UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	Docket Nos. 52-012-COL 52-013-COL
NUCLEAR INNOVATION NORTH AMERICA LLC	)	
(South Texas Project Units 3 and 4)	)	November 30, 2011

NUCLEAR INNOVATION NORTH AMERICA LLC'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR CONTENTION DEIS-1-G

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Pursuant to 10 C.F.R. § 2.1209, Applicant Nuclear Innovation North America LLC ("NINA")[1] hereby submits its Proposed Findings of Fact and Conclusions of Law on Contention DEIS-1-G ("Proposed Findings and Conclusions"). The Proposed Findings and Conclusions resolve all contested issues for that contention.

The Proposed Findings and Conclusions are based on the evidentiary record in this proceeding, and are submitted in the form of a proposed Partial Initial Decision by the Atomic Safety and Licensing Board ("Board"). The Proposed Findings and Conclusions are set out in numbered paragraphs, with corresponding citations to the record of this proceeding.

I. INTRODUCTION

1. On September 20, 2007, the Applicant submitted an application to the Nuclear Regulatory Commission ("NRC") for combined licenses ("COLs") under 10 C.F.R. Part 52 for STP Units 3 and 4, two Advanced Boiling Water Reactors ("ABWRs") at the existing STP site

[1] The original lead applicant for South Texas Project ("STP") Units 3 and 4 was the STP Nuclear Operating Company ("STPNOC"). NINA became the lead applicant in early 2011. The Proposed Findings and Conclusions refer to both NINA and STPNOC as the "Applicant."

in Texas.[2] This Partial Initial Decision presents the Board's Findings of Fact and Conclusions of Law relative to one of the admitted environmental contentions proffered by the Intervenors—Contention DEIS-1-G regarding the effect of a new energy efficient building code in Texas on the need for power from STP Units 3 and 4.

2. For the reasons set forth below, the Board finds that the NRC Staff and NINA have carried their respective burdens of proof to demonstrate the adequacy of the environmental review in accordance with 10 C.F.R. Part 51 with respect to this contention. The Board thus enters a ruling on the merits of the contention in favor of the Staff and NINA.

II. PROCEDURAL BACKGROUND

3. Following the Applicant's submission of the COL Application in September 2007, the NRC accepted the Application for docketing on November 29, 2007, and published the Hearing Notice on February 20, 2009.[3] The Hearing Notice stated that any person whose interest may be affected by this proceeding and who wishes to participate as a party must file a petition for leave to intervene within 60 days of the Hearing Notice (April 21, 2009).[4]

4. On April 21, 2009, the Sustainable Energy and Economic Development Coalition, the South Texas Association for Responsible Energy, Public Citizen, and several individuals ("Intervenors") filed a "Petition for Intervention and Request for Hearing" ("Petition").

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[2] South Texas Project Nuclear Operating Company; Notice of Receipt and Availability of Application for a Combined License, 72 Fed. Reg. 60,394, 60,394 (Oct. 24, 2007).

[3] South Texas Project Nuclear Operating Company; Acceptance for Docketing of an Application for Combined License for South Texas Project Units 3 and 4, 72 Fed. Reg. 68,597, 68,597 (Dec. 5, 2007); South Texas Project Nuclear Operating Company Application for the South Texas Project Units 3 and 4; Notice of Order, Hearing, and Opportunity to Petition for Leave to Intervene, 74 Fed. Reg. 7934, 7934 (Feb. 20, 2009) ("Hearing Notice").

[4] Hearing Notice, 74 Fed. Reg. at 7935.

5. The Board was established on May 1, 2009 to adjudicate the STP COL proceeding.[5]

6. The NRC Staff issued the Draft Environmental Impact Statement ("DEIS") for STP Units 3 and 4 in March 2010.[6] Chapter 8 of the DEIS provided an evaluation of the need for power from STP Units 3 and 4 in the region regulated by the Electric Reliability Council of Texas ("ERCOT"), which is the region of interest for STP Units 3 and 4. The Staff's preliminary recommendation from an environmental perspective was that there is a need for power from STP Units 3 and 4 and that the COLs for STP Units 3 and 4 should be issued.[7]

7. On May 19, 2010, the Intervenors proffered six new contentions (Contentions DEIS-1 through DEIS-6) that alleged various inadequacies in the NRC Staff's DEIS for STP Units 3 and 4.[8] The new contentions were supported by comments on the DEIS from Mr. David Power ("Power Comments").

