Dennis J. LaCroix
Dennis J. LaCroix, Esq.
Chief Counsel

Unanimously approved by the Energy Facilities Siting Council at its meeting on December 6, 1978.

Evelyn F. Murphy
Acting Chairman

In the Matter of Nantucket Electric Company
3 DOMSC ___ (6 December, 1978)

EFSC No. 78-28: Initial Petition for Approval of A Long Range Forecast of Electric Demand and Supply Requirements

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Due to problems chiefly with information gathering and a small staff, the Nantucket Electric Company did not make its initial filing of a long range forecast with the Council until March 2, 1978. The Council staff has reviewed this forecast and the responses of the company to information requests prepared by the staff. Given this review and the size of the company, the Council will APPROVE the long range forecast of the Nantucket Electric Company without need for a formal adjudicatory hearing,*

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* Since this is the company's initial filing, the Chief Counsel required the company to publish a notice of the adjudicatory proceedings on the filings in the local newspaper as well as to post the notice in the Town Hall. Interest and some response from the company's customers was thus solicited. Only one response was received from the island and that gentleman's interest was in the "outrageously high electric rates" being charged. The Chief Counsel wrote to this customer explaining the Council's focus and purpose in reviewing the forecast and suggesting that he had confused the EFSC with the DPU. After that explanation, that customer did not respond to the Chief Counsel's further invitation to participate in these EFSC proceedings. There being no other potential intervenors or interested persons on the Nantucket horizon, the Council sees no need for a formal adjudicatory hearing.

subject to four conditions stated below. Attention to these conditions by the company in its next filing due April 2, 1979 will allow the Council to understand the company's energy projections better without requiring the more sophisticated techniques described in EFSC Administrative Bulletin 78-3. The Council thanks the company for its earnest efforts to comply with the Council's filing requirements and encourages a continuation of these efforts.

In its long range forecast, this small, non-interconnected company has predicted that energy sales will grow at 2.6% per year and that peak load will grow at 4% per year on average over the forecast period. These projections are judgements based on adjusted extrapolations of historical data. The company's judgements are, in turn, based on its perceptions of the future performance of the island's economy. These perceptions, then, involve a number of indicators.

For the residential class, the primary variables in the methodology are the projected number of customers and the projected average use per customer. The company "considered" the high and low scenarios of population growth projected by the Office of State Planning. (See

Response to Question 1 of the June 6, 1978 Information Request in docket.) The company's forecast of constant average use per customer apparently reflects continued conservation. The commercial sector is projected to grow at a modest 1.5% per year from 1979 through 1987. Historically, the commercial sector has grown an average of 2% to 3% per year since 1973. There is no industrial sector in the Nantucket forecast.

Given the above factors and other aspects of the staff review, the Council feels that the information elicited in the following conditions will improve the forecast by further clarifying the company's energy projections.

CONDITIONS

1. Because the residential sector accounts for almost two-thirds of the company's energy output requirements, the company shall review for its upcoming supplement its projection of residential customers. The present customer projection closely follows the high scenario population forecast of the Office of State Planning which assumes a continuation of the relatively high rate of recent inmigration. The company shall monitor its customer growth in order to evaluate this assumption and its effects.

2. The company shall also evaluate the merits of forecasting its class on a disaggregated basis. In justifying its evaluation, the company shall make a good faith effort to present in its next filing five years of historical data on the number of customers and average use per customer for the following types of customers:

a) year-round with electric heating;
b) year-round without electric heating;
c) seasonal.

The Council finds that the forecast of a winter peak is dependent upon the assumptions made regarding customer growth and electric heating by new customers. Thus, a closer look at and explanation of these assumptions are in order.

3. The company shall provide and explain projection of the percentage of new customers installing electric heat and the average usage projected for such customers.

4. The company shall earnestly attempt to find and explicate an indicator(s) which relates Commercial consumption to population and tourism.

Should the company have any questions on or need some assistance with implementation of these conditions, the Council encourages its personnel to contact the

Council staff. As stated in other recent decisions, the Council is willing to assist and attempt to accommodate the companies under its jurisdiction in providing the Council with the data necessary for the exercise of that jurisdiction.

Energy Facilities Siting Council

by Dennis J. LaCroix
Dennis J. Lacroix, Esq.
Chief Counsel

Unanimously approved by the Energy Facilities Siting Council at its meeting on December 6, 1978.

Evelyn F. Murphy
Acting Chairman

In the Matter of Northeast Utilities System
3 DOMSC ____ (6 December, 1978)

EFSC No. 78-17: Petition for Approval of an Annual Supplement to Long Range Forecast

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APPEARANCES: Maurice L. Zilber, Esq.
Peabody, Brown, Rowley & Storey
Boston, Massachusetts 02108
for NORTHEAST UTILITIES SYSTEM

Michael B. Meyer, Esq.
Assistant Attorney General
Utilities Division
for THE MASS. ATTORNEY GENERAL, intervenor

The Energy Facilities Siting Council APPROVES the Annual Supplement (1978-87) of the Northeast Utilities Company, subject to certain conditions. G.L. c. 164, §69J.

THE PROCEEDINGS

The Council's review of and adjudicatory proceedings on the latest supplement to the long range forecast of the Northeast Utilities System ("NU" or "company") were formally initiated on or about May 30, 1978 when the company was directed to publish and post a notice of a prehearing conference on July 6, 1978.

At the July 6th conference, the company suggested that completion of the Council review of the previous NU supplement (1977-86; EFSC No. 77-17) be waived given the withdrawal of the company's proposed nuclear power plant from regulatory review and in light of updated system-wide data in the latest supplement. This suggestion was followed and so ordered in a hearings officer's ORDER of July 7, 1978 which also granted the Attorney General's petition to intervene and set out the discovery schedule.

At a second prehearing conference held September 8, 1978, the completion of discovery and a date for a hearing were discussed. In an ORDER dated September 11, 1978, dates for completion of all discovery and a hearing were set. The evidentiary hearing took place on October 19, 1978. At that hearing, three witnesses for NU, Messrs. Burbank, Roncaioli and Blakey, testified and were examined together in a panel format. Mr. Chernick presented testimony for the Attorney General as intervenor. Both the company and the Attorney General submitted briefs by November 10, 1978.

THE ANALYSIS

The NU forecast methodology is without question the

best of its kind currently being applied to a service area in the Commonwealth. The Council takes particular note of and appreciates NU's commitment of resources and expert personnel in the continuing development of its methodology and database.

NU's methodology consists of three major submodels:

1. Economic/Demographic Forecast
2. Sales Forecasts, by customer classes
3. Peak Load Forecast, by coincident class loads.

The company's strategy in the development of these models is to design a consistent, conceptual structure for each submodel. Each structure defines the appropriate data requirements which NU then pursues. Where data needs are not fulfilled by existing company, private sector, or governmental sources, NU has typically implemented their own data collection machinery. The Council commends this approach.

The projected growth rates for energy sales and peak load in the 1977 Supplement are substantially less than the levels predicted in the original 1976 Forecast (See Figure 1.).

FIGURE 1. COMPARISON OF 1976 FORECAST AND 1977 SUPPLEMENT GROWTH RATE PROJECTIONS

Energy Sales

	Residential	Commercial	Industrial	Total
1976 Forecast	3.8%	6.5%	4.7%	4.9%
1977 Supplement	3.5%	4.7%	3.5%	3.8%

Peak Growth

1976 Forecast (1975 thru 1985)	4.7%
1977 Supplement (1978 thru 1987)	3.5%

It is inherent in a methodology, or as here, a collection of methodologies as large and complex as that submitted by NU, to entail literally hundreds of assumptions and technical specifications. Many of these details may be irrelevant with respect to the final forecast, i.e., the sensitivity of the forecast to a range of values on a particular variable or set of variables may be negligible. Obviously, the company cannot exhaustively document sensitivity analyses of each and every assumption and exogenous specification. However, reviewers and intervenors must be able to appraise the relative impact or weight of any

given assumption on the final energy and peak load forecasts. The company should take steps to improve the reviewability of individual parameters in their models, as well as to improve the empirical basis for each specification.

The "bottom line" of the Council's review of NU's methodology is to praise the scope and sophistication of the company's work to date, but also to emphasize that the conceptual structure of many aspects of the various submodels are preliminary and in need of more, and more accurate, data. Further work is required toward the complete integration of all submodels into a conceptually consistent and manageable package. The weakness of the Commercial class sales forecast, for instance, dilutes the accuracy of the Peak Load forecast. Other interdependencies also exist and thus the potential for smaller details snowballing into meaningless aggregate forecasts.

The Council therefore approves NU's demand forecast as submitted pursuant to G.L. c. 164, §§69I, 69J, subject to the following conditions:

1. NU is directed to follow the guidelines for forecast development and documentation as prescribed in EFSC Rules 69.2 and 69.3 (as amended, December, 1978) and as

detailed in EFSC Administrative Bulletin 78-3 dated November, 1978. In formulating this condition, the Council acknowledges the concerns raised by the Attorney General: See Brief of the Attorney General, 10 November 1978, pp. 2-5, Sections A ("Documentation") and B ("Price Effects"). These areas were addressed by the NU witnesses, Mr. Burbank, Mr. Roncaioli, and Mr. Blakey, in their direct testimony and cross-examination at the 19 October 1978 hearing (Tr. 13-55). From that testimony, the Council has the impression that the improvements to be made by the company and implementation of this condition will take care of these concerns. The Council will direct its staff to review the next filing to see that this impression is not a mistaken one and to check on the progress made as to each area.

As part of this condition, the company should also consider what effect, if any, persistent inflation would have on customer energy consuming behavior, including inflation's impact on the values of previously estimated parameters.

2. Similarly, NU is directed to implement the substantive improvements to its Commercial class submodel which it acknowledged through its witnesses at the

hearing as already underway. The extended filing date (April 2, 1979) should aid the company in this regard.

3. NU should consider the thirteen "Specific Issues" listed in the Attorney General's brief (See Brief of the Attorney General, 10 November 1978, pp. 5-6) and should revise, explain or otherwise clarify them, as needed, in subsequent filings of the demand forecast. Again, the Council recognizes that NU's on-going approach to the development of its methodology and database should resolve many of these issues.

4. NU should measure the resilience of their forecasts to business cycle affects. This directive might easily be achieved by an additional "scenario" similar to their high and low growth scenarios (See 1977 Supplement, pp. 262-267).

In its efforts to meet these conditions, the company should feel free to consult with the Council staff if any clarification or assistance is needed. The Council thanks NU for its continuing cooperation which has resulted in an efficient public review and better understanding of its forecast.

Energy Facilities Siting Council

by Dennis J. LaCroix
Dennis J. LaCroix, Esq.
Hearings Officer

Unanimously approved by the Energy Facilities Siting Council at its meeting on December 6, 1978.

Evelyn F. Murphy
Acting Chairman

DECISION AND ORDER

In the Matter of Cambridge Electric Light Company, New Bedford Gas and Edison Light Company, and Canal Electric Company

3 DOMSC ___ (December 5, 1978)

Docket: EFSC 78-4

PETITION FOR APPROVAL OF DEMAND FORECAST SUPPLEMENTS

APPEARANCE: Michael T. Gengler, Esquire of Boston
for the Companies

Michael B. Meyer, Esquire of Boston
Assistant Attorney General for the
Attorney General of the Commonwealth
Francis X. Belotti, Esquire

THE PROCEEDINGS

The NEGEA Service Corporation has filed the second annual supplement to its Long Range Electric Forecast, for the period, 1978-1987 on behalf of the principal electric utility operating companies of New England Gas and Electric Association. The operating companies include Cambridge Electric Light Company, New Bedford Gas and Edison Light Company, and Canal Electric Company (hereafter referred to as the Companies). Each has petitioned the Energy Facilities Siting Council for approval of the demand forecast segment of the second supplement.

The only intervenor has been the Attorney General who has presented testimony with regard to claimed deficiencies in the supplement and the forecast methodology.

THE SUPPLEMENT

In the second supplement to the Long Range Electric Forecast, projected retail energy sales and peak load growth rates have been revised downward (See Figure 1).

FIGURE 1. COMPARISON OF PROJECTED COMPOUND GROWTH RATES OF ENERGY SALES AND PEAK LOAD FOR NEGEA COMPANIES

Cambridge	1976 Supplement	1977 Supplement
Peak growth*	2.4%	2.9%
Energy sales	3.6	2.6
New Bedford		
Peak growth*	6.0	5.0
Energy sales	6.1	4.7
Combined Companies		
Peak growth*	5.3	4.6
Energy sales	5.6	4.1

*Since 1971, the coincident annual system peaks have occurred variously in both winter and summer. The NEGEA forecasts assume system peaks in the winter over the entire forecast period.

These adjustments reflect recent trends in demand and consumption from the Commercial and Industrial sectors in Cambridge and from the Residential sector in the New Bedford service area. See Staff Analysis of Cambridge Electric Light Company et al. Forecast Methodology, (2 Nov. 1978), EFSC #78-4. See also 1977 Supplement, pages 1.1.3, 1.2.1, and 1.2.2; and 1976 Supplement, tables E-8 and E-11.

METHODOLOGY

The Companies employ a methodology in which microeconomic data is collected at the town level, town forecasts are derived, and then aggregated to produce divisional and service area wide forecasts. This methodology includes a combination of historical data on population trends, energy sales and consumption patterns, current information relevant to new dwelling permits, existing development and government policies with respect to growth in the service areas, and interview data on future projections of energy demand by class. In its process, the Companies interviewed town planners, financiers, civic leaders, and commercial and industrial leaders concerning current and future energy needs in their respective communities or businesses. The Companies maintain records of all interviews and have made these available for Council and intervenor inspection. For example, industry representatives comprising 81% of industrial class sales in the combined service areas were interviewed regarding their

anticipated energy needs in each of the next ten years. For a fuller discussion of methodology, see testimony of Richard K. Byrne, Exhibit N-1 and Transcript at 10-28.

ISSUES

The Attorney General has objected to the companies' interview technique as an apporach which is fraught with the potential for bias, distortion, and judgmental adjustment. See Brief of the Attorney General at 8. This objection would have merit but for the fact that the companies are engaged in a straightforward and continuing effort to revise and refine the interview technique. We expect that the industrial, commercial, and residential sector surveys will continue to be developed in such a manner that objective, quantifiable data will be obtained and in such a way that judgmental adjustments to this data will be clearly specified and justified.

The Staff analysis of the companies supplemental forecast has raised a number of important questions about residential heating consumption and penetration. See Staff Analysis. Particularly where, as here, there is a forecast of a significant increase in per customer consumption for electric heat, we expect a much more substantial and objective analysis of customer use patterns to justify increased consumption.

The companies have not directly considered the impacts

of price, time of use rates, and load management on demand, consumption, and system peak. We recognize the complexity of these factors; nevertheless, explicit consideration of these variables should be part of subsequent forecasts.

Finally, we note that the companies are conducting surveys of major appliance penetration, saturation, and efficiency. The results of these surveys should be included in subsequent forecasts.

DECISION AND ORDER

The Energy Facilities Siting Council approves the demand forecast segment of the Second Supplement, subject to the conditions set forth below. This approval extends only to the power sources specifically enumerated in the supply segment of the second supplement as filed with the Council at the date of this decision.

In giving this approval, the Council for the present accepts the survey-interview techniques which the companies employ at the town level. However, a more explicit documentation of all assumptions and data, particularly those derived from the Companies' interview process, will be required. The concern of the Council in stating this requirement is the preparation and documentation of a methodology that is reviewable by the Council Staff and intervenors. The Companies are directed to implement the following conditions:

1) Each major assumption is to be empirically justified and documented. This includes, but is not limited to, average annual residential class customer consumption, with and without electric heat, and major appliance penetration, saturation and efficiency.

2) Major forecast contingencies are to be enumerated and documented for each town. These contingencies relate to each town's policies toward growth, all known or assumed constraints to growth, and population trends.

3) Data derived from interviews or surveys must be statistically summarized and where the trends of these statistics deviate from the specific forecasts, documentation of all judgmental modifications are required.

4) The aggregation of microeconomic data into town forecasts and further aggregation into divisional or service area forecasts are to be systematized in such a manner as to facilitate replication by reviewers.

With this conditional approval, the Council applauds both the cooperative spirit of the Companies and the commitment to the development and refinement of the forecasting art. The Council encourages the Companies to continue to cooperate and work with the Council Staff toward the implementation of the above conditions and toward the development of techniques for explicit consideration of the impact of price effects, time-of-use rates, and load management on future demand.

Energy Facilities Siting Council

by _____
James A. Miessau, Esq.
Hearings Officer

Unanimously approved by the Council at its meeting on December 6, 1978.

_____
Evelyn F. Murphy
Acting Chairman

In the Matter of Boston Edison Company
3 DOMSC (December 6, 1978)

EFSC 76-12; 77-12

Petition for Approval of Proposed Walpole to Needham 345 kV Transmission Line

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APPEARANCES:

John J. Desmond, III, Esq. and Gaynelle G. Jones, Esq. for Boston Edison Company

Scott P. Lewis, Esq. and Turner C. Graybill, Esq. for the Town of Dover

Thomas B. Arnold, Esq. for the Robert Sever Hale Camping Reservation

James C. McManus, Esq. for the Attorney General of the Commonwealth

William A. Cross, Esq. and Roger B. Hunt, Esq. for the Town of Needham

Robert C. Cabot pro se

Alleen Wenckus for the Southwest Needham Civic Association

Rep. Robert F. Larkin, Jr. pro se

Daniel W. Thurler pro se, as a participating person

The Massachusetts Energy Facilities Siting Council APPROVES the general need and a site for the proposed Boston Edison Company Walpole to Needham 345 kV transmission line subject to the condition that an in-service date for the line will not be approved until completion

of a review of Boston Edison Company's (BECo or "company") Annual Supplement to be filed on April 2, 1979. The site approved is the "mirror-image" of the existing 115 kV line from Walpole to Needham, i.e., overhead from the company's West Walpole Station 447, in a northerly direction on an existing right-of-way for a distance of 9.4 miles to Westfield Street in Westwood, then underground to Needham Station 148.

I. History of the Proceeding

The Walpole to Needham line was first proposed by the company in its Long-Range Forecast filed with the Siting Council April 30, 1976. The first Annual Supplement 1-A updated the Long-Range Forecast and was filed December 31, 1976. The second Annual Supplement 1-B was filed December 31, 1977. Consideration of the line was separated from the remainder of the Long-Range Forecast and Annual Supplement 1-A, and public adjudicatory hearings concerning this line, and others*, were held on November 23, 1976, December 14, 1976, July 6, 1977, September 15, 1977, October 19, 1977, February 23, 1978 and November 20 and 21, 1978.

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* On December 21, 1977, the Siting Council approved four other transmission lines proposed by the company with the condition that revised and updated in-service dates be submitted. In the Matter of Boston Edison Company, 2 DOMSC (December 21, 1977) dated January 5, 1978 by the Hearings Officer. As to revised and updated in-service dates, please see Council ORDER, para. __ infra..

Petitions to intervene in opposition to the Walpole to Needham line were allowed on behalf of the Town of Dover, the Town of Needham, Robert C. Cabot, the Southwest Needham Civic Association, and the Robert Sever Hale Camping Reservation. Additional petitions to intervene were allowed on behalf of Representative Robert F. Larkin, Jr. and the Attorney General of the Commonwealth. Daniel W. Thurler took part as a participating person pursuant to EFSC Rule 15.3.

The record in this proceeding consists of the exhibits and testimony of company, intervenors, and Council staff witnesses as well as company responses to extensive information requests from the Town of Dover and the Council. The company witnesses included C. Bruce Damrell, Superintendent of the Engineering and Construction Department; Cameron H. Daley, Manager of the Research and Planning Department; Louis R. Delaplace, Senior Engineer; John J. Bartley, Principal Right of Way Engineer; Robert H. Little, Senior Arborist; Gregory R. Sullivan, Senior Engineer; David A. Silver, Vice President, Pirelli Cable Corporation of New Jersey; and David L. Cary, President, Leggat, McCall & Werner Appraisal and Consulting Company, Inc.

Witnesses appearing on behalf of the Town of Dover were: Dr. Charles W. Eliot, Landscape Architect and Planning Consultant; Dr. Peter Graneau, President, Under-

ground Power Corporation; Robert C. Cabot (pro se intervenor); John W. Connery, Director of Technical Assistance, Metropolitan Area Planning Council (MAPC); and Rita Barron, Executive Director, Charles River Watershed Association (CRWA) testified for the Town. Other witnesses were James E. Earley for the Hale Reservation, Alleen Wenckus for the Southwest Needham Civic Association, and Roger B. Hunt, Esq. and William Connaughton for the Town of Needham. Daniel Peaco and Philip Kernan testified for the Council staff.

A Tentative Decision dated December 16, 1977 approved the proposed Walpole to Needham line. However, the decision held that there was insufficient evidence in the record to determine when the proposed line would be needed and that, as a condition to the decision, a special hearing would be held to determine the appropriate in-service date for the line. The hearing was held February 23, 1978 and resulted in a second tentative decision dated March 8, 1978.

That decision again approved the line but did not set an in-service date since hearings on the most recently filed BECo Annual Supplement (1-B) had not been completed and, to that point, the company did not have a forecast or supplement acceptable to justify the construction of any facilities within Council jurisdiction. See 2 DOMSC 43, 57-58 (December 13, 1977).

At its March 15, 1978 hearing, the Council voted to defer any action on the second tentative decision and remanded the matter to the hearings officer for further hearings on issues outlined in its ORDER of March 20, 1978 (paragraph #2). The Council stated as the basis for the deferral that it was statutorily constrained from reaching a final decision until the company had received Council approval of a forecast or supplement sufficient to justify such construction. Cf. M.G.L.c. 164, §69I (Para. 1 of March 20 ORDER). Thus a final decision on the line would await completion of adjudicatory hearings on BECO's latest annual supplement (1-B).

Those hearings were completed at the end of August, 1978. After time for submission of briefs, a tentative decision was presented to the Council at its October, 1978 meeting and approved as final with two minor amendments. See 2 DOMSC 112 (October 11, 1978). That decision again approved the company's supplement with the condition that its projected growth rates "for purposes of justifying generating capacity expansion or proposed transmission facilities." 2 DOMSC 112, at 119. One of the amendments added by the Council was that an exemption for the Walpole to Needham line from this construction prohibition would be considered as part of the adjudicatory proceedings on

the line. See Decision Clarification, 2 DOMSC 132 et seq. (November 13, 1978). The Council also asked that the hearings officer reconvene the Walpole to Needham line proceedings as soon as possible.

At a November 1, 1978 prehearing conference in these proceedings, outstanding issues to be heard and hearing dates were set. These hearings were held on November 20 and 21, 1978.

II. Legal Standards

By statute, no utility company shall commence construction of a facility at a site "unless the facility is consistent with the most recently approved long-range forecast or supplement thereto." M.G.L.c. 164, §69I. At this point, BECo's most recent supplement has been conditionally approved on the basis of the company's continuing successful efforts to improve its forecasting methodology. 2 DOMSC 112 (October 11, 1978). However, the Council has not approved the forecast for purposes of justifying facilities such as the Walpole to Needham line. 2 DOMSC 112, at 119. Thus, while the Council may approve the site for this line so that the company may proceed with other required permit procedures, it cannot approve the line at this time for construction; the setting of an in-service date must await Council review of the next

BECo supplement.* As is discussed in detail below, the Council is not convinced that the need for this line is so independent of the company's load growth as to require setting an in-service date at this time. Yet the evidence of need independent of load growth does convince the Council that this line is indeed needed at some future date. But at this time, the Council is statutorily constrained from setting that date and allowing the start of construction.

A second statutory obligation of the Council is to review and site energy facilities "to provide a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." M.G.L. c. 164, §69H. The Town of Dover argues that the fundamental responsibility of the Siting Council in implementing this policy is to give environmental values paramount importance over economic efficiency. Initial Brief for Town of Dover at 2. The Town feels that since the Department of Public Utilities tends to give determinative weight to the relative costs of proposed facilities, the Siting Council should give more importance to considerations of

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* This is also true of the other BECo transmission facilities for which sites were approved in 2 DOMSC 58 (January 13, 1978). At page 62 of that decision, the Council reserved judgement on the in-service dates of the four lines considered. The proposed dates will also be revised after the Council review of the upcoming BECo supplement.

environmental impact and necessary energy supply than to the criterion of lowest possible cost.

The Council cannot accept this argument. The duty to provide a necessary energy supply with a minimum impact on the environment at the lowest possible cost appears in sections 69H and 69J of the Siting Act; no where in the Act does a statutory indication appear that environmental and necessary power considerations should take precedence over cost factors. M.G.L.c. 164, §69G et seq. The Council has in the past and will continue to give balanced consideration to environmental, need, and cost factors in reviewing proposed facilities.*

III. The Proposed Line and Alternatives

The Walpole to Needham 345 kV line will serve primarily the Boston, Brighton, Brookline, Newton, Needham, and Dedham area. The company proposed to construct it from West Walpole Station 447, north on existing Right of Way #10 for 9.4 miles, on a new right of way for approximately 1.3 miles, and then on existing Right of Way #3 for .75 miles to the company's Needham Station 148. There is presently an overhead 115 kV line on the 9.4 mile existing right of way which goes underground via town streets

* One exception is that environmental impact may be given special weight in the case of critical areas of environmental concern. See The Attorney General's Memorandum Opinion on the Secretary's 21A Authority, n. 29.

from Westfield Street, Needham to Needham Station 148 (Exs. BE-10, BE-13, and BE-42). The company's proposed new line would be constructed entirely overhead with an in-service date of June, 1983 (Ex. BE-100) at an estimated cost of $5,644,970 in 1977 dollars (Ex. BE-202). The type of construction proposed for existing Right of Way #10 is wood H-frame similar to the existing 115 kV structures. The type of construction proposed for Westfield Street to Needham Station right of way is double circuit, steel pole construction. (BECo response to Staff Information Request dated 4/27/78).

