UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
before the
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	
Boston Edison Company, et al.	Docket No. 50-471
(Pilgrim Nuclear Generating Station Unit 2)	

APPLICANTS' REPLY TO PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW OF INTERVENOR COMMONWEALTH OF MASSACHUSETTS

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INTRODUCTION

Pursuant to 10 C.F.R. §2.754(a)(3), Applicants submit herewith their reply to "Intervenor Commonwealth of Massachusetts' Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision" (Commonwealth's Proposed Findings) which was filed by the Commonwealth on November 5, 1979.

In this reply the Applicants have not sought to consider each proposed finding of fact and conclusion of law set forth in the Commonwealth's Proposed Findings. Applicants stand by their "Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision"

(Applicants' Proposed Findings) and, therefore, object to any of the Commonwealth's Proposed Findings inconsistent therewith. This reply is, however, directed to and deals with a number of conceptual, legal and factual errors which, Applicants submit, pervade certain of the Commonwealth's Proposed Findings.

The Applicants have not responded to the Commonwealth's Proposed Findings on the issue of theft and sabotage (¶¶261-272)*/ given the proposal by the Staff in the "Nuclear Regulatory Commission Staff's Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision" (Staff Proposed Findings) that the record be supplemented on this subject (Staff Proposed Findings, ¶326).

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*/ All citations to the Commonwealth's Proposed Findings appearing hereinafter will be to the appropriate paragraph number or numbers.

I. FINANCIAL QUALIFICATIONS

The Commonwealth's Proposed Findings respecting Boston Edison's financial qualifications to own and construct its 59% share of Pilgrim Unit 2 rest on four basic premises: (1) In the absence of a clear regulatory standard for determining financial qualifications and the difficulty of foreseeing the future, the Board cannot give any weight to the Company's testimony since it lacks credibility and quality and must instead base its findings on the Company's testimony before a rate setting body (¶¶22-26); (2) the Staff's presentation on the Company's financial qualifications is not entitled to any weight since it was not grounded on a searching independent evaluation of the Company's data (¶¶44, 46-48); (3) the Commonwealth's witness, as an impartial and expert observer, has painted the true picture of the Company which demonstrates that there is no "reasonable assurance" that the Company will be able to finance its 59% share of Pilgrim Unit 2 (¶¶49-53); and (4) the upward trend in capital cost estimates of the facility will create additional difficulty in the financing of Pilgrim Unit 2. ¶¶41-43.

A. The "Credibility and Quality" of the Applicant's case

The Commonwealth argues that the Company has "told a radically different story in a sworn evidentiary presentation to the Massachusetts D.P.U." than presented in this case, and that "Mr. Kelmon appeared to espouse a theory that flat unqualified assertions of fact can be true in the context of a rate case but not true in the context of a licensing proceeding" (emphasis added). ¶¶26, 35. The Commonwealth further urges the Board to reject this position, for any other conclusion "would reduce the regulatory process to a charade and would constitute an open invitation to future perjury." ¶26. In making these assertions, the Commonwealth relies on the cross examination of Mr. Kelmon which consisted, for the most part, of asking the witness whether he agreed with twelve selected statements from his testimony before the Massachusetts Department of Public Utilities (DPU) in the Company's most recent rate case (DPU 19991). Tr. 9277-9286.*/ As to three of the statements, Mr. Kelmon states his disagreement and as to the nine others selected

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*/ In the tactic of asking a Company witness in this proceeding whether he agreed with a statement made by a Company witness in a concurrent rate proceeding, the Commonwealth has rewarmed the "chestnut" it employed during earlier hearings on the Company's financial qualifications. See Tr. 5151-5165.

by the examiner, he stated his agreement.*/

In discussing and characterizing Mr. Kelmon's testimony the Commonwealth has sidestepped the Applicants' Proposed Findings (¶¶295, 297) and, more importantly, eschews any discussion of the relationship of the regulatory standard applied by a rate setting agency (in this instance the DPU) in determining appropriate rates to be charged by a utility and the regulatory standard applied by the Nuclear Regulatory Commission in determining the financial qualifications of an applicant for a construction permit.

In any rate setting proceeding (including DPU 19991) a utility seeks a level of return on its investment which in its judgment is commensurate with the need to cover operating expenses, debt service and dividends and with the need to provide compensation for the risk involved to investors as well as the need to attract capital and maintain credit.**/ It lies, in the first instance, with the

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*/ As to two of the three statements dwelt upon by the Commonwealth (see ¶24) the question was put to the witness "as a general matter" and without application to any context. Tr. 9277-9279.

**/ FPC v. Hope Natural Gas Co., 320 U.S. 591, 603 (1943); Bluefield Water and Improvement Co., v. Public Service Commission, 262 U.S. 679, 692 (1923); Permian Basin Area Rate Cases, 390 U.S. 747, 792 (1968); Boston Edison Company v. Department of Public Utilities, 1978 Mass. Adv. Sh. 932, 940, 375 N.E. 2d. 305, 314.

rate setting agency to determine whether the rate of return on an investment sought by a utility is "fair and reasonable." This determination inevitably requires the resolution of two competing interests -- the utility's need to obtain the highest level of return and the consumers' desire to receive the utility's services at the lowest possible cost.*/

In Massachusetts, the DPU employs an historical test year for the purpose of calculating the appropriate rate of return on investment for a utility.**/ The rate of return is thus calculated on a rate base which is "its

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*/ Prof. Bonbright has aptly summarized the conflicting considerations:

> "But the determination of reasonable rates introduces one complication not ordinarily involved in standards for satisfactory commodities such as headache tablets or automobiles. By and large, standards for these commodities are those of satisfaction to the person who swallows the pill or who buys the car. But principles of reasonable rates are designed partly to resolve conflicts of interest among different parties, particularly among investors to whom a rate means a source of income and consumers to whom it means an item of expense."

J. Bonbright, Principles of Public Utility Rates, at 38 (1969).

**/ See, e.g., New England Telephone and Telegraph Co. v. Department of Public Utilities, 360 Mass. 443, 450, 275 N.E. 2d. 493, 499 (1971); see also P. Garfield and W. Lovejoy, Public Utility Economics, at 45-46 (1964).

total investment (less depreciation) in property that is used and useful to the public in providing utility service during the test year."*/ The rate setting procedure in Massachusetts is, therefore, in sum and substance undertaken in an historical context.

By contrast, the Nuclear Regulatory Commission's regulations, albeit sketchy, apply a test which seeks to determine whether, in futuro, the applicant will have the necessary funds to construct the facility. Thus 10 C.F.R. §50.33(f) requires that the applicant present information sufficient to demonstrate that it has "reasonable assurance" of obtaining the necessary funds. The implementing guidance provided in Appendix C to 10 C.F.R. Part 50 states that an applicant should include information setting forth the "applicant's general financing plan for financing the cost of the facility." 10 C.F.R. Part 50, App. C §I(A)(2).**/ It is against the backdrop of the dichotomous historical-future relationship of a rate setting financial forum and a

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*/ Boston Edison Company v. Department of Public Utilities, supra, 1978 Mass. Adv. Sh. at 950, 375 N.E. 2d at 318.

**/ See also, Public Service Company of New Hampshire (Seabrook Station Units 1 and 2). CLI 78-7, 7 NRC 1, 8-9 (1978), aff'd sub nom. New England Coalition on Nuclear Pollution v. NRC, 582 F. 2d 87 (1st Cir. 1978).

nuclear regulatory financial forum that Mr. Kelmon's statements must be viewed.

The Commonwealth chooses to ignore this analysis and, with blinders added, advances its credibility thesis by focussing, in particular, on three responses by Mr. Kelmon in this proceeding which were alleged to be contradictory to the testimony given by him before the DPU. ¶¶24, 27-29. First, Mr. Kelmon was asked and answered as follows:

> "Q. I would like to ask if you agree with the following statement:
>
> 'Boston Edison Company is not financially sound.'
>
> A. (Witness Kelmon) What are you referring to? My testimony, sir?
>
> Q. I am asking you in general if you agree with the following statement:
>
> 'Financially, Boston Edison Company is not sound.'
>
> I am not referring to any particular document.
>
> A. As I hear that question today in this proceeding, I do not agree with that statement.
>
> Tr. 9276-9277.

The second selected statement, regarding the overall "financial health of the Company", and the third selected statement, regarding the limitation on the amount of bonds the

Company could issue "because of poor ratings and poor coverage", were similarly asked and answered. Tr. 9278-9283. It was in response to questioning regarding the latter point that Mr. Kelmon explained the distinction between the statements of his judgmental beliefs in this proceeding and before the DPU:

> "In the context of this case, in the forecast that's presented . . . we have not excluded the ability to issue bonds as we believe it is fair and reasonable to understand or to assume that we will get reasonable treatment in our rate hearings so that we can stay within the band of a return on equity of 10 to 13 per cent . . . . If I look at the context of this case as a forward-looking case starting from a point which recognizes a fair and reasonable conclusion of the case, I would say it is not true.
>
> . . .
>
> But when you make a pleading in a case before the Department of Public Utilities on facts as they were in the past, and the facts that we have in the past indicate . . . another issue of long term debt in the form of bonds would seriously hurt our customers."
>
> Tr. 9282-9284.

When the Commonwealth pressed the same line of questioning in examining the Staff's financial expert, Mr. Karlowicz amplified further upon the dimensional differences between the perspectives of a state's rate setting function and the NRC's financial qualification determination:

"Q. Do you agree with the following statement sir:

'Financially, Boston Edison Company is not sound.'

A. (by Witness Karlowicz) That's relative. And, I think, if you look at what they say right after that and what they say before that, their statement is true from that perspective. But again here this is not an exacting requirement, the financial qualifications. And it's a different standard.

We have no rate setting jurisdiction in our standard. We look at the Company's ability to finance. If a company can finance it, although the financing may not be desirable, but if it is attainable we believe that that is the meeting of our . . . requirements."

Tr. 9543-9544.

The Commonwealth urges the Board to reject Mr. Kelmon's testimony because he appears to "espouse a theory that flat unqualified assertions of fact could be true in the context of a rate case but not true in the context of a licensing proceeding" (emphasis added). ¶35. Viewed with closer scrutiny, what the Commonwealth posits as "flat unqualified assertions of fact" are judgmental opinion statements made in a rate setting proceeding the purpose of which is to determine what

a "fair and reasonable rate of return"*/ should be on an historically constructed rate base. Here, where Mr. Kelmon stated his disagreement, he was offering his opinion with respect to the future ability of the Company to finance its share of the facility in the context of the NRC regulatory standard which seeks to determine whether there are reasonable assurances that an applicant will be able to finance a facility.**/

What may be said concerning the judgment offered by Mr. Kelmon is equally true concerning the remaining points raised by the Commonwealth respecting Mr. Kelmon's prior testimony before the DPU. The Commonwealth states that both Mr. Kelmon's and Mr. May's prepared direct testimony in this case "gives no hint" of and "is directly

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*/ As the Commonwealth well knows, in proposing to this Board that the Company is "financially unqualified" the Commonwealth places itself in the same "contradictory" position when it argues "persuasively" before the Massachusetts Department of Public Utilities and the reviewing court that the financial markets in which the Company's securities are sold are improving (and thus a greater rate of return is unwarranted). See, Boston Edison Company v. Massachusetts Department of Public Utilities, supra, 1978 Mass. Adv. Sh. at 945, 375 N.E. 2d. at 316.

**/ The process of determining "reasonableness" for a rate setting agency assumes the same difficulties (alluded to by the Commonwealth in ¶¶22, 23) as it does for the NRC in its determination of "reasonable assurance" regarding an applicant's financial qualifications. As Justice Jackson observed in his dissent in F.P.C. v. Hope Natural Gas Co., supra: "I must admit that I possess no instinct by which to know the 'reasonable' from the 'unreasonable' in prices and must seek some conscious design for decision." 320 U.S. at 645.

contradictory" to Mr. Kelmon's testimony before the DPU. ¶25. While it is sufficient to note that these statements, drawn from Mr. Kelmon's testimony before the DPU, were not denied by him, reciting and dealing with each statement is unnecessary since they must be viewed in the framework of the historic regulatory rate setting previously discussed.

B. The Staff Evaluation

The Commonwealth urges the Board to reject the Staff evaluation of Boston Edison's financial qualifications as a mere parroting of the Applicant's data and lacking in substantive evaluation and independence. ¶47. The Commonwealth's proposed findings of fact in this regard are flatly at odds with the record.