8. Contention DEIS-1 challenged the DEIS evaluation of the need for power for STP Units 3 and 4.[9] Contention DEIS-1 included eight independent bases (labeled A through H) that generally alleged that the need for power analysis in the DEIS either did not account for efforts to reduce demand or did not account for power obtained from other generating sources.[10]

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[5] South Texas Project Nuclear Operating Company; Establishment of Atomic Safety and Licensing Board, 74 Fed. Reg. 22,184, 22,184 (May 12, 2009).

[6] NUREG-1937, Draft Environmental Impact Statement for Combined Licenses (COLs) for South Texas Project Electric Generating Station Units 3 and 4, Draft Report for Comment, Vols. 1 & 2 (Mar. 2010), *available at* ADAMS Accession Nos. ML100700327 and ML100700333 (Excerpts from the DEIS are provided as Exhs. NRC000065 and INT000040.).

[7] *Id.* at 8-25 to 8-26, 10-27.

[8] Intervenors' Motion for Leave to File New Contentions Based on the Draft Environmental Impact Statement (May 19, 2010) ("DEIS Motion").

[9] *Id.* at 2-5.

[10] *Id.*

9. Both the Applicant and the NRC Staff opposed admission of all of the proposed DEIS contentions.[11] The Applicant and Staff argued that the proposed DEIS contentions did not satisfy the contention admissibility requirements in 10 C.F.R. § 2.309(f)(1) and did not satisfy the requirements for late-filed contentions in 10 C.F.R. § 2.309(c) and (f)(2).

10. Following oral argument on proposed Contentions DEIS-1 through DEIS-6,[12] the Board issued Memorandum and Order LBP-11-07 on February 28, 2011 that, among other things, ruled on the admissibility of the proposed DEIS contentions.[13] As a part of LBP-11-07, the Board rejected Contentions DEIS-2 through DEIS-6 and seven of the eight bases submitted by the Intervenors for Contention DEIS-1, finding only Contention DEIS-1-G admissible.[14]

11. The Board took notice that, after issuance of the DEIS, Texas adopted energy efficient building code rules in June 2010,[15] and concluded that Contention DEIS-1-G raises a genuine dispute of material fact as to whether the need for power assessment failed to consider the new energy efficient building code that, according to the Intervenors, could allegedly save

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[11] STP Nuclear Operating Company's Answer Opposing New Contentions Based on the Draft Environmental Impact Statement, at 1-2, 47 (June 14, 2010); NRC Staff's Answer to Intervenors' Motion for Leave to File New Contentions Based on the Draft Environmental Impact Statement, at 1, 50-51 (June 14, 2010).

[12] Board Notice (Regarding Oral Argument) (July 30, 2010) (unpublished).

[13] *Nuclear Innovation North America* (South Texas Project Units 3 & 4), LBP-11-07, 73 NRC __, slip op. at 2, 30-74 (Feb. 28, 2011).

[14] *Id.* at 30-56.

[15] The new Texas energy efficient building code rules (34 Tex. Admin. Code § 19.53), adopted on June 4, 2010, are titled "Building Energy Efficiency Performance Standards," and state:

> (a) Single-family residential construction. Effective January 1, 2012, the energy efficiency provisions of the International Residential Code as they existed on May 1, 2009, are adopted as the energy code in this state for single-family residential construction as it is defined in Health and Safety Code, § 388.002(12).
>
> (b) All other residential, commercial, and industrial construction. Effective April 1, 2011, the International Energy Conservation Code as it existed on May 1, 2009, is adopted as the energy code for use in this state for all residential, commercial, and industrial construction that is not single-family residential construction under subsection (a) of this section.

2,362 MW of peak power demand by 2023.[16] The basis for this value was a report by the American Council for an Energy-Efficient Economy ("ACEEE"), entitled "Potential for Energy Efficiency, Demand Response, and Onsite Renewable Energy to Meet Texas's Growing Electricity Needs" (Mar. 2007) ("ACEEE Report").[17] For these reasons, the Board admitted Contention DEIS-1-G.

12. As admitted, Contention DEIS-1-G is limited to demand reductions based upon the adoption of the new energy efficient building code in Texas in 2010. The scope does not include the other bases rejected by the Board, such as the amount of generating capacity available or the overall ERCOT demand forecasts. In particular, Contention DEIS-1-G alleges:

> NRC Staff's DEIS analysis of the need for power is incomplete because it fails to account for reduced demand caused by the adoption of an energy efficient building code in Texas, the implementation of which could significantly reduce peak demand in the ERCOT region.[18]

13. At about the same time that the Board issued LBP-11-07 admitting Contention DEIS-1-G, the NRC Staff issued the Final Environmental Impact Statement ("FEIS").[19] As stated in the FEIS, the Staff's "recommendation to the Commission related to the environmental aspects of the proposed action is that the COLs should be issued."[20]

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[16] *South Texas Project*, LBP-11-07, slip op. at 46.