The following alternatives to the company's main proposal for the Walpole to Needham line were considered, to varying degrees of testimony and evidence, in this proceeding:

1. construction of a line entirely underground along the existing overhead right of way and public streets;

2. construction of the line overhead from Walpole to Westfield Street and then underground to Needham Station ("mirror image" of the existing 115 kV line);

3. construction of the line overhead to the Dover Station and then underground to the Needham Station along the existing right of way and public streets;

4. reconductoring the existing 115 kV overhead line and strengthening the existing underground portion of the line;

5. utilization of uneconomic generation capacity to reduce overloads on the present 115 kV line ("no-build" alternative); and

6. construction of a 345 kV line along the existing Medway to Framingham to Needham right of way.

Wherever the possibility of putting the line or any portion of it underground arose, there was much discussion and evidence as to the appropriate type of cable to be used, primarily as a part of the cost factor of the line but also going to its environmental impact.

The normal and emergency ratings of the overhead section of the existing 115 kV line are 268 MVA and 315 MVA, respectively. The present capability of the underground section of the line is 260 MVA; however, in 1980, BECo will install heat exchangers so that the underground capability is increased and the overhead ratings will be limiting. BECo's proposed overhead 345 kV line will have a normal rating of 1500 MVA and an emergency rating of 2000 MVA.

The chosen "mirror-image" site for this line will have the same overhead rating with the underground portion rated at 1500 MVA.

The Council's selection of the "mirror-image" site for the company's new 345 kV Walpole to Needham line is consonant with the Council's belief that, in many cases, the use of an existing right of way as the site of new

lines is the most appropriate way to achieve the proper statutory balance of the need, environmental and cost factors mentioned above. M.G.L.c. 164, §69H. See In the Matter of Eastern Utilities Associates, 1 DOMSC 312, 314 (June 15, 1977). As further discussed below, the company has demonstrated, and no intervenor has disputed, the general BECo system need for more transmission capability in this particular sector of its service area. In this case, where much attention was given to the environmental impact of the company's proposed line, the choice of the "mirror-image" site is quite obviously a choice of a site having the least environmental impact given the general need for the line. While the cost of the line's construction along the existing right of way is somewhat more than that along the path of the company proposal, the Council feels this increment is a small price to pay for the avoidance of land takings for a new right of way and other environmental impacts unnecessary to be sustained at this time. Unnecessary since a primary reason for BECo's opening a new corridor for this 345 kV line is the anticipation of a second 345 kV line into the Needham Station 148 (Tr. 34-38 [12/14/76]) at some future date which the Council finds is too remote to persuade the Council not to utilize the existing right of way. The Council sees no reason to burden the company

or the intervenor now with the costs of eminent domain proceedings and of environmental consequences simply to provide for a line which will not be needed for almost 15-20 years. (Tr. 37 [12/14/76]).*

In short, the Council finds that its choice of the existing 115 kV line right of way as the site for a new 345 kV line from Walpole to Needham provides "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." M.G.L. c. 164, §69H.

IV. The Need for the Walpole to Needham Line

The Council must consider the need for the proposed 345 kV line from Walpole to Needham within the context established by the Council's decision on the company's latest supplement to its long range forecast. 2 DOMSC 112 (October 11, 1978). In that decision, the Council conditionally approved the supplement but held that, given the conditions imposed, the forecasted electrical consumption or demand growth rates therein would not be accepted to

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* The in-service date for this second 345 kV line was estimated to be the early 1990's given load projections as of December 1976. (Tr. 37 [12/14/76]). Since load projections have decreased since that time, it must be assumed that the need for the second line and its in-service date have been accordingly revised to a later date. In the matter of this second line, the Council has also considered the company's arguments on the difference in the ratings due to undergrounding the first 345 kV line as a factor in the timing of the second line (Tr. 34-38 [12/14/76]).

justify generating capacity expansion or proposed transmission facilities. Id. at 119. In their deliberation on the tentative decision, the Council members were mindful of the significant investment of time and interest in the Walpole-Needham line proceedings to date. Thus, in announcing their vote on the supplement decision, the Council members indicated that an exemption to the construction prohibition would be considered for this line within the context of the hearings on the line. Cf. Decision Clarification, 2 DOMSC 132 et seq.

Thus, the issue of need for the Walpole to Needham line must include and address whether that need can be justified on a basis apart from the forecast so that the line might avoid coming within the construction prohibition imposed by the Council after review of the latest BECo forecast supplement. After examining the company's evidentiary efforts to do this, (see, inter alia, EX. BE-100, BE-101; Tr. 33-36 [7/6/77] Tr. 10-48 [11/20/78]), the Council concludes, as stated earlier, that the need for this line is not so independent of load growth as to warrant setting an in-service date at this time.*

* It might be noted that this line was originally proposed for an in-service date of 1980 and was deferred once, based on decreasing load growth, to the summer of 1982 (Tr. 36 [7/6/77]). For the same reason, the present in-service date proposed by BECo is the summer of 1983 (Tr. 15 [2/23/78]; EX. BE-100).

The company has argued two main points in support of the need for the proposed Walpole to Needham 345 kV line. The first contends that the existing 115 kV Walpole to Needham line will experience an unacceptably high risk of overload in the event that double contingencies occur coincident with peak loads which are anticipated in the early 1980's. The second contends that the reliability of the transmission/generation system supplying Metropolitan Boston must be improved. (See, e.g., EX. BE-100; BE-101). These points are addressed separately below.

A. Double Contingency Overload Conditions

Load flow analysis was the primary methodology employed by the company in its study of overload conditions incurred by double contingencies. (EX. BE-31-C) This analysis uses a computer simulation of the New England generation and transmission system to focus on the loading of a particular line, given a total system load level and the existence of certain contingencies. The method used by the company is consistent with New England Power Pool (NEPOOL) and Northeast Power Coordinating Council (NPCC) planning criteria. Load flow results show that when the Boston Edison system load attains a level of 2460 MW, the occurrence of four different double contingencies would overload the existing 115 kV Walpole to Needham line up to 25 MW above its emergency capacity (EX. BE-31C). The additional capacity proposed is

to alleviate these overload conditions as well as to allow for additional load growth and expected generation additions to the south of Boston. (See generally, EX. D-7).

The use of this load flow analysis as support for the need for this line shows it dependence on load growth. The company witness has stated: "An important justification of the proposed 345 kV line lies in circuit overloadings, for double contingencies, which arise in the early 1980's due to load growth." (EX. BE-101) and confirmed this statement under cross-examination (Tr. 11 [11/20/78]). Given this dependence on load growth, the Council is unwilling to grant exemption from the construction prohibition discussed above for this line.

B. System Reliability Considerations

The company has also presented several arguments relating the need for the line to the need to improve the reliability of the system supplying Metropolitan Boston. (Cf. e.g., EX. BE-100; BE-101). Presently, Boston is supplied by generation in the downtown area, which is supplemented via ties to the 345 kV grid surrounding Boston by generation external to this area. Boston's ties to the grid are 230 kV and 115 kV lines to the south and 345 kV and 115 kV lines to the north. The company believes a 345 kV tie to the south is necessary as a significant portion of the economic external generation lies to the

south and southeast of Boston. The company also contends that the addition of a southerly 345 kV corridor will allow necessary additional operating flexibility, which, in turn, would allow full utilization of economic power available to the south and avoid the "locking in" of this power. The company has stated that it is desirable to have more than one 345 kV corridor (the existing one is the Woburn to Ayer tie to the north) feeding a major metropolitan area, siting the New York blackout as a prime example of this desirability. (Cf. e.g., EX. BE-100; BE-101).

The Town of Dover points out (Dover Further Supplementary Brief, p. 3) that the company has testified that the power system, at this point in time, is not unreliable (Tr. 14 [11/20/78]). The Council recognizes that any transmission addition would improve system reliability and that as system load increases, reliability decreases. In the instant case, however, it must be shown that the reliability of the system under present conditions is unacceptable. Without an approved forecast, the Council cannot approve a line on this basis unless the line improves a system which can presently be termed unreliable. The company has not shown any specific degree or magnitude of present system unreliability which would justify setting an in-service date now for this line.

The ancillary issue of operational flexibility has also been discussed in terms of BECo's existing system constraints and NEPOOL operation and maintenance constraints. The company has expressed concern over the occurrence of triple or higher order contingencies. While higher order contingencies including forced outages are beyond the standards set by NEPOOL and NPCC (Tr. 16 [2/23/78]), NEPOOL's scheduling of maintenance has and can contribute to these conditions (Tr. 46-47 [11/20/78]). In addition, the company has argued that the economic dispatch of units by NEPOOL may be constrained by the present transmission system, which has been termed as "locking in" economic generation. These conditions have not produced loss of load or uneconomic dispatch (Tr. 44 [11/20/78]). The Council recognizes these conditions as problems, but the information provided by BECo does not demonstrate the danger of overloads or of dollar savings of a magnitude significant enough to justify the need for the line independent of any load growth.

C. Conclusions

The Council finds that there is insufficient documentation of the need for the Walpole to Needham line on a basis apart from load growth. The Council also finds that the 345 kV Walpole to Needham line will, at some point in time, be an appropriate addition to the Boston Edison

system as load growth occurs. The option to reconductor the existing 115 kV line is not an appropriate solution as the BECo system would be unduly jeopardized during construction and the reconductoring would not provide a long term solution to the problem of bulk transmission into the Boston area. Thus, while the company has demonstrated a general future need for this line, it has failed to provide the Council with information sufficient enough to warrant an exemption from the construction prohibition for this line. The Council will defer setting an in-service date for this line at this time.

V. Environmental Impact

As has been stated, because the selected site utilizes an existing right of way for the entire length of the new line, the environmental impact of that line is prima facie minimal.

Most of the intervenors have claimed that the company's proposed overhead line will have an adverse environmental impact. With the exception of the crossing of the Hale Reservation, primary concern is directed toward the 1.3 miles of new right of way which would cross residential sections of Dover and Needham and the Charles River.* It

* The intervenor Southeast Needham Civic Association (SNCA) is concerned about the environmental effect of a possible widening of BECo Right of Way #3 which carries a 115 kV line from Framingham to Needham. The homes on Richardson (cont'd)

has been argued throughout these proceedings that the line will have a divisive effect on the character of the communities involved and that their aesthetic and natural beauty will be marred. It is also claimed that public enjoyment of the Charles River will be impaired. The selected site obviates these concerns since there will be no new right of way to be acquired and the non-impactful crossing of the Charles River is provided for along the existing right of way at the Chestnut Street Bridge.

The selected line site will, however, cross the Hale Reservation on existing Right of Way #10 which now contains the 115 kV Walpole to Needham line. Although the Hale Reservation is a private reservation, it is a major and unique natural resource for urban and suburban residents of the metropolitan Boston area. During the summer it is the site of the nation's largest day camp, serving 1400 children daily. In its testimony, the Reservation proposed that the line be placed underground or, in the alternative, that the new and existing lines be placed on the same towers (EXS. HR-1, HR-2). Since that testimony was given, the Hale Reservation entered into negotiations with the

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* Drive, Needham (the residents of which comprise SNCA) adjoin the present easement on Right of Way #3. At the last session in this case, it was made clear that BECo does not intend to widen that easement. (Tr. 221 [11/20/78]). Nor will the "mirror-image" site for the new 345 kV line cause any such widening. It is hoped that this allays SNCA's concerns.

company as to an environmentally acceptable utilization of the existing right of way through the Reservation by the 345 kV line. The company and the Reservation reached an agreement as to the width of the cleared right of way, type of conductor, pole design and location, and appropriate tree screening. This agreement is included in the record as EX. HR-3.

Again, the selected site will comply with the policy of the Council to employ an existing right of way whenever possible for the construction of a new line, see In the Matter of Eastern Utilities Associates, 1 DOMSC 312, 314, and by so doing in this case, will achieve a minimum environmental impact.

VI. Cost

The company has provided the following cost estimates for its proposed plan and the selected "mirror-image" alternative (EX. BE-202):

	Cost in 1977 Dollars
BECo Proposal (all overhead)	5,644,970
Selected Site (overhead from Walpole to Westfield Street, underground from Westfield St. to Needham Station)	7,737,795

These are the only two alternatives discussed here. Upon consideration of the other alternatives, the Council finds that these routes would incur substantially higher costs*

(* on next page)

with greater environmental impact than the chosen sites as well as technically equivalent or inferior design.

The "mirror-image" line cost estimate is $2.09 million more than the company's proposed overhead line. However, land acquisition costs for the 1.3 miles of new right of way on the latter line are not included in the above figure (EX. BE-202). At the last session in these proceedings, testimony was presented on the potential costs of such land acquisition (Tr. 169 et seq. [11/20/78]; Tr. 76 et seq. [11/21/78]). The company contends that these costs would be around $577,000 (EX. BE-406) which reduces the difference between its proposal and the selected site to $1.5 million. The Towns of Dover and Needham contend that this BECo estimate is conservative. See Dover and Needham briefs generally; also EX. N-2 and Tr. 76 et seq. [11/21/78]. The Council finds that the additional cost of the "mirror-image" site, be it $1.5 million or a lesser amount, is a reasonable expense when balanced with the need for the line and its environmental impact. It is also a reasonable additional cost since the selected site will avoid (if only for a while by the company's planning criteria) the taking of any new right of way. In this case, the Council finds that

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* For example, costs for other BECo alternatives in 1977 dollars were $24,829,000 for a totally underground route and $11,432,000 for an all overhead route from Medway to Framingham to Needham (EX. BE-35). Figures for alternatives presented by Dover were in a similar range, especially as to an all underground route. (EX-D-8A; D-8B; D-13).

this consideration has practical as well as environmental benefits. As stated earlier, BECo's present concern for the future need of a second 345 kV line in this area is actually too remote to be a significant factor in this decision.

The record in this case also contains testimony on cost differentials given the use of various underground cable technologies. See EX. D-8A; D-8B; D-13; BE-300; BE-301; Tr. 14 et seq. [10/19/77]; Tr. 76 et seq. [11/20/78]. While the primary point being made here went to a comparison of the costs of the BECo all underground route with Dover's costs for the same route, this testimony also has some relevance to the cost of the underground section of the selected site. Dover maintains that even for that section, a different technology could reduce costs further. While not denying the truth of that argument, the Council does not find that any alternative cable technology has been demonstrated to be clearly superior to that used by BECo in terms of both reliability and cost. Given the "mirror-image" site selected, it may also well be that the company must use a technology compatible with the cable already in use for the 115 kV line. With these points in mind, the Council feel that further discussion of the details of comparative technologies and their costs is unnecessary.

The Council realizes that given the points discussed throughout this decision, it was not faced with a decision based solely on differences between an overhead line and an underground line. Yet the record in this case is replete with testimony on underground line alternatives and technologies and thus affords the Council an opportunity to comment on an overhead versus underground choice for transmission line sites. Quite frankly, the Council's preference is for overhead sites given, of course, the proper minimization of environmental impacts. Underground transmission lines are more often than not a luxury where there is a feasible overhead alternative. This is especially true in the instant case.

Should the company in this case not have had an existing transmission corridor available for its new 345 kV line, the choice would have been between an overhead route and an underground route. All factors considered, the Council would have chosen the overhead route with attention being given to lessening the impact of such a route on the Charles River. The underground route would have indeed been a luxury enjoyed solely by the people of Dover and Needham without their bearing a proportionate share of the cost of such a line. Indeed, a disproportionate share of the costs of the underground alternative would have been borne by others in the BECo service area without the receipt of the

"benefit" of such a route. This inequity would have militated strongly against the choice of an underground site versus overhead route; given a proper balance of environmental impact, the Council could never opt for an alternative to be enjoyed by few and paid for by many.

Therefore, it is ORDERED that a site for a BECo 345 kV line from Walpole to Needham be APPROVED in accordance with this decision and the following provisions:

1. That the new line be sited along the right of way for the existing 115 kV Walpole to Needham line ("mirror-image" site);

2. That the Council will not determine the appropriate in-service date for the new line until it reviews and approves the next BECo annual supplement and removes the construction prohibition presently in effect;

3. That in the further planning and construction of the new line, the company consider the alternative underground cable technologies discussed in this proceeding and employ the technology it finds to be most reliable and cost effective;

4. That the new line be approved at its projected cost. This cost is, no doubt, subject to reasonable change from a variety of factors including inflation of wage and material costs, construction problems encountered in the field and other causes beyond the control of the company. The company is directed to notify the Council of all such changes and of the final cost figure for the line in upcoming annual supplements. Approval by the Council of a facility at the preliminary licensing stage should not be construed as a binding determination upon a rate setting agency.

5. That the chemical herbicide 245T not be used in any fashion without Siting Council approval pending review by the Environmental Protection Agency pursuant to 40 CFR 162.

6. That the company honor the agreement it reached with the Hale Reservation as to right of way width, conductor type, pole design and location, and appropriate tree screening. In this condition the Council wishes to recognize and approve that agreement included in the record as EX. HR-3.

Energy Facilities Siting Council

by _____
Dennis J. LaCroix, Esq.
Hearings Officer

Unanimously approved by the Energy Facilities Siting Council on December 6, 1978.

_____
Evelyn F. Murphy
Acting Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council
3 DOMSC

EFSC No. 78-33

In the Matter of	)	
	)	DECISION AND ORDER
Eastern Utilities Associates System	)	

On behalf of its operating companies, Brockton, Fall River, Blackstone, and Montaup, the Eastern Utilities Associates System (EUA or the System) has petitioned the Energy Facilities Siting Council for approval of the Second Supplement to its 1976 Long Range Forecast of Electric Power Needs and Requirements. This supplemental forecast covers the eleven year period from 1978 through 1988 and includes a projection of electric energy consumption at a compound growth rate of 4.3% and peak demand at a compound growth rate of 4%; new facilities are not proposed for construction.

On 4 December 1978, an adjudicatory hearing was held to consider the supplemental forecast as required by G.L. c. 164, §§69I,J. The Attorney General of the Commonwealth appeared as an intervenor in the proceeding and presented expert testimony which critiqued the forecast. The hearings

officer was assisted by the Council's chief economist, Marc G. Hoffman.

Subject to the Order set forth herein, the Siting Council approves the supplemental forecast of consumption and peak together with those facilities and capacity which the System has listed as necessary to meet its projected requirements with a prudent reserve margin. Specifically, the Council finds and rules that the forecast complies with the statutory standard of G.L.c. 164, §69J.

FORECAST APPROACH

The EUA forecast is characterized by simplicity in its approach and clarity in its presentation. It is the product of a strong, straightforward, and generally competent effort by the small staff of a relatively small utility system. It is superior to the forecasts of several other systems of similar size and resources.

The forecast essentially consists of two major components: a residential customer class forecast from which a commercial customer class forecast is also derived and an industrial class forecast. The residential forecast has been developed from population projections made by state/regional planning agencies, a usage schedule for major

appliances (space heating, water heating, cooking, dryers, freezers, air conditioning), a projection of base use for all other appliances (lighting, televisions, stereos, washers, and the like), and a projection of use for so called "unforseen appliances." The commercial forecast is derived from a judgmentally adjusted historic ratio of commercial to residential experience on the assumption that commercial growth and energy use are directly related to residential customer growth and energy use. Finally, the industrial forecast is developed from a survey of major customers together with regression analysis projections of some of the smaller customers and simple trending of the energy usage of others.

FORECAST LIMITATIONS

In reviewing the System's forecast, it is important to recognize that EUA is a relatively small utility. The System is one sixth of the size of the Northeast Utilities system which is the largest utility in the New England Power Pool. Consequently, we cannot and do not expect the same level of sophistication, level of detail, and expenditure of resources from EUA as we do from Northeast, New England Electric System, or the Boston Edison Company. Nevertheless,

significant limitations in the present forecast should be acknowledged and subject to more detailed study as the System refines its forecasting capability.

1. EUA has not provided an explanation for the substantial difference in projected compound rates of growth in residential base use for existing customers (1%) and for new customers (3.6%). Given that base use includes the same appliances for both existing and new customers, there is no apparent reason for the projected disparity in their use patterns. Explanatory analysis is necessary to justify continued reliance upon this disparity.

2. EUA has not provided an adequate conceptual basis for its "unforseen appliances" category of residential use. Indeed, the conflicting testimony presented by the System's witnesses indicates that no effort has yet been made to define what appliances or uses - even in a generic sense - may be included in this category. Yet, it has a significant impact on the residential and commercial projections because it consumes 4000 kwh per year/customer at a 19% penetration rate. (The magnitude of this impact may be illustrated by recognizing that 4000 kwh is close to 150% of the average total residential consumption of a typical non heating customer for 1977).

In its present form, "unforseen appliances" is an

arbitrary inflation factor for consumption. Further definition and explanation are required if we are to accept this category of use in any subsequent forecast.

3. EUA has not provided a price analysis to support the high penetration rates which it has projected for electric heating and hot water uses. The System justifies the penetration rates on the assumption that electric heating prices will become competitive with alternative fuels. Given, however, that this assumption and its resulting penetration rates are largely responsible for the high consumption levels projected for the later years of the forecast period, it is imperative that analysis of competing fuel prices be undertaken. The price advantage of electric heating and hot water must be demonstrated if we are to continue to accept the projected penetration rates.

4. EUA has not provided an adequate explanation for its assumption that new electric heating customers will consume the same average amount of energy as do present heating customers. The System's claim that present electrically heated homes are as energy efficient as will be new houses has not been demonstrated in evidence and cannot serve as a basis for failing to reduce the energy consumption projections for new, more efficient residences.

5. EUA has not applied appliance efficiency standards to its calculations of replacements of old appliances. This oversight should be corrected.

6. EUA has not disaggregated its housing stock by type of residence, and it has projected energy use for all types of housing from average values for single family electrically heated homes alone. Consequently, its average use values for heating, hot water, and cooling may overstate the actual values for some types of housing such as apartments, row houses, or three family homes. Housing stock should be disaggregated as customer data becomes available.

7. EUA has not provided sound theoretical or empirical bases for its commercial and industrial sector forecasts. These forecasts are deficient in concept, definition, and commitment of resources. There has been no real effort to identify and define indicators or variables which may explain the actual relation between residential growth and commercial expansion or which may account for industrial activity.

We recognize the difficulty and cost associated with attempts to forecast these sectors for small service areas, and we are not proposing an expensive effort which might fail for lack of sufficient data. At the same time, we expect the System to pursue conceptual approaches, data collection, and analysis of the commercial and industrial classes

with the same vigor and commitment which it has devoted to the residential sector. We urge the System to work with our Staff in this regard.

We note that EUA's survey approach to forecasting major industrial requirements is an acceptable technique for a utility of its size. However, the present questionnaire is too limited in substance and lacks detailed, quantified inquiry into expansion, relocation, conservation, fuel switching, operating efficiencies, and the like. A more comprehensive questionnaire will enhance the forecast value of the survey approach.

8. EUA has not employed the standard demographic technique of predicting household numbers from age specific population projections. The System should determine the extent to which these projections are available for its service area. If age specific projections are available, household numbers for the 1980 forecast should be developed from these.

9. Finally, EUA has not discounted the possibility that consumption and peak requirements for its wholesale customers are being "double counted." The Town of Middleborough, for example, is included in both the EUA forecast and in the forecast filed by the Massachusetts Municipal Wholesale Electric Company. See EFSC Docket No. 78-1.

The System must demonstrate that double counting of wholesale customers has been affirmatively avoided in its subsequent forecast filings.

ORDER

The Eastern Utilities Associates System is directed to respond affirmatively in its next supplemental forecast to the limitations cited above which involve base use disparity, unforseen appliances, consumption rates for new heating customers, efficiency standards for appliance replacements, and double counting of wholesale customers.

The System is directed also to report to the Siting Council, as part of its next supplemental forecast, on the availability of age specific population projections and on its effort to disaggregate housing stock.

The System is directed also to report to the Siting Council in its next supplemental forecast on the development of a more rigorous and comprehensive approach to commercial and industrial sector forecasting.

Finally, the System is directed to present a fuels price analysis to the Council on or before 1 June 1979. This analysis should consider the price impacts of alternative fuels on the penetration rates of electric heat

and hot water.

The System is urged to meet with the Council's Staff for assistance in framing its responses to this Order.

EDWARD J. DAILEY
Hearings Officer
Dated: 29 December 1978

This decision was approved by a majority of those members present and qualified to vote at the meeting of 21 February 1979.

JOSEPH S. FITZPATRICK
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

EFSC No. 78-24

In the Matter of	)	
The Massachusetts Electric Company	)	DECISION
et al	)	

The New England Power Company proposes to construct two overhead 115 kV transmission circuits from its Meadowbrook substation No. 16 in Chelmsford to its North Chelmsford substation No. 2, a distance of 4.1 miles. These circuits will replace two existing 23 kV circuits which will be removed. The new circuits are to be placed in service in 1980 and will be constructed at a cost of $907,000, based on 1978 figures ($1,067,000 in 1980 dollars).

After Staff review, an adjudicatory hearing was held on 11 January 1979 to consider the company's proposal. Need for the new circuits is premised upon the fact that the existing 23 kV circuits have experienced overloads of their normal operating ratings during the summer of 1978. See company exhibit NEES-2. As load growth continues, these overloads will lead to transmission failures within

two to four years. Consequently, the substantially increased capacity of the new circuits is required.

Environmental impacts associated with the 115 kV circuits will be minimal and acceptable since the facilities will be constructed within an existing right of way. The company has agreed to minimize visual impact associated with the circuit by employment of natural screening and by long spanning of the Middlesex Canal, a national historic site. The company has also agreed to the prohibition against use of the herbicide 245 T pending completion of review of its use by the United States Environmental Protection Agency.

The Energy Facilities Siting Council approves the company's proposal as submitted and specifically finds that the 115 kV circuits are required "to assure immediate, reliable service for the protection of the public." See the Council's Decision and Order in 2 DOMSC 156 (1978).

EDWARD J. DAILEY
Hearings Officer
Dated: 15 February 1979

This decision was unanimously approved by all present and voting in the affirmative at the Siting Council meeting of 7 February 1979.