The Commonwealth suggests that the discovery of an error in the Applicants' data which was not found by the Staff in its review proves that the Staff conducted no independent assessment of the Applicants' data. ¶44. The Commonwealth further argues that the Staff's failure in the past to find other applicants in other licensing proceedings to be financially unqualified also indicates that the Staff has a tendency to conduct inaccurate and

non-independent reviews.*/ ¶47. The Staff's testimony in this proceeding, and in particular the cross-examination of Staff witness Karlowicz, demonstrates the contrary.

The process by which the Staff reviewed the financial qualifications of Boston Edison Company were detailed in the testimony of Staff witness Karlowicz and SER Supp. No. 4. The process began with the submission of Amendment 8 on May 8, 1978. Applicants' Exh. 1-NN, Tr. 9601. The Staff review of Amendment 8 indicated that because of the differences between certain historical data and the Company's projections, further information was required to document these projections. Tr. 9519, 9583; SER Supp. No. 4 at C-9. Additionally, the Staff requested that Boston Edison submit alternative plans under various postulated conditions so that the Company's ability to obtain additional external financing could be analyzed. Id. at C-8. During the initial period of Staff review following submission of Amendment 8 the Staff advised the Company that it could not find it to be financially qualified based upon then current information. Tr. 9586.

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*/ The Commonwealth acknowledges that such a past record does not prove anything about the Staff's review in the present case. ¶47. Nevertheless, the Commonwealth credits its position with a number of statements which are unsupported in the record. In particular the statement about the financial qualifications of Public Service Company of New Hampshire (¶47) far exceeds anything reasonably inferable from the portion of the record cited, and flies in the face of a Commission ruling directly to the contrary.

Following the Staff's call for further documentation supporting Boston Edison's financing assumptions contained in Amendment 8, the Company supplied detailed information in a broad spectrum of areas.*/ With this information the Staff was able to confirm independently the accuracy of the Applicants' projections of net income and internal cash generation during the early years of plant financing. Tr. 9560-9565; SER Supp. No. 4 at C-9 to C-11. Based on its review of the submitted data and utilizing external information, the Staff then reached its conclusion that Boston Edison is financially qualified to assume its 59% interest in the construction of Pilgrim Unit 2. Tr. 9519; SER Supp. No. 4 at C-15.**/ The Staff conclusion does not necessarily mean that what is projected will necessarily occur but that what

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*/ See Applicants Exh. 1-EE, Tr. 9397, which includes letters dated June 2, 23 and 30, September 1 and 15, October 16, November 3 and 15, 1978 transmitting inter alia, monthly financial statements, internal financial forecasts, pro-forma sources of funds statements using alternative rate relief assumptions, status of rate case proceedings and regulatory disclosure statements. The Staff also sought and was supplied information as to whether there were significant accounting changes in the information supplied by the Company. Tr. 9562.

**/ The Staff conclusions rest on two key assumptions, (1) that a rational regulatory environment will exist, i.e., rates set by the appropriate body will cover the cost of service including the cost of capital and (2) that viable capital markets will exist. Id.

has been presented and evaluated is one possible way by which the Company can finance the facility. Id.

The Staff's review clearly indicates that it has, in fact, conducted a completely independent review of the Applicants' data and subjected that data to close scrutiny where it believed warranted. In light of these circumstances, neither the discovery of one error nor the prior Commission conclusions regarding Applicants' financial qualifications suggest otherwise.

C. The Commonwealth's Neutral Observer

The Commonwealth suggests that instead of relying on the Applicants' and Staff's testimony, the Board should look to its witness Mr. Levy who testifies as a "neutral, impartial, and unbiased state regulator" and one who has "relied heavily" on the Applicants' documents. ¶49.

On cross examination Mr. Levy's appearance before the Board proved to be less than that of a "neutral, impartial, and unbiased" observer. Mr. Levy served as a Commissioner and subsequently Chairman of the DPU in the period from January 1978 to January 1979. Levy, p.2, following Tr. 9434. During his tenure at the DPU he sat on several cases involving Boston Edison. Id. at 3. One of those cases (DPU 19494) still underway, which Mr. Levy was, in part, responsible for initiating, related to an investigation into whether the Company's construction

(viz., Pilgrim Unit 2) "was the minimum necessary to adequately serve the customers of Boston Edison Company." Tr. 9448, 9550. Although hearings were in mid-stream at the time of Mr. Levy's departure in January 1979, Mr. Levy, because of the composition of the "new" DPU Commission, took it upon himself to write the Attorney General who had intervened in opposition to the Company's construction program, complimenting him upon his work and offering his assistance in any way he thought appropriate. Tr. 9461. This letter led to Mr. Levy's testimony before the Board and was based, in part, on information obtained during his term as the DPU. Levy, pp. 3-4, following Tr. 9434.

Following his tenure as DPU Chairman and prior to completion of the evidentiary presentation in DPU 19494, Mr. Levy actively sought out an opportunity in the press to set forth his views on Pilgrim Unit 2 which he accomplished by writing an "Op-Ed" article in the Boston Globe entitled "Why Boston Edison Should Not Build Pilgrim II". (February 15, 1979). Levy, p.3, following Tr. 9434; Tr. 9450, 9452. In part, the article written by Mr. Levy addressed the subject matter in his testimony before the Board. Tr. 9452. Mr. Levy considered it in the "public interest" to write, and apparently be paid for, the article prior to the conclusion of the DPU investigation in DPU 19494, in part due to the changed composition of the "new"

commission" in its investigation in DPU 19494. Tr. 9456. Mr. Levy has actively sought out roles in which he might press upon this Board, the Massachusetts Legislature and the "new" DPU commission, his preconceived positions regarding Pilgrim Unit 2; neither Mr. Levy nor his testimony can be masqueraded as that of an "impartial neutral" observer.

The Commonwealth asserts Mr. Levy's testimony should be given "great weight". ¶49. It is clear from Mr. Levy's cross examination that he has only a very limited background in utility financial expertise. Tr. 9414-9427. Further, Mr. Levy indicated that he was not even familiar with all of the filings by the Applicant in support of its financial qualifications. Tr. 9481, 9435. At best, what Mr. Levy presented was a rehash of Boston Edison internal documents (as to which no corporate action was taken by the Company), without the semblance of an independent financial analysis.

D. <u>The Trend in Capital Costs</u>

The Commonwealth's argument concerning the capital cost estimates for Pilgrim Unit 2 is twofold. First, the Commonwealth implies that the Applicants don't even know what their own estimate is. ¶41. Second, the Commonwealth states that there is an upward trend in cost estimates (¶42) and that higher costs will cause "additional difficulty" in

financing the facility. ¶43. Neither argument deserves credence.

In its argument respecting differing cost estimates for the facility, the Commonwealth has simply sought to blur the facts. From several different sources having different dates and prepared for different purposes, the Commonwealth has identified several different figures which the Commonwealth assessed to be the " 'most recent' capital cost estimates for Pilgrim II." Each of the figures cited by the Commonwealth, however, involved different assumptions, rounding off, or was constructed at a different time.*/ Certainly there is no showing that the Applicants were unaware of their own "most recent" cost estimate and the Commonwealth never sought to cross-examine the Applicants' witnesses on these estimates (which the Commonwealth itself offered as evidence) in order to determine the basis for the apparent differences. Given

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*/ The $1.895 billion figure is the figure produced in the last "formal" estimate, which was Estimate #4 in January 1979. See ¶42. The $1.95 billion figure makes the simplifying assumption that all AFUDC is at the Boston Edison Company rate whereas only 59.026% is Boston Edison Company's share of the facility. The $2 billion figure is a rounded off figure. The $2.015 billion figure is the total construction expenditure, including common facilities, transmission facilities and other non-plant costs. The $1.841 billion figure was in fact, dated prior (December 6, 1978) to Estimate #4.

the different circumstances surrounding each figure, there is, in fact, no real discrepancy in the various figures.

The Commonwealth's argument that there has been an upward trend in capital cost estimates (¶42) is obviously true as is the observation that higher costs will pose "additional difficulty". ¶43. The upward trend in capital cost estimates is clearly a result of more than inflation. It is significant that each progressive estimate has been for a unit projected to come into service at a later date and with a significantly longer overall construction period over which AFUDC must be accumulated. See, e.g., Commonwealth Exh. 104. The Commonwealth's cost estimate growth rate calculation makes no attempt at sorting out these factors. ¶42. Of greater significance than a past trend in estimates, of course, is an actual future cost. The Commonwealth offers no evidence as to what the future cost of the Facility will be, aside from the past trend. If the plant were in fact constructed on the schedule underlying the most recent "Estimate #4" there is no showing that application of the Commonwealth's trend would produce any better estimate than Estimate #4 itself. On the other hand, Applicants agree that if the unit were to be constructed on a longer schedule than that underlying Estimate #4, the plant will cost more but this will be much more a

factor of the date the plant is scheduled for completion, inflation, and the further compounding of interest on dollars already spent (AFUDC), than it will be based upon the Commonwealth's trend of estimate amount versus the date the estimate was made.

That there will be "additional difficulty" in financing something which will cost more is a statement of the obvious. The Commonwealth does not begin to suggest, however, the extent of this additional difficulty in the present case and the degree to which it impacts Boston Edison's financial qualifications. Further, the Commonwealth has adduced no evidence to indicate that a corresponding inflationary trend does not exist with respect to other types of electrical generation. Irrespective of any trends noted by the Commonwealth, Boston Edison Company and the other Applicants have a continuing obligation to serve the public interest even if it is at a higher cost or requires the attraction of greater capital. See, e.g., Commonwealth Exh. 102 at 21. The Commonwealth adduced no evidence as to either the amount of additional cost which will be covered by the upward trend in estimates, nor the amount of "additional difficulty" which will be encountered by financing the additional cost. In short, there is no basis for finding that either of these factors will have a significant bearing in the present case.

II. TECHNICAL QUALIFICATIONS

The Commonwealth appears to have all but abandoned its contention relating to the technical qualifications of Boston Edison, Bechtel and Combustion Engineering (CE). The Commonwealth's Proposed Findings fail to discuss in any detail the voluminous evidentiary record in this proceeding in support of its argument urging the Board to reject a finding that Boston Edison, its architect engineer, and NSSS vendor have provided acceptable Quality Assurance (QA) programs under the Commission s regulations.

The Commonwealth argues that: (1) applicants have a "large burden of persuasion" on the issue of QA (¶57); (2) inspection letters from the AEC to Boston Edison with respect to Pilgrim Unit 1 "demonstrate a pattern of negligence" on the part of Boston Edison and Bechtel (¶59); and (3) the Commission has criticized the Company and the Staff in an unrelated proceeding. ¶60. None of these arguments has any merit.

The Applicants have met the requisite burden of proof on this issue as required by the Commission's regulations. As discussed in their proposed findings, Applicants presented the testimony of several panels of witnesses in order to provide the Board with evidence of reasonable assurance that Boston Edison and its principal contractors

will implement the Pilgrim Unit 2 QA program. Applicants' Proposed Findings ¶¶112, 171 and 214. These witnesses testified generally concerning Boston Edison and its principal contractors' technical qualifications, and specifically, in great detail, about the QA Program implemented for Pilgrim Unit 2. In addition, the NRC Staff presented a number of witnesses who testified as to the technical qualifications, QA program and prior enforcement history of Boston Edison, Bechtel and CE. Applicants' Proposed Findings, ¶¶113, 172 and 215. In light of the evidence contained in these hundreds of pages of testimony as to the adequacy of the Pilgrim 2 QA program, the Commonwealth has no grounds to argue, and indeed provides no record support, that Applicants have not met the required burden of proof.

Secondly, the Commonwealth's argument that the Company's QA history for Pilgrim Unit 1 demonstrates "a pattern of negligence" on the part of Boston Edison and Bechtel is a mischaracterization of the compliance history of Pilgrim 1. The testimony of NRC Staff inspectors is simply to the contrary. See, Caphton, pp. 4-6, following Tr. 4234; Garland, p.3, following Tr. 4425; Sternberg, p.12, following Tr. 4234. For example, the Commonwealth states that Boston Edison's noncompliance record for Pilgrim Unit 1 involved "not the technical problems one

would expect in the construction of any new facility," but "go to the Applicants' control of and response to those inevitable problems." ¶59. This statement flies in the face of the testimony of Staff Witness Sternberg, an NRC inspector assigned as the project inspector for Pilgrim Unit 1:

> "In general, the majority of the items in the enforcement history were minor problems relating to hardware problems where one of a redundant instrument, component or system was found to be operating slightly outside its allowed tolerance."

Sternberg, p.11, following Tr. 4234.