[17] *See id.* at 42 n.229, 47-48. The ACEEE Report is provided as Exh. STP000008.

[18] *Id.* at 48.

[19] NUREG-1937, Environmental Impact Statement for Combined Licenses (COLs) for South Texas Project Electric Generating Station Units 3 and 4 (Feb. 2011) (Exhs. NRC00003A to NRC00003D).

[20] Exh. NRC00003C, at 10-29.

14. During a prehearing conference call on March 8, 2011, all parties agreed to move forward with a hearing and to a schedule of evidentiary filings leading up to a hearing during August 2011.[21]

15. In accordance with the March 11, 2011 Scheduling Order, the parties submitted pre-filed direct testimony, initial position statements,[22] and related exhibits on May 9, 2011. On May 31, 2011, the parties submitted their rebuttal testimony, rebuttal position statements,[23] and related exhibits for both admitted contentions. On August 17, 2011, NINA filed surrebuttal testimony and additional exhibits to address arguments regarding the energy savings due to renovations that were raised by the Intervenors for the first time during rebuttal testimony. On August 17, 2011, the Staff likewise filed additional exhibits and an affidavit regarding the savings from renovations.

16. On June 17, 2011, NINA and the NRC Staff filed motions in limine that sought to strike aspects of the Intervenors' pre-filed direct and rebuttal testimony and exhibits.[24] The Intervenors agreed that some of the information included in these motions with respect to Contention DEIS-1-G should be excluded.[25] The Board agreed to strike those portions of the

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[21] *See* Order (Establishing Schedule for Evidentiary Hearing) (Mar. 11, 2011) (unpublished).

[22] Nuclear Innovation North America LLC's Initial Statement of Position on Contention DEIS-1-G (May 9, 2011); NRC Staff Initial Statement of Position (May 9, 2011); Intervenors' Initial Statements of Position in Support of Contentions CL-2 and DEIS-1 (May 9, 2011).

[23] Nuclear Innovation North America LLC's Rebuttal Statement of Position on Contention DEIS-1-G (May 31, 2011); NRC Staff Rebuttal Statement of Position (May 31, 2011); Revised Intervenors' Consolidated Response to Applicant's and Staff's Statements of Initial Positions (May 31, 2011).

[24] Nuclear Innovation North America's Motion In Limine to Strike Portions of Intervenors' Initial and Rebuttal Submissions (June 17, 2011); NRC Staff Motion *In Limine* to Exclude Portions of Testimony and Exhibits Filed by the Intervenors (June 17, 2011).

[25] *See* Intervenors' Consolidated Response to Applicant's & Staff's Motions In Limine, at 1-2 (June 27, 2011). Subsequently, the Intervenors filed an addendum clarifying issues raised by the Board during a conference call. *See* Corrected Intervenors' Addendum to Intervenors' Consolidated Response to Applicant's and Staff's Motions In Limine (July 1, 2011).

Intervenors' submissions that the Intervenors agreed may be excluded.[26] In general, the excluded information included: (1) alleged energy savings from Federal energy efficiency standards, as well as from various forms of demand side management, use of non-nuclear generation, and energy savings in other states and countries; (2) arguments regarding retirements of existing plants within the ERCOT region; and (3) issues related to the cost and construction duration of STP Units 3 and 4.[27] However, in those areas where the Intervenors' did not agree to exclude testimony or exhibits, the Board denied the motions, stating that "[l]icensing boards are accustomed to weighing evidence and determining its relevance to the issues presented."[28] In denying in part the motions in limine to strike, the Board was not making a finding that the subject testimony and exhibits were relevant to Contention DEIS-1-G. As discussed later in this decision, the Board holds that the subject portions of the testimony and exhibits are not relevant and therefore accord them no weight.

17. On August 18 and 19, 2011, the Board began an evidentiary hearing on Contention DEIS-1-G in Austin, Texas. The Board admitted into evidence the exhibits proffered by the parties. Although the Board was scheduled to complete the hearing in August 2011 in Austin, Texas, the questioning of the witnesses was postponed due to a medical emergency for the Intervenors' witness. The hearing was rescheduled for October 31, 2011.[29]

18. On October 31, 2011, the Board completed the evidentiary hearing on Contention DEIS-1-G at the NRC headquarters in Rockville, Maryland. The hearing was conducted in

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[26] *See* Order (Ruling on Motions in Limine), at 2-3 (July 14, 2011) (unpublished).