JOSEPH S. FITZPATRICK
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

In the Matter of Boston Edison Company Proposed Walpole to Needham 345 kV Transmission Line	)	EFSC Docket No. 76-12; 77-12

DECISION: IN-SERVICE DATE

The Massachusetts Energy Facilities Siting Council APPROVES an in-service date of as soon as possible for the proposed Boston Edison Company (BECo) Walpole to Needham 345 kV transmission line for reasons set out below. The site of this line is to be the route discussed and approved by the Council in its earlier decision on this line. See Section III of 3 DOMSC ____ (12/6/78).

I. HISTORY OF THE PROCEEDING

As the parties to this case are aware, the history of this line and the proceedings thereon date back to BECo's Long Range Forecast of April 30, 1976 when the line was first proposed. The relevant course of events in this case up to last December is adequately chronicled in the earlier Walpole to Needham line decision and rather than be repeated, is now incorporated by reference herein. See Section I of 3 DOMSC ____ (12/6/78). We

can begin the present decision with a narrative of relevant events since the decision of December 6, 1978.

The Council in that earlier decision approved the general need, site and construction mode for the Walpole to Needham 345 kV transmission line subject to the condition that an in-service date for the line would not be approved until completion of a review of BECo's annual supplement which was filed on April 2, 1979.

On December 13, 1978, BECo filed a Petition for Rehearing and Reconsideration of the decision and argued again that there was an "immediate need" for permitting the start of construction of the line to meet system reliability requirements and to alleviate overload conditions on its system in the metropolitan Boston area. The Council in a Memorandum and Order dated December 28, 1978 denied the petition. However, the Council, cognizant of its statutory duty concerning a necessary energy supply for the Commonwealth, M.G.L. c. 164, §69H, indicated that Boston Edison could present to the Council:

> indicia of substantially changed circumstances which might require some modification of the decision at hand.... (Memorandum and Order, page 5).

On May 2, 1979, after filing its Annual Supplement 1-C, BECo filed with the Council a Motion for Separate Hearing and Approval of Forecast in Part, again requesting approval of the Walpole to Needham 345 kV Transmission Line, and stated:

> The Company urges approval of the facility's in-service date aside from consideration of the

> aggregate growth in consumption or demand in order to satisfy appropriate standards of operating reliability necessary for the metropolitan Boston area service territory. The Company is of the opinion that the consequences of a failure of the electrical system serving the metropolitan Boston area, from insufficient or inadequate transmission facilities to the area, could have a devastating impact on the safety and welfare of the Public. The metropolitan Boston area's crucial electrical needs if jeopardized, with damage to underground equipment occurring, would create a presently avoidable threat of repair delays, injury to public safety, and area economic loss which could be extensive. For these reasons, a delay of review of the in-service date of the Walpole-Needham 345 kV Transmission Line by the Council until after Annual Supplement 1-C is considered and approved would result in costly delays in the commencement of construction of this Line and such delays would impose unnecessary economic penalties upon the Company and its customers.

The Town of Dover opposed the Company's motion.

On May 21, 1979, the Siting Council issued a Memorandum and Order which allowed the Company's motion and established the hearing schedule. In its order the Council stated:

> ...we disagree that circumstances since December have not substantially changed to the extent that another opportunity should not be afforded the Company to show that the line is essential to BECo's operating flexibility and system reliability. Recent conditions such as the headline-making Back Bay blackout and the claim of a shortfall of fuel oil for urban generation leave us with a feeling a necessary power supply for this urban portion of the Commonwealth may need some help, perhaps in the form of this line. (Memorandum and Order, page 2. See also 44 Fed. Reg. No. 150 at 45437: DOE/ERA Investigation into Electric Power Outages in Boston, Mass.).

Boston Edison Company prefiled the testimony of its witness, Mr. Andrew F. Corry, on June 5, 1979. On June 14, 1979 the Staff requested the assessment of an independent planning expert, Mr. John Casazza, of Random and Casazza, Washington, D.C. to ascertain whether quantitative analyses could be brought to bear on the company's

assertion of need. Subsequently, Mr. Casazza was retained to assist the Staff in the analysis of the remaining issues in this case.

On June 29, 1979, the Siting Council (over the objection of the Town of Dover) conducted a conference pursuant to EFSC Rule 15.8 at which time the Siting Council's consultant, Mr. Casazza, detailed for the parties the specific questions he had for BECo in order to obtain certain quantitative information needed for Staff analysis. The Company furnished the requested information on July 20, 1979 (Ex. HO-2) and July 25, 1979 (Ex. HO-3). Mr. Casazza forwarded an analysis to the Siting Council on July 27, 1979 (Ex. HO-4).

On July 31, 1979, a public hearing was held. The BECo presented its direct case through two witnesses: Andrew F. Corry, Senior Vice President and Gregory R. Sullivan, Senior Engineer in the Planning Division of the Engineering, Planning and Research Department. The intervenor Town of Dover offered no witnesses, but extensively questioned both company witnesses.

II. ISSUE PRESENTED

What remains to be done by the Council in this matter is to determine an in-service date for this line. The issue here is whether or not such a determination can be made now on the basis of presently existing circumstances and the status of the operating reliability and flexibility of BECo's transmission system. Council approval of an in-service date on that basis is actually determined by when the line begins to become a useful and needed component of BECo's electric supply system.

As discussed in detail on the following pages, the Council finds that the Walpole to Needham 345 kV transmission line becomes such a useful component as soon as it goes in-service. Thus, the Council approves an "as soon as possible" in-service date. In so doing, the Council is also mindful of the company's position that the line cannot practically be in-service until 1985. Tr. 184 et seq. [7/31/79]; EX. BE-500. This reiterates earlier testimony at past hearings in this case of a 67 month timetable from approval to completed construction. See EX. BE-200 and BE-201.

Since the Council, in resolving the issue before it today, finds that the Walpole to Needham line will be of immediate use to the BECo system once in-service, it hopes that its "as soon as possible" date will encourage expedition in the regulatory and construction progress of the line.

In arriving at its decision, the Council considered three factors: BECo system reliability, its operational flexibility and fuel availability. These considerations are detailed in the following paragraphs.

III. SYSTEM RELIABILITY

A. The Premise

As a basic premise for its system planning, the company asserts that a higher level of reliability is called for in the supply of power to urban areas with the resulting application to those areas of higher, more stringent standards for such reliability.

Tr. 10-16; 17 [7/31/79]; EX. BE-500 [Q/A. 10]. While the NEPOOL reliability standards are designed to maintain the overall bulk power supply system, those standards recognize that "...more rigid objectives may be applied in some segments of the pool because of local considerations." Cf. EX. HO-2 [Q/A. 1].

In its testimony, the company presented several reasons for requiring more stringent reliability criteria for Metropolitan Boston. First, the consequences of a power outage in such an urban area are more severe than in other areas given the extent to which a number of public health and safety systems rely on a continuous supply of power. EX. BE-500 [Q/A. 8]. Second, the restoration of power after disruption is a difficult process. Tr. 15, 162 [7/31/79]. Third, the NEPOOL general maintenance schedule has resulted in several instances where 600 MW plus of BECo's capacity has been out during the company's summer peak period. EX. HO-2 [Q/A. 2]. Finally, the use of more stringent criteria is in line with the practices used by companies serving other major metropolitan areas. Tr. 161, 174 [7/31/79].

The Town of Dover took no issue with the company's basic premise calling for more stringent reliability standards for the supply of power to an urban area such as Boston.

The Council, by dint of its responsibility to provide a necessary energy supply for the Commonwealth, M.G.L. 164, §69H, is concerned with the question of sufficient system reliability. The company has emphasized the importance of a high level of

reliability for urban areas, and the Council finds merit to this argument based on the information provided herein by the company.

B. The Higher Level

Assuming the validity of the premise discussed above, the next step is to establish what level of reliability is appropriate for planning the supply of power to an urban area. It is on this point that the Town of Dover takes issue with the company. Although it makes no argument or case against a higher level of reliability for the Boston area, the Town questions the contingencies used in the company's analyses to express its more stringent reliability criteria.

To represent the more stringent reliability criteria, BECo provides in its planning for one contingency beyond that called for in the NEPOOL standards. Cf. EX HO-2 [Q/A. 1]. By so doing, the company allows for the loss of two major system components during a time of peak load in addition to the unavailability of 600 MW of capacity due to scheduled maintenance or other operational considerations. This 600 MW is equivalent to the largest BECo unit or a combination of other units on partial or full scheduled maintenance. (The occurence of such a loss of capacity was described during the hearing as a triple contingency or triple unavailability. Tr. 27-31; 94-95; 170-174 [7/31/79].) The company's limited control of NEPOOL maintenance scheduling, Tr. 39 et. seq. [7/31/79], and the fact that this level (600 MW)

of maintenance has occurred during BECO's summer peak, Tr. 99 [7/31/79], indicates that the company must plan for such an event.

Thus, the company has argued that a triple unavailability criterion should be the higher standard of reliability assumed in its system planning for the Metropolitan Boston Area; the Town disputes this standard. The question facing the Council is to what extent should the criteria for urban power planning be more stringent, i.e., how high a standard of reliability in this case should we accept?

The Council accepts the company's standard of reliability for urban areas and finds it appropriate in this case; we believe it is warranted to rely on the company's experience and judgment in this matter as it is not "plainly unreasonable". See Wannacomet Water Co. v. DPU, 346 Mass. 453, 457, (1963). Nevertheless, the Council has observed a lack of an explanation of NEPOOL's rationale for scheduling large amounts of maintenance on BECo units during the summer months, given that BECo's system is a summer peaking one. While this does not affect the appropriateness of the company's reliability standards in this case, the Council asks the company to use the above observation to continue to develop its reliability criteria by including a more detailed discussion of NEPOOL maintenance procedures. In this way, the current state-of-the-art in a company's setting of reliability standards, especially when part of a power pool, can be more

easily reviewed and understood.

IV. THE ILLUSTRATION: LOAD FLOW ANALYSIS

In response to a Council information request, EX. HO-1, BECo provided a series of load flow analysis runs which illustrate the worst contingency cases for which provision must be made under the BECo planning criteria. These load flows were run at load levels representative of existing system conditions, both peak and off-peak, and showed those conditions as they would be with and without the Walpole to Needham transmission line. EX. HO-2 [Q/A. 2].

The company argues that these load flow cases demonstrate the need for this line under present system conditions. As stated by witness Andrew F. Corry, BECo Senior Vice-President, "...[A]s soon as the Walpole to Needham 345 kV line goes into service, it goes to work. All our load flows show that it goes to work immediately and goes to work pretty hard, right away." Tr. 25 [7/31/79].

The Town of Dover disputes the company's assessment of the load flow results for several reasons. First, the company ran several load flows using the projected 1979 summer peak loads which are 3% higher than any loads actually experienced at present. Tr. 53 [7/31/79]. Dover argues that with a 3% reduction in load, all the load flow runs show that the system is not overloaded. Second, the Town points out that the load flows were run without considering the planned reconductoring of the

Framingham to Speen Street 115 kV line to be done in 1981, which will increase that line's summer emergency rating from 168 MVA to approximately 240 MVA. Tr. 103 [7/31/79]. Third, Dover questions the practice of not dispatching gas jets at New Boston and Mystic stations to relieve transmission overloads and provide voltage support. Tr. 71 [7/31/79].

Although all of the load flow analyses presented do not show overloads, they do show a system that is stressed to its limit for several sets of conditions. Those runs performed at the projected 1979 summer peak (3% greater than the historic peak) show some overloads and unacceptable voltage reductions. Those runs performed at 96% of the projected 1979 summer peak (99% of historic peak) show the system to be fully loaded with voltages below normal values. At 85% of the projected 1979 summer peak, (88% of historic peak) which occurs 100-200 hours per year, the system is heavily loaded and voltages fall below 100%. When these load flow runs are repeated with the proposed 345 kV line in service, all voltages are at normal values, no overloads appear and that 345 kV line carries 350-450 MVA in addition to the 150-190 MVA carried by the existing 115 kV line. This indicates substantial use of the new line under a variety of existing conditions. It is to be noted that for purposes of its decision here, the Council's consideration of these analyses is limited to those which evaluate load flows under historic rather than projected load conditions.

The points raised by the Town of Dover, though technically correct, would not substantially alter the results indicated in the load flows. The addition of 70 MVA to the emergency summer rating of the Framingham to Speen Street line would not relieve the Walpole-Needham right of way of 200-300 MVA shown in those runs with the 345 kV line in service. The use of the historic peak rather than the projected 1979 peak would reduce the loads by 3% in the projected peak load runs and would bring the overloaded lines within their capacity. However, this would not restore voltages to normal values and the system would still be heavily loaded. Dover's argument that all gas jets should be dispatched prior to load shedding or brown-outs is made without consideration of the company's assertion that some of these units have a very short design life and are in place for the purpose of emergency power supply to the major generating units for start-up after a blackout and for other non-load related conditions. Tr. 71 [7/31/79]. The Council sees no reason to discount the company's operational considerations on this point. The load flows presented show that the BECo system is heavily loaded under the postulated emergency conditions during existing (historic) peak and shoulder load conditions. The load flows also show significant flows on the proposed 345 kV Walpole to Needham line under these same conditions when it is in service. The Council finds that these results indicate that the installation of the Walpole to Needham line would alleviate the stress situations,

and would make the system clearly adequate to perform under the postulated emergency conditions. Thus would the reliability of the bulk power supply system of Metropolitan Boston be improved.

V. OPERATIONAL FLEXIBILITY

Another factor advanced by the company is support of the immediate need of the proposed line is the need for improved operational flexibility. The company is concerned that the degree of flexibility in the system is limited and should be increased. EX. BE-500. Two recent blackouts in the Boston area are cited as examples of instances where the flexibility was limited. Tr. 12, 14 [7/31/79].

Dover argues that operational flexibility is not a supporting factor since BECo has noted only one instance of uneconomic dispatch in the past ten years. Cf. Dover Brief at p. 15 [8/8/79]. While uneconomic dispatch may indeed be an infrequent event, it is not necessarily the only form of operational flexibility. The load flows performed at 85-90% of peak load show the system to be heavily stressed. This load level occurs some 100-200 hours per year and indicates that there are many days during the year when the flexibility for maintenance of system components is limited. Tr. 164-170 [7/31/79]. The Council finds that the company's concern for operational flexibility is a legitimate one because system reliability is impacted. Thus, while not an independent basis for the immediate need for the line, it is an

appropriate consideration in this case.

VI. FUEL OIL UNAVAILABILITY

Another factor which BECo has put forth in this case is the potential for fuel oil unavailability. The company has stated that the recent oil supply situation has increased the uncertainty of the fuel oil supply to their generators. EX. BE-500 [Q/A. 12]. Specifically, the company has been informed by its fuel oil supplier that it can no longer guarantee 50% of the fuel for the New Boston Generating Station. Tr. 14 [7/31/79]. The company argues that this increases the likelihood of partial or full cutbacks of inner-city generation and speculates that the condition will only be worse in future years.

The Town of Dover contends that uncertainty in the oil supply situation is no reason to build the line. Dover argues that this oil supply uncertainty is generic to New England, not specific to Boston, and that more transmission will not alleviate the problem. In addition, Dover points out that a supply of oil in storage is available to BECo and that the lead time needed for the line's construction would obviate its effect on the current shortfall.

The Council recognizes that the oil supply uncertainty alone does not establish the need for the proposed line. However, the fuel situation does underline the point that additional system flexibility is desirable to provide an adequate electrical supply

for Metropolitan Boston. An important consideration here is that all significant generation in downtown Boston is oil fired, leaving that area particularly sensitive to the oil supply uncertainty. Based on the continuing pessimistic nation-wide reports concerning oil supply, it is not unreasonable to consider that the situation may worsen over time.

The Council believes that the oil supply uncertainty is a factor which must be considered in the evaluation of this line or any consideration of system reliability. The line cannot guarantee Boston's electric supply during an oil supply problem but it would provide some additional ability to deal with shortage situations which would be caused by reduced generating capability in the Boston area. Given the distribution of non-oil-fired generation, additional transmission capability is particularly helpful to the Metropolitan Boston area. Again, while this factor is not an independent basis for the immediate need for the line, it is an appropriate consideration here.

VII. EX PARTE COMMUNICATIONS

In its brief (filed 8/3, corrected 8/8), the Town of Dover suggests that an "off-the-record" conversation between the Council's consultant, John A. Casazza and BECo personnel constitutes an ex parte communication and may be reversible error. Dover Brief at p. 2. The Council disagrees.

First, reference must be made to the Hearings Officer's

Memorandum and Order dated July 11, 1979 which set out the rationale for retaining the services of Mr. Casazza; that rationale is reiterated by reference now. The "off-the-record" conversation also became a part of the record as EX. HO-3. The Town does not allege that Mr. Sullivan's written summary (EX. HO-3) of his conversation with Mr. Casazza is not complete, accurate, or true; its only objection is the manner in which the information described in EX. HO-3 was exchanged.

This does not comprise the reversible error of ex parte communications described in the cases cited by Dover. Sangamon Valley Television Corp. v. United States, 269 F. 2d 221 (D.C. Cir. 1959); Home Box Office Inc. v. FCC, 567 F. 2d 9 (D.C. Cir. 1977). In Sangamon Valley, the fatal ex parte communications were both oral and written private approaches to FCC members which did not go into the public record. 269 F. 2d, at 223-224. In Home Box Office, the same court spoke of "undue industry influence over Commission proceedings" and "secret" communications undisclosed by the agency. 567 F. 2d, at 53, 54. In the case before the Council, there have been no private approaches made to Council staff or members, no "secret" communications not disclosed by this agency, and no undue industry influence involved. Certainly, the complaint of the Town does not raise the issue of ex parte communications described as an evil by the cases cited in its brief.

The Town also complains that it was not afforded the

opportunity "to educate Mr. Casazza concerning the relevant considerations which should underlie any assessment" of the proposed line. Dover Brief at p. 3. As far as the record reflects, no such opportunity was denied the Town; indeed no such opportunity was requested by the Town.

In any event, the Town's remedy for these alleged defects in the procedures herein is to strike Mr. Casazza's analysis (EX. HO-4) from the record as "tainted". Dover Brief at p. 4. The Council feels this is unnecessary but does assure the Town that it has not accepted Mr. Casazza's report, however characterized, "as a substitute for the applicant's burden of proof". Id.

VIII. SUMMARY AND ORDER

Based on the above considerations, the Council approves the in-service date for the proposed line as soon as possible. A review of BECo's load flow assessment shows that its system is heavily stressed furing the postulated emergencies under existing peak and shoulder load conditions. While it can be argued that the system had not yet failed under these conditions, it is apparent to the Council that these conditions bring the system to unacceptable levels of reliability. With the additional considerations of an uncertain fuel supply and operational flexibility, the Council finds that it is a prudent exercise of its discretion to approve the immediate installation of the line. It is again noted that this decision is premised

on the Council's acceptance of the more stringent reliability criteria for the Boston urban areas as presented by the company. This acceptance was given here while recognizing that appropriate reliability criteria for urban areas is an issue still to be studied in the industry and out, and about which there is much controversy. The Council again recommends that the company continue its study of this higher standard of reliability and keep the Council informed.

Therefore, it is ORDERED that an immediate in-service date be APPROVED for the proposed Walpole to Needham 345 kV transmission line in accordance with this decision and with the provisions of paragraphs 1, 3, 4, 5 and 6 as set out in the final two pages of the Council's earlier decision on this line. 3 DOMSC _____ (December 6, 1978).

Energy Facilities Siting Council

By: Dennis J. LaCroix
Dennis J. LaCroix, Esq.
Hearings Officer

This decision was approved by a vote of 6-0 with one abstention by those members present at the Energy Facilities Siting Council meeting of September 18, 1979.

Joseph S. Fitzpatrick
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

In the Matter of the Petition of the Middleborough Gas and Electric Department for Approval of a Transmission Line Extension from Middleborough to Bridgewater	)	EFSC No. 79-32

3 DOMSC _____ (18 September, 1979)

DECISION AND ORDER

THE PROCEEDING

On March 21, 1979, the Middleborough Gas and Electric Company, through its counsel, Nathan S. Paven, Esq., filed a petition for approval of an extension of a transmission line from Middleborough to Bridgewater as more fully described below. Although the company is a member of the Massachusetts Municipal Wholesale Electric Company (MMWEC), it chose to file a separate petition for the line outside of the Council proceedings on the MMWEC forecast supplement (EFSC No. 79-1). This choice was based on a determination that MMWEC workload and staffing would not permit MMWEC to devote adequate attention to obtaining Council approval expeditiously. It was also felt that a review of the proposed line would be uncomplicated since the Council had already looked at and approved a portion of this line for Eastern Utilities Associates System (EUA) in 1 DOMSC 312 (June 15, 1977). The Middleborough portion is a 9,000 foot extension of that line to be constructed by the company. Thus, in the interest of expedition, this separate filing was made.

Notice of an adjudicatory hearing on this line was published on July 26, August 2 and August 9, 1979 in the Middleborough Gazette and was posted in the Middleborough Town Hall. The notice was also sent by certified mail with return receipts requested to all abutters of the proposed extension, to the Middleborough Board of Selectmen and to the Middleborough Conservation Commission. The return receipts are on file in the docket.

A hearing was held at Council offices on August 13, 1979; there were no requests for intervention pursuant to EFSC Rule 15.2 nor participation pursuant to EFSC Rule 15.3.

THE PROPOSED FACILITY

The proposed Middleborough line extension under review is part of a 6.2 mile 115 kV transmission line to be constructed by the company and EUA. The line would connect EUA's Bridgewater substation with an existing 115 kV line running between EUA's Mill Street substation and Middleborough's Wareham Street substation. The EUA portion of the line, approximately 4.4 miles between the Bridgewater substation and a point near Titticut Street in Bridgewater, received Council approval in 1 DOMSC 312, 316-318 (June 15, 1977). The remaining 9,000 feet, from Titticut Street to the line's connection with the existing 115 kV line at Summer Street in Middleborough is to be built by the petitioner and is the subject of this decision.

The proposed Middleborough extension is to be constructed parallel to two 345 kV lines within an existing right of way presently occupied by the New England Gas and Electric Association (NEGEA). See EX. M-4: Line Map. The proposal requires widening this right of way by 20 feet and the installation of wood poles. See EX. M-3, para. 1 and 2. The in-service date for this proposed extension from the Middleborough/Bridgewater line to the Summer Street tap is April 1, 1980. The estimated cost for acquisition and construction is $200,000.00 and is based on the petitioner's and neighboring utilities' experience with similar facilities. See EX. M-1, p. 3.

NEED FOR THE PROPOSED FACILITY

The entire Bridgewater to Middleborough line is proposed to increase the reliability of both the EUA and Middleborough systems. The surrounding service areas are presently served by a single radial feed 115 kV line. This radial feed line taps off EUA's main Somerset feeder in West Bridgewater and proceeds to EUA's East Bridgewater substation, EUA's Mill Street substation and ends at Middleborough's Wareham Street substation. The EUA system need for its portion of the line, as stated in 1 DOMSC 312, 316-318, is based on establishing a backup supply to the two EUA substations mentioned above.

Middleborough argues that the proposed line is needed to reduce the risk of rolling blackouts and overloads on the 13.8 kV supply system in the event that the radial-feed 115 kV supply fails or is out on maintenance. See EX. M-1, p. 2; EX. M-3, para. 6. That 115 kV line from Mill St. substation to the Wareham St. substation is the only 115 kV supply to the Middleborough system.

The town contends that its only existing back-up line, a 13.8 kV line used during maintenance, is overloaded at minimum load hours and further that the use of this back-up line during a normal day requires rolling blackouts to sustain service. Any present loss of the existing 115 kV line at a point between the Somerset tap and the proposed connection point would now give rise to the system problem just described.

The proposed line extension would reduce the risk of losing the Town's 115 kV supply by significantly reducing the amount of the 115 kV supply considered radial feed.

With the proposed line in service, the loss of service in Middleborough would be averted.

The Council agrees with the company that its inability to deal with such a single contingency is an unacceptable risk for the Town of Middleborough and indicates the lack of needed system reliability. The Council finds that the construction of the proposed line extension would significantly reduce that risk and would improve Middleborough's system reliability.

SITE OF THE LINE

As noted earlier, Middleborough proposed to construct the line extension on its own woodpoles adjacent to two existing 345 kV lines with the NEGEA right of way. Alternatives to this proposal would be more costly in terms of rental, future installation and maintenance payments. See EX. M-1, p. 1-2; EX M-3, para. 1.

The construction of the Middleborough extension will also require a 20-foot widening of the existing right of way. In this section of the right of way, the Nemasket River meanders in and out several times. The Council has advised the petitioner that while constructing and in maintaining the line, all due care and caution with respect to the Nemasket River and its possible recreational uses should be employed, as consistent with the Local Conservation Commission's orders. See EX. M-5.

CONCLUSION

Thus, the Council approves the construction of the Middleborough to Bridgewater 115 kV transmission line extension to be sited as proposed above for an in-service date of April, 1980 at an estimated cost of $200,000.00. The Council finds that the company's proposal will satisfy the need discussed above with the least environmental impact and at the least possible cost based on presently available information.

It should be noted that approval by the Council of a facility at the preliminary licensing stage should not be construed as a binding determination upon a rate-setting agency as to whether the ultimate costs incurred by a company for the facility are reasonable or are to be allowed for rate-setting purposes. The Council also recognizes that there may be circumstances whereby escalation of the cost of a facility could cause a company to delay or re-evaluate the need for construction. The Council will

expect companies to inform it of all such changes through Supplemental Forecasts and to inform the Council of the ultimate cost of each approved facility so that the Council may be aided through such experience in evaluating cost proposals.

Finally, the Council requires that the company not use the herbicide 2-4-5 T in maintaining the right of way of the approved line. The Council bases this condition regarding the use of 2-4-5 T on its current status with the Environmental Protection Agency. 2-4-5 T is under a notice of cancellation from the EPA because of its mutagenic effect on human fetuses. Its use is prohibited pending completion of and findings from these EPA cancellation proceedings.