The fact is that with respect to each of the inspection reports which the Commonwealth introduced into evidence, Boston Edison responded to the identified deficiencies by describing the corrective action taken. See, Applicants' Proposed Findings, ¶¶139-147. Thus, instead of mistakes being "hidden and uncorrected" as claimed by the Commonwealth, they were identified and corrected in a timely manner.

Finally, the Commonwealth's citation to the UCS Petition (¶60) is totally inappropriate. 10 CFR §2.754(c) provides that proposed findings of fact "shall be confined to the material issues of fact presented on the record, with exact citations to the transcript of record and exhibits in support of each proposed finding" (emphasis added). There is nothing on the record of this proceeding

which deals in any respect with the UCS petition and the Commonwealth's citation to it appears to be nothing more than an attempt to color a case it failed to make on the record of this proceeding. Accordingly, the Board should disregard this argument.

In conclusion, the Commonwealth asserts that there is "a disturbing and continuing trend on the part of the Applicant and architect-engineer which prevents this Board from issuing an unconditional construction permit." ¶63. According to the Commonwealth, the construction permit should be conditioned on (1) the Staff's "close scrutiny" of Boston Edison and Bechtel's QA program during construction and (2) an adjudicatory hearing on QA programs at the operating license stage. ¶64. Neither of these conditions is appropriate in this proceeding nor would they be justified. The Commonwealth has made no attempt, other than by broad general statements with no record citations, to provide such justification. Indeed, this argument completely ignores the lengthy record made by the Applicants and the Staff in this proceeding on the adequacy of the Pilgrim 2 QA program. In particular, it ignores the evidence reflecting the Applicants' responsiveness to QA problems. As the Staff testified:

> "[t]he responsiveness of the licensee and the effectiveness of the action to prevent a reoccurrence are weighted by the NRC in considering escalated enforcement action. In no case was escalated action necessary to have Boston Edison . . . comply with the NRC's regulations or rules." (emphasis added).

Sternberg, p.4, following Tr. 4234.

The Commonwealth has simply provided no basis in the record for the Board to condition the issuance of the construction permit and none is warranted.

III. NEED FOR POWER

The Commonwealth's Proposed Findings concerning the issue of Need for Power, (¶¶ 65-119), for the most part simply repeat the criticisms made in the prepared direct testimony of the Commonwealth's two witnesses, Paul Chernick and Susan Geller. In fact, the central thesis behind the Commonwealth's argument appears to be that the Board should uncritically "adopt[] in whole the testimony of the Commonwealth's witnesses." ¶ 116. The principal criticisms made by the Commonwealth of the Applicants' and the Staff's presentations are in fact drawn directly, without further analysis, from the direct testimony of Mr. Chernick and Ms. Geller. See, e.g., ¶¶ 88, 94, 107. Such a line of argument obviously relies heavily upon the knowledge, experience and credibility of the two witnesses - a reliance which is hardly justified on the record but which the Commonwealth fails to recognize as an underlying issue on which its Proposed Findings depend.

The Commonwealth's complete dependence upon the testimony of its witnesses is especially evident with respect to the NEPOOL and ORNL load forecasts where the Commonwealth's central assertion appears to be that the Applicants' and Staff's

principal forecasting witnesses, who, together with others, have spent years developing their respective load forecasting models (Bourcier, pp. 4-6, following Tr. 10,430; Chern, following Tr. 11,352, Tr. 11,234-11,238), don't understand their own models. ¶¶ 87, 108. On the other hand, according to the Commonwealth, both Mr. Chernick and Ms. Geller, neither of whom had sufficient time to review both models, if their assertions to that effect are to be believed (Tr. 10,958, 10,960-10,961), and who have never produced a load forecast on their own (Tr. 10,984, 11,104), understand each of those forecasting models better than the persons who developed them. ¶ 116. Such a proposed finding borders on the incredible in any circumstance, but is more suspect here where the disparity in the qualifications and experience of the witnesses is so great, (see Applicants' Proposed Findings, ¶¶ 427, 434-435, 457), and particularly where, in a field such as load forecasting, a fair degree of judgment on the part of the forecaster is involved. Chernick and Geller, Tr. 10,986.

In Applicants' Proposed Findings the testimony of the Commonwealth's witnesses was discussed in

considerably more detail than will be attempted in these reply findings. Aside from the question regarding Mr. Chernick's and Ms. Geller's qualifications several other points were noted such as the witnesses' lack of documentation of their criticisms (see Applicants' Proposed Findings, ¶¶ 441, 443, 459), their lack of quantification of the effects of their criticisms (see Applicants' Proposed Findings, ¶¶ 444, 458) as well as the possibility that in some cases there was a misunderstanding or a difference of professional opinion. See Applicants' Proposed Findings, ¶ 442. Aside from the issue of quantification,*/ the

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*/ The Commonwealth says that it is not true that its witnesses Chernick and Geller have failed to quantify their criticisms. The Commonwealth declares that the witnesses made "two specific estimates of the effect of errors," however, no citation to the record is given even for these two. ¶ 101. In any event, the witnesses apparently forgot these "two specific estimates" when they were cross-examined by the Board on the subject of whether any of their criticisms were quantified. Tr. 11,159-11,160. Possibly one of the "two specific estimates" was Mr. Chernick's "forecast" of a 1% growth rate, which he pulled out of thin air during cross-examination. But it is more likely Mr. Chernick's "forecast" is covered by the Commonwealth's reference to "forecasts done with a crystal ball or Tarot cards." ¶ 101.

Commonwealth has not responded to these points in its proposed findings, and its effort instead is devoted to restating its witnesses' testimony.

At the outset of its proposed findings, the Commonwealth cites several Appeal Board decisions in order to emphasize two points, that there must be a "genuine" need for power and that the applicant has the "burden of proof." See ¶¶ 66-67, 70. While Applicants dispute neither of these propositions, they would note the singular lack of discussion in the Commonwealth's argument of what type of showing the Appeal Board and the Commission have held would constitute meeting the burden of proof. See, e.g., Applicants' Proposed Findings, ¶¶ 406-407. The Commonwealth, however, on the whole, implies that there are exacting standards which must be met in order to satisfy the need for power requirement. The Appeal Board and Commission decisions suggest a less demanding standard, i.e., that the load forecast be "reasonable... in the light of what is ascertainable at the time made." Kansas Gas & Electric Co., (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 328 (1978). Recognition must also be given to a range of factors which affect demand forecasts and cause them to be

uncertain "even beyond the uncertainty that inheres to demand forecasts." Carolina Power & Light Co., (Shearon Harris Nuclear Power Plant), CLI-79-5, 9 NRC 607, 610 (1979). The fact is that there will be some electrical load in future years - a fact which even the Commonwealth appears to believe. Chernick, Tr. 11,162. In any event, a good faith effort by the Applicants and by the Staff, to project future loads, which considers those factors which the Commission has identified as affecting demand forecasts, (see, Carolina Power & Light Co., supra), can hardly be rejected out of hand as the Commonwealth urges on the basis of alleged errors to which the Commonwealth need offer no alternatives, quantification or documentation.

It is also apparent that the Commonwealth fundamentally misunderstands, or chooses to confuse, the case presented by the Applicants and the Staff as to the need for power. As stated in the Applicants' Proposed Findings, there are in actuality three separate bases which are advanced in support of the need for Pilgrim Unit 2. The first of these is a need for additional generating capacity to assure adequate reliability levels. The second is economic and supports the early installation of the unit rather than a later installation, even

if the unit is not required on an absolute need basis until a later date. The third is substitution for imported oil and the furtherance of energy policies and goals. (Applicants' Proposed Findings, ¶ 411). Admittedly the latter two are linked in the sense that substituting nuclear generation for imported oil-fired generation is not only consistent with national and state energy policies, but is also cost-effective. The two theories are, however, quite different.

The Applicants and the Staff presented an economic case solely as a basis of comparing two alternatives, viz., Pilgrim Unit 2 in 1985 versus Pilgrim Unit 2 in 1988. The analysis is intended to show that if the unit were installed earlier than needed for reliability reasons, it would be economic to do so. It is not a cost/benefit analysis which is advanced to justify Pilgrim Unit 2 as opposed to no unit, which the Commonwealth well knows. The Commonwealth nevertheless seeks to attack the economic case as a "cost/benefit analysis which assumes the ultimate conclusion" (¶ 99, see also ¶ 112), a classic "straw man" argument.

The substitution case, on the other hand, relies upon the benefit of nuclear power displacing power generated by another fuel and has two facets - Pilgrim

Unit 2, whenever installed, will generate electricity that would otherwise be generated using oil and Pilgrim Unit 2, if installed earlier rather than later, will save more oil.*/ The Commonwealth chooses to confuse the issue by lumping together the economic and substitution case (calling them both "substitution"), by accusing the Applicants and the Staff of a faulty cost/benefit analysis that neither the Applicants nor the Staff present, and by totally ignoring the case of pure substitution which would undisputedly result in the displacement of millions of barrels of imported oil, thus, implementing state and national energy policies calling for a reduction in imported oil dependency. See Applicants' Proposed Findings, ¶¶ 509-515.

The Commonwealth advances a number of arguments regarding the Applicants' and the Staff's reliability presentations. For the most part, these are a repeat of

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*/ Obviously if load growth is as high or higher than present projection, Pilgrim Unit 2, along with other planned additional capacity, would be needed just to meet the additional load and there would not be significant "displacement" of existing oil-fired capacity which would still be needed for reliability purposes. In such a case, even if there were no displacement, the nuclear capacity would be necessary to prevent increased reliance on imported oil. If load growth is less than expected, then displacement of existing oil-fired capacity would occur. Weiner, Tr. 10,939-10,940.

the direct testimony attacks by Mr. Chernick and Ms. Geller on the NEPOOL and the ORNL forecasts. Also included, however, are arguments relating to an alleged requirement for a separate Boston Edison Company "need for power", transmission ties and reserves, the setting of reserve margins and capability responsibilities beyond 1984/85, and previous NEPOOL forecasts.

With respect to the NEPOOL forecast, the Commonwealth argues that NEPOOL doesn't understand its own forecast. ¶¶ 87-88. Curiously, the Commonwealth does not cite any of the cross-examination of Donald V. Bourcier, the Applicants' expert witness on the NEPOOL forecast, in support of this argument. Instead, the Commonwealth references the cross-examination by Applicants' counsel of the Commonwealth's witnesses. See ¶ 87. At best, an argument as to NEPOOL's understanding of its forecast based upon questioning by Applicants' counsel is naive. Applicants' counsel was not held out to be, nor does he purport to be Applicants' authority on the NEPOOL forecast. He was not a witness and his questions are not evidence. To the extent this matter need be addressed at all it is suggested that the portions of the cross-examination of Mr. Chernick cited in the Commonwealth's Proposed Findings were caused in large measure by the

misleading manner in which Mr. Chernick's direct testimony was presented. Of the Commonwealth's three examples of the Applicants' alleged failure to understand their own model (¶ 87), all three are equally open to an opposite interpretation. The miscellaneous use formula which Mr. Chernick appears to attribute to NEPOOL in his testimony, (Chernick, p. 32, following Tr. 11,224) was in fact derived by Mr. Chernick himself.*/ Chernick, Tr. 11,028-11,029. The cross-sectional fallacy, which the Commonwealth now feels compelled to defend with a citation to factual materials which are not in evidence (¶ 87), became an issue largely because the Commonwealth's witness chose to illustrate his argument with what proved to be hypothetical data (Chernick, Tr. 10,997-10,998) and, in fact, Mr. Chernick had no idea whether the fallacy really created a problem or, if so, in what direction it acted. Chernick, Tr. 11,109-11,110. The

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*/ Although we do not necessarily question Mr. Chernick's mathematical abilities in the derivation of formulae, we would note that there is nothing in the record which would verify this formula or otherwise enable comment on it one way or the other.

issue of the DOE efficiency standards, of which Applicants were allegedly "warned in detail", (¶ 87) actually presents a question of who had interpreted the DOE regulations correctly. The record discloses no citation to these efficiency standards so it is not possible to extend the argument further. However, it is clear that NEPOOL and Mr. Chernick had different interpretations of these regulations (compare Bourcier, Tr. 10,829-10,830 with Chernick, Tr. 11,012-11,016) and we fail to understand the basis on which Mr. Chernick claims to be better able to interpret DOE regulations.*/

With respect to various alleged "errors" in the NEPOOL forecast which are cited by the Commonwealth, (¶ 94) there is simply no support in the record other than the conclusion of the Commonwealth's witness that these errors exist, or any development as to the seriousness of these errors or the extent to which they impact upon the overall reasonableness of the forecast or its results. Undaunted the Commonwealth, in its

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*/ We also fail to understand the Commonwealth's reasons for pursuing this matter since, as the Commonwealth is fully aware, the DOE's efficiency target program and the regulations thereunder are no longer in effect.