[27] As instructed by the Board, the Intervenors filed revised testimony and exhibits to remove the excluded information. *See* Intervenors' Notice of Filing of Revised Testimony (July 25, 2011).

[28] *See* Order (Ruling on Motions in Limine), at 3-4.

[29] Atomic Safety and Licensing Board; In the Matter of Nuclear Innovation North America LLC (South Texas Project Units 3 and 4); Evidentiary Hearing to Receive Testimony and Exhibits Regarding the Application, 76 Fed. Reg. 61,401, 61,401 (Oct. 4, 2011).

accordance with the provisions of Subpart L to 10 C.F.R. Part 2, and none of the parties requested an opportunity to conduct cross-examination. At the hearing, the witnesses responded to questions from the Board. The Board closed the evidentiary record for Contention DEIS-1-G and for all environmental matters on November 29, 2011.[30]

III. LEGAL STANDARDS

A. Contested Hearings on Environmental Issues

19. The contention at issue here, Contention DEIS-1-G, arises under the National Environmental Policy Act of 1969 ("NEPA") and the NRC regulations in 10 C.F.R. Part 51 implementing the agency's responsibilities pursuant to NEPA.

20. The Board reviews contested issues *de novo*, applying the same substantive standard applicable to the NRC Staff's NEPA review. According to the Commission: "[W]hen resolving contentions litigated through the adversary process[, boards must] bring their own '*de novo*' judgment to bear. In such cases, boards must decide, based on governing regulatory standards and the evidence submitted, whether the applicant has met its burden of proof (except where the NRC Staff has the burden)."[31]

B. Environmental Impacts Evaluated Under NEPA

21. NEPA requires that federal agencies, such as the NRC, prepare an Environmental Impact Statement ("EIS") for "major Federal actions significantly affecting the quality of the human environment."[32] NEPA does not mandate substantive results; rather, it imposes

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[30] Memorandum and Order (Adopting Transcript Corrections and Closing Evidentiary Record), at 2 (Nov. 29, 2011) (unpublished).

[31] *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 39 (2005).

[32] 42 U.S.C. § 4332(2)(C) (2006).

procedural restraints on agencies, requiring them to take a "hard look" at the environmental impacts of a proposed action and reasonable alternatives to that action.[33]

22. This "hard look" is subject to the "rule of reason."[34] This means that an "agency's environmental review, rather than addressing every impact that could possibly result, need only account for those that have some likelihood of occurring or are reasonably foreseeable."[35] Consideration of "remote and speculative" or "inconsequentially small" impacts is not required.[36] As the Commission explained, "NEPA also does not call for certainty or precision, but an *estimate* of anticipated (not unduly speculative) impacts."[37] When faced with uncertainty, NEPA only requires "reasonable forecasting."[38] Similarly, the U.S. Supreme Court has held that NEPA does not require a "worst case analysis."[39]

23. Additionally, forecasts under NEPA are legally sufficient if they are reasonable. The Commission stated in *Pilgrim*:

> There is no NEPA requirement to use the best scientific methodology, and NEPA "should be construed in the light of reason if it is not to demand" virtually infinite study and resources. Nor is an environmental impact statement intended to be a "research document," reflecting the frontiers of scientific methodology, studies and data. NEPA does not require agencies to use technologies and methodologies that are still "emerging" and

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[33] *See La. Energy Servs., L.P.* (Claiborne Enrichment Ctr.), CLI-98-3, 47 NRC 77, 87-88 (1998); *see also Balt. Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97-98 (1983) (holding that NEPA requires agencies to take a "hard look" at environmental consequences prior to taking major actions).

[34] *La. Energy Servs., L.P.* (Nat'l Enrichment Facility), LBP-06-8, 63 NRC 241, 258-59 (2006) (citing *Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 836 (1973)); *see also Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 767-69 (2004) (stating that the rule of reason is inherent in NEPA and its implementing regulations).

[35] *Nat'l Enrichment*, LBP-06-8, 63 NRC at 258-59 (citing *Shoreham*, ALAB-156, 6 AEC at 836).

[36] *See Vt. Yankee Nuclear Power Corp.* (Vt. Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 44 (1989) (citing *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 739 (3d Cir. 1989)).

[37] *La. Energy Servs. L.P.* (Nat'l Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005).

[38] *Scientists' Inst. for Pub. Info., Inc. v. AEC*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

[39] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 354-55, 359 (1989).