Energy Facilities Siting Council

By: Dennis J. LaCroix
Dennis J. LaCroix, Esq.
Hearings Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 18 September, 1979.

Joseph S. Fitzpatrick
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

In the Matter of A Petition For Approval Of A Joint Long Range Supply Forecast And Various Transmission Facilities for New England Electric System (NEES)	)	EFSC No. 76-24

AMENDMENT TO FINAL DECISION

This amendment concerns that part of the final decision in the above entitled matter which pertains to the Massachusetts Electric Company's (MEC) 115 KV transmission line and substation already approved in the Council's deliberations in said matter. 2 DOMSC 1, 12 - 13 (June 15, 1977). The line will run from the Pleasant Street substation in Lee, Massachusetts to the Risingdale substation in Great Barrington, Massachusetts and includes a 1.1 mile segment that was originally to be owned by Western Massachusetts Electric Company (WMEC), a part of the Northeast Utilities (NU) system. It is that 1.1 mile segment that is the subject of this amendment.

When originally proposed, this segment was going to be the responsibility of WMEC and thus evidence concerning the design location and cost thereof was submitted by NU in the course of hearings on its forecast in November, 1976. It was understood, however, that this line would not serve any WMEC load but was being built for MEC supply purposes. Cf. NU Long Range Forecast (1976 - 1985) at pp. 314 and 318 and prepared testimony of L. E. Mentor at p. 3 in EFSC No. 76-17.

In its decision on this and other NU facility proposals, the Council allowed NU to proceed with this segment. 1 DOMSC 227 (June 15, 1977). As already stated, the Council had approved the larger (8.3 miles) portion of this line in EFSC No. 76-24. 2 DOMSC 1, 12 - 13.

It now appears that MEC has agreed to construct the entire 9.4 miles of the Pleasant Street to Risingdale 115 KV line, thereby relieving NU/WMEC of its responsibility for the 1.1 segment. MEC has asked that the Council amend its earlier approval of this line so that it reflects that MEC is permitted to build and own the complete line. Since this 1.1 mile segment is an essential part of the line approved earlier (2 DOMSC, at 12 - 13), logic dictates that the Council amend that approval as requested.

Therefore, it is now ORDERED that the June 15, 1977 decision of the Council with respect to the Pleasant Street to Risingdale 115 KV transmission line be, and hereby is, AMENDED to include approval for the construction of a 1.1 mile segment thereof (Pleasant Street, Lee to Fairview Street, Lee) by Massachusetts Electric Company. This company now has EFSC approval to construct the entire 9.4 miles of the line approved as needed by the company in 2 DOMSC, at 12 - 13; the conditions concerning this line set out at p. 13 of that decision are still applicable.

Energy Facilities Siting Council

by Dennis J. LaCroix, Esq.
Chief Counsel

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of October 22, 1979.

Joseph S. Fitzpatrick
Chairman

In making these findings, the hearings officer has distinguished the various individual petitioners according to the following categories: customer, user, resident. He found these distinctions helpful in this matter in determining whether an individual was "substantially and specifically affected by this proceeding." G.L. c. 30A,§10(4).

For purposes of this decision, it is important to note that a BECo. "customer" is one whose name appears on the bills for services sent out by the company. The BECo. customer has literally signed up for electric service from the company; that signature memorializes a bilateral agreement that BECo. will provide and the customer will pay for that electric service. In effect, the customer and the company are obligated to each other and are responsible for fulfilling their obligations.

With one whose name does not appear on a monthly bill from the company, there exists no such obligation. Such a person is simply a "user" of electric service. The obligation of that person to pay goes not to the company, but to another indivudual whose name does appear on the bill. The important factor here is the relationship each person, customer or user, has to the company and the attendant responsibilities of that relationship.

For example, in the matter at hand, petitioner Breneman's name is said to appear on a monthly BECo. bill; petitioner Albert is said to pay a portion of such a bill which is not in his name. Let us suppose, for the sake

of illustration, that Ms. Albert is Mr. Breneman's roommate and pays a portion of the bill that is in Mr. Breneman's name. The company knows only that it can look to Mr. Breneman for payment for the electric services rendered; it knows nothing of the payment arrangements between the roommates. Should Ms. Albert not pay her share of the monthly bill, it is a matter to be straightened out between Ms. Albert and Mr. Breneman; Mr. Breneman is still obligated to the company in the amount of the monthly bill. In this sense, Mr. Breneman, the customer, has a direct relationship and responsibility to the company whereas Ms. Albert, as merely a user, has no such relationship or responsibility.

Thus, Paul Breneman, Lucille Raimondo and Jenny Silverman are customers of BECo., with all the rights and obligations that relationship implies. Since their names appear on monthly BECo. bills, they can be said to have tangibly assumed the responsibilities of that relationship.

As customers, these three individuals are substantially and specifically affected by the instant proceeding on the BECo. annual supplement. In the present case, their interest is basically economic and is affected by the BECo. figures and projections of supply and demand as contained in the supplement. What BECo. customers pay for electric service now and in the future will be affected by these figures and projections; to say that customers do not have a substantial and specific interest in that cost is illogical. Given that logic and the direct relationship of the customer to the company, the three customers

of BECo. named in the petition (Breneman, Raimondo, Silverman) should be, and are, allowed to intervene herein.

That logic and direct relationship does not extend to a user of BECo. electric service as discussed above for purposes of intervention. In this case, Ms. Albert and Mr. Slesinger have no tangible, direct relationship to the company. While it is true they are economically affected by the cost of electric service, their economic interest is once removed; their agreement is with a BECo. customer rather that the company itself. That customer to whom they pay a share of the electric bill is the appropriate party in interest. Thus, Ms. Albert and Mr. Slesinger cannot be allowed to intervene in this proceeding.

The third category of "resident" helps neither the customer nor the user in achieving standing. Were there any construction activity being considered in this proceeding, residence within the BECo. service area may have some bearing on standing as a party, as a resident could show some substantial and specific interest of an environmental nature arising out of a proposed facility. However in this case, simply being a resident of the BECo. service area is not enough for standing to intervene; the pivotal distinction here is between customer and user.

Finally, the hearings officer's finding that Boston Clamshell is an unincorporated association was a fact agreed to by the individual petitioners and thus is uncontroverted.

III. Legal Principles

In conducting its adjudicatory proceedings, the Council is mandated "to afford all parties an opportunity for a full and fair hearing." G.L. c. 30A, § 10. The threshold question which has arisen in this case goes to a determination of standing as a party. Section 1(3) of G.L. c. 30A defines "party" to an adjudicatory proceeding, a definition which is supplemented by section 10(4) of the same chapter. From this definition it can be seen that an agency such as the Council is vested with a certain discretion as to whom it will allow to intervene in its proceedings. As the company states, however, this discretion is not unlimited. See Newton v. Department of Public Utilities, 339 Mass. 535, 543, fn. 1 (1959). A guideline for the exercise of this discretion can be gleaned from the statutory sources cited above: a person seeking to intervene in agency proceedings should show that he or she may be "substantially and specifically affected by the proceeding." G.L. c. 30A, §10(4). As discussed in the previous section, the hearings officer has found in the instant case that a BECo. customer has standing to intervene under that guideline.

For the sake of an efficient and orderly administrative process, lines must be drawn as to interventions therein; to preserve such a process, "a party must meet the legal requirements necessary to confer standing."

Save The Bay, Inc. v. Department of Public Utilities, 366 Mass. 667, 672 (1975). The question of intervention and orderly process arose again in Boston Edison Company v. Department of Public Utilities, 1978 Mass. Adv. Sh. 932, 984-987 where BECo. challenged a DPU ruling which allowed two individuals to intervene in a rate case, one in a limited way, the other in an extensive way. The Supreme Judicial Court, in upholding both interventions, cautioned that such extensive participation as allowed by the DPU should be permitted "only if careful consideration discloses special circumstances in justification." Id., at 986-987. The hearings officer feels that the intervention allowed in the present proceeding does not violate that caution.

In the present proceeding, the intervenors are represented by counsel whereas the DPU intervenor mentioned above represented himself. Id., at 986. In fact, it is the presence of the intervenors' counsel in our case that convinces the hearings officer that an orderly administrative process will be maintained. He is familar with Mr. Salgo and his work from other Council proceedings and feels sure that, with Mr. Salgo as counsel, the intervening customers will be of assistance "in fully elucidating the issues," and that this intervention may serve to "expedite the case." Id., at 986.

Though it might be said that the Attorney General as intervenor represents all interested consumers pursuant to G.L. c. 12, §11E, this is certainly no obstacle to

intervention by individual BECo. customers.[1] Indeed, as was pointed out by the Assistant Attorney General working on the case at hand, his office welcomes the opportunity to benefit from any expertise available and that intervenor efforts often supplement the Attorney General's resources and efforts which, practically speaking, cannot be all inclusive nor exhaustive of possible issues. While not wishing to burden intervenors' counsel herein with the weight of Dickensian great expectations, the hearings officer will again note that, given his past performances, the intervention of his clients will aide that of the Attorney General in dealing with the issues in this case.

Finally and briefly, suffice it to say that for this case, the question of affording any status to Boston Clamshell is foreclosed herein by the fact that Boston Clamshell is an unincorporated association and by agreement at oral argument that such associations can have no standing in this proceeding. See Save The Bay, Inc. v. Department of Public Utilities, supra., at 675. The request of the intervening customers to have their participation recorded in the name of Boston Clamshell must be denied. Allowing their intervention as customers recognizes their own particular individual interest, not that of their association.

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1 A similar argument by BECo. concerning an omnibus representation by the Massachusetts Consumers Council posed no difficulty for the Supreme Judicial Court; the argument went unanswered, if not simply ignored by the high court. Boston Edison v. Department of Public Utilities, supra. at 985.

IV. Conclusion

In deciding the intervention question in this proceeding, the hearings officer has drawn distinctions between BECo. customers, users of BECo. services and residents of the BECo. service area. This was done to address the petitions to intervene in this particular matter and cannot be considered to have exhausted the categories of intervenors who may have a substantial and specific interest in such cases. Each petition must be evaluated according to the interest expressed as balanced with the need to conduct an orderly and efficacious, full and fair administrative process. See Save The Bay, Inc. v. Department of Public Utilities, supra., at 672. Such was the evaluation made in the instant case which, it is hoped, will provide some guide for the future.

Energy Facilities Siting Council

by Dennis J. LaCroix

Dennis J. LaCroix, Esq.
Hearings Officer and
Chief Counsel

Dated at Boston this 30th day of October, 1979.

In the Matter of the Groveland Electric Light Department

3 DOMSC (February 29, 1980)

Petition of the Groveland Electric Light Department for approval of the Third Annual Supplement to its Long Range Forecast

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This decision concerns the Groveland Electric Light Department's third annual supplement to its forecast submitted pursuant to M.G.L. c. 164 § 69I and Chapter G of the EFSC Regulations. The supplement was reviewed by the Council staff.

It was suggested that no adjudicatory hearing be held unless so requested by the Department or an interested party as no new facilities within Council jurisdiction were proposed by this company and no significant change from the long-range forecast was noted. The Department was so advised and was asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers.

The decision is as follows:

I. Introduction

Groveland's methodology, assumptions, demand and energy requirements, supply and conservation efforts will be discussed in this decision. The Council finds that the Department's projections in this supplement are based on reasonable statistical methods. Factors which may contribute a degree of uncertainty to these projections are noted in the discussion along with recommendations for continued review.

II. Methodology & Assumptions

The Department forecasts energy consumption and peak demand by developing judgements as to the rate at which each class's consumption will increase or decrease during the forecast period. These judgements are based on both an examination of the historical data and assumptions about local factors.

Groveland has identified the following assumptions concerning local factors: 1) a slower or flat growth in the nation's economy; 2) energy conservation by consumers; 3) reduction in system demand and overall energy requirements during 1977 and 1978; and 4) the uncertainty surrounding the completion of Groveland's sewage treatment system.

The Energy Facilities Siting Council bases its approval of forecasts on the reasonableness of the statistical methods used to make projections. Rule 62.9(2)(b). This rule is applied on a case-by-case basis. The case at hand involves a small, stable community that does not expect dramatic change from recent experience. The community has also experienced a decline in the growth rate of consumption during the post embargo period. The judgements reflect these circumstances as accurately as possible given the state of the art of forecasting. Thus, the record supports a finding that a forecast based primarily on these judgements is a reasonable statistical method in this case.

III. Demand & Energy Requirements

A. Total Requirements

Total energy output requirements (table E-8) are based on the sum of the component classes (tables E-1 through E-7). In table E-8 the Department projects an average annual growth rate of .5% in total energy output requirements during the forecast period. The average annual growth rate for the system was -.04% during the period 1974 - 78. This is a considerably lower annual growth rate than the 20.6% experienced during the 1970 - 73 period. The projected and historical data pertaining to peak growth rates, as seen in table E-11,

mirror the data for total energy output requirements in this summer peaking system. Thus, Groveland has witnessed a significant decrease in the growth of its energy requirements, since the 1973 oil embargo.

B. Residential

There are two classes of residential users: residential with electric heating (table E-1) and residential without electric heating (table E-2). While the total consumption of each residential class is important, the data on the number of customers and the average use per customer also warrants examination.

1. Residential Class with Electric Heating

The Department projects the following average annual growth rates for the residential class with electric heating during the forecast period:

1) number of customers	1.1%
2) average use per customer	0.0%
3) total consumption	1.1%

These projections are based on the assumption that electric heat will not be installed in most new homes. However, the Department informed the Council since the filing of the Third Supplement that electric heating was installed in two-thirds of the new homes built in Groveland during the 1979 fiscal year. There were no new customers in this class during 1978, however, the number of customers grew at an average annual rate of 15% during the 1974 - 1978 period. The historical data and the information concerning the number of new

homes choosing electric heating indicates that the Department's projections for this class may have underestimated the number of new electric heating customers. In the face of the uncertain relative prices and availabilities of gas, heating oil and electricity it is difficult to accurately forecast how consumers will behave when choosing a new heating system.

The Department projects no increase in the average use per electric heating customer. The average use per customer may level off or decline depending upon how new building standards, conservation measures, and the rising cost of energy combine to affect consumption.

Given the uncertainty surrounding the factors affecting projections for this class, the Council finds the Department's judgements to be reasonable.

2. Residential Class without Electric Heating

The Department projects the following average annual growth rate for the residential class without electric heating during the forecast period:

1) number of customers	0.5%
2) average use per customer	0.0%
3) total consumption	0.5%

These projections are based on judgements about consumer conservation and the historically low or negative growth rate experienced by this class. The number of customers in this class grew at a rate of .3% from

1970 - 73 and .5% from 1974 - 78. The average use per customer grew at an annual rate of 7% from 1970 - 73 and 2% from 1974 - 78. Total consumption for this class grew at a rate of 7% from 1970 - 73 and 2% from 1974 - 78. This historical data indicates that the residential class without electric heating has experienced a significant decline in growth rate during the post embargo period. Given the historical experience of this class, and the uncertainty of projecting with more accuracy, the Council finds the Department's judgements to be reasonable.

C. Commercial & Industrial

Groveland does not have an industrial rate. The commercial class includes commercial uses, municipal uses (minus street lighting and the department's internal use) and light industrial uses (i.e., less than 1000kw). The Department projects an average annual growth rate of .4% during the forecast period. The commercial class grew at an average annual rate of -5.7% during the 1974 - 78 period. On one hand, the historical data combined with any prospective conservation measures may cause further decline in this class's consumption; on the other, a decision to construct Phase III of Groveland's sewer project may spur commercial development as this phase would run through a commercially zoned area. The net impact of these conflicting forces is uncertain. The Council finds the judgements to be reasonable, and recommends that the Department monitor the effects that conservation measures and the sewer project have on this class.

D. Street Lighting & Railroad

The town of Groveland has a mixture of incandescent, mercury and high pressure sodium street lights. The sodium lamps are the most energy efficient, the mercury are next best and the incandescent are the least energy efficient. The majority of the lights are mercury. The Department projects an average annual increase of .5% in this class during the forecast period. The growth rate during the 1974 - 78 period was -.2%. While new subdivisions may require additional street lights, the Department expects any increase in consumption to be partially mitigated by the conversion of existing street lights to the more energy efficient sodium lamps. The conversion will proceed as the funds are made available. The Council finds these judgements reasonable.

The railroad class in table E-6 has been relabeled "Other" because it is comprised of private area lighting, internal use and use by public authorities other than the Town. The Department projects an average annual growth rate of 0% for this class during the forecast period. The growth rate was 11% during the 1974 - 78 period. The annual data for that period is characterized by significant fluctuations, the most recent being a -20.1% from 1977 to 1978 and an 89.1% increase from 1976 to 1977. The Department informed the Council that the latter fluctuation was caused when Groveland's second water well came on line; adding approximately 500 Mwh in 1977. The decrease from 1977 to 1978 was explained by a cut back in use by the Haverhill Water Department. The Council finds the judgements about this class to be reasonable.

E. Losses

Commencing with the 1978 supplement, the Department began to list "Losses" only in the "Losses and Internal Use" column of table E-7. This accounting change was first reflected in the 1977 historical data. Losses dropped 870 Mwh to 401 Mwh in 1977. In 1978 losses rose 691 Mwh to 1,092 Mwh. The decrease in 1977 was attributed to the accounting change. The Department was unable to explain the large increase in 1978 except to suggest that it may be the result of an anomaly in the reporting process which the company cannot explain. The Department also suggests that the figure of 1,092 Mwh, which is 6.1% of the Department's total energy requirements, is a realistic value for a system the size of Groveland.

IV. Supply

Groveland is an "all requirements customer" of the New England Power Company (table E-24). The contract is a standard "wholesale for resale" customer contract, effective September 1, 1967. Seven years notice is required for cancellation by either party.

Groveland has experienced minimal load growth since the oil embargo, see Total Requirements section above. The Department has also shown an interest in peak management devices, see Conservation section following. The community's minimal load growth and the Department's willingness to use peak management devices may reduce the variability in future demand. If the variability in future demand is reduced, a question arises as to whether the Department can cut costs by purchasing energy at a "contract demand" rate as opposed

to the present "all requirements" rate. The Council requests that the Department discuss the advantages and disadvantages of purchasing energy at a "contract demand" rate in its next filing.

V. Conservation

The Department informed the Council that it has been practicing a form of peak pricing for those customers with electric hot water and ranges (approximately 4.3% of those customers without electric heat) for the last 20 years. This is accomplished by installing meters that are capable of registering the flow of electricity for two different pricing periods. The off-peak rate is in effect from 11:00 pm through 7:00 am and the on-peak rate is in effect from 7:00 am through 11:00 pm.— The Department manager expressed concern over the continued availability of the aforementioned meters as it is becoming difficult to obtain them.

As another conservation practice, the Department installed capacitors on its lines during the second half of 1978 to improve the power factor.

The Council applauds the Department's willingness to take initiatives and will be interested in any effects these measures have on demand. The Council encourages further efforts by the Department to expand conservation through its pricing structure. Expansion may involve: adjusting the hour at which the off-peak rate takes effect, offering commercial customers a peak pricing system and offering electric heating customers a peak pricing system in order to encourage them to investigate load management devices such as off-peak storage heating. The Council requests that it be informed, in future filings, of any action that the Department takes to expand its peak pricing system.

VI. Order

The Council has reviewed Groveland's third supplement. The Council finds that the supplement is based on reasonable judgements and historical data whose accuracy has not been contested. Given the state of the art of forecasting small communities and the Department's expectation that future conditions will be similiar to the recent past, a methodology based on judgements which, to the extent possible, accurately reflect these conditions are a reasonable statistical method under Rule 62.9.

In reviewing the Groveland filing, the Council realizes that it is difficult to achieve much more accuracy from such small systems because growth therein is often uneven. A concomitant effect of this uneven growth is the generation of statistical data that results in large percentage increases or decreases from small absolute changes in the raw data.

The Council is also aware that Groveland, as a relatively small municipal department with other responsibilities, has limited resources and a small staff. Nevertheless, the Department was scrupulous in providing the Council's staff with the information needed to review this supplement and this has been most helpful. The Council makes the following requests for the next filing:

The Council requests that the Department continue to monitor the number of new homes being equipped with electric heat and the progress of the Town's sewer project. In subsequent filings, the Department should discuss how these two factors effect the formulation of the assumptions used for its projections.

The Council requests that any substantial fluctuations in the losses be more thoroughly explained in subsequent filings.

The Council requests that the Department discuss the costs and benefits of purchasing energy on a "contract demand rate" in its next filing.

The Council requests that it be informed in future filings of any action that the Department takes to expand its peak pricing system.

The Council requests two (2) copies each of each of the following documents being prepared for the Department by its consultant, Venderweil Engineering, Inc.: 1) the technical memorandum on rate design and 2) the letter on Groveland's rate revisions.

The Council requests that the Department inform it as to the availability of rates for the purchase of power from customers i.e., "Buy Back" or "Purchase Power Rates".

Finally, as the Department is without the means to and does not normally collect the information necessary to develop the load profiles required for tables E-26 through E-29, the Council grants the Department's request for a waiver of these tables.

The Council APPROVES the Groveland Electric Light Department's third supplement subject to the afore mentioned requests. The Council thanks the Department, especially Mr. Hill, and its consultants, Venderweil Engineering, Inc., for their cooperation.

Energy Facilities Siting Council

by Robert Wilmot

Robert Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 29 February, 1980.

Joseph S. Fitzpatrick
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

In the Matter of the Approval	)	
of the Taunton Municipal Lighting	)	EFSC No. 79-51
Plant Third Annual Supplement	)	

APPEARANCES: Kenneth M. Barna, Esq. and Edward A. Roster, Esq.
for the Taunton Municipal Lighting Plant

William C. Osborn, Esq. for the intervenor,
On the Corner, Inc. d/b/a Taunton Consumer
Protection Program

The Massachusetts Energy Facilities Siting Council hereby conditionally APPROVES the third annual forecast supplement submitted by the Taunton Municipal Lighting Plant ("TMLP"). The conditions attached to this approval are set out at the conclusion of this decision.

I. HISTORY OF THE PROCEEDINGS

TMLP filed its third annual supplement with the Council on April 17, 1979. Notice of Council adjudicatory proceedings on this supplement was published and posted at the hearing officer's direction and a prehearing conference was held on July 30, 1979. On August 3, 1980, the hearing officer received a petition to intervene from On The Corner, Inc. d/b/a Taunton Consumer Protection Program ("TCPP") which was essentially a petition to renew this association's earlier intervention in last year's TMLP proceedings (Cf. EFSC No. 76-51; 78-51 and

2 DOMSC 75 (September 6, 1978)). This petition was allowed.[1] On August 17, 1979, the intervenor filed a motion which requested certain changes in the schedule set herein by the hearing officer on August 2, 1979. TMLP, through its counsel, stated its objections to this request in the form of four motions which, among other matters, objected to the intervention in whole and in part. On August 27, 1979, a hearing on all motions was held at Council offices and was transcribed by a stenographer. The hearing officer issued a written Decision and Order on these motions dated August 29, 1979; TMLP's motions were denied and certain schedule changes were made which had the adjudicatory hearings beginning on October 5, 1979, after completion of discovery herein. Those changes were negated by other alterations made by agreement of counsel for TMLP and the intervenor so that hearings on the supplement finally began on October 25, 1979. These hearings took place at Council offices over the course of seven days between October 25 and November 8, 1979, and were transcribed by a stenographer[2]. The intervenor's brief was filed on January 8, 1980; TMLP's was received on February 14, 1980.

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[1] The intervenor is referred to variously throughout the record as "On The Corner, Inc.," "TCPP" and, of course, "the intervenor." For clarity's sake, let it be recorded that there was only one intervenor in this case, no matter what or how many appellations have been used in the record.

[2] Transcript references throughout this decision are by volume and page; e.g. (TRI-3) refers to volume one, page three of the transcript.

II. THE DEMAND FORECAST METHODOLOGY

The Council's conditional approval of TMLP's demand forecasting methodology this year should not obscure the efforts made by this company since last year's review. Cf. 2 DOMSC 75 (September 6, 1978). Last year the focus of the conditional approval was the distinct lack of documentation for the methodology in general. Given this lack, neither heads nor tails could be made of last year's filings to the extent that the conditions were really suggestions for improvements needed to make the filing reviewable. This year, the supplement has improved to the point where a more detailed critique can be, and is, offered and where the focus at that critique has changed from documentation difficulties to difficulties with the statistical method employed.

The record developed in the instant proceeding shows that TMLP's methodology is based primarily on subjective judgements about future growth rather than reasonable statistical methods. The most serious problem here is that these judgements were not developed in a systematic way which could be reviewed; i.e., the results could not be duplicated by another party given the same information. The historical trend approach as used by TMLP is not a statistical method, but merely a graphic representation of the forecaster's judgement as to what the future growth should be. The "checks and cross-checks" (EX. T-4 (O/A 8B)) were not systematically incorporated in the development of the forecast, but served only to rationalize after the fact the initial judgement about future growth in

simply a qualitative way. The attempt to provide statistical measures of a linear regression on the historic data failed to use accurate historic data and lacked statistically significant results. A detailed discussion of each of these points follows a summary description of the TMLP methodology which is based primarily on the testimony of TMLP's forecaster, Michael Horrigan (EX. T-4).

A. TMLP's Demand Forecast

TMLP has forecast total electrical output requirements for its system to grow from 354.9 thousand Mwh (megawatthours) in 1978 to 626.2 thousand Mwh in 1989 or at a 5.3% equivalent annual compound growth rate. For the same eleven year period, the winter peak is forecast to grow at a 5% annual compound rate from 69.6 Mw (megawatts) to 118.9 Mw.

TMLP states their methodology is based primarily on a historical trend approach and analysis which was performed on each customer class. The results of this analysis on each customer class were then compared to known and expected growth rates to verify the accuracy and feasibility of the historical trend approach. Cf. Third Annual Supplement, p. 3.