Proposed Findings simply turns to characterizations to make its arguments. Although Mr. Chernick and Ms. Geller showed no hesitancy to use the adjective "serious" to describe errors amounting to as small as nine megawatts out of 24,000 (Chernick, Tr. 11,025-11,027), the Commonwealth, in its Proposed Findings, takes even more liberty in its use of the term in describing various alleged errors as "serious oversights" and "extremely serious" even where its own witnesses drew no such conclusions. ¶ 94. Furthermore, despite Mr. Chernick's testimony on cross-examination that he could not tell whether certain alleged errors understated or overstated demand, (Chernick, Tr. 11,106-11,107), the Commonwealth's Proposed Findings state that these alleged errors did in fact overstate demand. ¶ 94.

The Commonwealth seeks to avoid the burden of backing up its arguments regarding errors in the forecast by pointing to the burden of proof which lies with the Applicants. ¶ 101. While there is no dispute that the Applicants have an ultimate burden of proof on the issue of need for power, there is no such burden which extends to every utterance by a Commonwealth witness relative to a potential problem that he perceives may exist. In fact, there is little or nothing in the

record which would allow any verification or further discussion of the various errors alleged by the Commonwealth, aside from what has already been said. The Commonwealth's witnesses were repeatedly asked for data concerning the errors which they alleged, however, they had no data. See, e.g., Tr. 11,003-11,004; 11,010; 11,052; 11,176; 11,224. Most of the alleged errors depend upon the witnesses' purported knowledge of other data or the correct value of a particular quantity or to intuition, however, there is nothing in the record as to what the correct values are or how they were determined. The classic example of this is the supposed data on college students avoiding the draft which Mr. Chernick felt should have been factored into the migration equations. Chernick and Geller, p. 18, following Tr, 11,224; Tr. 11,003-11,004. Similarly, the statement that wages influence migration (Chernick and Geller, p. 18, following Tr. 11,224) is not equivalent to a statement that wages are statistically significant variables which must be modelled. Wages, for example, may be correlated closely with some other variable, such as employment, and thus not be a proper variable at all. It is probable that people migrate for many different reasons, but this is not to suggest that a model has to include each and every possible variable in order to

be a reasonable model.

The Commonwealth suggests that the Applicants are unable "to respond on the merits to serious substantive criticism." ¶ 106. Applicants submit that the record is barren of evidence which would permit the criticism of Mr. Chernick and Ms. Geller to be so characterized.

The Commonwealth especially notes that the Applicants' most recent presentations concerning need for power included only the NEPOOL forecast and did not deal with the forecast of Boston Edison Company or any other individual Applicant.*/ ¶¶ 85-86. The

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*/ In the 1975 and 1977 presentations by the Applicants concerning need for power, the Boston Edison Company forecast was presented. The NEPOOL forecast at that time was determined by summing the individual companies' forecasts and thus there was a direct relationship between the two forecasts. The present NEPOOL forecasting methodology is no longer tied to the sum of the individual companies' forecasts or for that matter to any company forecast, and there is no longer a rationale for the presentation of individual companies' forecasts - indeed, some of the member companies had not submitted final updated 1979 forecasts to NEPOOL and Mr. Bourcier was not generally familiar with the results of the individual companies' forecasts. Bourcier, Tr. 10,803-10,805.

Commonwealth, however, points to no requirement of NEPA or NRC regulations which requires that each participant in a jointly owned facility present an individual forecast in addition to a comprehensive composite forecast covering the region in which the individual companies operate - Pilgrim Unit 2 is in fact owned by a number of utilities from the New England region and the power it supplies will be fed into the New England Power Pool. The concern of NEPA is whether there is a need for the power from the unit and the Applicants' submit that this concern is addressed by showing that New England has such a need. As for justifying Boston Edison Company as the lead participant - aside from questions of technical and financial qualifications, the Commonwealth fails to point to any requirement for such a justification.

The Commonwealth makes the point that NEPOOL's peak forecast growth rate has declined from the rates forecast in previous years. ¶ 90. It also points out that the Boston Edison Company peak forecast growth rate has declined over the last few years. ¶ 91. It fails, however, to make any point, or to cite any evidence, that the existence of these trends implies that these growth rates will continue to decline indefinitely. The present NEPOOL forecast represents a new forecast

methodology, and the Commonwealth offers no suggestion as to what trend should be inferred from this forecast,*/

The Commonwealth also suggests that the two "backcasts" produced in testing the NEPOOL model for 1977 and 1978 each overforecasted by 3.5% and that this would imply that the growth rate for the 1980's can be reduced from 3.8% to 0.3%. ¶ 89. This is, of course, a somewhat different trend than the declining growth rate trend and its relationship to that trend is not clear. The Commonwealth also does not explain the logic or the validity of applying this trend, but merely states the result of its application. The Commonwealth repeats the same exercise when it observes that the 1972/73 through 1978/79 compound growth rate in peak demand was

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*/ The Commonwealth tries to compare the 1979 NEPOOL forecast using the new methodology with the forecast that would have been obtained had the old methodology been continued. ¶ 92. Aside from the question of whether such a comparison would mean anything, since NEPOOL did not collect updated forecasts from member companies, (Bourcier, Tr. 10,803-10,805, 10,817), this comparison cannot be performed based on any evidence in the record, although the Commonwealth did try to get several witnesses to agree to various figures produced by the Commonwealth's counsel. Tr. 10,810-10,816. The comparison presented by the Commonwealth in its proposed findings was in fact the Commonwealth's own hypothetical (Tr. 10,815) and it is somewhat misleading to present this figure as supported by the record. See ¶ 92.

1.8%. ¶ 93. As the Commonwealth is well aware, one could as easily select the compound growth rate in peak demand from 1973/74 through 1978/79 which was 3.3%, (Bourcier, Tr. 10,943), thereby deemphasizing the rather calamitous and non-representative year of the oil embargo.

The Commonwealth also presents an argument based upon the allegation that the Applicants and NEPOOL "make no allowance whatsoever in their load and capacity projections for the constributions [sic] to reliability made by transmission ties to other pools." ¶ 96. Further, the Commonwealth goes on to state that the correct inclusion of this factor would negate the need for Pilgrim Unit 2. ¶ 96. The Commonwealth is correct that NEPOOL's load and capacity report does not credit the reliability benefits of transmission ties, as a line item. However, the Commonwealth is flatly wrong when it states that transmission ties are not considered by NEPOOL in its reliability evaluation. Transmission ties to other pools are one of the considerations employed in determining the required level of reserves for future years. Weiner, Tr. 10,763-10,764; Barstow, Tr. 11,378-11,381. There is no testimony or other evidence in the record which would support the

Commonwealth's statement (¶ 95) that the full effect of these ties has not been properly considered. In fact, the cross-examination by the Commonwealth's counsel concerning the reliability effects of existing transmission ties shows that NEPOOL has taken the effects of existing transmission ties into account and that NEPOOL considers them equivalent for reliability purposes to 800 MW of firm capacity. Barstow, Tr. 11,380-11,381.

The Commonwealth further argues that since NEPOOL has not set capability responsibilities or objective capabilities beyond the year 1984/85, the Applicants are thus unable to "demonstrate any reliability requirements beyond the 1984/85 power year. ¶ 97. The Commonwealth finds further force behind this argument in the alleged fact that NEPOOL has not set these figures "intentionally", presumably because of a bad or clandestine purpose. ¶ 97. The relevance of this point however, escapes us. The Commonwealth does not suggest that there will be no need for electric power or no need for reserves or no reliability requirements beyond the year 1984/85. The fact that NEPOOL has not formally set these requirements beyond that year does not mean that they will not exist or that their range of values cannot be projected for long-range planning purposes.

The Commonwealth also attacks the economic analysis which was presented by the Applicants in order to demonstrate the cost-effectiveness of bringing Pilgrim Unit 2 on line earlier rather than later. ¶¶ 98-99. Aside from the Commonwealth's misconception or mischaracterization of the purpose of the analysis, which was discussed earlier, the Commonwealth simply repeats a number of the criticisms initially presented by Mr. Chernick and Ms. Geller with respect to the Applicants' cost study analysis. These criticisms relate to cost study assumptions as to the variables, the cost of equity capital, the discount rate, nuclear plant capital cost and the prices of nuclear and fossil fuel. In that the Applicants' cost study calculations would not in any event be sensitive to the values attributed to the cost of equity and discount rate variables (Legrow, Tr. 10,786, 10,790-10,791) no purpose is served in discussing what the Commonwealth contends these values ought to be. Further, the Commonwealth's contention that the estimated capital cost of the plant should be derived by trending the increases of prior estimates, which the Commonwealth also advances in connection with its Proposed Findings as to the Applicants' financial qualifications (¶ 42-43) is plainly specious. We turn next to the fuel cost variables challenged by the Commonwealth. The Commonwealth contends that the "Applicant used a nuclear fuel cost escalation rate which appears quite optimistic in light of the history the

Applicant has experienced in its supplier refusing to deliver on supply contracts. Tr. 10,793-10,795." There is certainly no great "history" of supply problems evident from the record citations given by the Commonwealth except to the extent that such a "history" was repeatedly suggested by the Commonwealth's interrogation. However, questions of counsel standing by themselves are not evidence. But more fundamentally, there is no support whatsoever for any implication that the nuclear fuel cost escalation rate is "optimistic". If anything, the opposite is true since the early years' supplies of nuclear fuel are at a below-market cost reflecting the advantage of one particular long-term contract, and there is, in fact, very rapid escalation as supplies under this contract terminate and nuclear fuel is purchased at market prices. Legrow, Tr. 10,793. The final argument raised by the Commonwealth concerns fossil fuel (meaning oil) cost escalation. Somewhat surprisingly, the Commonwealth suggests that future oil prices as projected in the Applicants' cost study are too high. In requesting that the Board accept the testimony of Mr. Buckley over that of the A. D. Little witnesses, Messrs. Turner, Godley and Hanna, (¶ 113) the Commonwealth offers no analysis of either oil price projection and no basis for the selection of one over the other. In fact,

Mr. Buckley stated that his proffered testimony was intended in part to show that the A. D. Little forecast was too low (Buckley, pp. 8-9, following Tr. 10,947), based in large part on the then-recent increases in world oil prices.*/ On the other hand, Mr. Buckley stated that he assumed no drastic real price increases and no supply interruptions (Buckley, pp. 6-7, following Tr. 10,947), and merely applied an inflation factor of 8 to 10% for future prices. The Commonwealth somewhat overstates the case when it cites Mr. Buckley's assumption as authority for the proposition that a constant oil price is a better forecast than one which projects price escalation. In any event, the net effect of Mr. Buckley's choice of a higher starting point and a higher rate of inflation nearly offsets the A. D. Little projected real price increases to which the Applicants applied a constant inflation rate in their cost study. In fact, both forecasts produce approximately the same oil price for the mid-1980's. See Applicants' Proposed Findings ¶¶ 482, 484, 486.

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*/ This was also due to the fact that the A. D. Little forecast dealt with a specific grade of Saudi Arabian crude which has been held below world prices for much of 1979. Turner, Godley and Hanna, pp. 6-7, following Tr. 10,430.

The Commonwealth's Proposed Findings also deal rather harshly with the presentations made by the Staff and the Massachusetts Office of Energy Resources. Several of these criticisms bear further comment.

The Commonwealth's attacks on the ORNL model reduce ultimately to a question of credibility. The qualifications and experience of the respective witnesses, Mr. Chernick, Ms. Geller and Dr. Chern, of course, speak for themselves. The underlying basis for the Commonwealth's criticism of the model was that the model was just so bad that nothing could be done with it. Chernick and Geller, Tr, 11,165-11,167. Such a criticism is really tantamount to saying that Dr. Chern and the team that works under him at ORNL is incompetent. We seriously question whether the Commonwealth's witnesses have the experience or the qualifications to make such a judgement.

Several of the criticisms of particular elements of the model are also particularly suspect. The allegation that the model projects declining profits is repeated twice (¶¶ 102, 111) however, the Commonwealth has yet to explain why it is important that the model project profits correctly. See Staff's Proposed Findings, ¶ 461. The Commonwealth also raises the issue of natural gas. ¶ 110. Despite their insistence that natural gas use is significant in New England, they continue to miss the central

point of whether natural gas is a statistically significant variable in the forecasting of electric use. See Chern, Tr. 11,257. An issue is also raised with respect to the industrial price elasticities used by Dr. Chern which the Commonwealth feels to be too low. ¶ 109. Their "support" for this contention appears to be for cross-examination of Dr. Chern where he defended the choice of the price elasticities which he used. Chern, Tr. 11,260-11,272. This was in contrast to Mr. Chernick and Ms. Geller who had no knowledge of any studies specific to New England and whose basis was only "general knowledge of what the literature indicates." Chernick and Geller, Tr. 11,176. Part of the "literature" is, of course, the work of Dr. Chern. Chern, Tr. 11,270, following Tr. 11,352.