> under development, or to study phenomena "for which there are not yet standard methods of measurement or analysis." And while there "will always be more data that could be gathered," agencies "must have some discretion to draw the line and move forward with decisionmaking." In short, NEPA allows agencies "to select their own methodology as long as that methodology is reasonable."[40]

The Commission has stated that it asks "not whether every assumption contained in the FEIS was the best or whether it will turn out true but, 'whether the economic assumptions . . . were so distorted as to impair fair consideration of . . . environmental effects.'"[41] Similarly, in the context of power forecasts, the Appeal Board held in *Nine Mile Point* that "inherent in any forecast . . . is a substantial margin of uncertainty," and therefore the forecast should be accepted if it is "reasonable."[42] In summary, forecasts are subject to substantial uncertainty and, as long as they are reasonable, they are not open to criticism because some other person has an opposing view.[43]

24. The parties all agreed with the legal principles cited above.[44] However, in certain areas, they disagreed with the application of those principles to the facts in this proceeding.

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[40] *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315-16 (2010) (citations omitted).

[41] *Private Fuel Storage, LLC* (Indep. Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 145 (2004).

[42] *Niagara Mohawk Power Corp.* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 365-67 (1975). The Commission has endorsed the *Nine Mile Point* rule. *See Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, & 4), CLI-79-5, 9 NRC 607, 609-10 (1979).

[43] *See Nw. Envtl. Advocates v. Nat'l Marine Fisheries Serv.*, 460 F.3d 1125, 1143-44 (9th Cir. 2006) (finding no merit in the petitioner's argument that a multi-port analysis should have been included in the agency's economic analysis, where the assumptions and overall conclusions of the agency's economic analysis were "reasonable"); *S. La. Envtl. Council, Inc. v. Sand*, 629 F.2d 1005, 1014 (5th Cir. 1980) (rejecting plaintiffs' argument that the estimate of fair rental value of equipment moving through a project's waterways should have been calculated differently when the agency's calculation was fair and reasonable).

[44] *See* Transcript of South Texas Project Units 3 and 4, Docket Nos. 52-012-COL and 52-013-COL, at 1556, 1659-61, 1665-68, 1672-73, 1676, 1679 ("Tr.") (showing agreement among all parties that NEPA requires evaluation of whether a methodology is "reasonable").

C. Standard of Proof

25. An applicant generally has the burden of proof in a licensing proceeding.[45] In cases involving NEPA contentions, the burden shifts to the NRC Staff, because the NRC Staff, not the Applicant, has the burden of complying with NEPA.[46] However, because "the Staff, as a practical matter, relies heavily upon the Applicant's ER in preparing the EIS, should the Applicant become a proponent of a particular challenged position set forth in the EIS, the Applicant, as such a proponent, also has the burden on that matter."[47]

26. With respect to Contention DEIS-1-G, the Intervenors have the initial "burden of going forward," that is, they must provide sufficient evidence to support the claims made in the admitted contention.[48] If the Intervenors can make that showing, the Applicant has the burden of satisfying the Board that it should reject the contention.[49]

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[45] 10 C.F.R. § 2.325.

[46] *See, e.g.*, *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

[47] *La. Energy Servs., L.P.* (Claiborne Enrichment Ctr.), LBP-96-25, 44 NRC 331, 338-39 (1996) (citing *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 & 2), ALAB-471, 7 NRC 477, 489 n.8 (1978), *rev'd on other grounds*, CLI-97-15, 46 NRC 294 (1997)).

[48] *Consumers Power Co*. (Midland Plant, Units 1 & 2), ALAB-123, 6 AEC 331, 345 (1973) ("The ultimate burden of proof on the question of whether the permit or license should be issued is, of course, upon the applicant. But where, as here, one of the other parties contends that, for a specific reason . . . the permit or license should be denied, that party has the *burden of going forward* with evidence to buttress that contention. Once he has introduced sufficient evidence to establish a *prima facie* case, the burden then shifts to the applicant who, as part of his overall burden of proof, must provide a sufficient rebuttal to satisfy the Board that it should reject the contention as a basis for denial of the permit or license."); *see also Vt. Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 554 (1978) (upholding this threshold test for intervenor participation in licensing proceedings); *Phila. Elec. Co.* (Limerick Generating Station, Units 1 & 2), ALAB-262, 1 NRC 163, 191 (1975) (holding that the intervenors had the burden of introducing evidence to demonstrate that the basis for their contention was more than theoretical).

[49] *See, e.g.*, *La. Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1093 (1983) (reiterating the well established principle that, after intervenors have made a *prima facie* showing, the burden shifts to the applicant) (citing *Midland*, ALAB-123, 6 AEC at 345).