After the supplement was filed, documentation was compiled for purposes of verification (TR. II-39). TMLP refers to these as "checks and cross-checks" (EX. T-4 (Q/A 8B)). The verification sources used after the initial "load trend analysis" were given as:

1. internal sources;

2. external sources;

3. load forecast comparison with major electric utilities; and

4. linear regression analysis. (EX. T-4 (Q/A 8B))

According to Mr. Horrigan, load trend analysis was conducted by plotting historical data on semi-log graph paper, examining the historical points, and plotting a best fit curve based on judgement. (EX. T-4 (Q/A 8D & G)). This method was followed for projecting 1) the number of electric heating residential customers; 2) the number of non-electric heating residential customers; 3) the total commercial class sales; 4) the total industrial class sales; 5) load factor; and 6) demand. Residential sales figures (with and without electric heating) were obtained from the product of the trend in number of customers and the trend in average use per customer. However, in the historical data as to average use for these two types of customers, Mr. Horrigan found "no apparent trend." For the average use for each of these two types of customers Mr. Horrigan "plotted a conservative trend based on the lowest historical points." (EX. T-4 (Q/A 8G(2))). The load trend analyses are presented in Attachments MH-3 through MH-8 to EX. T-4 and are said to be based on the period since the Arab Oil Embargo. (EX. T-4 (Q/A 8E)).

1) Verification Sources: Internal

TMLP next identified and calculated expected load additions for the three customer classes based on applications received by TMLP for new and expanded electrical service. This

comprised the internal source check which forecasted growth in peak of 16.2 Mw over 1978 for the first three years of the forecast. (EX. T-4, Attachment MH-15). Based on this internal source analysis, TMLP found its projections for the next three years conservative (EX. T-4 (Q/A 8I)).

2) Verification Sources: External

The external sources check has two components: discussions and documentation. The discussions involved contacting the local planning boards, industrial and development commissions, and banks. TMLP claims that these discussions indicated that the Tuanton area had great possibilities for growth (EX. T-4 (Q/A 8J)).

The documentation method included reviewing reports on population, building permits, dwelling units and a local industrial park to check the reasonableness of TMLP's load trend projections. TMLP found that population projections from the South Eastern Regional Planning and Economic Development District Report (SERPEDD) showed a projected population growth rate for the TMLP service territory greater than that of other areas, specifically, those of Eastern Utilities Associates (EUA) and New England (NEPOOL model projections). TMLP interpreted this as verification of its expectations of relatively faster growth. Review of historical residential building permit data for Taunton led to the following conclusion: "Based on historical data from 1974 - 78, it is expected that the number of permits issued in for residential units will be approximately 80 per year. However, with the proposed impact

of the Myles Standish Industrial Park and Compugraphic Co. coming into TMLP's service area, it is expected that the number of new home starts in Taunton will increase above the 80 per year figure." (EX. T-4, Attachment MH-18). It is noted that no statement regarding the historical building permit data for Raynham was offered. This information may have been used in conjunction with another external forecast of dwelling units prepared by SERPEDD on projected dwelling units and was examined and presented in Attachments MH-20 and MH-21 to Ex. T-4. TMLP contends that, "These exhibits show that there will be more dwelling units built in the TMLP service area in the future than in the past ... . It shows we will have more development than in the past few years 74 - 78 while our demand was growing at a 5.73%/yr. clip." (EX. T-4 (Q/A 8M)).

The external documentation reviewed to check the projected industrial growth was a report on the Myles Standish Industrial Park. TMLP took assumptions of building coverage and rate of development from the Taunton Industrial Development Commission's estimates of Potential Economic Benefits, combined them with an estimate of power requirements per square foot and obtained an estimate of 1.6 Mw of demand growth per year for the next twenty years. (EX. Y-4 (Q/A 8N)). How this estimate was used is not stated nor clear from the record, but another report on transportation attributes of the planned industrial park was found to "seem to assure the development of the park." (EX. T-4, (Q/A 8N)).

3) Verification Sources: Forecast Comparisons

TMLP next compared its forecast to that of EUA and NEPOOL to assure that TMLP's projections were reasonable (EX. T-4 (Q/A 80)). Based on the conclusion that one of the most significant factors of load growth is population growth, TMLP developed comparative measures of class load growth rates to projected population growth rates. TMLP found that its projection of residential electrical growth was very conservative since TMLP was projecting less electrical growth relative to projected population growth than either EUA or NEPOOL. Ibid.

Mr. Horrigan states that after all of the above sources were reviewed, "(I) then used my judgement on growth in Taunton." (EX. T-4 (Q/A 8P)). Seven judgemental factors were presented in his testimony, yet how these judgement factors were used is not directly nor clearly discussed. His net result was the submittal of the projected growth rates in TMLP's filing. Ibid.

One of Mr. Horrigan's judgements on growth in Taunton concerns conservation and is mentioned here as it is commented on below in the Council's critique of the overall methodology. How TMLP included conservation in its supplement can best be seen from the words of forecaster Horrigan himself:

> I also considered conservation in the growth projection. TMLP's growth projection for the next 10 years is 5% while for the last 5 years it is 5.7% and for the last year it was 5.4%. TMLP included conservation by using a growth rate lower than the past. TMLP also included load growth by projecting improved load factors for the future. In addition by using the past five years to

project growth, TMLP's numbers include conservation and elasticity caused by the great increase in electric, energy and oil prices. In addition for commercial and industrial growth the last five years includes the severe recession of 1974 and 1975. In addition, as shown in my testimony, TMLP used conservative projections compared to other utilities and TMLP's project data shows that the growth rate for at least the next three years will be greater than projected.

(EX. T-4 (Q/A 8O))

4) Verification Sources: Linear Regression Analysis

TMLP then employed a computer program of R.W. Beck and Associates, Engineers and Consultants ("Beck") to test statistically the trend-line projections fitted on semi-log graph paper by TMLP. TMLP found the results supportive of its graphical trend approach because the lower constant growth rate of 4% per year obtained by fitting a straight line to the data with this computer program was consistent with a higher compound growth rate of 5% per year obtained by the hand-drawn logarithmic curve (EX. T-4 (Q/A 8Q)).[3]

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[3] It is Mr. Horrigan's claim in his testimony that the Beck computer program arrived at these energy and demand projections of 4% annually for the forecasted years. (EX. T-4 (Q/A 8)). However, the record as to this figure is undeveloped and unclear. While John George of Beck described the program used by TMLP, defined the statistical tests applied to historical data to produce linear regression trend lines and commented on, to a certain extent, the validity of those lines, the 4% figure is not mentioned. Cf. EX. T-5, sec. II.

This program is described in the testimony of John K. George, Jr. of Beck. Cf. EX. T-5, sec. II. Based on historical data, the program projects the number of customers and the average energy use per customer using linear regression techniques. The product of these projections for each customer class yields projected class consumption. These are summed and losses added to give total system energy requirements. Applying a projection of system load factor to total energy requirements produces a projection of peak demands. (EX. T-5, II-2). The program also produces statistical tests which TMLP states are required by Rule No. 63.5 (a) (V). (EX. T-5, II-4). Trend line parameters and statistical tests are presented in Attachment JKG-2 to Ex. T-5. Mr. George finds, "Generally, the statistics show acceptable trend line representations for the number of customers in each class (except for the industrial which is explainable) and unsatisfactory trend line representations for the use per customer for each customer class." (EX. T-5, II-5). Mr. George's testimony also included comments on the choice of historical period, suitability of linear regression for TMLP, and the difference between linear trends and trends drawn on semi-log paper.

Having thus verified its judgements, TMLP seeks approval of its forecast supplement.

5) Critique

TMLP argues for Council approval of its demand forecast because it has presented a reasonable and even conservative load forecast (TMLP Brief, II-12). The Council, however, must base its decision on EFSC Rule 62.9 which requires, in part,

"reasonable statistical projection methods." EFSC Rule 62.9(2)(b). The reasonableness of the forecasted growth rate is not at issue. It is not that the rate of forecasted growth is irrelevant but rather that the Council, in reviewing a forecast, looks to the reasonableness of the statistical method used to obtain the growth rate in order to evaluate the filing. Rule 62.9(2)(b) further states that, "what constitutes a reasonable statistical projection method may depend upon the size of the company, the state of the art of forecasting, and the extent to which the requirements of this Chapter are met." These factors, rather than the results themselves, provide the basis for a Council decision.

It is worth repeating that the record in this matter shows TMLP's methodology to be based primarily on subjective judgements about future growth rather than on a reasonable statistical method in which these judgements are developed in a systematic way which can be reviewed. The most serious problem of the TMLP methodology is that the results could not be duplicated by another party given the same information. The historical trend approach as used by TMLP is not a statistical method, but simply a graphic representation of the forecaster's judgement as to what the future growth should be. The "checks and cross-checks" were not systematically incorporated in the development of the forecast, but served only to rationalize after the fact the initial judgement about future growth in just a qualitative way. The attempt to provide statistical measures of a linear regression on the historic data failed to use accurate historic data and lacked statistically significant results. The promised detailed decision now follows.

The record in this case clearly shows that the TMLP load trend analysis consisted primarily of judgements and did not amount to a reasonable statistical method. The accepted state of the art of time trend analysis is to estimate the relationship between a variable and time by minimizing the sum of squared deviations of the data from lines passing through the mean of the data. These calculations can be performed by hand or by computer programs. What makes the "least squares" technique a statistical method is that it can be reproduced and evaluated as to statistical significance by standard statistical tests. TMLP's use of the technique to forecast the components of or total of customer class consumption fails on three grounds.

The first problem with TMLP's method of load trending is its reliance on curve-fitting by eye and the hand drawing of the curve. While it may be possible to obtain an equally good "fit" by eye as by statistical estimation, the curve fit attempt to provide these measures from the Beck computer program testified to by Mr. George unfortunately fails to do so for technical reasons to be discussed separately below. When TMLP was asked if it was able to use any of the statistical measures from the Beck trend line regression program to evaluate the statistical fit of trend lines drawn by eye, the TMLP forecaster did not know how to answer. (Tr. I-152).

Whether or not the hand drawn curves used for the projections are accurate or reviewable is overshadowed by the dominant role of judgement in drawing the curves. This predominance of judgement is the second problem. The TMLP brief

acknowledges that, "The trending reflected judgements ..." (TMLP Brief, II-16). Mr. Horrigan testified extensively that the choice of historical period for each of his curves was determined by the criteria of obtaining a curve with a reasonable projection (Tr. I-154-165). The argument that these judgements were conservative as stated by TMLP throughout the hearing is irrelevant to the reasonableness of the statistical method. On cross-examination, Mr. Horrigan explained the basis of the load trend method: "...(T)he use of this method is based, is not based just on the eyeball fit. It is also based on the eminent knowledge of the system engineer, who was conducting this type of estimate, as far as what he knows, and his coming on line, and what he projects from his field of territory." (Tr. I-159). Asked what the benefit was of the fitting exercise given the extent it is influenced by such "eminent" knowledge, the witness could only answer that it provided a record and means to project within a short period of time. (Tr. I-159-160). However laudable these characteristics, the role of judgement in doing the load trending undercuts any value a systematic use of a trend of historic data may have. There is no trend to evaluate when the data and the curve are chosen on the basis of obtaining a preconceived result. The load trending by TMLP cannot be considered a reasonable statistical method.

Thirdly, even if TMLP had conducted the load trending according to standard statistical practice, there would remain the issue of appropriateness of forecasting on the basis of time trend analysis. Time trend analysis substitutes the march of time for causal factors to explain the past behavior

of the variable, electricity use. To forecast future electricity demand solely as a function of time requires the presumption that the causal factors relating to electricity use in the past will have the same relationship to electricity use in the future. A demonstration of the reasonableness of analysis for forecasting. See 2 DOMSC 42 (December 13, 1977) for discussion of and conditions on the use of time trend analysis. Selective use of the post-embargo period is not, in and of itself, such a showing.

The additional verification checks used by TMLP (internal sources, external sources, and comparisons to other forecasts) do not comprise a reasonable statistical method unless some system exists whereby results of these checks can be incorporated into the forecast. Criteria must be established which determine how these additional analyses would confirm, if not modify, the results of the primary method. These sources could, of course, form the basis of a methodology, but the record does not show this to be the case. The record shows that these sources were used as an after the fact confirmation of an initial judgemental forecast in a non-quantitative unsystematic way. Some sources indicated that economic growth was likely, yet how this confirmed a specific growth rate for electricity was not developed (EX. T-4 (Q/A 8J)). Some sources indicated greater electrical growth than that forecasted. However, these analyses were not used to modify the initial forecast, but were used rather to sanctify it as "conservative." (Tr. I-178). Sources which could be interpreted as showing less customer growth

than already forecast were interpreted as indicating that greater electrical growth would occur than had in the past (EX. T-4 (Q/A 8M)). This is not a reasonable statistical method.

The record does indicate the great amount of effort which TMLP put into gathering this information. This information, most of which had not previously been considered by TMLP, does indicate dynamic changes in the determinants of future electrical use in the TMLP service area. The need for a reasonable statistical method to account for the complex and numerous factors affecting future electrical requirements is all the more telling, given the record's reflection of an absence of a systematic approach to incorporating diverse sources of information

The use of a linear regression analysis as calculated with the Beck program was described by Mr. George as perhaps not the most technically appropriate model to evaluate the relationships involved. (Tr. I-134). The Council agrees and notes that linear regressions cannot produce statistical measures of logarithmic curves. In addition, the record shows that in some instances inaccurate historical data was used and that critical parts of the analysis were statistically insignificant. Furthermore, the program's alleged 4% growth rate used by Mr. Horrigan to verify his work was not substantiated in the record. The Council must discount this attempt, however well intended. An appropriate use of trend line analysis with statistic measures as identified in Rule 69.2 might have been the intention of the initial load trend analysis, but this post hoc effort does not succeed in rescuing Mr. Horrigan's judgements.

Based on the lack of reviewability due to the absence of both statistically measurable trends and evaluative measures of statistical significance and the lack of any demonstrable appropriateness of time trend analysis for forecasting future demand, the Council finds that TMLP's load trend analysis as used in the preparation of this supplement is not a reasonable statistical method. The additional sources, the "checks and cross-checks," were not systematically integrated with the forecast and cannot for that reason alone be considered reasonable statistical methods. While the record shows great effort to collect evidence which supports load additions, very little effort was expended to understand and incorporate conservation in the forecast. Greater consideration must be shown to forces affecting all forms of load reduction (e.g., conservation, load management, and co-generation) if a ten-year forecasting methodology is to be found reasonable given the potential of an economically growing area such as the TMLP service area.

It matters not how many times Mr. Horrigan chose "conservative" numbers as part of his judgements, but that he was merely choosing. Whatever the wisdom of any forecaster's judgement, if those judgements are not part of a systematic approach which can clearly be examined, reviewed, even duplicated, they cannot be found to constitute a reasonable statistical method under the Siting Council's statute and Rules and Regulations.

It may indeed be that Mr. Horrigan has too many other responsibilities within TMLP to expect from him the work required for an adequate forecast. See EX. T-4 (Q/A 4). Yet that does not mean that an adequate forecast should not be

required. Certainly TMLP is not a utility of the magnitude of Boston Edison and what is expected of TMLP is relative to its size in keeping with a long-standing Council policy. However, it is important to note that its service area is growing at a rate beyond that of this state's or the New England average and has potential for even more. The Council thinks it worthwhile for the utility serving this area and facing this growth potential to have an understanding of the growth forces in the area, how they are developing and what might affect them. It is suggested that the area's growth should be reflected in the growth of TMLP's ability to forecast that area's energy needs as accurately as possible.

III. THE TMLP SUPPLY PLAN

Pursuant to its statutory obligation, G.L. c. 164, §69I(3), the Council has reviewed TMLP's supply plan as submitted in the present supplement. This supply plan contains changes in nuclear unit purchases from TMLP's previously submitted yet uncommented upon plans. TMLP has eliminated its proposed 11.5 Mw ownership in the cancelled NEPCO units and is concerned that its proposed 6.9 Mw share of Pilgrim II will not be available until after 1988. TMLP has now proposed taking an additional 3 Mw share in Seabrook I and II as well as an 11.5 Mw share of Millstone III. As seen in the discussion to follow, the Council approves the TMLP supply plan with certain conditions as to future supply considerations. This approval is based on considerations of reducing TMLP's oil dependence (fuel mix) and of unit diversity for the TMLP system. Also noted below are the limitations of the economic analyses of the TMLP supply program.

To formulate the bases for its approval, the Council deliberated over the arguments presented by the parties. TMLP has argued for approval of its supply plan on several grounds. With respect to the proposed additional purchases of Seabrook and Millstone III capacity, TMLP claims that 11.5 Mw of the 14.5 Mw would displace 11.5 Mw of their Cleary No. 9 Unit under TMLP's agreement with Montaup Electric Company ("Montaup Agreement"). TMLP also argues that the purchases are justified on the basis of economics, oil displacement, reduction on oil dependence, unit diversity, fuel diversity, improvement of generation mix, reliability, availability and governmental policy grounds. (TMLP Brief, I-5).

The Intervenor, On the Corner, Inc., contends 1) that TMLP has overstated its need for capacity for load growth; 2) TMLP has understated the costs of nuclear power with the result that its proposed nuclear purchases may cost more than staying with the present generation mix or developing alternative capacities; and 3) the TMLP has inadequately explored the contribution of other alternatives, including conservation, as a means of economically supplying its customers with electricity at the lowest possible cost. (Intervenor Brief, p. 1).

A. Background

TMLP presently owns 6.9 Mw in the Vermont and Maine Yankee nuclear units, Cleary No. 9 - a combined cycle, oil-fired, 110 Mw intermediate unit, and Cleary No. 8 - an oil-fired, 25 Mw peaking unit for a total owned-capacity of 141.9 Mw.

The record shows that TMLP's present capacity ownership is highly concentrated in one unit (Cleary No. 9), heavily dependent on oil, and composed predominately of intermediate and peaking rather than base load capacity.

The Montaup Agreement represents a valiant attempt to rectify the overabundance of both intermediate capacity and reserve capacity (TMLP's present NEPOOL capability responsibility is less than 90 Mw. (EX. T-1, Attachment SW-5)) and the insufficiency of base load capacity. TMLP buys 20 Mw of oil-fired base load capacity from Montaup (10 Mw of Canal No. 2 until October 31, 1982 and 10 Mw of Somerset No. 6 until October 31, 1984), and Montaup buys all capacity from Cleary No. 9 not needed by TMLP for its capability responsibilities. TMLP can only sell up to 25% of the expected lifetime capacity of the unit to the non-tax-exempt Montaup. According to Attachment SW-5 to EX. T-1, at 5% peak growth Montaup would have purchased 24% of Cleary No. 9's lifetime megawatt years through the winter of 1988 - 89. At the lower peak growth rate of 4% per year Montaup's maximum purchase limit would be reached during the winter of 1988 - 89.

With these characteristics of the TMLP power supply system in mind, the Council found arguments on fuel mix and unit diversity persuasive.

B. Fuel Mix: Reduced Oil Dependence

With respect to fuel mix, the Council finds that the record supports diversifying TMLP's fuel mix for purposes of reducing its oil dependence. As Mr. Whittemore testified,

92% of TMLP's capacity was from oil. (Tr. I-68); (EX. T-2 (Q/A 10(D))). The risk exposure to higher oil costs or interruptions of supply of TMLP is so great in a system so oil-dependent that the reduction of this oil dependence is a need that the Council finds can be met by the proposed supply plan in this particular case. Even with no load growth, the maximum non-oil capacity available to TMLP under the proposed plan would be only 44% of the 1978 peak (30.56 Mw of nuclear to 69.9 Mw peak). Without the additional proposed nuclear purchases, the TMLP maximum non-oil resources would be only 16.06 Mw of nuclear or 23% of the 1978 peak. With any load growth in the TMLP service area, the exposure to the hazards of oil dependence increases, thereby justifying the non-oil purchases proposed by this supply plan.

C. Unit Diversity

The record shows that TMLP presently has life of unit ownership in only four units. By 1988/89 TMLP, under the Montaup Agreement, will have 95.9 Mw or 75% of 127.8 Mw of present total capacity in one unit, Cleary No. 9. If Seabrook and Pilgrim are completed by then, 2.3 Mw and 6.9 Mw will be added respectively (and possibly 3 Mw more) at Seabrook and 11.5 Mw at Millstone III if these present contracts are fulfilled. With the Seabrook, Pilgrim, and Millstone shares, total capacity would be 151.5 Mw. Yet Cleary No. 9 is still the dominant unit and its dominance will increase upon expiration of the Montaup Agreement: 110 Mw out of 165.6 Mw or 66% of TMLP's capacity would be in one unit. Logic dictates that should this unit go out

of service, TMLP would be in a very vulnerable situation; such vulnerability would only increase with any growth. See also EX. T-6, p. 12 et seq. Consequently, the Council finds that TMLP's supply plan can be approved on the basis of improving unit diversity.

D. Supply Plan Economics

Much time and attention was given during the proceedings to the economics of the TMLP supply plan. While not a basis for Council approval herein, the Council feels that it should comment on this point to offer guidance for future proceedings in which such economic arguments may arise.

TMLP's economic arguments compare power supply program costs with and without the proposed purchases for the years of the forecast. TMLP chose not to take the capacity credit for replacing Cleary No. 9 capacity under the Montaup Agreement assuming the 5% forecasted annual peak growth rate. TMLP's economic analyses reflect the annual savings projected from replacing oil-fired generation with nuclear powered generation. Of course, many cost and operating assumptions are made, some of which were challenged by the intervenor. However, even assuming that the company's assumptions are reasonable, the analyses fail to consider properly all the costs of the proposed nuclear purchases and thus cannot ae a basis for approval of the supply plan.

The difficulty with the TMLP supply cost analysis is in its handling of the capital costs of the nuclear investments. In its analysis of the costs of Seabrook I and II as shown in

Attachment RMC-2 to EX. T-6, TMLP does not include the capital costs of the Seabrook plant. (Tr. III-63-65). TMLP argues that no capital costs will be incurred during those years as TMLP will be paying for the capital costs with internally generated cash prior to the years for which the analysis was conducted. The Council does not dispute that TMLP may pay for the plant in a manner of its own choosing. However, for the Council to base an approval of a supply plan on the analysis presented by TMLP would be tantamount to finding that there was no cost for the plant itself. Such an approval would be ill-founded.

On the other hand, TMLP's analyses of the savings from the Millstone III purchase do account in some way for capital costs because the annualized debt service on the fully externally financed purchase is included in the costs associated with the purchase. See EX. T-6, Attachments RMC-3 and RMC-4. However, the difficulty here is that the analysis does not go far enough. The cost analysis is for only three years and savings for just three years are not enough to justify the purchase. The presumption of the TMLP argument is that, if a purchase shows a savings over the supply plan without the purchase, then the purchase is justified. The Council agrees with this in principle, but the application must be consistent. TMLP's comparison spread the capital costs of the Millstone III over thirty years while only analyzing three years of costs with and without the purchase. From this, TMLP would have the Council conclude that TMLP's assumptions of nuclear fuel escalation, oil price escalation, no additional capital costs for Millstone III after completion,

and a thirty year life for Millstone III show savings which justify the purchase of Millstone III as replacement capacity. Yet such a conslusion would be unfounded. This analysis shows economic benefit for three years of a unit with an assumed thrity year life. For the analysis to be complete and provide a basis for a decision, TMLP must demonstrate economic benefits for the same number of years over which the capital costs are spread.

At the request of the Council staff, TMLP did prepare life of purchase analyses which compared all costs in constant dollars. These present worth analyses show that, given the TMLP cost assumptions, the Seabrook purchase, with a discount rate of 7.5%, had a lower cost than the oil needed to generate a comparable amount of electricity from Cleary No. 9. While this analysis is preferable, it still leaves unaddressed the possibility that the assumptions may not hold true, thus risking an ill-founded decision. Because of the limited resources and record available in the instant case, the Council will not base this decision on the economics of replacement power. Of concern to the Council is the assumption of a thirty-year economic life for the nuclear purchases. Many factors such as regulatory policies, future nuclear costs (capital, operating, and fule), changes in available technologies could render these nuclear purchases economically obsolete before the completion of their assumed life. Mr. Cotte, TMLP's supply planning expert, did agree that there were risks associated with nuclear power (Tr. III-69-70) and that the cost estimates were developed for

comparative purposes as engineering estimates. (Tr. VI-58-59). The record in this case is understandably insufficient to resolve all the arguments about the assumptions as to the absolute magnitudes of the cost projections and as to associated risks.

E. Supply Plan Alternatives

The Intervenor's contention that conservation among other alternatives, should be considered a supply option is noted by the Council. Indeed, the Council can find no reason in the record why conservation should not be considered a supply option. TMLP should take notice that the Council expects future supply plans to consider conservation as a supply option. However, given the problem of unit diversity and dependence on oil, the supply plan can be approved even if conservation were to maintain future loads at present levels. Consequently, the Council finds that the Intervenor's contention does not, based on the record, significantly change the basis for this approval.

With respect to the Intervenor's contention that alternatives to the nuclear purchases were not adequately considered by TMLP, the record does show that some consideration has been given to hydro and wind power by TMLP. The Intervenor, for its part, has not demonstrated that sufficient alternative capacity is feasible and available enough to alter the basis for this decision. The Council would note, however, that further capacity additions by TMLP will likely have to meet harder tests as to alternatives considered than the additions being approved in this supply plan. Consequently, TMLP should continue to look into and pursue all alternatives to oil-fired generation. In

fact, the record indicates that refuse-fired generation may be the most feasible alternative for TMLP to develop. (Tr. II-125). The Council expects TMLP to report on the status of refuse-fired generation in its next forecast.

IV. APPROVAL AND CONDITIONS

Therefore, based on the discussion above, the Council APPROVES the third annual supplement of the Taunton Municipal Lighting Plant, subject to the following conditions.