The Commonwealth gives extremely short shrift to the presentation by the Massachusetts Office of Energy Resources. ¶¶ 114-115. Whatever Mr. Fitzpatrick's "expertise" insofar as it was discussed by counsel at the beginning of Mr. Fitzpatrick's testimony (Tr. 10,658-10,659), the Commonwealth appears to go out of its way to attempt to discredit the head of the state office within the Commonwealth with responsibility "for establishing energy policy for the Commonwealth." Fitzpatrick,

pp. 1-2, following Tr. 10,947.*/ In any event, the Commonwealth does not appear to suggest or argue that the energy policy of Massachusetts, or of the United States, is other than as stated by Mr. Fitzpatrick, viz. the reduction of dependency upon imported oil.**/

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*/ The suggestion that the witness refused to admit that an agency he once headed still existed in order to hinder the admission of a document into evidence is as ridiculous as it is odious. As the Constitutional Officer with responsibility to defend state agencies and officials, (Mass. G. L. c. 12, §3), presumably the Attorney General, who is counsel for the Commonwealth, is or should be well aware of the status or lack thereof of the disputed agency. In any event, as was made clear by Mr. Fitzpatrick, the question of the legal status of the predecessor agency was one that he could not answer and the answer would require a legal review. Fitzpatrick, Tr. 10,661-10,666. The claim that the colloquy concerning the legal status of the predecessor agency was somehow for the purpose of "hinder[ing] the admission for the truth of the matter contained therein of a document produced by that office" (¶ 115) is simply spurious and has no support in the record. Certainly, no one argued this as a reason for not admitting the document. Since the previous administrators of that agency (i.e., Henry Lee and Paul Levy) were both witnesses for the Commonwealth, presumably the Commonwealth would have had no difficulty in obtaining a sponsor if it wished to do so.

**/ The Commonwealth refers to Mr. Fitzpatrick's position concerning a proposed MMWEC facility as being "contrary" to the state policy to reduce oil concumption. ¶ 115. Although Mr. Fitzpatrick agreed in response to questioning that he endorsed the facility (Fitzpatrick, Tr. 10,673) it is by no means clear whether this is "contrary" to or in furtherance of the overall policy to reduce oil usage - without some further evidence on the issue it is plausible that a new efficient oil-fired facility may replace or allow a lesser dependency on an older less efficient oil-fired facility. The Commonwealth certainly doesn't support its claim that this is "contrary" to state policy with anything in the record.

Fitzpatrick, pp. 2-4, following Tr. 10,947. In fact, as noted previously, the Commonwealth largely appears to ignore the issue of energy policy and the desirability of reducing the nation's imported oil 'ependency and the avoidance of the issue in their attack on Mr. Fitzpatrick is consistent with that position.

IV. ALTERNATIVE ENERGY SOURCES

The Commonwealth suggests that if there is a need for additional capacity to the equivalent of the proposed 1180 MW Pilgrim 2 Unit, "the combination of coal, solar, and the burning of solid waste can supply that need at an economically competitive price and with less impact to the environment." ¶ 124. While the Commonwealth has proposed several findings as to the burning of solid wastes (¶¶ 125-134) and as to solar energy (¶¶ 135-142), only as to coal does the Commonwealth request a finding as to a "presently existing and reasonable alternative to Pilgrim 2." ¶ 172.

The Commonwealth states that there is evidence in the record that the burning of solid waste to generate steam to generate electricity is economically and technically feasible (¶ 126), that there is an existing waste burning plant generating steam (¶ 127) and one planned to generate 60 MW of electricity which is technically and economically feasible (¶ 128), that with an additional proposed plant there would be a generating potential of 145 MW (¶ 129), that studies estimate that about 470 MW of power potentially could be generated from solid waste in Massachusetts (¶ 130),

and that the burning of waste to generate energy is environmentally and economically sound (¶¶ 131-133) and should be encouraged. ¶ 134.

What the Commonwealth fails to disclose is the unanimity of testimony that theoretical potentials notwithstanding solid waste burning would account for such a small amount of power that it cannot be considered as a reasonable alternative to Pilgrim 2. See Applicants' Proposed Findings, ¶¶ 572-574; see also, Carolina Environmental Study Group v. AEC, 510 F. 2d, 796, 800-801 (D.C., Cir. 1975).

The Commonwealth, while maintaining the feasibility and economics of certain applications of solar energy in New England, does not contend that central station electric generation from solar power is feasible in New England at this time. ¶ 135. Accordingly, the Commonwealth does not advance solar energy as an alternate source of generation but rather as a replacement of generation and hence a potential factor in reducing the need for power. ¶ 142. Thus, while it would appear that all parties agree that solar energy offers a potential for space and water heating, it does not present a reasonable alternative source of baseload generation as is proposed to be supplied by Pilgrim 2. Staff Proposed Findings, ¶ 247; Applicants' Proposed Findings, ¶ 568; see also, Carolina Environmental Study Group v. AEC, supra.

The Commonwealth concludes that of the more conventional sources of power which are reasonable alternatives to Pilgrim 2 coal is the most likely alternative. ¶ 143.

"To set the background" the Commonwealth observes that a coal-fired plant has the advantage of (a) an abundant source of fuel and (b) an advanced extraction and generation technology. ¶ 144. However, nowhere does the Commonwealth acknowledge, or even discuss, the disadvantages. See, e.g., Applicants' Proposed Findings, ¶ 559.

Moreover after "set[ting] the background", the Commonwealth's case for coal is simply a challenge to the Applicants' case for nuclear and particularly to the Applicants' most recent analysis. ¶¶ 146-173.

The Commonwealth states first that Applicants' witness Gerber, starting with the premise of the Applicants' most recent analysis that the capital cost of coal is equivalent to nuclear, only found a 1.69 mill/kwh nuclear power cost advantage. ¶ 148. The Commonwealth, however, neglects tc point out that Mr. Gerber found a nuclear advantage on the unrealistic and conservative assumption that the coal costs presented in the 1975 (earlier testimony) remained the same and only the nuclear capital costs projections were increased to reflect the inflationary impact. Gerber, Tr. 8104, 8111-8112.

The Commonwealth next contends (¶ 149) that the Applicants' use of the EPRI-financed study on coal capital cost (in comparison to Pilgrim 2) before the second aspect of the EPRI study which is to encompass nuclear plants is released, is a misuse of that study. Quite obviously the Commonwealth has forgotten that Pilgrim 2 is a nuclear plant whose capital cost estimates, performed by Bechtel Power Corporation, author of the EPRI study, are on this record and that the cost estimates of the EPRI study are specifically adjusted to Boston Edison conditions.

Noting that other earlier analysis has put coal costs at 85%, 79% and 84% of nuclear costs (¶ 150) the Commonwealth returns to Mr. Gerber to establish that coal has the economic edge. ¶ 152. The Commonwealth again misstates Mr. Gerber's testimony and the cited record. Using assumptions he termed "heroic", Mr. Gerber described as follows the circumstances under which coal would have the edge:

> "If you used the 10.8 (mills/kwh nuclear fuel cost), and inflated the nuclear capital cost to the extent that they have now been inflated, and assumed that coal capital costs . . . would remain as they were originally estimated a year and a half ago, and if you assumed that the cost of coal . . . would continue . . . unchanged from . . . January '77 to 1984, then the cost of nuclear . . . would go higher. Tr. 8108.

The Commonwealth also challenges the applicability of the EPRI report because "the report assumed that two

500 MW coal plants would be built, although its own figures indicate that capital costs would be lower for one 1000 MW unit" and that the Applicants' analysis did not attempt to identify the optimum size of a coal plant that might actually be built. ¶ 151. The Commonwealth does not argue that the report's "own figures" show that the capital cost of one 1000 MW unit is $1211/kw compared to $1346/kw used by the Applicants, Dunlop, Tr. 8240-8241, Exh. SP-5, Table 8-3, Table 9-2, following Tr. 8207), a reduction of 10%, and that this reduction in capital costs would reduce the coal/nuclear differential from 17.9 mills/kwh to 14.4 mills/kwh. See, Exh. SP-4, following Tr. 8207. In this instance, the Commonwealth inexplicably ignores the uncontroverted evidence of its own witness MacDonald that the capacity factors of coal-fired power plants decrease with increasing plant size, (MacDonald, p. 3, following Tr. 5690), and fails to recognize that, as MacDonald's coal data base demonstrates, there is only very limited experience with 1000 MW coal units. Id.; Note that Table 2 shows only two power plants greater than 900 MW, comprising seven years of operation, in the entire data base. It is of interest that Bechtel Power Corporation, a major architect/engineer/constructor of coal-fired power plants, is attempting to develop standardized plant designs of 500 MW and 750 MW capacities and that Bechtel's experience with 20 power plants currently in engineering and construction which are

scheduled to come on-line after 1977 is predominantly in the 400 to 600 MW range. Dunlop, Tr. 8242-8243.

The Commonwealth's final challenge to the Applicants' coal-nuclear analysis is directed to the nuclear side (only) of the study's assumption that in the year of analysis both plants will operate at 70% capacity factor. ¶¶ 153-166. The Commonwealth argues as a result of its witness' testimony and cross-examination that the Applicants' calculations based on a nuclear 70% capacity factor are "wholly unjustified" and that a more likely state of affairs calls for capacity factors in the range of 45% to 55%. ¶ 154.

While the Commonwealth cites no references to support its conclusions that it established its position through cross-examination it ostensibly relies on "three pieces of evidence bearing on the question "identified as MacDonald (¶¶ 155-160), Boxer (¶¶ 161-165) and Lee-Levy. ¶¶ 153, 164. The testimony of MacDonald and Boxer consist of predictions based on their statistical models. Enough appears on the record of this proceeding to conclude that the Board can place little or no confidence in the results of statistical model forecasts employed by MacDonald and Boxer. See Applicants' Proposed Findings ¶¶ 541-555; Staff Proposed Findings ¶¶ 273-281. On the other hand, the record amply supports a conclusion that Pilgrim Unit 2 capacity factors can be expected to fall within a 60% to 70% range and

within such a range it is clearly the preferred economic alternative. Heuchling, p. 54, following Tr. 955, Tr. 1484-1486. Further, historical data associated with nuclear power plants does not call for dismissal of the Applicants' assumptions of a 70% capacity factor. Nash, p. 27 and Table 8, following Tr. 3110. Assuming the "high cost seismic design-no recycle" option and a 85% coal to nuclear capital cost ratio, nuclear remains clearly the preferred alternative even if one assumes that the nuclear plant will operate at a 60% capacity factor, and the coal-fired plant at a 70% capacity factor. Nash, p. 27 and Table 13, following Tr. 8304. In asserting that the Applicants' nuclear capacity factor assumptions are unjustified, the Commonwealth has chosen to ignore testimony suggesting that large coal plants, particularly those employing scrubber technology, may not achieve a 70% capacity figure. Tr. 983-986, Vetrano, pp. 16-18, following Tr. 140.

The "Lee Report" (see Applicants' Proposed Findings ¶¶ 536-540) offers little support for the Commonwealth's rejection of the Applicants' assumption. Instead it offers observations that "nuclear power plants historically have averaged between 55% and 60% and on the basis of what we have seen, it seems likely that nuclear plants may only achieve a 70% capacity factor at best, with both coal and

oil doing somewhat better at 75%" Lee Report, pp. 18-19, following Tr. 4962.

In asserting that the Applicants "cite no facts on which to base its conclusion that there will be recycling of nuclear fuel" (¶ 17), the Commonwealth chooses to rely on outdated testimony with respect to fuel costs and ignore the Applicants' most recent testimony presenting fuel cost assumptions which, in recognition of the potential unavailability of reprocessing, concluded that it is "prudent to base our fuel cost forecast (10.8 mills/kwh in 1988) on a 'throwaway' cycle". Seery, p. 21, following Tr. 8207.