27. The Applicant's position must be supported by a preponderance of the evidence.[50] Therefore, if the preponderance of the evidence shows that the Applicant's positions with respect to Contention DEIS-1-G are reasonable, the Board will rule in favor of the Applicant. The same is true with respect to the NRC Staff.

D. Need for Power Analyses Under NEPA

28. Under 10 C.F.R. § 51.71(d), the DEIS must include a need for power analysis as part of its consideration of the "economic, technical, and other benefits and costs of the proposed action." NEPA requires federal agencies to balance the environmental costs against the anticipated benefits of a proposed action. Specifically, 10 C.F.R. § 51.107(a)(3) requires a "weighing [of] the environmental, economic, technical, and other benefits against environmental and other costs." Therefore, as part of the NRC's NEPA analysis for licensing a nuclear power plant, the agency considers need for power as a benefit from the plant.

29. As the Commission explained in a 2003 denial of a rulemaking petition in which it discussed the need for power inquiry at some length:

> The need for power must be addressed in connection with new power plant construction so that the NRC may weigh the likely benefits (e.g., electrical power) against the environmental impacts of constructing and operating a nuclear power reactor. The Commission emphasizes, however, that such an assessment should not involve burdensome attempts to precisely identify future conditions. Rather, it should be sufficient to reasonably characterize the costs and benefits associated with proposed licensing actions.[51]

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[50] *See Pac. Gas & Elec. Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-763, 19 NRC 571, 577 (1984) ("In order to prevail . . . , the applicant's position must be supported by a preponderance of the evidence.").

[51] Nuclear Energy Institute; Denial of Petition for Rulemaking, 68 Fed. Reg. 55,905, 55,910 (Sept. 29, 2003). The Commission recently re-affirmed this conclusion. *See S.C. Elec. & Gas Co.* (Virgil C. Summer Nuclear Station, Units 2 & 3), CLI-10-01, 71 NRC 1, 17 (2010).

30. The Commission further explained that, while NEPA requires the agency to perform a "reasonable assessment" of the need for power, "the NRC does not supplant the States, which have traditionally been responsible for assessing the need for power from generating facilities, their economic feasibility and for regulating rates and services."[52]

E. Mootness

31. The Commission has held: "[W]here a contention is 'superseded by the subsequent issuance of licensing-related documents' — whether a draft EIS or an applicant's response to a request for additional information — the contention *must* be disposed of or modified."[53] Based on this established legal principle, the Commission made clear that "resolution of the *mooted* contention requires *no more than* a finding by the presiding officer that the matter has become moot."[54] In the *LES* proceeding, the licensing board dismissed portions of two environmental contentions as moot *in its partial initial decision* on admitted NEPA contentions, finding that the omissions alleged by the intervenors had been cured.[55] The *LES* licensing board found that the Staff supplied the necessary information after one of the contentions was admitted, and therefore concluded that "the omission alleged in this contention has been cured, and [that] the DEIS [was] no longer defective in the alleged respect."[56]

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[52] Denial of Petition for Rulemaking, 68 Fed. Reg. at 55,909.

[53] *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 & 2; Catawba Nuclear Station, Units 1 & 2), CLI-02-28, 56 NRC 373, 382 (2002) (emphasis added) (citing *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), CLI-83-19, 17 NRC 1041, 1050 (1983)).

[54] *USEC, Inc.* (Am. Centrifuge Plant), CLI-06-9, 63 NRC 433, 444-45 (2006) (emphasis added).

[55] *La. Energy Servs., L.P.* (Nat'l Enrichment Facility), LBP-05-13, 61 NRC 385, 410-11, 424-26, *aff'd*, CLI-05-28, 62 NRC 721, 723 (2005).

[56] *Id*. at 411.

F. Changes in Scope of a Contention

32. Parties are not permitted to change the scope of the contention admitted by the Board. As the Commission has stated: "Our own longstanding practice requires adjudicatory boards to adhere to the terms of admitted contentions."[57] Additionally, the Commission has stated that "[w]here an issue arises over the scope of an admitted contention, NRC opinions have long referred back to the bases set forth in support of the contention."[58]

G. The Board's Decision Supplements and Amends the FEIS

33. In determining whether the FEIS should have contained additional information, the Board may consider the record as a whole. Established Commission precedent has held that the adjudicatory record and the Board decision become part of the FEIS.[59] In NRC licensing proceedings, "the ultimate NEPA judgments regarding a facility can be made on the basis of the entire record before a presiding officer, such that the EIS can be deemed to be amended pro tanto."[60] The Commission has recently affirmed this principle in this proceeding.[61] Therefore, the Board may consider the full record before it, including the testimony to conclude that "the

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[57] *Claiborne*, CLI-98-3, 47 NRC at 105.