1. Should TMLP choose to base future forecasts on some sort of trend line analysis, such analysis shall be supported by reviewable and appropriate quantitative measures.

2. To the extent that judgements modify the trend line analysis, such modifications must be quantified and the basis for the judgements discussed.

3. The company shall comply with Rule 63.5, Methodology for Forecasting Demand, to the fullest extent possible. Specific attention shall be given to documenting and discussing the "determinants of future demand" listed in Rule 63.5 (b). This shall include a discussion of what source materials were used, any analyses that were performed, any judgements made, and how all of the above considerations for each of the determinants entered into the forecast.

4. Each use of time trend line analysis shall be justified and include therein:

a. Identification of causal factors.

b. A discussion of the relationship of causal factors in historical and projection periods relative to the forecasted variable.

c. A discussion of the suitability of trend analysis relative to other statistical methods.

d. Discussion of the suitability of the functional form used.

5. The extent of customer conservation over the forecast period shall be quantified and include programs and policies of the Commonwealth and Federal government such as the Residential Conservation Service, Schools and Hospitals Program, and Power Plant and Industrial Fuel Use Act.

6. TMLP shall continue to pursue all alternatives including conservation, load management, and industrial co-generation as supply options to oil-fired generation. TMLP will submit a report to the Council no later than August 1, 1980, on the potential for shared co-generation at the planned Myles Standish Industrial Park. Also, as the record indicates, the City of Taunton and nearby communities are now deliberating options for the use of municipal solid waste for energy. Since energy from solid waste is a viable supply option, the Council expects the TMLP to actively pursue this alternative and report on its status in the next forecast proceedings.

Energy Facilities Siting Council

by Dennis J. LaCroix

Dennis J. LaCroix, Esq.
Hearing Officer

This decision was approved by a unanimous vote of the members present and voting at the Energy Facilities Siting Council meeting of February 29, 1980.

Joseph S. Fitzpatrick
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

In the Matter of Boston Edison Company Occassional Supplement - Third Mystic Oil Storage Tank 3 DOMSC _____ April 3, 1980	)	EFSC No. 79-12A

FINAL DECISION

The Massachusetts Energy Facilities Siting Council hereby APPROVES the proposal of the Boston Edison Company to construct an additional fuel oil storage facility at its Mystic Station in Everett. The bases for this approval are more fully described below.

I. HISTORY OF THE PROCEEDINGS

On September 21, 1979, Boston Edison Company ("company") filed an occasional supplement to its Annual Supplement 1-C pursuant to EFSC Rules 3.1 and 65.3[1]. This occasional supplement and the accompanying petition for its approval concerned the proposed expansion of the existing oil storage capacity at Mystic Station by adding a third 250,000 barrel oil storage tank (the "facility"). The company asked that construction be allowed to commence as soon as practicable in hopes of having the tank ready by the Spring of 1981.

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[1] A waiver (Rule 3.1) was requested since Rule 65.3 (occasional supplement) could be read as limited to transmission lines and associated facilities. The vehicle of an occasional supplement seemed appropriate in this case and the waiver was granted.

An initial scoping session as to this facility was scheduled for October 5, 1979. At this session, the EFSC Staff met with certain company personnel to discuss the dimensions of the proceeding including scheduling a public informational hearing in the City of Everett.

On October 10, 1979, the company was asked to publish and post a public notice which set two dates: first, a public informational hearing was scheduled for October 29, 1979 at 7:00 pm in Everett City Hall; second, a pre-hearing conference was scheduled for November 8, 1979 at 10:00 am in the Council offices.

The Everett public hearing was well-attended by city officials and citizens; a transcript of this hearing is in the docket. At the pre-hearing conference no intervenors appeared although the Attorney General's petition to intervene was received a day later on November 9; it was allowed, there being no objection from the company. At this conference, it was agreed that technical sessions may (and did) resolve the need for any formal information requests so that the proceedings could move efficiently. One technical session was held on November 16, 1979 and certain information on the facility proposed was requested and exchanged. This information exchange was completed by materials enclosed in a letter from company's counsel to the Staff and the Attorney General dated January 25, 1980. (EX. BE-105). A second prehearing conference was then scheduled for February 8, 1980.

At this conference, certain information loose ends were tied up and the company set out to prepare its direct testimony which was filed in written form on March 11, 1980. (EX. BE-1). A final prehearing conference was held on March 28, 1980. At this conference, the feasibility of a hearing and tentative decision in time for the April 7, 1980 Siting Council meeting was discussed and agreed to.[2] The hearing was held on March 31, 1980 at Council offices. The decision approving construction of the facility follows.

II. FACILITY DESCRIPTION

As stated, Boston Edison Company proposes the installation of an additional fuel oil storage tank at Mystic Station in Everett. The current estimated cost for the project is $4,080,000. The proposed facility would increase the present on site oil storage capacity by 250,000 barrels or from 590,000 barrels to 840,000 barrels. According to the company, this capacity increase would improve the average number of days of maximum on site storage from 29 days to 41 days.

This increased inventory is intended to assist in mitigating problems the company has experienced resulting from tanker delivery delays. It will also provide additional protection against exhausting the supply of fuel at Mystic Station. In the unfortunate event of a station shutdown due to exhaustion of fuel supply, replacement power costs could be encountered.

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2 The Assistant Attorney General involved was unable to attend, but telephoned the hearing officer to give his assent to the waiver and immediate hearing date.

The project is also proposed as insurance against the fuel supply and delivery schedule uncertainties of the immediate and foreseeable future. In addition, it can provide the opportunity to improve the dollar average cost of fuel oil since additional storage capacity will be available for spot purchases.

The proposed third oil storage tank would be located in an area east of the existing 345 kV switchyard. The tank will be a standard API welded steel above ground tank with a steel dike. Tank size will be 178 feet diameter and 56 feet high. Tank dike will be 252 feet diameter by 28 feet high. See EX. BE-101. The installation will include tank and dike foundations, steam and oil piping, fire protection systems, lighting and power supply. Fuel oil tanks and associated piping will be suitably insulated. The fuel oil tank will be equipped with remote reading tank level and temperature instruments similar to the existing tanks. A 24" oil delivery line will be extended from the existing tank farm to the new tank. The new storage tank will be interconnected with the existing fuel oil storage tanks by piping.

III. DECISION

The Council has reviewed the possible alternatives to this proposed facility. See EX. BE-105, No. 1. The record in this case shows that an alternative site is not feasible (EX. BE-105, No. 1-A) and that the only viable alternative to the tank as to oil supply is to rely upon the existing means of supply without constructing the tank. As discussed further below, this in not an appropriate solution to the company's

fuel oil supply difficulties. The third tank is that appropriate solution.

The main consideration in the instant case is the company's maintaining a reliable fuel supply. This consideration has 2 aspects: 1) an adequate supply of electricity; and 2) an economical supply of electricity. The question of an adequate supply of electricity from the Boston Edison system was also considered in the Council deliberations and its decision on the company's Walpole to Needham 345 kV transmission line. See Section VI of 3 DOMSC _____ (9/18/79). Until completion of this line (not before 1985 by company estimates), there can be times when a major company generating unit is out of service that the adequacy of the supply of electricity to the Metropolitan Boston area depends on a reliable fuel supply to Mystic Station. As was stated in the Walpole to Needham line decision and remains true in the present case, "(a)n important consideration here is that all significant generation in downtown Boston is oil fired, leaving that area particularly sensitive to the oil supply uncertainty." 3 DOMSC _____ (9/18/79) at Section VI. The proposed tank will go far to ensure an oil supply sufficient to maintain an adequate supply of electricity to Metropolitan Boston. The Council agrees with the company on this point and will not require the occurence of a black-out in the city to prove the point.

Once the Walpole to Needham line is in-service, the focus on the need for the third tank shifts to the second aspect, an economical supply of electricity. This aspect, a consideration from the outset, continues to remain a concern even when the

Walpole to Needham line eases the adequate supply concern.

Consideration of the economics underlying the tank proposal must begin with recognition of a company operational problem in the scheduling of tanker shipments. With the present limited storage capacity of only 500,000 barrels, it may be that the company may have to refuse delivery from a supplier if the tanks are unable to take the entire load which incurs the risk of running too low on inventory waiting for another tanker. Additional storage can be used to level out shipping difficulties without jeopardizing generation and a continuous electrical supply. See EX. BE-1 (Q/A 22) and EX. BE-104.

The company presently has a number of ways it could supply Mystic Station with fuel oil while awaiting the next tanker. See BE-105, No. 1. The company can barge fuel from its other tanks. The initial problem here is that barges with concerted effort can only supply approximately 20,000 barrels per day (bbls/day). This is insufficient to cover the station's peak burn rate of 30,000 bbls/day. Other problems include the reliability of such a method as it is prone to delay by manpower shortages, strikes, poor weather as well as the greater chance of oil spillage[3] due to an increased handling of the product at two locations.

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[3] As for the potential environmental impacts of the proposed tank, it should be noted that this project has effectively received a clean bill of health: it does not require an Environmental Impact Report. See EX. BE-102. With reference to M.G.L. c. 30, sec. 62A, the Secretary of Environmental Affairs has determined and certified that no EIR need be prepared as there are no issues "which by the nature and location of the project are likely to cause damage to the environment."

A second existing supply method is a pipeline connecting Mystic Station with the company's New Boston-L. Street complex. However, barring the need to supply L. Street from Mystic, this pipeline could only pump 6,000 bbls/day from New Boston to Mystic, not nearly enough to cover the burn rate of the Mystic 7 unit alone (approximately 22,000 - 24,000 bbls/day). The third existing method is also a pipeline connection, this one from Mystic to the adjacent EXXON facilities which formerly supplied the station. This pipeline could handle the station's daily peak burn rate if EXXON were willing and able to make an emergency sale or exchange with the company.

The Council agrees with the company's position that while the above means exist to supply Mystic Station, they are not as reliable as having possession of the fuel in one's own tanks. However, this is not dispositive of the matter. The Council need now weigh the improvement in the reliability of the fuel supply that a third tank brings about against the cost of achieving that improvement. The economics of a reliable fuel supply involve the costs of supplying electricity with and without the additional tank.

With the tank, carrying costs can expect to be an additional $1,490,000 per year. This estimate spreads the capital costs over 23 years and assumes a carrying charge of 18.3% on $27 per barrel oil. See EX. BE-105, No. 4. If the capital costs had to be spread over fewer years, if the cost of money increased and/or if the cost of oil increased, then the annual cost of the tank would similarly increase.

These costs would be offset by the savings of the costs that could be expected to be incurred if there were no tank. These savings would be principally the costs of barging. Barging, based on the past year's experience cost, is approximately $720,000. EX. BE-105, No. 1. It is possible that more barging might be necessary and that its cost could increase in the future if no third tank is added.

An additional economic consideration is the ability of the company to avail itself of lower cost oil on the spot market. See EX. BE-1 (Q/A 24). The present contract with the supplier of oil to Mystic Station allows the Company, at its option, to increase or decrease deliveries by 15% of Mystic Station requirements. With present Station requirements running between 7 and 8 million barrels per year, there is significant opportunity to save money on fuel. When the spot price is below the contract price, a $1 per barrel differential would not be an unreasonable expectation, according to the testimony at the hearing. Under these conditions, savings could reach $1,000,000 per year. Some years there could be greater savings and some years there may be no savings in spot market purchases (should the market price not be below the contract price). The third tank expands the company's ability to take advantage of the market conditions.

A cost that would be avoided with the tank and might be incurred without the tank is the cost of replacement power. Replacement power costs have been estimated by the company for Mystic Units Nos. 4, 5 and 6 as a monthly average of $76,000 per day in 1980 to as much as $410,000 per day by 1985 during periods of large unit outages. Approximately 50% of the year

one major unit can be expected to be out of service thereby putting increased reliance on the other units. Depending on load levels and the lack of new capacity, a shortfall of fuel at Mystic Station would force the company to pay for electricity from more expensively operated units. See EX. BE-1 (Q/A 26-28).

In light of the economic considerations[4] discussed above, the Council finds that the economics of the tank justify the increased reliability which the tank provides. The Council also finds that to build this facility elsewhere would be more costly without any significant non-monetary benefit. It is the Council's decision that this facility will provide a necessary energy supply for the Commonwealth with a minimal environmental impact at the lowest possible cost.

Therefore the Council APPROVES the construction of this facility at the current estimated installed cost of $4,080,000

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[4] There is one consideration which could change the analysis. The analysis is based on annualizing the capital cost of the tank over 23 years. There is a possibility that oil will not be burnt at Mystic Station for the full 23 years. Official notice is taken of the inclusion of Mystic Units 4, 5 and 6 in the President's recent proposal for coal conversion possibilities across the United States; the above mentioned units could be burning coal in the future, distant or otherwise. However, there is no direct evidence that this will be the case. The Council cannot base its decision on a mere possibility, but leaves further consideration of it to the Company and the ratemeking process to adjudicate as need be.

2 DOMSC 58, 61-62. Since the Council found that this line was closely tied in with the Walpole-Needham 345 Kv project which was, at that time, still undergoing Council review in lengthy hearings, an in-service date was not then determined. 2 DOMSC 58, 62. The Walpole to Needham 345 Kv line has since been approved by the Council in its decisions of December 6, 1978 (3 DOMSC _____) and September 24, 1979 (3 DOMSC _____). In the latter decision, the Council established an immediate in-service date for the Walpole to Needham line.

Thus, in a letter dated March 21, 1980 from its Assistant General Counsel to the EFSC Hearing Officer, Boston Edison now requests that the Council either establish an immediate in-service date for the Hyde Park/Dewar Street line or allow it to purchase and install certain equipment relative to this line in order to realize certain cost and construction savings.[2]

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[2] In his letter, Edison's counsel asks that should no in-service date be set, the Council alternatively allow the company to take the following actions for the following reasons:

i) Purchase four (4) 115,000 volt oil circuit breakers and six (6) sets of 115,000 volt disconnect switches. The company would thereupon be able to combine the purchase of this equipment with similar equipment for other projects so as to realize the best overall cost savings;

ii) Purchase and install a portion (3,500 feet) of the 6-inch steel pipe for the two 115,000 volt pipe type cables under Blue Hill Avenue (Boston) between the Hyde Park and Dewar Street substations. The City of Boston is in the process of scheduling this portion of Blue Hill Avenue for repaving this Spring. The failure to install the pipe prior to the City repaving could result in denial of the company's location under the street or a requirement that the company assume extensive reopening and repaving (e.g., curb-to-curb) additional costs.

III. Decision and Order

Upon consideration of the company's request, the Council finds that it is only logical to approve an immediate in-service date for the Hyde Park/Dewar Street line. A most compelling consideration is this line's connection, literally and figuratively, with the Walpole to Needham 345 Kv line. The Walpole to Needham line was the subject of a lengthy and detailed review culminating in its approval for an immediate construction start; this approval was based on system considerations which indicated and supported the need for this line apart from load growth numbers. To fail to approve now an immediate in-service date for a line which is integral to the Walpole to Needham line is to belie those system considerations and to be inconsistent in fulfilling the Council's mandate to ensure an adequate energy supply for the Commonwealth at the least cost and minimal environmental impact.

It is also to be noted that, with respect to the Hyde Park/Dewar Street line, there was no public opposition nor intervention in the Council proceedings in EFSC No. 76-12.[3] Again, logic and the fulfillment of the

[3] All of the opposition and intervention in this docket was directed to the Walpole to Needham line, thus precipitating the lengthy and detailed proceedings referenced earlier in this decision.

Council's responsibilities dictate that an immediate in-service date for this line be established. This is compatible with the previous Council decisions cited above.

Therefore, it is ORDERED

1) That an immediate in-service date be established for the Hyde Park/Dewar Street 115 Kv underground line;

2) That the conditions numbered 2 through 5 inclusive of 2 DOMSC 58, 63-64 be, and are still to be followed by the Company; and

3) That as to the above-referenced condition numbered 3, the line is approved at a recently projected cost of $6,285,000 (Supplement 1-C, Vol. II, Sec. II-17).

Energy Facilities Siting Council

by Dennis J. LaCroix

Dennis J. LaCroix, Esq.
Hearing Officer/Chief Counsel

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 7 April, 1980.

Joseph S. Fitzpatrick

Joseph S. Fitzpatrick
Chairman

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Council

In the Matter of a Proposed Rulemaking: Amendments Relative to Interstate Natural Gas Companies 3 DOMSC	)	EFSC No. 80-25

DECISION and ORDER

INTRODUCTION

1. Background

The Energy Facilities Siting Council (Council) has undertaken this proceeding in order to clarify its regulatory relationship to interstate natural gas companies. This relationship has been the focus of some debate between the Council and such companies as operate in Massachusetts since mid-1976 when the Algonquin Gas Transmission Company (Algonquin) filed a rulemaking petition with the Council seeking to exempt these companies from Council jurisdiction.

A proceeding such as the instant one was conducted by the Council on the Algonquin petition. After a public hearing, a receipt of extensive memoranda from all participating parties and arguments before the Council, the Council issued its decision which denied the complete exemption sought by Algonquin. 1 DOMSC 108 (February 16, 1977).

As a result of this decision, Algonquin opted to litigate the jurisdictional issue before the Supreme Judicial Court. The company appealed to that court under M.G.L. c. 25, sec. 5 and also brought a petition for declaratory relief on the same matter to the Single Justice session of that court. Another interstate natural gas company, Tennessee Gas Pipeline Company (Tennessee) joined the judicial fray by bringing suit against the Council in the United States District Court for the District of Massachusetts on the same jurisdictional question. Before the litigation smoke cleared, another interstate natural gas company, Distrigas of Massachusetts Corporation (Distrigas) had intervened in both the state and federal actions, followed closely by similar intervention by the Federal Energy Regulatory Commission (FERC) on behalf of the plaintiff Tennessee in the federal suit.

In the time passed since the initiation of these court cases, all the parties thereto have met to discuss the jurisdictional issue. A main point that has been made is that, given the extent of federal regulation of these interstate companies, they certainly are in no need of overlapping or duplicative regulation on the state level. The Council, for its part, acknowledged that its jurisdiction over these companies was limited and not of the same scope as its jurisdiction over intrastate gas companies. A resolution of the differences here lies in

describing an efficient and intelligent exercise of Council jurisdiction; the amendments proposed in this proceeding attempt to detail such an exercise.

2. PURPOSE and SCOPE

As stated the purpose of the proposed amendments is to clarify the relationship between the Council and the interstate natural gas companies by defining the scope of that relationship. To achieve that end, the existing regulations must be made more specific as to their application to these companies; this is what is intended in the proposed amendments to Rule 3.3 (980 CMR 2.03(3))[1] definition of "gas company"); to Rules 66.1 (980 CMR 7.06(1)) and 68.1 (980 CMR 7.08(1)) (gas forecasts and annual supplements, respectively); the proposed addition of Rule 67.9 (980 CMR 7.07(9)) (interstate facilities); and the addition of a third paragraph to Rule 81.1 (980 CMR _____) (Coastal Zone Management).

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[1] References in brackets (980 CMR _____) are to the regulations as located in the Code of Massachusetts Regulations (CMR). CMR is a compilation of administrative agency regulations effective up to and including January 1, 1978. Since some additions may have been made to agency regulations since that date (e.g., EFSC Ch. J, Coastal Zone Management), CMR should be considered incomplete and an up-date of any CMR reference is recommended.

The scope of these regulation proposals (and of the relationship between the Council and the interstate companies) is briefly described as follows. By having the companies file annual demand or sendout data (Rule 66.1 and 68.1), the Council receives information which will give it a better perspective on the overall gas supply picture and aid the Council in meeting its statutory mandate of ensuring a necessary energy supply for the Commonwealth. M.G.L. c. 164, sec. 69H. By taking this data for informational purposes only and by being specific as to the extent to which the regulations apply to interstate companies (Rule 3.3), the Council avoids "over-regulating" which would result by unnecessarily duplicating regulation at the federal level. The Council avoids over-regulating further by delineating the extent of its participation on the state level in such companies' construction proposals (new Rule 67.9). By taking the action contemplated by the new regulation as to interstate facilities, the Council exercises its duty to the public by informing them early and completely of the nature and effect of these construction proposals through a local informational hearing without adding another tier of regulation that may only serve to duplicate or protract the existing federal regulation of such proposals. What is really achieved by the proposed regulations is an efficient and intelligent exercise of Council jurisdiction which makes use of the present regulatory scheme without unduly expanding it.

It is hoped that the action taken by the Council herein will serve to fulfill its perceived duties without proliferating regulations which unnecessarily burden the companies being regulated.

3. Proceedings

Public notice of this rulemaking was published in several Massachusetts newspapers of wide circulation and in the Massachusetts Register on or about February 13, 1980. A public hearing on the proposed regulations was held on March 7, 1980. The period for public comment on these proposals was extended to and including March 19, 1980. The tentative decision of the EFSC Chief Counsel was issued on or about March 28, 1980 and was presented to the Council at its meeting on April 7, 1980 for consideration and a vote.

4. Comments

The comments received herein from the participating interstate natural gas companies were generally favorable. Counsel for these companies suggested certain changes to the initial proposal, many of which were very helpful and are incorporated in the regulations proposed for promulgation which are set out in the Appendix to this decision.

Comments from other participants[2], namely, associations

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[2] A list of participants in this proceeding includes: Algonquin Gas Transmission Company; Tennessee Gas Pipeline Company (a division of Tenneco, Inc.); Distrigas Corporation; Executive Office of Environmental Affairs (through OCZM); The Conservation Law Foundation of New England, Inc.; Sierra Club, New England Chapter; Massachusetts Association of Conservation Commissioners; Union of Concerned Scientists; and former EFSC Environmental Member Morris K. McClintock.

with environmental concerns as well as the Massachusetts Office of Coastal Zone Management (OCZM), focused on what might be termed the Council's abdication of its jurisdiction and the effects thereof. The following paragraphs address the concerns of these groups and OCSZ.

As has been stated above, what is achieved by these regulations is an efficient and intelligent exercise of Council jurisdiction over interstate natural gas companies which are predominatly federally regulated. This is important to note: the Council is not abdicating jurisdiction, it is exercising it intelligently. Whatever piece of the jurisdictional pie the Council may carve for itself as a result of the pending litigation detailed earlier in this decision, the Council must face the fact that, in this area on interstate companies, FERC has the bulk of the authority. No matter how successful the lawsuit may be for the Council, it must still face the question of how to exercise what authority it has intelligently and efficiently. The goal of this exercise is not to see how many hearings the Council can hold, nor to delay the project under consideration. The Council's objective in an exercise of its jurisdiction in this instance is to identify, through its process, what environmental impacts the project presents and to see to it that those impacts are factored into the build or no-build decision. Since that decision, i.e., the ultimate decision as to the need and public convenience of an interstate gas project, resides in FERC, it is absolutely

necessary that local concerns are inserted into the FERC deliberative process as soon as possible. That is what the exercise of Council jurisdiction detailed in the proposed regulations does: the company is required to notify the Council of a project at the same time its application is made to FERC. Then the Council holds that application up for local review in public hearings; these hearings identify what local environmental problems may be involved in the companies proposal. Having identified these problems, the Council presents them to the ultimate decisional authority by its intervention in the relevant FERC proceedings. What has happened in this scenario is that local Massachusetts concerns are identified and brought to the attention of the decision-maker efficiently without unnecessarily duplicating regulation, especially in long, drawn out proceedings. This is an intelligent exercise of Council jurisdiction, not an abdication or surrender thereof.

That these regulations are an exercise of jurisdiction rather than a surrender should allay the fears of OCZM that the Council would somehow cease to have the wherewithal to implement Policy 8 of the CZM Program. As provided by the regulations proposed, the Council is still exercising its jurisdiction and is still able to review an interstate gas proposal using Policy 8 criteria. (See new Rule 67.9(iii) attached).

It must be remembered that under the Federal Coastal Zone Management Act (Act), no federal agency (e.g., FERC)

can issue a license or permit to conduct an activity affecting land or water uses in the coastal zone of a state which has a coastal zone plan (e.g., Massachusetts) without receiving an appropriate certificate from the applicant (e.g., an interstate natural gas company) to be concurred in by the designated state coastal zone agency (e.g., OCZM) indicating that the proposed activity is consistent with the state coastal zone program. 16 U.S.C. sec. 1456(c)(3). Thus, if an interstate gas company were to seek a FERC license for a project located in a Massachusetts coastal zone, FERC could not so issue that license until the Massachusetts OCZM had done its consistency review; in such a case, since the Massachusetts CZM program is "networked,"[3] it would perform that review through the Council as reflected in EFSC Rules and Regulations, Chapter J. Thus, as required by the Act, the CZM program can still demonstrate, even with the proposed regulatory changes, that it provides adequately for the consideration and approval of "facilities ... which are necessary to meet requirements which are other than local in nature" including

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[3] "Networked" describes the machinations of the Massachusetts CZM program; i.e., the CZM Office does not have the regulatory authority to enforce its policies; rather the policies are implemented through the EOEA agencies and, as to Policy 8, through the Council. See 301 CMR 20.7.60 (Council is recognized by EOEA as having the power to determine the issue of consistency with the CZM program for energy facility projects subject to EFSC jurisdiction.)

energy projects. 16 U.S.C. sec. 1455(c)(8) and (e)(2). Again, the Council is not eliminating interstate gas facilities from its jurisdiction, but is seeking to exercise what jurisdiction it has in an intelligent and efficient manner.