The Commonwealth suggests that "[I]t would be inappropriate [for the Board] to discount coal's [economic] advantages based on this [Doctor Gotchy's] evidence". ¶ 168. While it is true that the Commonwealth's contention focused on economic advantage, assuming arguendo that coal would have an economic advantage, it would hardly seem in keeping with the NEPA mandate to ignore the greater health and societal effects of the coal cycle. See, Tennessee Valley Authority (Hartsville Nuclear Units 1A, 2A, 1B and 2B) ALAB-367, 5 NRC 92 (1977).

While acknowledging the large uncertainties in estimating many of the potential health effects of the coal cycle, it is to be noted that the assessment of the impact of the transportation phase of the coal cycle, on the other

hand, is based on firm statistics and is alone greater than the conservative estimates of health effects of the entire nuclear fuel (all uranium) cycle. This can reasonably be expected to increase as more coal is shipped over greater distances. Gotchy, p. 11, following Tr. 8358. See Staff Proposed Findings ¶ 285.

In sum, the Applicants and the Staff having explored fully Pilgrim Unit 2 and its alternatives, have reached a conclusion adequately supported by the record, that Pilgrim Unit 2 is the environmentally and economically preferred means of generating the required power.

V. ALTERNATIVE SITES

The Commonwealth's Proposed Findings on the issue of alternative sites generally mirror their comments on the Draft Supplement to the FES. The Applicants' Proposed Findings have already addressed each of the issues raised by the Commonwealth in those comments and amply support the conclusion that the Staff has taken the requisite "hard look" at alternative sites, including the identification and examination of several specific sites, and that based upon this review there is no alternative site which is "obviously superior" to the proposed Rocky Point site. Applicants nevertheless believe that several of the statements made in the Commonwealth's Proposed Findings so distort the record in this proceeding and misapply applicable legal standards that a further reply on specific points is warranted. In particular, Applicants deem it necessary to address the Commonwealth's erroneous analysis of: (1) the appropriate region of interest, (2) the identification of sites which are real alternatives, (3) the evaluation and comparison of individual sites, and (4) the issue of demographics.

A. Region of Interest

The Commonwealth broadly challenges a number of aspects of the Staff's selection of the state of Massachusetts as the appropriate region of interest within which alternative sites should be evaluated.*/ ¶¶179-200. In large part, this challenge displays a considerable degree of misunderstanding of the region of interest selected by the Staff, and, indeed, that studied by the Applicant. For example, the Commonwealth asserts an acceptance by the Staff of the Applicants' "limitation"**/ of the region of interest

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*/ The Staff's evaluation of alternative sites was further supplemented by its evaluation of alternative sites at existing nuclear power plant sites in New England outside of Massachusetts, including the Millstone site and the Seabrook site. FSFES, §§4.9, 4.10, 4.13, 4.14.

**/ The Commonwealth apparently only loosely examined the Applicants' siting study and the supporting material submitted to the Staff by the Applicants. In fact, the 1974 Boston Edison Siting Study (Applicants' Exhs. 14 (a), (b) and (c)) was not limited to eastern Massachusetts. Many of the environmental topics were investigated on a statewide basis. As Applicants have explained, the study was initially limited to the area within the boundaries of the Commonwealth. Griffin, pp. 3-4, following Tr. 9608. Sites were identified by a "radial" expansion from the service area of Boston Edison Company. Expansion of the site search ended when the study team concluded that a reasonable number of alternatives had been identified. The "limiting factor," if there was one, was that an adequate number of sites had been identified. However, neither Boston Edison Company (which sponsored the study), the UE&C study team, nor the Applicants attempted to limit the scope of the study to the eastern half of the state.

to only the eastern portion of the Commonwealth of Massachusetts. ¶188.*/ In addition, the Commonwealth specifically questions the rationale for the exclusion of other New England states. Neither area of criticism is justified.

The relationship between the Staff's analysis of alternative sites and the information and data prepared and submitted by the Applicants is understandably an area of some confusion given prior proceedings in this docket. The Commonwealth pays lip service to some of these difficulties and acknowledges that the key issue is indeed whether the Staff has performed an adequate analysis, ¶¶183, 188; see also, Boston Edison Company (Pilgrim Nuclear Generating Station, Unit 2), ALAB-479, 7 NRC 774, 779 (1978). However, most of the Commonwealth's criticism appears to be aimed at alleged shortcomings in the Applicants' data rather than at the Staff's analysis. ¶¶ 184-186, 188.

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*/ There appear to be two paragraphs numbered 188; the present reference is to the first such paragraph.

While the Applicants have substantial disagreement with the Commonwealth over several of the statements made concerning the data submitted by the Applicants,*/ the key issue, viz., the Staff's analysis of that information, is dealt with conclusorily by the Commonwealth and without any referenced support to the record. The entire point of the FSFES and the Staff's presentation of its panel of 10 witnesses was to explain the process and results of its own independent analysis. The fact that the Staff may have ultimately "accepted" some particular information or explanation offered by the Applicants does not establish that the Staff's analysis

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*/ For example, the Commonwealth asserts that no evidence was offered showing that any "environmental factors" were considered by the Applicants in "limiting its region of interest to eastern Massachusetts." ¶ 188. Two responses are necessary here. First, evidence on this subject was offered and admitted into the record. This included the letters of April 13 and August 2, 1978 which were included in Applicants' Exh. 15, and which were cited by the Commonwealth. ¶ 188. However, evidence on this subject also included Applicants' Exhs. 14(a), (b) and (c), which the Commonwealth failed to cite and apparently failed to examine. Section IV of Applicants' Exh. 14(b) contains extensive discussions of the environmental factors employed in identifying a region of interest. The August 11, 1978 letter contained in Applicants' Exh. 15 also discusses environmental factors.

was inadequate or not independent - in fact, there were several instances where the Staff called upon the Applicants for additional information (see Applicants' Exhs. 15, 16) and, as the Commonwealth concedes, there were also instances where the Staff did not accept some portion of the Applicants' analysis. ¶178.

The geographic limits of an analysis of alternative sites, required pursuant to NEPA, is governed by "rule of reason". The Commission has discussed application of this rule at some length. Public Service Co. of New Hampshire (Seabrook Units 1 and 2) CLI-77-8, 5 NRC 503, 540 (1977). In selecting a region of interest, decision-making is not constrained to purely environmental matters, even though the legal requirement for an alternative sites study grows primarily out of NEPA. For example, the Commission has commented that "sites in or near load centers have obvious practical advantages for the applicant and its rate payers." Id. at 540. In the same decision, the Commission also made the following comments:

> "It is also appropriate for the Board, in applying the 'rule of reason', to consider the possible institutional and legal obstacles associated with construction at an alternative site, such as the lack of franchise privileges and eminent domain powers and the need to restructure existing financial and business arrangements." Ibid.

Much of the Commonwealth's argument concerning region of interest is directed to the legal, regulatory and political obstacles upon which the Applicants and the Staff relied as a basis for establishing the region of interest as Massachusetts. ¶¶189-200. The Commonwealth argues that with the exception of the State of Maine, there are no "unusual or insurmountable 'legal barriers' to siting Pilgrim 2 outside Massachusetts." ¶196. While recognizing the difficulties in locating Pilgrim 2 in other New England states, the Commonwealth concludes that these difficulties are not insurmountable. However, as the FSFES states, and as the Applicants' Proposed Findings pointed out, the Staff never assumed that it would be absolutely impossible to locate Pilgrim 2 in a neighboring state (with the exception of Rhode Island), but rather recognized the extreme difficulties in siting Pilgrim 2 outside of Massachusetts. FSFES, §3.1; Applicants' Proposed Findings, ¶343. In limiting the region of interest to Massachusetts, the Staff factored in these difficulties, along with numerous other considerations, and did so only after having found a large number of alternative sites in Massachusetts. The Commonwealth's attempt to minimize the difficulties of siting outside of Massachusetts simply has no basis.

In paragraphs 343-349 of their proposed findings, Applicants discuss in great detail the evidence in this proceeding demonstrating why it would be very difficult to site the proposed Pilgrim 2 facility in a state other than Massachusetts. While the Commonwealth argues that possibly the Pilgrim 2

facility could be sited in a state other than Massachusetts, its argument overlooks the basic purpose and thrust of this evidence. The question is not whether, under any circumstances the proposed Pilgrim 2 facility could be located in a neighboring New England state; rather, the question is whether it was reasonable for the Staff to rely upon the evidence in determining the relevant region of interest. Cf., Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2) ALAB-471, 7 NRC 477, 486 (1978). The Board is not called upon to determine whether the laws of a neighboring state absolutely preclude the siting of Pilgrim 2 in that state, as the Commonwealth appears to argue. The Board's responsibility is to determine whether the Staff acted reasonably in relying upon this evidence to establish the relevant region of interest. The Commonwealth simply ignores this fundamental point.

In the Seabrook proceeding, ALAB-471, supra, the Appeal Board specifically approved the Licensing Board's consideration of "possible institutional and legal obstacles associated with construction at an alternative site. . . ." 7 NRC at 486. There, the Appeal Board sanctioned the elimination of neighboring states from the relevant region of interest if there was an adequate basis provided in the record for not looking in those states for alternative sites. That basis, which the Appeal Board held was lacking in Seabrook, has been set forth in detail in the record of the Pilgrim 2 proceeding. See Applicants' Proposed Findings, ¶¶342-351.

The evidence clearly demonstrates that based on legal, regulatory and political obstacles, there was a rational basis for excluding states other than Massachusetts for purposes of evaluating alternative sites to the proposed Pilgrim 2 site.*/

The Commonwealth presented no evidence in this proceeding to show that it was reasonable to look at alternative sites in other New England states, nor has the Commonwealth ever suggested a specific alternative site outside of Massachusetts which might possibly be obviously superior to the proposed Pilgrim 2 site. The Court of Appeals' observation in Seacoast Anti-Pollution League v. Nuclear Regulatory Commission, 598 F.2d 1221 (1st Cir. 1974), bears repeating:

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*/ The Commonwealth challenged those portions of the April 13, 1978 letter dealing with legal, political and institutional impediments to out-of-state siting. Applicants' Exh. 15, Section III of Attachment 2. Commonwealth claims that Applicants' sponsoring witness Griffin was not in technical control of the preparation of this document but only in administrative control. ¶191. This claim by the Commonwealth clearly differs from testimonial evidence brought forth during cross examination by the Commonwealth. In response to a question from Chairman Luton, Mr. Griffin clearly stated that he was not the administrative supervisor of the Boston Edison attorney who prepared the document. Mr. Griffin stated that he was responsible for the technical content of the material. Tr. 9708. As a person who has participated in and managed several electric power plant siting studies in the northeastern United States since 1973, it is reasonable to assume that Mr. Griffin was familiar with the law of electric power plant siting in New England states and was therefore capable of performing a technical review of the subject material. See, Griffin, p.2, following Tr. 9608; cf. Tr. 9705-9711.

> Petitioners' castigation of the agency for its failure to develop reasons supporting the three sites [Millstone, Montague and Pilgrim] cannot but ring somewhat hollow, when they have been so singularly lacking in specifics themselves. If one of their sites was a feasible and obviously superior alternative to Seabrook, petitioners, given the opportunity as they were, should have been able to present some supporting material.

598 F.2d at 1231.

As the Applicants pointed out in ¶¶353-354 of their Proposed Findings, the Commonwealth has been similarly "lacking in specifics" in this proceeding. Accordingly, the Board must reject the Commonwealth's argument that the selected region of interest was unreasonable.

The legal, regulatory and political obstacles to locating the proposed Pilgrim 2 facility in a state outside Massachusetts were not the only reasons for confining the region of interest to Massachusetts. The Staff pointed out in the FSFES that other factors considered were: "minimizing transmission costs and increasing system reliability by placing the source near the load; coordinating with regional power pool planning; water availability for plant needs; land availability for plant needs; choosing low population areas for nuclear options." FSFES, §3.1; Applicants' Exh. 15, April 13, 1978 letter, Attachment 1. The Commonwealth admits that concepts of "load center, system reliability and transmission losses appear reasonable siting considerations in the abstract but reject these concepts as inconsistent

in this case because the need for power from Pilgrim 2 has been justified on a New England-wide basis. ¶ 199. However, there is no inconsistency here since NEPOOL's objectives "provide for the utility to produce its portion of . . . demand by developing a new plant in the vicinity of its load center." Applicants' Exh. 15, letter of April 13, 1978, Attachment 1, at 4, and Attachment 2, Section VII; See Applicants' Proposed Findings, ¶ 342. This is especially significant in the context of Pilgrim 2, 85 per cent of the ownership of which is in Massachusetts.