[58] *McGuire/Catawba*, CLI-02-28, 56 NRC at 379; *see also Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 & 2), ALAB-899, 28 NRC 93, 97 & n.11 (1988) (stating that the "intervenor is not free to change the focus of its admitted contention, at will, as the litigation progresses"), *aff'd in part and remanded in part on other matters sub nom*., *Massachusetts v. NRC*, 924 F.2d 311 (D.C. Cir.), *cert. denied*, 502 U.S. 899 (1991).

[59] *See, e.g.*, *La. Energy Servs.* (Nat'l Enrichment Facility), CLI-06-15, 63 NRC 687, 707 n.91 (2006) ("Adjudicatory findings on NEPA issues, including our own in this decision, become part of the environmental 'record of decision' and in effect supplement the FEIS."); *Claiborne*, CLI-98-3, 47 NRC at 89 ("In NRC licensing adjudications . . . it is the Licensing Board that compiles the final environmental 'record of decision' . . . . The adjudicatory record and Board decision . . . become, in effect, part of the FEIS.").

[60] *LES*, LBP-05-13, 61 NRC at 404.

[61] *Nuclear Innovation North America LLC* (South Texas Project, Units 3 & 4), CLI-11-06, 74 NRC __, slip op. at 7-8 (Sept. 9, 2011) (stating that "the Staff's review (the FEIS itself) and the adjudicatory record will become part of the environmental record of the decision").

aggregate is sufficient to satisfy the agency's obligation under NEPA" to take a "hard look" at the environmental consequences of issuing a COL.[62]

IV. FACTUAL FINDINGS AND LEGAL CONCLUSIONS

A. Witnesses and Evidence Presented

1. NINA's Expert Witness

34. NINA presented one witness regarding Contention DEIS-1-G: Mr. Adrian Pieniazek. Mr. Pieniazek submitted both direct and rebuttal testimony for this contention and gave oral testimony at the evidentiary hearing.[63] Mr. Pieniazek also submitted surrebuttal testimony regarding the demand savings from renovations under the energy efficient building code.[64]

35. Mr. Pieniazek is the Director of Market Policy for NRG Energy, Inc. ("NRG Energy").[65] He has more than 27 years of experience in the energy industry and has been in his current position since 2003. Currently, Mr. Pieniazek represents NRG Energy's interests at ERCOT and the Public Utility Commission of Texas, as well as providing analysis and policy recommendations to numerous NRG Energy business units, with a specific emphasis on wholesale electricity market design issues. Prior to his current position, Mr. Pieniazek was the Director of Asset Management for Reliant Energy, Inc. in Texas. Prior to that, he served as the Director of Generation Planning for City Public Service Board ("CPS Energy"), the municipal

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62 *Nat'l Enrichment*, LBP-06-8, 63 NRC at 285-86.

63 Direct Testimony of Applicant Witness Adrian Pieniazek Regarding Contention DEIS-1-G (May 9, 2011) ("Pieniazek Direct Testimony") (Exh. STP000001); Rebuttal Testimony of Applicant Witness Adrian Pieniazek Regarding Contention DEIS-1-G (May 31, 2011) ("Pieniazek Rebuttal Testimony") (Exh. STP000028).

64 Surrebuttal Testimony of Applicant Witness Adrian Pieniazek Regarding Contention DEIS-1-G ("Pieniazek Surrebuttal Testimony") (Exh. STP000032).

65 NRG Energy is an owner of NINA.

power utility serving San Antonio, Texas.[66] Mr. Pieniazek has experience in performing forecasts of power needs.[67]

36. Based on the foregoing, and the respective background and experience of Mr. Pieniazek, the Board finds that Mr. Pieniazek is qualified to testify as an expert witness relative to the issues raised in Contention DEIS-1-G.

2. NRC Staff's Expert Witnesses

37. The Staff presented two witnesses regarding Contention DEIS-1-G: (1) Mr. Daniel C. Mussatti; and (2) Dr. Michael J. Scott. Mr. Mussatti and Dr. Scott submitted both direct and rebuttal testimony for this contention and gave oral testimony at the evidentiary hearing.[68] Mr. Mussatti also sponsored calculations and exhibits related to renovations and the energy efficient building code.[69] Additionally, the Staff filed direct testimony from Jessie M. Muir sponsoring the FEIS into the hearing record.[70]

38. Mr. Mussatti is a Socioeconomist for the NRC's Office of New Reactors ("NRO"). Mr. Mussatti has 22 years of experience in economic valuation of natural resources and the environment and the economic analysis of regulations, standards, and control technologies. Since 2006, Mr. Mussatti has been NRO's expert for the determination of the need for power for planned new nuclear generating capacity. He also is the technical lead for the

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66 Mr. Pieniazek's resume is provided as Exh. STP000002. *See also* Pieniazek Direct Testimony, at 1-2.