A final note: the companies participating in this rulemaking suggested the inclusion of language in these regulations which would state that an applicant (before FERC) company could commence and complete construction if it is authorized to do so under federal law, i.e., once FERC has issued its certificate of public convenience and necessity as to the project. The concern here is with the EFSC statutory provision which prohibits construction of a facility unless the "facility is consistent with the most recently approved long-range forecast or supplement thereto." G.L. c. 164, sec. 69I. The suggested language is not included in the regulations, but the Council would like to address the underlying concern. As stated in the regulations, the Council will receive annual demand/sendout data from the companies for informational purposes only and will not adjudicate that data. See Rule 66.1 (980 CMR 7.06(1)) as amended and attached hereto. The Council does not seek to exercise any approval power over the annual forecasts or supplements of interstate gas companies. Therefore, it makes no sense to require interstate gas companies to delay construction until Council approval of their forecasts; the statutory provision referred to above cannot logically be read to be applicable in this situation. What is required

of the companies when they propose construction is to involve the Council contemporaneously with FERC in the licensing of the project. See new Rule 67.9 (980 CMR 7.07(9)) as attached. In this way the Council will be able to exercise the limited jurisdiction it has over such companies in, again, an intelligent and efficient manner.

And that is the key point in this rulemaking. The Council is not abdicating or surrendering any jurisdiction, but is seeking to exercise it in a manner which reorganizes and realizes its agency obligations and is compatible with the maze of existing regulations in the area. The Council thanks all participating parties for their comments.

Therefore it is ORDERED that the EFSC Rules and Regulations as amended and set out in the Appendix to this decision be, and hereby, are promulgated by this Council. The Chief Counsel is instructed to take the necessary step remaining to record this agency action with the Secretary of State so that this action may take effect.

Energy Facilities Siting Council

by Dennis J. LaCroix

Dennis J. LaCroix, Esq.
Chief Counsel

Dated at Boston this 28th day of March, 1980.

APPENDIX: AMENDMENTS

1. Definition of "Company" or "Gas Company"

Amend the definition of "company" or "gas company" found in Rule 3.3 (980 CMR 2.03(3)) by adding the following paragraph:

> Rule 3.3(vi) (980 CMR 2.03(3)(f)): The term "company" or "gas company" including gas transmission, pipeline and liquid natural and synthetic gas manufacturing companies, as used throughout all Chapters and parts of these regulations does not apply to interstate natural gas companies which are regulated by the Federal Energy Regulatory Commission pursuant to the Natural Gas Act, 15 U.S.C. sections 717 et seq. except as specifically provided in the third paragraph of Rule 66.1 (980 CMR 7.06(1)) (gas forecasts), the last sentence of the second paragraph of Rule 68.1 (980 CMR 7.08(1)) (annual supplements to gas forecasts) and Rule 67.9 (980 CMR 7.07(9)) (interstate facilities), provided, however, that this paragraph shall not be deemed to exempt such companies from filing and obtaining approval of forecasts with respect to intrastate gas facilities not subject to regulation under the Natural Gas Act.

2. Gas Forecasts and Supplements

A. Amend Rule 66.1 (980 CMR 7.06(1)) by replacing third paragraph therein with the following paragraph:

> Interstate natural gas companies subject to Federal Energy Regulatory Commission regulation and persons who have filed an application with the Federal Energy Regulatory Commission for construction of facilities subject to the Natural Gas Act, and operating or intending to operate in Massachusetts will file demand or sendout data with the Coucnil. Such data may be extracted from the companies' annual filings with the Federal Energy Regulatory Commission and shall be for informational purposes only; no adjudicatory proceedings will be held thereon. Duplicates of the companies' FERC filing may be submitted in lieu of the above demand and sendout data.

B. Delete the second sentence of subsection (1) of Rule 66.2.

C. Amend Rule 68.1 (980 CMR 7.08(1)) by adding the following sentence to the second paragraph therein:

> Interstate natural gas companies will update on an annual basis the data filed with the Council pursuant to the third paragraph of Rule 66.1 (980 CMR 7.06(1)) for informational purposes only.

3. Interstate Facilities

Add a new Rule 67.9 (980 CMR 7.07(9)) and relevant sub-sections to define Council responsibility with respect to facilities planned by interstate natural gas companies as follows:

> Rule 67.9 (980 CMR 7.07(9)) INTERSTATE FACILITIES.
>
> (i) When interstate natural gas companies regulated by the Federal Energy Regulatory Commission (FERC) pursuant to the Natural Gas Act, 15 U.S.C. sections 717 et seq. plan to construct new or modify existing facilities within the Commonwealth, the Council requires the following information:
>
> 1. A copy of the company's application to FERC for a certificate of public convenience and necessity with respect to the facility construction/modification.
> 2. Identification of the (1) general route of a pipeline or the sites of other facilities and (2) of the municipalities in the Commonwealth to be affected by such construction/modification and a description of the manner in which these municipalities will be affected. This information can be provided in a cover letter to the submittal of the FERC application to the Council, which letter references those parts of the application

where that information can be found.

This information will be submitted to the Council at the same time the individual company files its application with FERC.

Within 60 days of receipt of this information, the Council will hold public informational hearings in the municipality or municipalities where the affected sites are located and will complete said hearings within thirty (30) days of the time for commencement thereof. The company will attend this hearing so that the public's questions concerning the construction project may be addressed and potential difficulties identified early in the application process. Interested citizens who attend such hearings will be advised as to the nature and availability of their options, rights and/or remedies with respect to the project. Notice of such hearings will be given twenty-one (21) days in advance in a practical manner to be specified by the hearing officer designated by the Council.

(ii) Upon receipt of the company's application to FERC, the Council will act to preserve the rights of interested citizens of the Commonwealth by intervening in the FERC proceedings on said application. After conducting the public informational hearings as described in

(i) above, the Council will present to FERC through its intervention the difficulties and problems identified at said public hearings.

(iii) Further, upon receipt of said application, the Council will contact the appropriate FERC personnel and request joint public hearings as described in (i) above and also will request joint adjudicatory hearings, said joint hearings to be conducted by the Council and FERC.

(iv) The Council will also continue to apply the criteria set off in Policy 8 of the Massachusetts Coastal Zone Management Program (MCZMP) as authorized by the Federal Coastal Zone Management Act (the "Act"), 16 U.S.C. sec. 1451 et seq. and implemented further in Chapter J of the EFSC Rules and Regulations herein. A MCZMP consistency review of the company's application as contemplated by the Act, 16 U.S.C. sec. 1456(c)(3) will be conducted by the Massachusetts Coastal Zone Management Office.

3. Massachusetts Coastal Zone Management Program

Add a third paragraph to Rule 81.1 (980 CMR _____) as follows:

The Siting Council will review the installation of facilities subject to certification under the Federal Natural Gas Act for purposes of determining compliance with the CZM Program as set out in Rule 67.9 (980 CMR 7.07(9)) of

these rules and regulations. Findings as to these facilities will issue from the Office of Coastal Zone Management pursuant to 16 U.S.C. sec. 1451 et seq.

These regulation changes were approved and adopted by a vote of the Council members present at their meeting on May 5, 1980. The vote, as recorded in open session, was 7 to 1 for approval and adoption, with one abstention.

Joseph S. Fitzpatrick
EFSC Chairman

In the Matter of the Town of Rowley Municipal Lighting Plant

3 DOMSC April 7, 1980)

Petition of the Town of Rowley Municipal Lighting Plant for approval of the Third Annual Supplement to its Long Range Forecast

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This decision concerns the Town of Rowley Municipal Lighting Plant's third annual supplement to its forecast submitted pursuant to M.G.L. c. 164, §69I and Chapter G of the EFSC Regulations. The supplement was reviewed by the Council's staff.

It was suggested that no adjudicatory hearing be held unless so requested by the Board or an interested party as no new facilities within Council jurisdiction were proposed and no significant change from the long-range forecast was noted. The Board was so advised and was asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers.

The decision is as follows:

Town of Rowley Municipal Lighting Plant (Docket #79-47)

I. Introduction

Rowley's methodology, assumptions, demand and energy requirements, supply and conservation efforts will be discussed in this decision. The Council finds that the Board's projections in this supplement are based on reasonable statistical methods. Factors which may contribute a degree of uncertainty to these projections are noted in the discussion along with recommendation for continued review.

II. Methodology & Assumptions

The Board forecasts energy consumption and peak demand by developing judgements as to the rate at which each class's consumption will increase or decrease during the forecast period. These judgements are based on both an examination of the historical data and assumptions about local factors.

Rowley has identified the following assumptions concerning local factors: 1) the acceptance of new customers by the water department beginning in the Spring of 1980; 2) the maintenance of an apartment moratorium until May, 1981; 3) the completion of approved subdivisions; 4) the lack of a municipal sewer system in the community; 5) the fact that approximately 30% of the town is wetland and thus restricted from development and 6) the preference of the community's developers for gas heating.

The Energy Facilities Siting Council bases its approval of forecasts on the reasonableness of the statistical methods used to make projections. Rule 62.9(2)(b). This rule is applied on a case-by-case basis. The case at hand involves a small, stable community that does not expect dramatic change from recent experience. The community has also experienced a decline in the growth rate of consumption during the post embargo period. The judgements reflect these circumstances as accurately as possible given the methodology and size of system. Thus, the record supports a finding that a forecast based primarily on these judgements is a reasonable statistical method in this case given the expected stability of the community.

However, some of the local factors mentioned above indicate that this community may experience a greater rate of residential growth than that experienced in the recent past. Such a change may necessitate the use of a more quantitative method in order to satisfy the requirement that a forecast be based on reasonable statistical projection methods.

III. Demand & Energy Requirements

A. Total Requirements

Total energy output requirements (table E-8) is an overall growth rate based on the sum of the componant classes (tables E-1 through E-7). In table E-8 the department projects an average annual growth rate of 4.5 percent in total energy output requirements during the forecast period.[1] The average annual growth rate was 3.4% from 1974 - 78. This is a lower rate than the 13.9% experienced from 1970 - 73. This trend is mirrored in the projected and historical data pertaining to peak growth rates, as seen in table E-11, in this winter peaking system. Thus Rowley has experienced a decrease in the rate of growth of its energy requirements since the 1973 oil embargo.

B. Residential

There is no table E-1 as the town does not have a separate rate for residential with electric heating. Therefore, table E-2 includes residential customers both with and without electric heating.

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[1] Discussing the Town of Ipswich's "Other" sales, 99% of which are to Rowley, MMWEC projected an average annual growth rate of 2.8% for Rowley during the forecast period. MMWEC "Forecast Documentation Narrative" 12-7-79, p. 24, 27; EFSC Docket #79-1.

The contents of table E-2 warrants the following comments:

1) there are approximately 75 residential customers with electric heating included in the 1,135 customers identified in table E-2;
2) the number of customers reflects the number of meters served and not the number of households served because master meters are used in some apartment buildings. Thus, the number of customers is less than the number of households;
3) "the average use per customer" reflects the average use per meter and not the average use per household due to the use of master meters.

The Council acknowledges that it is common practice for electric companies to equate the number of customers with the number of meters served. However, for forecasting purposes it is more useful to identify the number of customers with the number of households served. These problems will be corrected to the extent that individuals request that master meters be replaced by individual meters in the more than 250 apartments during the next two years.

Rowley is principally a residential community. Sixty-four percent (64%) of its total energy output requirements (table E-8) were attributed to the residential class in 1978.

The Board projects the following average annual growth rates for the residential class without electric heating during the forecast period:

1)	number of customers	1.8%
2)	average use per customer	3.4%
3)	total consumption	5.5%

These projections are based on the assumption that electric heat will not be installed in most new homes.

Consumption for this class grew at an average annual rate of 4.1% during the 1970 - 73 period. During the 1974 - 78 period the average annual growth rate was 15.4%. A substantial portion of this rate was due to a 44% growth rate in consumption from 1974 - 75. Since 1975, the average annual growth rate has been 4%. The unusually high rate of growth in 1975 was attributed to the addition of a number of apartment complexes. As concerns the average use per customer data, the Council cannot determine whether the projections include any conservation. The Council will examine the adjusted data in the 1980 Forecast for conservation.

On one hand, the eventual lifting of the apartment development moratorium, the completion of approved subdivisions and the number of proposed subdivisions augur for increased consumption; on the other, the significant proportion of land that may not be developed due to wetland restrictions, the lack of a municipal sewer and any limits on the quantity of water that the town's new well can supply will act to deter growth in consumption. The net impact of these conflicting forces is uncertain.

The Council finds the judgements to be reasonable. In its next filing, the Board should discuss how customer conservation, the status of the town's water supply and the uncertainty surrounding the level of residential construction effect the formulation of the judgements.

C. Commercial

Rowley does not have an industrial rate. The commercial class includes commercial and light industrial users. Demand from this class is projected to grow at an average annual rate of 5.5% during the forecast period. The average annual growth rate was 7% during the 1974 - 78 period and 10% during the 1970 - 73 period. The projections reflect the Board's expectations that new commercial customers, as in the recent past, will be small diverse businesses rather than large commercial customers, and that this will result in a gradual slowdown in the growth rate for this class during the forecast period. The Council finds that judgements reflecting a decline in the growth rate are reasonable and recognizes the difficulty of accurately forecasting the magnitude of the decrease for the entire forecast period.

D. Street Lighting & Railroad

The town of Rowley has a mixture of mercury vapor and low sodium lights. The sodium lamps are the most energy efficient; the mercury vapor lamps are the next best. The majority of the lights are of the mercury variety. The department projects an average annual increase of 3.9% in this class during the forecast period (table E-6). The growth

rate during the 1974 - 78 period was 4.3%. The Town will convert all of its street lights to the sodium variety as the funds are made available. The projected growth for this class is based on the assumption that energy conserved through conversion to low sodium lights will partially off-set the increase in demand due to the installation of additional street lights. This appears to be a reasonable judgement under the circumstances.

E. Losses

Losses and internal use (table E-7) dropped from 1,086 Mwh in 1977 to 705 Mwh in 1978. The manager attributes this 35% decrease to a billing error by Rowley's supplier in December, 1978. The Council finds the judgements about this class to be reasonable.

IV. Supply

Rowley purchases all its requirements from the Town of Ipswich Municipal Light Department under an exclusive contract dated March 1, 1976 (table E-24). The parties interpret the contract as automatically renewing itself year after year unless terminated by written notice 90 days prior to the renewal date. Ipswich may amend the contract provisions pertaining to rates by notifying Rowley of such amendment. Rowley may purchase up to 7,000 KW under this contract. There is no charge if Rowley uses less than the 7MW. The peak demand in this winter peaking system was 2.96 MW in 1978.

V. Conservation

(See Street Lighting & Railroads and Average Use Per Customer in Residential)

VI. Order

The Council has reviewed Rowley's third supplement. The Council finds that the Supplement is based on reasonable judgements and predominately accurate historical data. Given the state of the art of forecasting small communities and the Board's expectation that future conditions will be similar to the recent past, a methodology based on judgements which accurately reflect these conditions is a reasonable statistical method under Rule 62.9. If the community changes from stable to more rapid growth it may be necessary to use a more quantitative method in order to satisfy the requirement that a forecast be based on reasonable statistical projection methods.

In reviewing the Rowley filing the Council realizes that it is difficult to achieve much more accuracy from such small systems because growth therein is often uneven. A concomitant effect of this uneven growth is the generation of statistical data that results in large percentage increases or decreases from small absolute changes in the raw data. The Council is also aware that Rowley, as a relatively small municipal utility with other responsibilities, has limited resources and a small staff. Nevertheless, the Board provided the Council's staff with the information needed to review this supplement and this has been most helpful. The Council APPROVES the forecast with the following conditions:

That the Board, in its 1980 Forecast 1) establish the date(s) on which any master metered apartment buildings came on line 2) add the apartment units in excess of the number of

master meters to the "customer" category for the appropriate year 3) recalculate the "average use per customer" from that year forward and 4) footnote the table to this effect.

That the Board footnote the number of residential customers with electric heating in subsequent filings for the 5 year historical period so that the Council can observe any increase or decrease in those customers choosing electric heating.

That the Board discuss, in subsequent filings, the effect that customer conservation, the status of the Town's water supply and the uncertainty surrounding the level of residential construction have on the formulation of judgements.

The Department inform the Council as to the availability of rates for the purchase of power from customers i.e., "Buy Back or Purchase Power Rates."

The Council APPROVES the Rowley Municipal Light Board's third supplement with the afore mentioned conditions. The Council thanks the Board, especially Mr. McCormick, for their cooperation.

Energy Facilities Siting Council

by Robert D. Wilmot

Robert D. Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 7 April, 1980.

Joseph S. Fitzpatrick
Chairman

In the Matter of the Merrimac Municipal Light Department

3 DOMSC (April 7, 1980)

Petition of the Merrimac Municipal Light Department for approval of the Third Annual Supplement to its Long Range Forecast.

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This decision concerns the Merrimac Municipal Light Department's third annual supplement to its forecast submitted pursuant to M.G.L. c. 164, s. 69I and Chapter G of the EFSC Regulations. The supplement was reviewed by the Council's staff.

It was suggested that no adjudicatory hearing be held unless so requested by the department or an interested party as no new facilities within Council jurisdiction were proposed and no significant change from the long-range forecast was noted. The department was so advised and was asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers.

The decision is as follows:

Merrimac Municipal Light Department (Docket #79-46)

I. Introduction

Merrimac's methodology, assumptions, demand and energy requirements, supply and conservation efforts will be discussed in this decision. The Council finds that the department's judgements in this supplement are based on reasonable statistical methods. Factors which may contribute a degree of uncertainty to these projections are noted in the discussion along with recommendations for continued review.

II. Methodology & Assumptions

The department forecasts energy consumption and peak demand by developing judgements as to the rate at which each class's consumption will increase or decrease during the forecast period. These judgements are based on both an examination of the historical data and assumptions about local factors.

Merrimac has identified the following assumptions concerning local factors: 1) no major growth in population 2) little or no new commercial development 3) preference of new home owners for gas and oil heat 4) the completion of approved subdivisions 5) the sewering of the older, almost fully developed, part of town by 1981 6) no new apartment buildings and 7) the continuing predominance of the community's residential character.

The Energy Facilities Siting Council bases its approval of forecasts on the reasonableness of the statistical methods used to make projections. Rule 62.9(2)(b). This rule is applied on a case-by-case basis. The case at hand involves a small, stable community that does not expect dramatic change from recent experience. The community has also experienced a decline in the growth rate of comsumption during the post embargo period. The judgements reflect these circumstances as accurately as possible given the state of the art of forecasting. Thus, the record supports a finding that a forecast based primarily on these judgements is a reasonable statistical method in this case.

III. Demand & Energy Requirements

A. Total Requirements

Total energy output requirements (table E-8) is an overall

growth rate based on the sum of the componant classes (tables E-1 through E-7). In table E-8, the Department projects an average annual growth rate of 2.5% in total energy output requirements during the forecast period. The average annual growth rate was 6.3% from 1970 to 1973 and 3.2% from 1974 to 1978. This trend toward a decreasing rate of growth in the post oil embargo period is not mirrored in the historical data concerning peak growth. The peak; in this winter peaking system, grew at an average annual rate of 0% from 1970 to 1973 and 5.6% from 1974 to 1978. The department projects an annual growth rate of 3% in peak demand during the forecast period.

B. Residential

There are two classes of residential users: residential with (table E-1) and without (table E-2) electric heating. While the total consumption of a residential class is important, the data on the number of customers and the average use per customer also warrants examination.

The residential class without electric heating (table E-2) warrants the following explanation. The number of customers reflects the number of meters served and not the number of households served because master meters are used in some apartment buildings. Thus, the "number of customers" is less than the number of households served. The average use per customer data is also effected by this practice causing the data to reflect the average use per meter and not the average use per household. The Council realizes that it is common practice for electric companies to equate the number of customers with the number of meters served. However, for forecasting purposes it is more useful to identify the number of customers with the number of households served. In this case thirty apartments or households,

comprising 2% of the customers in the residential class without heating, are on two master meters and hence counted as two customers. There are no plans to convert these master metered apartments to individual meters. In order to maintain more accurate data the Department should 1) establish the date(s) on which any master metered apartment buildings came on line 2) add the apartment units in excess of the number of master meters to the "customer" category for the appropriate year 3) recalculate the "average use per customer" from that year forward and 4) footnote the table to this effect.

Merrimac is principally a residential community. Sixty-seven percent (67%) of its total energy output requirements were attributed to the residential classes in 1978. During the forecast period an average annual growth rate of 4.3% is projected for the residential class with electric heating and 3.4% for the residential class without electric heating. The increase in residential consumption was 3.8% for customers with electric heating and 1.8% for those without electric heating from 1977 to 1978. Both classes of residential customers experienced a significant decrease in their rates of growth during the post embargo period, 1974 - 78.

The "average use per customer" for the residential class with electric heating grew at an average annual rate of 13% from 1970 to 1971 and -.7% from 1974 to 1978 (table E-1). The "average use per customer" for the residential class without electric heating grew at an average annual rate of 7% from 1970 to 1973 and .7% from 1974 to 1978. This historical data shows a substantial decline in the rate of growth for the average use per customer in the post embargo period for both residential classes. The Department projects an average annual growth rate of 2% for both classes during the forecast period.

While the historical average use data cannot be an absolute measure of customer conservation because of data problems relating to master metered apartments and weather variations, it does seem to indicate lower increases in growth per customer than forecast by the Department. The assumptions upon which these judgements are based are not clear nor is it evident that this judgement incorporates recent apparent consumer conservation.

The Council finds the Department's judgements to be reasonable on the condition that it explain the assumptions including those pertaining to consumer conservation, upon which these judgements are based in the next filing.

C. Commercial & Industrial

The Commercial Class (table E-3) includes commercial, small industrial and industrial customers as the Department has one rate for these users. The Department projects 0% growth for this class during the forecast period. While demand from the Commercial Class grew 7.1% in 1978, the average annual growth rate was -1% from 1970 - 73 and 1.7% from 1974 - 1978. The Department informed the Council that demand from this class will exceed that forecasted in the near term due to the installation of a 1000 KVA transformer by an industrial customer. The sewage system may encourage commercial development because it will run near commercially zoned property on Route 101. Given the uncertainty surrounding the factors effecting projections for this class, the Council finds the Department's judgements to be reasonable.

D. Street Lighting & Railroad

The Town of Merrimac has a mixture of incandescent, mercury vapor and low pressure sodium street lights. The sodium lamps are

the most energy efficient, the mercury are next best and the incandescent are the least energy efficient. New Subdivisions are equipped with sodium lights. The Town will convert the remainder of its street lights, approximately 200, to sodium at about 3% per year.

Demand from this class is projected to grow at an average annual rate of 0% during the forecast period. This class grew at an average annual rate of -1.3% from 1970 - 73 and -.1% from 1974 - 78. The projections for this class are based on the assumption that energy conserved through conversion to low sodium lights will off-set the increase in demand due to the installation of new street lights. The Council finds the Department's judgements to be reasonable.

The railroad class is actually demand from private area lighting. Private area lighting is a street light rental service offered by the department. The department is considering raising the rate for this class as it has not kept pace with energy costs.

The department projects an average annual growth in demand of 2% for this class during the forecast period. Demand grew at an average annual rate of 20% from 1970 - 73 and 4.7% from 1974 - 78. Thus, this class experienced a significant decline during the post embargo period. The Council finds the judgements upon which this projection is based to be reasonable.

E. Losses & Internal Use

Losses and internal use (table E-7) increased 19.9% in 1978. The department attributes this increase to overlaps between its supplier's billing periods and the Council's forecast period.

The department projects an average annual growth in demand of

0% for this class during the forecast period. Demand increased at an average annual rate of -2.2% from 1970 - 73 and 3% from 1974 - 78. The Council finds the judgements about this class to be reasonable.

II. Supply

Merrimac is an "all requirements" customer of the New England Power Company under FPC Tariff #1, see table E-24. The contract is a standard "wholesale for resale" customer contract, effective November 11, 1967. Seven years notice is required for cancellation by either party.

The community voted to join MMWEC at the May 29, 1979, Town Meeting. The Light Board recommended this action for planning purposes. MMWEC personnel are currently working with the department to develop long- and short-term power supply plans. If the department decides that it is advantageous to purchase power from MMWEC in the long- and short-term, it will cancel its contract with the New England Power Company. It may do so under the "contract demand settlement agreement" which allows the municipals to separate from the New England Power Company as their "all requirements" supplier. The separation is accomplished by gradually reducing primary purchases of energy through October 31, 1981, at which time a municipal electing this course would cease to purchase primary power from N.E.P.Co. However, the Department is concerned that the price of electricity resulting from MMWEC"s short-term fuel mix may not be as advantageous to Merrimac consumers as the price resulting from MMWEC"s long-term fuel mix. If this be the case, the department may elect to give seven years notice and terminate their relationship with N.E.P.Co. as required under the present contract. This scenario would enable Merrimac to remain a N.E.P.Co. customer for seven more years and

switch to MMWEC with the expectation that the price of its electricity will be more advantageous to Merrimac consumers.

Given the fact that the Department is considering a conversion from its status as a purchaser of power to that of an indirect owner of capacity through MMWEC, the Department should investigate local supply options such as load management, conservation, renewable resources and co-generation and report to the Council on these options in six months.

V. Conservation

(see Street Lighting & Railroads and Residential)

VI. Order

The Council has reviewed Merrimac's third supplement. The Council finds that the forecast is based on reasonable judgements and predominately accurate historical data. Given the state of the art of forecasting small communities and the Department's expectation that future conditions will be similar to the recent past, a methodology based on judgements which accurately reflect these conditions is a reasonable statistical method under Rule 62.9.

In reviewing the Merrimac filing, the Council realizes that it is difficult to achieve much more accuracy from such small systems because growth therein is often uneven. A concomitant effect of this uneven growth is the generation of statistical data that results in large percentage increases or decreases from small absolute changes in the raw data. The Council is also aware that Merrimac, as a relatively small municipal department with other responsibilities, has limited resources and a small staff. Nevertheless, the Department was helpful and provided the Council's staff with the

information needed to review this supplement. The Council APPROVES the forecast subject to the following conditions:

That the Department explain the assumptions, including those pertaining to consumer conservation, upon which its judgements concerning the residential class forecasts are based.

That the Department 1) establish the date(s) on which any master metered apartment buildings came on line 2) add the apartment units in excess of the number of master meters to the "customer" category for the appropriate year 3) recalculate the "average use per customer" from that year forward and 4) footnote the table to this effect. The Council requests that this correction be reflected in the 1980 supplement.