The Commonwealth also challenges the legal, political and institutional bases for defining the geographic scope of the alternative sites evaluation as "post hoc" justifications for limiting geographic scope. ¶195. The Commonwealth ignores the fact that these factors have always been significant in power plant site selection. Certainly they were factors to be considered in 1973, as the opinions of counsel reflect. Applicants' Exh. 18. That they were of concern in 1973 is also indicated by the initial limitation of the UE&C study to the Commonwealth of Massachusetts. The Commission recognized the existence of similar factors in Seabrook in 1977. CLI-77-8, supra, 5 NRC at 540. The Appeal

Board in Seabrook called for evidence on these matters in 1978. ALAB-471, supra, 7 NRC at 486. It was in response to this guidance from the Commission and the Appeal Board in 1977 and 1978 that the Applicants and Staff first took steps to develop an evidentiary record on these matters. Applicants' Exh. 15, letters of April 13, August 2 and August 11, 1979; FSFES §3.1; Applicants' Exh. 18, opinions of counsel and state statutes. This evidence can hardly be characterized as a post hoc justification for the scope of the study. It is evidence of restraints on siting which have existed over the years.

In any event, the Staff effort was not strictly limited to Massachusetts. The Staff did compare two existing nuclear power plant sites outside Massachusetts, namely the Millstone site in Connecticut and the Seabrook site in New Hampshire, in order to ascertain whether these non-virgin sites could offer distinct advantages over the Rocky Point site. FSFES §§4.9, 4.10, 4.13, 4.14. Neither of these two sites was found to be obviously superior to the proposed Pilgrim 2 site.

The Commonwealth is critical of the assumptions used to solicit the opinions of counsel. ¶192. Out-of-state counsel were requested to analyze a hypothetical

proposed nuclear project based on the assumption that most of the power would be used by out-of-state customers, i.e., Pilgrim 2 with its current ownership percentages.*/ The

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*/ Concerning ownership of units and use of power therefrom, the Commonwealth has also made comments in ¶196, including a suggestion that the ownership of Pilgrim 2 be changed. The Commission has also discussed these questions in Seabrook and made remarks which are very relevant here.

> "In so ruling, we do not exclude the possibility that the Licensing Board will find, on the basis of evidence already in the record and other relevant factors, that a limit on alternate site consideration to the area in or near the lead applicant's service area is appropriate in the context of this application. Careful examination of the substance of the intervenors' claims about Southern New England sites indicates that a large part of their argument deals with ways in which the applicant might satisfy its power requirements without being lead applicant for a power facility. For when the applicant indicates legal and technical barriers to its obtaining sites outside the 19 that were considered in the FES, the intervenor suggests that the plant might be built elsewhere by another utility, in which case applicant presumably may buy a share of that other plant, or purchase power from it. But this Commission sits to license, or not to license, a nuclear power plant proposed by a particular applicant. It is not within our power to order that a different plant be built by another utility. The fact that a possible alternative is beyond this Commission's power to implement, does not absolve us of any duty to consider it, but our duty is subject to a 'rule of reason,' NRDC v. Morton, 458 F.2d 827 (D.C. Cir. 1972); Concerned About Trident v. Rumsfeld, ___F.2d___,9 ERC 1370, 1380 (D.C. Cir. 1976). And NEPA does not require that we reformulate a discrete licensing question in terms as broadly as intervenors suggest."

Seabrook, CLI-77-8, supra, 5 NRC at 539-540.

Commonwealth contends that this assumption is inconsistent with the actual mode of operation of the NEPOOL grid, thus any opinions based on these assumptions would be "unduly influenced." ¶ 192. The Commonwealth's comments are based upon an incorrect understanding of the Pilgrim 2 Joint Ownership Agreement and the normal operating procedures of NEPOOL. The accounting system of the NEPOOL network assumes that power used by customers is produced by the power plants owned by their electric company. Thus, the customers of a NEPOOL member company pay for power on the basis of that member company's ownership of plants on the NEPOOL network. The joint owners of Pilgrim 2 own entitlements to power produced by the unit. Each Company is entitled to a share of plant output proportional to its percentage of plant ownership. Their customers will pay for the unit and enjoy its benefits. As discussed in Applicants' Exh. 15, approximately eighty-five per cent of the present joint ownership of Pilgrim 2 is in Massachusetts. April 13, 1978 letter, Attachment 2, Section VII, and Attachment I, Section II, at 5; Applicants' Exh. 15, August 11, 1978 letter, Attachment 2; Applicants' Exh. 1-A, License Application, at I-1; Applicants' Exh. 1-A, Joint Ownership Agreement, Appendix to License Application. This means that if Pilgrim 2 is built in any state other than Massachusetts most of the power will effectively be exported; i.e., the

customers of the joint owners, most of whom reside in Massachusetts, will receive the benefits of the unit through the provisions of the NEPOOL accounting system and the entitlements system prescribed in the Pilgrim 2 Joint Ownership Agreement. Thus the residents of those foreign states would be well founded in the perception that if the unit were to be built in their states most of the power from Pilgrim 2 would be exported to Massachusetts. The Commonwealth does not understand these arrangements, thus their comments on this subject are irrelevant.

The Board should reject the Commonwealth's argument that the region of interest established by the NRC Staff for purposes of evaluating alternative sites to the proposed Pilgrim 2 site was not adequate and does not rest upon a reasonable basis.

B. The Sites Selected Were Real Alternatives

The Commonwealth challenges the selection of candidate sites as "'straw men' to be struck down in the comparison with Rocky Point." ¶183. Apparently the Commonwealth views the efforts by the Applicants and Staff to identify alternative sites to be a charade.

Some of the sites examined by the Staff were identified in the 1974 Boston Edison Siting Study. Applicants' Exh. 14(a), (b) and (c). The purpose of this study was to identify new power plant sites. The Pilgrim site was not included in the study because it had already been identified and was the site of ongoing expansion.

The 1974 study was not, as the Commonwealth would have us believe, a deliberate effort by Boston Edison to identify undesirable sites ("straw men") which could, somehow, be used five years later in 1978 to make the Rocky Point site look favorable in an alternative sites evaluation by NRC Staff.

In early 1978, the Staff explored in some detail the 1974 study document for use in the Staff's alternative site evaluation. The Staff raised questions on methodology and found some deficiencies in the 1974 Study. As stated by the Staff in its Proposed Findings: "However, no area contained a serious enough flaw to eliminate consideration of the site or to believe that the study was not adequate. (FSFES, pp. 3-2, 3-7; Staff

Supplemental Testimony Relating to Alternate Sites, pp. 4-13, following Tr. 9852)." Staff Proposed Findings, ¶85. The Staff determined that the 1974 Study had identified candidate sites which were "among the best that could reasonably be found" in eastern Massachusetts. FSFES §5.6. Contrary to the Commonwealth's claim, the Staff did not "accept[] the Applicant's slate of sites without investigating the quality of that slate." ¶183. The Staff thoroughly investigated the quality of these sites, and it was on the basis of this detailed investigation that the site comparison was ultimately performed.

The Staff believed it appropriate to examine the Connecticut River resource area. Applicants' Proposed Findings, ¶342. The Staff selected the Montague site as representative of this resource area because a substantial data base existed for this site and, in addition, an alternative sites evaluation had been conducted by the Staff in connection with the Montague nuclear project. That analysis, which had identified environmental characteristics of specific sites in the Connecticut River resource area, demonstrated that the Montague site was preferable to other sites in the

resource area. FSFES, at 4-1.*/

The Commonwealth has criticized the Staff's inclusion of the Seabrook and Millstone sites in the alternative sites analysis. ¶179. Plants are under construction at both sites and large data base exists for each. In Seabrook, CLI-77-8, supra, the Commission directed that, on remand, the Licensing Board compare the Seabrook site with possible alternative sites in southern New England which housed nuclear plants or which had been proposed as plant sites. 5 NRC at 539; see, also, ALAB-471, 7 NRC at 481, 482, 491. The Pilgrim 2 Appeal Board also expressed an interest in those "potential alternative sites which are also under construction for nuclear facilities." Pilgrim 2, ALAB-479, supra, 7 NRC at 790. Thus, it was perfectly reasonable for the Staff to examine these sites. The Staff compared Pilgrim with these sites to determine whether Seabrook or Millstone offered any distinct advantages. FSFES §4.9, 4.10, 4.13, 4.14. Neither was found to be obviously superior to Rocky Point.

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*/ The Commonwealth seems to have a love-hate relationship with the Montague and Pilgrim sites, depending on the proceeding. As pointed out by the Pilgrim 2 Appeal Board, the Commonwealth opposed development of the Montague site in the Montague Units 1 and 2 proceeding. ALAB-479, supra, 7 NRC at 794, citing NRC Final Environmental Statement, Montague Nuclear Power Station, Units 1 and 2 (NUREG-0084) at A-94 (February 1977). Furthermore, at one time in the Pilgrim 2 proceeding the Commonwealth portrayed the Montague site as "fatally flawed" and not a valid alternative to Pilgrim (FSFES, at A-13). On the other hand, we now find the Montague site has returned to favor, as its attributes are singled out by the Commonwealth as more favorable than Rocky Point. ¶210, 211, 253, 254, 255 256.

C. Evaluation and Comparison of Individual Alternative Sites

The Commonwealth asserts that within the relevant region of interest, the alternative sites considered in the FSFES do not represent "a realistic range of genuine environmentives [sic] to Rocky Point." ¶201. It further states that if the candidate sites did in fact, present a range of genuine alternatives, it would have no argument with the Staff's limitation on the region of interest to the Commonwealth of Massachusetts. ¶201. The Commonwealth challenges whether the alternative sites selected are potentially licensable and charges that the Staff has manipulated its screening criteria so as not to permit the "reasoned choice of alternatives which NEPA requires." ¶¶201, 205. The Applicants assert that it is the Commonwealth which has manipulated the facts, in an attempt to discredit the Staff's detailed analysis of environmental factors at alternative sites.

The Commonwealth's basic argument is that environmental defects which have been identified and evaluated by the Staff at each alternative site make these sites less than genuine alternatives to the proposed Pilgrim 2 site. This argument grossly mischaracterizes the environmental defects in question and unfairly challenges the sincerity of the Staff's undertaking. What the Commonwealth fails to acknowledge is that the environmental defects identified and evaluated by the the Staff with respect to alternative sites simply support the Staff's conclusion that there are no alternative sites

which are obviously superior to the proposed Rocky Point site. The slate of candidate sites considered in the FSFES constitutes the final winnowing of over 100 parcels of land -- most of which were eliminated earlier in the review process because they possessed environmental and other defects of a greater consequence than the sites ultimately identified. Applicants' Proposed Findings, ¶339. The Commonwealth is not able to dispute the fact that, after undertaking a lengthy and detailed study, the Staff was not able to find any alternative site which is "obviously superior" to the Rocky Point site.

The Commonwealth's distortion of an extensive and detailed analysis by the Staff, by arguing that no genuine comparison of alternatives was made, attests to the wisdom of the determination of the Court of Appeals in Seacoast, supra, that participants in the NEPA process must do more than sit back and criticize an agency's evaluation. The Court there stated:

> "Vermont Yankee makes it clear that the NEPA requirement of studying alternatives may not be turned into a game to be played by persons who -- for whatever reasons and whatever depth of conviction -- are chiefly interested in scuttling a particular project. There would be no end to the alternatives that might be proposed if opponents had no obligation to do more than make a facially plausible suggestion that a particular alternative might be of interest, and could then, after awaiting results, find reasons why the agencies survey was inadequate. The agency bears a primary responsibility to investigate serious alternatives, but reviewing courts, when weighing objections based on an alleged failure to study alternatives, properly may consider the extent and sincerity of the opponents' participation."

598 F.2d at 1230-31.

If the Commonwealth had brought forward specific alternative sites which did not possess the so-called "environmental deficiencies", there might be some basis for its argument that the Staff did not take a realistic range of alternative sites. Although ample opportunity has been provided through extensive documentation and hundreds of pages of testimony in this proceeding, the Commonwealth has not proffered any such evidence supporting the possibility or suggesting such a site. Since the Commonwealth has been unable to identify any alternative site which it believes the Staff should have evaluated, its argument is nothing more than a semantic assault on the analysis performed by the Staff. The fact is, as the existing record in this proceeding clearly demonstrates, the only limitation on the quality of the sites chosen for the alternative sites review was the general quality of the potentially licensable sites within the region of interest. Applicants' Proposed Findings, ¶¶361-62. The Commonwealth's attempt to have it appear otherwise should be rejected by the Board.