That the Department continue to monitor the progress of the community's sewage system and discuss its impact on commercial demand in subsequent filings.

That the Department investigate local supply options such as load management, conservation, renewable resources and co-generation and report to the Council on these options in six months.

The Department inform the Council as to the availability of rates for the purchase of power from customers i.e., "Buy Back or Purchase Power Rates."

Finally, the Council grants the Department's request that tables E-27 and E-28 be waived.

The Council APPROVES the Merrimac Municipal Light Board's third supplement subject to the afore mentioned conditions. The Council thanks the Department, especially Mr. Van Nahl, for their cooperation.

Energy Facilities Siting Council

by Robert D. Wilmot

Robert D. Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 7 April, 1980.

Joseph S. Fitzpatrick
Chairman

In the Matter of the Concord Municipal Light Plant

3 DOMSC (May 5, 1980)

Petition of the Concord Municipal Light Plant for Approval of the Third Annual Supplement to its Long Range Forecast.

This decision concerns the Concord Municipal Light Plant's third annual supplement to its forecast submitted pursuant to M.G.L. c. 164, §69I and Chapter G of the EFSC Regulations. The supplement was reviewed by the Council's staff.

It was suggested that no adjudicatory hearing be held unless so requested by the utility or an interested party as no new facilities within Council jurisdiction were proposed and no significant change from the long-range forecast was noted. The utility was so advised and was asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers.

The decision is as follows:

I. Introduction

Concord's methodology, demand and energy requirements, supply and conservation efforts will be discussed in this decision. The Council finds that the utility's forecast in this supplement is based on reasonable statistical methods. Factors which may contribute a degree of uncertainty to these projections are noted in the discussion.

II. Methodology

Concord used a methodology which combined judgement and "least squares linear regression trend line analysis" to derive its projections for the 1979-1988 forecast period. That is to say that sales, average use per customer and number of customers were

projected as a function of time using a statistical technique. This method uses historical data to predict future trends. Implicit in this methodology is the assumption that the trend observed in the historical period will continue into the future. This raises the question of whether there is a historical period that will accurately indicate future demand. Thus the projections are sensitive to the choice of base periods.[1] Secondly, there are issues raised with respect to how the statistical derived projections were adjusted by judgements.

The methodology must satisfy the review criteria stated in Rule 62.9. First, any historical data used must be accurate and complete. Second, the forecast must be based on these data and reasonable statistical projection methods. A statistical projection method will be found to be reasonable if it is appropriate, reviewable and reliable. The appropriateness of a methodology depends on whether the methodology used is technically suitable given the size and growth dynamics of the system. The reviewability of a methodology depends on whether it has been presented in a manner such that the results can be evaluated and duplicated by another person given the same information. The reliability of a methodology is a measure of confidence, i.e., that what is forecasted is most likely to occur, given the assumptions, judgements and data which drive the forecast methodology.

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[1] The significance of historical phenomena may be diluted by combining into one base period what should be analyzed as two or more base periods. For example - for many communities a trend line based on the pre-embargo period would show a higher rate of growth in energy sales than a trend line based on the post-embargo period.

The review criteria in Rule 62.9 are applied on a case-by-case basis. The appropriateness of a trend based forecasting method is affected by 1) the stability of the systems growth in consumption and number of customers and 2) establishing a relationship between past and future trends. More specifically, where trend line forecasting is used, the relationship between the base period and the forecast period must be established, 1 DOMSC 43, 54-57 (13 December, 1977). A review of Concord's historical data and supplement show evidence of stability but do not sufficiently establish a relationship between past and future trends. The case at hand involves a stable community of moderate size that does not expect dramatic change in consumption and number of customers from recent experience. The proportion that each class contributes to total energy output requirements has also remained constant during the recent period.

Figure 1*

Class	Range of each Class's Contribution to Total Sales During 1975-1978
Residential with electric heating	8-9.4%
Residential without electric heating	30-31.2%
Commercial	28-29.2%
Industrial	24-25%

*derived from data in the 1979 Supplement

In addition, Concord's land is almost completely developed, therefore electrical demand is less likely to be affected by new construction than by change in the use of previously developed land. Thus, the record supports the conclusion that Concord is a stable community. The light plant submitted limited information

supporting its choice of the 1971-78 base period. This information did not address the changes in energy use which occurred within that period. The next question is whether Concord's methodology is reviewable and reliable as implemented? The historical data appears to be accurate and complete. The result of the regression indicates a slight negative growth trend in the average use per customer category for both residential classes. The projections were modified to indicate positive growth because of Concord's judgement that it is unrealistic to project the negative trend and the use of heat pumps will increase the average use per customer. Thus a modest positive growth trend was selected for the average use per customer and incorporated into the projections.[2]

At this juncture, questions of reliability and reviewability arise. As to reliability, the Council must be informed of the basis for judgements made concerning the average use per customer, the manner in which these judgements were developed, and whether these judgements were incorporated into the forecast in a reasonable manner. As to reviewability, it must be possible for the results to be evaluated and duplicated by another person given the same information.

The record, supported only by historical data, does not sufficiently explain the basis of Concord's judgement on the projections for the average use per customer. Such an explanation would also enhance the reviewability of the supplement. Thus, further evidence is needed to sufficiently support Concord's judgement in selecting these particular trends.

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[2] For residential customers without heat, a 1% per year increase was applied to 1978 average use over the forecast period. For customers with electric heat, 1979 average use was increased by 1.4% over 1978 average use and held constant at this level over the forecast.

III. Demand & Energy Requirements

Concord has not significantly altered its forecasts from the 1978 Supplement with the exception of Losses and Internal Use (table E-7) and Total System Load (table E-11). Losses and Internal use are forecast to grow at an average annual rate of .51% The total system load chart indicates that this historically winter peaking system expects to become a summer peaking system during the forecast period.

IV. Supply

Concord is an all requirements customer of Boston Edison (table E-24). The addition of a substation (table E-23) and transmission line (table E-20) are power supply alternatives under study at this time.

V. Conservation

The Town has undertaken the following steps to conserve energy: spray insulation of town buildings, limited conversion of street lights to high pressure sodium lamps and the installation of solar heating for the light plant garage and office building. Consumer inquiries as to the energy efficiency of appliances are referred to "Consumer Reports". The Board has also considered proposing by-laws which restrict certain loads.

The light plant has also installed a number of Time-of-Day meters to collect data for future analysis as recommended by a consulting firm. Other recommendations still under consideration are: a rate provision for acceptance of supplementary solar heating of water and peak load pricing.

The Council appreciates the Town's initiatives in the area of conservation and load management and will be interested in any effects these measures have on demand.

VI. Order

The Council has reviewed Concord's 1979 Supplement. The Council finds that the historical data are accurate and complete. It also finds that the trend line analysis may be appropriate, reliable and reviewable and hense a reasonable statistical projection method if the conditions below are met. The forecast is APPROVED subject to the following conditions:

1) In future filings, if based on a trend-line methodology, the light plant shall explain its choice of base years, and discuss the relationship between the base period and the future period for each separate element forecast by this method (i.e., number of customers, average use, and/or commercial and industrial sales). It must be domonstrated that the base period would be a good indicator of the forecast period.

2) In future filings, the light plant shall explain the basis for and the manner in which it incorporates judgements into the forecast. These judgements include the basis for adjustment of trend-line analysis results, the reasons for a shift to a summer peak, and the basis for a decline in the system load factor.

3) The light plant will inform the Council as to the availability of rates for the purchase of power from customers, i.e., "Buy Back or Purchase Power Rates."

The Council APPROVES the Concord Municipal Light Plant's 1979 Supplement subject to the afore mentioned conditions. The Council thanks the light plant, expecially Mr. Sproul, for their cooperation.

Energy Facilities Siting Council

by Robert D. Wilmot

Robert D. Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 5 May, 1980.

Joseph S. Fitzpatrick
Chairman

EFSC Nos. 79-31 and 79-30

Petition of the Russell Municipal Light Department and the Chester Municipal Light Department for Approval of Their Third Annual Supplements to the Long-Range Forecasts.

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This decision concerns the third annual supplements to long-range forecasts submitted by the following utilities pursuant to M.G.L. c. 164, §69I and Chapter G of the EFSC Regulations: 1) Russell Municipal Light Department and 2) Chester Municipal Light Plant. The supplements were reviewed by the Council's staff.

It was suggested that no adjudicatory hearing be held unless so requested by the department or an interested party as no new facilities within Council jurisdiction were proposed and no significant change from the long-range forecast was noted. The departments were so advised and were asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers.

The individual decisions are as follows:

Russell Municipal Light Department (Docket No. 79-31)

Russell is an all-requirements customer of Western Massachusetts Electric Company and predicts an overall system output growth of 3% per year and peak growth of 2% per year. These are the same growth rates found in the 1978 and 1977 supplements. See 2 DOMSC 37 (November 1977).

In reviewing the Russell filing, the Council realizes that it is difficult to forecast with a great degree of accuracy for small systems because the area covered by the forecast is small

and the growth therein is often uneven. A concomitant effect of this uneven growth is the generation of statistical data that results in large percentage increases or decreases from small absolute changes in the raw data.

Because of its small size and its contractual relationship to WMECO the Council will pursue to the extent necessary, substantitive issues of requirements with respect to the filing of its wholesale supplier.

As there are no significant changes from the 1978 and 1977 supplements, the Council APPROVES the Russell Municipal Light Department's 1979 Supplement subject to the condition that the department inform the Council as to the availability of rates for the purchase of power from customers, ie., "Buy Back or Purchase Power Rates."

Chester Municipal Light Department (Docket No. 79-30)

Chester is an all-requirements customer of Western Massachusetts Electric Company. Its 1978 filing was disapproved for a lack of compliance with the filing requirements. The 1979 filing is somewhat improved, but the Department, once again, did not calculate the average use per customer or any of the percentage changes.

In reviewing the Chester filing, the Council realizes that it is difficult to forecast with a great degree of accuracy for small systems because the area covered by the forecast is small and the growth therein is often uneven. A concomitant effect of this uneven growth is the generation of statistical data that results in large percentage increases or decreases from small absolute changes in the raw data.

Because of its small size and its contractual relationship to WMECO, the Council will pursue to the extent necessary substantive

issues of requirements with respect to the filing of Chester's wholesale supplier.

The Council APPROVES the Chester Municipal Light Department's 1979 Supplement subject to the following conditions:

1) In future filings Chester will submit TYPED forecasts and calculate the average use per customer and all other percent changes indicated on the tables applicable to Chester.

2) The department will inform the Council as to the availability of rates for the purchase of power from customers i.e., "Buy Back or Purchase Power Rates."

Energy Facilities Siting Council

by Robert Wilmot

Robert D. Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 5 May, 1980.

Joseph S. Fitzpatrick
Chairman

In the Matter of the Norwood Municipal Light Department

3 DOMSC (June 10, 1980)

Petition of the Norwood Municipal Light Department for Approval of the Third Annual Supplement to its Long Range Forecast

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I. Introduction

This decision concerns the Norwood Municipal Light Department's third annual supplement to its forecast submitted pursuant to M.G.L. c. 164, §69I and Chapter G of the EFSC Regulations. The supplement was reviewed by the Council's staff.

It was suggested that no adjudicatory hearing be held unless so requested by the Department or an interested party as no new facilities within Council jurisdiction were proposed and no significant change from the long-range forecast was noted. The Department was so advised and was asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers as well as to post said notice in the Town Hall.

Norwood's forecast methodology, its demand for and supply of energy requirements, and its conservation efforts will be discussed in this decision. The Council's approval of the Supplement is subject to the conditions stated in its Order set out in Section VI below. The decision is as follows.

II. Methodology

A. The Council's Review Criteria

A company's demand forecast must satisfy the review criteria stated in Rule 62.9(2)(a), (b) and (c) as applied on a case-by-case

basis by the Council. These criteria call for the use of accurate and complete historical data as a base for a reasonable statistical projection method.[1] A statistical projection method will be found to be reasonable if it is appropriate, reviewable and reliable.

A methodology is appropriate when it is technically suitable for the size and nature of the particular system. A methodology is reviewable when it has been presented in a manner such that the results can be evaluated and duplicated by another person given the same information. For a methodology to be capable of duplication, its significant determinants and assumptions must be clearly identified in the forecast documentation. Also, the means by which they are incorporated into such documentation, a description of that process and the basis for particular assumptions must similarly be clearly explained in the forecast narrative. A methodology is reliable when it provides a measure of confidence that the assumptions, judgements and data which comprise it will forecast what is most likely to occur.

B. Norwood's Methodology

Norwood has chosen a methodology which combines various types of regression analysis[2], arithmetic average, and judgement to derive its projections for the 1979-1988 forecast period.

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1 Review criteria for all forecast methodologies and methodologies specializing in demand forecasting are stated in Rules 69.2 and 63.5, respectively.

2 The types of regression analysis used were: straight line sum of the squares, logarithm sum of the squares and sum of the linear squares. See letter to Malcolm McDonald, Norwood's Assistant Superintendent, from the Hearing Officer dated April 28, 1980.

In using such a statistical technique, a base period is selected and historical data on sales, average use per customer and number of customers for that period are projected as a function of time.

The Department selected 1974 through 1978 as the base period for its regression analysis. For its average use per customer projections the Department used an arithmetic average of the 1975 through 1979 base period. These projections in table E-1 and those for consumption in tables E-3 and E-5 were then adjusted to incorporate judgements concerning consumer conservation in the former and the construction of a large industrial/commercial park in the latter.[3]

C. The Review Criteria Applied To Norwood

As mentioned above, Norwood makes its forecast projections by using a methodology that combines the statistical techniques of regression analyses and arithmetic averaging with the use of judgement. Given the size and relatively stable nature of the Norwood system, it appears to the Council at first glance that this is an appropriate methodology for the Department to use. However, it is noted that as statistical techniques, both regression analyses and arithmetic averaging use historical data to predict future trends. Implicit here is the assumption that the causal factors affecting the trend in the given historical or base period will continue to have the same effect in the future. Since projections derived by the use of these techniques are clearly sensitive to the historical or base period chosen, a threshold question arises as to whether that chosen period will

[3] See Hearing Officer's letter of April 28, 1980 to Mr. McDonald.

accurately reflect future demand. The utility has the burden of showing that it has chosen a base period that will provide an accurate forecast of future demand. 1 DOMSC 43, 54-57 (December 13, 1979). Thus, unless the base period and the rationale for its choice are clearly explained, there remains for the Council some question as to the appropriateness of a methodology. In the instant case, Norwood did not provide such an explanation in the forecast document; it is expected that it will do so in future filings.

This dearth of explanation also affects the criterion of reliability, especially where, as here, a utility's methodology relies in part on judgements. In a case such as Norwood where judgements are incorporated into a methodology, questions arise as to what and why judgements are made, on what are they based and then exactly how are they finally incorporated in and with what effect on the statistically derived projections. These questions must be addressed by the company in its forecast document. Until that is done, the Council cannot arrive at any decision on the reliability, i.e., measure of confidence, of the methodology and its results. In the instant case, these questions as to the use of judgements were not addressed in the forecast document. Again, the Council expects that future filings will remedy this.

All of the above comments also impact the third criterion of reviewability. A forecast based on a trend analysis methodology is difficult to evaluate when the relationship between its past and future trends is largely unexplained and undocumented. It is of no benefit to the Council to review only the conclusions arrived at by the forecaster unless also given the

benefit of that forecaster's input and rationale used therein. Such input and rationale are an integral part of the utility's filing with the Council. As stated in EFSC Rule 63.5(c), "The forecast documentation shall be sufficiently explicit and complete to allow the Council fully to understand the forecast from the information presented."

As has been pointed out in the above paragraphs, Norwood's filing lacks sufficient documentation. It is expected that this is a matter that can easily be remedied in future filings. The Council appreciates the help that Malcolm McDonald, the Department's Assistant Superintendent, has rendered in the review of this supplement; some supplemental information on the filing was cooperatively supplied by Mr. McDonald. But it must be remembered that the forecast and its supplements are public documents which often are reviewed by persons other than the Council and its staff. Thus, reviewability of that document itself is of the essence and is the thrust of Rule 63.5. In the Council's ORDER (Section IV below), paragraphs 1 - 3, inclusive, are intended to assist the Department in meeting the requirements of Rule 63.5. The Council has also instructed its staff to assist the Department in fulfilling these conditions in its next filing; Department personnel need but contact the staff to avail itself of this assistance.

III. Energy (Demand/Supply) Requirements and Conservation

Overall, Norwood has not significantly altered its forecast from the 1978 Supplement. On the demand side, the Department projects an average annual growth rate of 2.57% in total energy

output requirements and expects to remain a summer peaking system during the forecast period.

On the supply side, Norwood continues as an all requirements customer of the Boston Edison Company. (See table E-24)

In the area of energy conservation, the Department has initiated peak control measures. Along with offering an off-peak hot water heating rate, the Department will telephone its larger customers in an effort to reduce consumption when it appears that a new peak may be reached. In addition, the Department is presently examining carrier controlled load shedding devices and is willing to negotiate a rate for off-peak heating. Its current budget also includes funds for attaching such devices to hot water heaters on an experimental basis. The Department also expects further energy conservation with the installation of more efficient street lighting.

The Council applauds the Department's initiatives in the area of conservation and load management and will be interested in any effect these measures have on its energy requirements.

IV. Order

The Council APPROVES Norwood's 1979 Supplement subject to the following conditions:

1) In future filings, whenever a forecast is based on time trends, the Department shall explain its choice of base years, and discuss the relationship between the base period and the future period for each separate element forecast by this method (i.e., number of customers, average use, and/or commercial and industrial sales).

It must be demonstrated that the base period is a good indicator of the forecast period.

2) In future filings, the Department shall explain the bases for and the manner in which it incorporated judgements into the forecast. This includes an explanation for any adjustment of regression analysis results by virtue of the use of judgements.

3) In future filings, the Department shall describe the steps in its methodology pursuant to Rule 63.5(a), (b) and (c). Subparagraph (c) states that, "The forecast documentation shall be sufficiently explicit and complete to allow Council fully to understand the forecast from the information presented."

4) The Department will inform the Council as to the availability of rates for the purchase of power from customers, i.e., "Buy Back Power Rates."

The Council thanks the Department, especially Mr. McDonald, for its cooperation.

Energy Facilities Siting Council

by Robert D. Wilmot

Robert D. Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 10 June, 1980.

Joseph S. Fitzpatrick
Chairman

Petition of the Wellesley Municipal Light Plant for Approval of the Third Annual Supplement to its Long Range Forecast

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This decision concerns the Wellesley Municipal Light Plant's (hereafter "Division") third annual supplement to its forecast submitted pursuant to M.G.L. c. 164, §69I and Chapter G of the EFSC Regulations. The supplement was reviewed by the Council's staff.

It was suggested that no adjudicatory hearing be held unless so requested by the Division or an interested party as no new facilities within Council jurisdiction were proposed and no significant change from the long-range forecast was noted. The Division was so advised and was asked to publish notice of tentative APPROVAL and of the right to a public hearing in local newspapers.

The decision is as follows:

I. Introduction

Wellesley's methodology, demand and energy requirements, supply and conservation efforts will be discussed in this decision. The Council's approval of the Supplement is subject to the conditions stated in the Order.

II. Methodology

A. The Council's Review Criteria

The demand forecast must satisfy the review criteria stated in Rule 62.9(2)(a), (b) and (c). These criteria are applied on a case-by-case basis. First, any historical data used must be accurate and complete. Second, the forecast must be based on these data

and reasonable statistical projection methods.[1] A statistical projection method will be found to be reasonable if it is appropriate, reviewable and reliable. The appropriateness of a methodology depends on whether the methodology used is technically suitable given the size and nature of the system. The reviewability of a methodology depends on whether it has been presented in a manner such that the results can be evaluated and duplicated by another person given the same information. In order for a methodology to be capable of duplication the significant determinants and assumptions must be identified in the forecast documents. The means by which they are incorporated into the forecast and the reasons for making a particular assumption must be explained in the forecast narrative. The reliability of a methodology is a measure of confidence in the assumptions, judgements and data which drive the forecast methodology, i.e., that which is forecasted is likely to occur.

B. Wellesley's Methodology

Wellesley used a methodology which combines "trend line analysis" and judgement to derive its projections for the 1979-1988 forecast period. In this statistical technique a base period is selected and historical data on sales, average use per customer and number of customers for that period are projected as a function of time. The Division selected 1974 through 1979 as the base period.

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[1] Review criteria for all forecast methodologies and methodologies specializing in demand forecasting are stated in Rules 69.2 and 63.5, respectively.

Using the data from this period, the forecaster calculated a year by year average, weighted in favor of the later years. This weighted average growth rate was used to derive the projections.[2] Should the forecaster have knowledge of specific future load additions which would exceed the growth projected by the trend line analysis, the forecaster would modify the projections to reflect this growth.

C. The Review Criteria Applied to the Case at Hand

As previously mentioned in section II B, Wellesley uses trend line analysis and a weighted average growth rate to derive its projections. The appropriateness of a trend-based forecasting method is affected by the relationship between past and future trends. More specifically, where trend line analysis is used to forecast, the utility has the burden of showing that it is reasonable to expect that the past will provide an accurate forecast of the future. 1 DOMSC 43, 54-57 (13 December, 1979)

Implicit in the use of historical data to predict future trends is the assumption that the causal factors affecting the trend in the historical period will continue to have the same effect in the future. Such projections are sensitive to the choice of base periods[3] and raise the question of whether a historical period exists that will accurately indicate future demand.

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2 See letters to Mr. Berdan, Manager, Wellesley Municipal Light Plant, from the Hearing Officer dated May 6, 1980 and May 9, 1980.

3 The significance of historical phenomena may be diluted by combining into one base period what should be analyzed as two or more base periods. For example, for many communities a trend line based on the pre-embargo period would show a higher rate of growth in energy sales than a trend line based on the post-embargo period.

The choice of base periods in the case at hand implies that the consumption during the forecast period will not change dramatically from that experienced during the post-embargo period. The Division's information concerning private and public construction plans partially supports this expectation for the near term.[4] However these assumptions, the information on which they are based and the manner by which they are incorporated into the forecast were not discussed in the forecast as required by Rule 63.5. Therefore the record does not contain sufficient information either to explain the choice of base periods or to justify the assumption that the historical period will accurately forecast the future.

Similarly, information on the use of judgements must also be provided in the forecast if it is to be reviewable. A forecast cannot be reviewed unless the reviewer knows what judgements are incorporated, why particular judgements are incorporated and how they are incorporated. The description of Wellesley's methodology in section II B gives some indication that the methodology is capable of review. However, this information was not included in the forecast, but was obtained through telephone conversations. Rule 63.5 requires that such information be included in the forecast; subparagraph (c) states that, "The forecast documentation shall be sufficiently explicit and complete to allow Council fully to understand the forecast from the information presented." In future filings the Division

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[4] See letter to Mr. Berdan, Manager, Wellesley Municipal Light Plant, from the Hearing Officer dated May 6, 1980. These letters are public information and may be examined at the Energy Facilities Siting Council offices.

shall describe the steps in its methodology pursuant to the rule mentioned above.

III. Demand & Energy Requirements

Wellesley has not significantly altered its forecast from the 1978 Supplement. The Division projects an average annual growth rate of 1.7% in total energy output requirements during its forecast period. Losses and Internal Use are forecast to grow at an average annual rate of 1.7% during the forecast period. The Total System Load chart table indicated that this historically winter peaking system expects to become a summer peaking system during the forecast period.

IV. Supply

Wellesley is an all requirements customer of Boston Edison. Table E-24 which contains supply information was left out of this supplement. Although past filings contain this information, the table is required in each filing to keep information current and maintain continuity.

V. Conservation

Energy conservation measures such as insulating its buildings and converting to more efficient street lights are being pursued by the Town.[5] The Town's street lighting is a mixture of incandescent, mercury and high pressure sodium lamps. High pressure sodium lamps are the most energy efficient. If it is granted monies under a program where the federal and state

[5] See letter to Mr. Berdan, Manager, Wellesley Municipal Light Plant, from the Hearing Officer dated May 6, 1980.

governments pay the cost of new fixtures, the Town will convert twenty-five percent (25%) of its street lighting to high pressure sodium lamps.

In order to better control its peak, the Division has instituted Time of Day metering; a radio controlled interruptable rate for water heating, dryers and air conditioners; and has presented lectures accompanied by handouts to students in the local schools. (See footnote #5) The Council applauds the Town's initiatives in the area of conservation and load management and will be interested in any effects these measures have on demand. It is expected that such effects will be explicitly and clearly explained in future filings.

VI. Order

The Council APPROVES Wellesley's 1979 Supplement subject to the following conditions:

1) In future filings, if based on a trend line methodology, the light plant shall explain its choice of base years, and discuss the relationship between the base period and the future period for each separate element forecast by this method (i.e., number of customers, average use, and/or commercial and industrial sales). It must be demonstrated that the base period would be a good indicator of the forecast period. (See section II C)

2) In future filings, the light plant shall explain the basis for and the manner in which it incorporates judgements into the forecast. These judgements include the basis for adjustment of trend line analysis results, the reasons for a shift to a summer peak, and the basis for a decline in the system load factor. (See Sections II C and III)

3) In future filings the Division shall describe the steps in its methodology pursuant to Rule 63.5 (a), (b) and (c). Subparagraph (c) states that, "The forecast documentation shall be sufficiently explicit and complete to allow Council fully to understand the forecast from the information presented." (See Section II C)

4) The light plant will inform the Council as to the availability of rates for the purchase of power from customers, i.e., "Buy Back or Purchase Power Rates."

The Council thanks the light plant, especially Mr. McBurney, and its consultant, Mr. Valance, for their cooperation.

Energy Facilities Siting Council

by Robert Wilmot

Robert D. Wilmot
Hearing Officer

This decision was unanimously approved by those members present and voting at the Energy Facilities Siting Council meeting of 10 June, 1980.

Joseph S. Fitzpatrick
Chairman