The Commonwealth claims that "from a system reliability and transmission standpoint, the Applicant's own studies indicate that the location of Rocky Point is certainly not the best location for a NEPOOL nuclear unit." ¶197; See Applicants' Exh. 15, August 18, 1978 letter. Attachment 3, "Transmission Cost Study for Alternative Sites Evaluation". The Commonwealth misunderstands the purpose, scope and results of this study. It was not a transmission system reliability

study, nor was it a stability study. Id. at 4. The purpose of the study was to "identify significant transmission related costs of an 1150 MWe power plant if installed at Pilgrim Station or at any of several alternative sites." Id. at 2. These costs included capital costs, transmission losses and environmental costs. Id.

Table 1 of the study contains transmission capital cost estimates and indicates that Pilgrim is the best of all sites examined in regard to this factor. Table 3 contains information on environmental costs. Pilgrim and three other sites were found to be the best in this regard. Apparently the Commonwealth did not notice these findings when reviewing the study.

Tables 2 and 4 of the study contain information on transmission losses for the period from mid-1985 to mid-1986 (not for the life of the unit). It appears to be Table 2 which is the focus of the Commonwealth's concern. Page 12 of the study indicates that demand "differences between sites of 6 MW or less appear not to be meaningful" in Tables 2 and 4. With this explicit qualifier in mind, an examination of the "Demand" column of Table 2 indicates that eight of the ten sites fall into the same range as Pilgrim, as they are within plus or minus 6 MW of Pilgrim. These include Millstone, Montague, Sites 1, 2A, 2, 18, 19 and 20. Only two of the sites fall outside this group: Charlestown and Seabrook. Only one of ten sites is superior to Pilgrim in this regard.

Table 4 indicates the sensitivity of a study of this type to small changes in schedules for plant construction. With Millstone 3 operating before Pilgrim 2, instead of after it (as had been assumed in the analysis shown in Table 2), three of the four sites would have demand losses greater than Rocky Point. This is indicative of the changes in demand and energy losses and the consequent shuffling of the order of "best sites" which can be expected to occur during the life of a unit.

Table 2 also contains information on energy losses for the 1985-1986 year. The margin of error for this factor is estimated to be 30,000 to 40,000 MWhrs. With this in mind, we note that six of the ten sites appear to have lower total energy losses, one site appears to have higher energy losses, and sites 18, 19 and 20 fall into the same range as Pilgrim.

In conclusion, Rocky Point was found to be the best site in regard to capital cost, one of the best sites in regard to environmental costs, and, for the 1985-86 year, in the middle range in regard to losses. The results of the transmission study were expressed in environmental and economic terms. Staff consideration of environmental results is reflected in Table 11 of the FSFES. The capital costs, demand and energy loss factors defined in the study were identified as economic rather than environmental factors. The Staff did not use these costs or any other economic cost information for site comparison purposes. Staff's Proposed Findings, ¶123; Tr. 10,185.

Finally, the Commonwealth claims that the Staff has misapplied the obviously superior standard by comparing individual environmental impacts at the candidate sites with those at Rocky Point and applying the standard to each category of impacts. ¶¶205-212.

The Staff here carefully analyzed specific environmental impacts at each alternative site, and utilized this detailed examination in making a comparison of the candidate sites with Rocky Point. At the conclusion of this process, the Staff made an overall site-by-site determination as to the potential environmental superiority of these candidate alternatives.

The only proscription against applying the obviously superior standard is that the standard must be applied at the conclusion of the Staff's evaluation of the particular impact. Pilgrim 2, ALAB-479, supra, 7 NRC at 785. In Seabrook, CLI-77-8, supra, the Commission stated that the obviously superior standard comes into play after the alternatives have been identified and their "salient features" explored. In other words, the Staff cannot dismiss an identified alternative site prior to a detailed evaluation of specific environmental factors on the grounds that the alternative site is, based on generalized considerations, not obviously superior to the proposed site. The Staff did not take such a course of action in this proceeding. The Staff here carefully analyzed numerous specific environmental impacts at each alternative site, and utilized this detailed

examination in making a comparison of the candidate sites with Rocky Point. Thereupon, the Staff made an overall determination as to the potential environmental superiority of these candidate alternatives. Table 11 of the FSFES delineates the factors studied and judgements made by the Staff in regard to each site. Table 11 is not intended, of itself, to show the obviously superior test. It merely notes many of the specific items of interest to the Staff in making their overall determination. There is absolutely nothing analytically improper with this method of making comparisons. The Applicant is at a loss to see how this method of analysis "tortured" the Staff's conclusions. ¶212. Accordingly, the Commonwealth's argument lacks any basis and in fact appears to be an attempt to confuse the issue.

The Commonwealth's observations regarding the Staff evaluation and comparison of alternative sites fails to acknowledge that the Staff effort has satisfied every principal guideline for such evaluations as set forth by court decisions, and decisions of the Commission and Appeal Board in recent years. The record in this proceeding does "contain detail sufficient for . . . assessment of the most important impacts to permit adequate overall comparison of [Pilgrim] with alternative sites . . ." Seabrook, supra, CLI-77-8, 5 NRC at 520. "During the preparation of the DES the Staff [did] . . ., to the extent appropriate under the circumstances

conduct independent analysis of the environmental questions that arise in connection with the proposed facility." Id. at 525. The Staff analysis and conclusions clearly "represent the results of vigorous probing for possible shortcomings." Boston Edison Company, (Pilgrim Nuclear Generating Station, Unit 2), LBP-77-66, 6 NRC 839, 841 (1977) citing St. Lucie, ALAB-435, 6 NRC 541 (1977). The Staff's analysis is not "couched in generalities." Pilgrim 2, LBP-77-66, supra, 6 NRC at 845. The Staff has developed a "record of careful examination, either physically or by review of proferred descriptions, of [sites] other than Rocky Point." Ibid. In carrying out its NEPA responsibilities, the NRC Staff has gone "beyond mere assertions and indicate[d] its basis for them . . .," producing an end product which is "an informed and adequately explained judgement." Silva v. Lynn, 482, F.2d. 1282, 1287 (1st Cir. 1973). The "environmental consequences of each reasonable alternative have been afforded a hard look." Pilgrim 2, ALAB-479, supra, 7 NRC at 779. The Staff has provided "a detailed, thoughtful analysis drawn from adequate data so that a reviewing body can decide on an objective basis whether the agency fairly assessed other courses of action which might realistically be substituted for the one proposed." Ibid. The FSFES is a "detailed statement by the responsible official . . . on alternatives to the proposed action." Id., at 780, citing Silva v. Lynn, supra, 482 F.2d at 1284-85. The Staff effort has elicited

"information sufficient to permit a reasoned choice of alternatives so far as environmental aspects are concerned." Pilgrim 2, ALAB-479, supra, 7 NRC at 783, citing NRDC v. Morton, F.2d. 827, 836 (D.C. Cir. 1972). The FSFES is a "detailed statement;" it is clearly more than a "conclusionary statement, unsupported by empirical or experimental data, scientific authorities or explanatory information of any kind;" it clearly "affords [a] basis for comparison of the problems involved with the proposed project and the difficulties involved in the alternatives." Pilgrim 2, ALAB-479, supra, 7 NRC at 783, citing Silva v. Lynn, supra, at 1285. The Staff effort clearly was not a "hypothetical" or "generalized" exploration of alternative sites. Pilgrim 2, ALAB-479, supra, 7 NRC at 791.

D. Demography

The Commonwealth takes the position that under NEPA demography must be accorded "far greater" weight than other environmental concerns. ¶217. The Commonwealth states, without any relevant citation, that demography "is a paramount public safety consideration that must be accorded far more weight than most of the other environmental concerns addressed by the Staff in its FSFES." Id. Moreover, according to the Commonwealth, where population density surrounding a proposed site is significantly high, i.e., population densities exceed certain Staff "trip level" numbers, the Staff, as part of its alternative site evaluation, must perform a class 9 accident analysis in order to evaluate the potential residual risk to that population. ¶227. The Commonwealth argues that trip levels would be exceeded if the Staff's analysis of population density surrounding the Rocky Point site did not grossly underestimate population density and thereby obscure the "risk potential" to this area. ¶230.

The Commonwealth's argument that, in performing the NEPA balance, population should be afforded greater

weight than other environmental factors, has no basis in either NRC regulations and practice or in the case law developed under NEPA. In fact, to the extent that it is relevant, the Appeal Board's decision in Seabrook, ALAB-471, supra, cited by the Commonwealth appears to support the opposite conclusion. In that case, the Appeal Board held that the Staff could not dismiss possible alternative sites which meet NRC regulations on the basis of the population factor alone. Id. at 510.

The Commonwealth's argument appears to be an attempt to take the health and safety standards applicable under the Atomic Energy Act of 1954, as amended, (the Act) and the Commission's regulations, in particular 10 CFR Part 100, and engraft those standards onto the alternative sites evaluation under NEPA. This argument, however, conveniently ignores the standard of reasonableness which, unlike the more stringent health and safety provisions of the Act, is applicable under NEPA. NRDC v. Morton, supra, at 827. In fact the footnote on page 105 of the Commonwealth's proposed findings cites and discusses a portion of a Commission opinion which specifically states that the standards to be applied under the Act and under NEPA are different. Thus, while the protection of the public health and safety is of paramount importance under

the Act, NEPA requires a reasonable evaluation of all environmental factors, including population.

The Commonwealth further argues that, instead of using an averaging calculation in determining population density, the Staff must look at the maximim or peak number of persons who could be affected at any particular moment in time by potential accident releases. Again, the Commonwealth provides no support for its argument and confuses the different standards to be applied under the Act and NEPA.

The Commonwealth's claim that the Staff has underestimated the population density surrounding the proposed Rocky Point site, is based upon the following claims: (1) the Staff ignored certain transients and weighted other transients such that their full impact was not taken into account; (2) the Staff improperly factored the surrounding waters of Cape Cod Bay in calculating population density; and (3) the Staff disregarded the differences in population density within various radial sectors. ¶¶233-235, 238-246. According to the Commonwealth's suggested approach in calculating population density, one would have arrived at much higher figures for population density surrounding the proposed Pilgrim 2 site.

As Applicants discussed in ¶¶364-365 of their proposed findings, a close look at the methodology used by the Staff in determining the average population density surrounding the proposed Rocky Point site, clearly demonstrates the reasonableness of the Staff's chosen methodology. The Staff determined that transients, who are in the area for only a short period of time (sometimes less than an hour) should not be treated the same as residents who spend the entire year in the area (assumed 8760 hours per year). Transients should be weighted according to the duration of their stay and a weighted average of their total number factored into the overall population density figures. FSFES at 5-9. This approach, which is set forth in Regulatory Guide 4.7, takes into account the realistic potential risk to these transients from any postulated accident releases; an approach which has been used in the NEPA review of approximately 15-20 proposed facilities. Tr. 11,527.

Moreover, contrary to the Commonwealth's assertion that the Staff ignored the transient population within a distance of 0 to 2 miles from the proposed facility, the Staff testified that this transient population was considered but was so negligible that, on a weighted basis, there was no need to factor it into the population density figures. Tr. 11,502. Instead, the Staff properly looked at the more concentrated areas of transients, that is, the areas between 2 and 5 miles

from the proposed facility, weighted their time spent in the area and factored these numbers into its calculations. The Commonwealth has not shown why the Staff's methodology is in any way improper under NEPA.

Similarly, the Commonwealth's argument that the Staff must look at the maximum population distribution within individual radial sectors has no basis. As in the case of inclusion of the Cape Cod Bay waters, to adopt the Commonwealth's argument here would in effect ignore the realistic risk to the population surrounding the proposed Rocky Point site. Indeed, the Staff did not do otherwise with respect to the land-based alternative sites.

As the Applicants have pointed out in their proposed findings (¶368), the Staff properly compared the average population density surrounding the proposed Rocky Point site with alternative sites. Since population density is only a "crude factor" (rather than a precise index) in evaluating potential risks, the Staff adopted the criterion that for population densities at alternative sites to be considered obviously superior to the proposed Pilgrim 2 site, the average population

density would have to be less by a factor of 2 than the proposed site. The Commonwealth argues that use of this factor of 2 "finds no support in either logic or precedent." ¶257. The Staff provides a discussion of this matter in Appendix B of the FSFES, which states "[R]elatively large differences in the population density between two sites would be required to exist before significant differences in residual risks at these sites could reasonably be expected. . . [S]tudies indicate that population density differences by a factor of at least two or more would be required before significant differences in residual risk could reliably be expected." FSFES, at B-1.

Accordingly, the Board should find that the Staff's approach and methodology used to evaluate population density surrounding the Pilgrim 2 site is reasonable.

CONCLUSION

For the foregoing reasons the Applicants submit that the Board should reject the Commonwealth's Proposed Findings.

Respectfully submitted,

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