67 Tr. at 1714.

68 Prefiled Direct Testimony of Daniel C. Mussatti and Dr. Michael J. Scott Regarding Contention DEIS-1 (May 9, 2011) ("Mussatti/Scott Direct Testimony") (Exh. NRC000031); Prefiled Rebuttal Testimony of Daniel C. Mussatti and Dr. Michael J. Scott Regarding Contention DEIS-1 (May 31, 2011) ("Mussatti/Scott Rebuttal Testimony") (Exh. NRC000062).

69 *See* Affidavit of Daniel C. Mussatti Concerning Renovations Exhibits for Contention DEIS-1 (Aug. 17, 2011) (Exh. NRC000072).

70 Prefiled Testimony of Jessie M. Muir Sponsoring NUREG-1937 into the Hearing Record (May 9, 2011) (Exh. NRC000001).

maintenance and revision of the socioeconomic, environmental justice, and benefit-cost balancing sections for the NRC's guidance document, NUREG-1555, "Environmental Standard Review Plan—Standard Review Plans for Environmental Reviews for Nuclear Power Plants" ("ESRP"). For the STP COL Application, Mr. Mussatti was involved in the development of the DEIS and the FEIS. In conjunction with staff from Pacific Northwest National Laboratory ("PNNL"), he assisted in editing sections of the EIS related to socioeconomics, environmental justice, and need for power.[71]

39. Dr. Scott is a Staff Scientist and Senior Staff Economist at PNNL. As a senior economist for 30 years at PNNL, Dr. Scott has participated in a number of studies that involved the estimation of long-term growth in electricity demand. He assists the NRC Staff with environmental reviews for nuclear power plant licensing and license renewals in the areas of socioeconomics, environmental justice, need for power, and benefit-cost analysis. Dr. Scott also assists the Department of Energy Office of Energy and Renewable Energy by providing economic and environmental analysis for its appliance standards programs, developing models for, and assessment of, the macroeconomic impacts of energy efficiency and renewable energy programs, and assisting in the development of integrated assessment models of climatic change in the area of uncertainty propagation. For the STP COL Application, Dr. Scott was the principal author of the FEIS sections dealing with socioeconomics, environmental justice, need for power, and benefit-cost balance.[72]

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[71] Mr. Mussatti's resume is provided as Exh. NRC000032. *See also* Mussatti/Scott Direct Testimony, at 1-4.

[72] Dr. Scott's resume is provided as Exh. NRC000033. *See also* Mussatti/Scott Direct Testimony, at 1-4.

40. Based on the foregoing, and the respective background and experience of Mr. Mussatti and Dr. Scott, the Board finds that Mr. Mussatti and Dr. Scott are qualified to testify as expert witnesses relative to the issues raised in Contention DEIS-1-G.

3. Intervenors' Expert Witness

41. The Intervenors presented one witness regarding Contention DEIS-1-G: Mr. Philip H. Mosenthal. Mr. Mosenthal submitted both direct and rebuttal testimony for this contention and gave oral testimony at the evidentiary hearing.[73]

42. Mr. Mosenthal is the founding partner of Optimal Energy, Inc., a consultancy specializing in energy efficiency and utility planning. Optimal Energy advises numerous parties, including utilities, non-utility program administrators, government, and environmental groups. Mr. Mosenthal has 27 years of experience in all aspects of energy efficiency, including facility energy management, policy development and research, integrated resource planning, cost-benefit analysis, and efficiency and renewable program design, implementation and evaluation. Prior to co-founding Optimal Energy in 1996, Mr. Mosenthal was the Chief Consultant for the Mid-Atlantic Region for XENERGY, INC. (now KEMA).[74]

43. Based on the foregoing, and the respective background and experience of Mr. Mosenthal, the Board finds that Mr. Mosenthal is qualified to testify as an expert witness relative to the issues raised in Contention DEIS-1-G.

B. Contention DEIS-1-G Is Moot

44. Contention DEIS-1-G alleged that DEIS Chapter 8 failed to account for the reduced demand that could result from the implementation of the proposed Texas energy

[73] Direct Testimony of Philip H. Mosenthal (dated May 9, 2011) ("Mosenthal Direct Testimony") (Exh. INTR20001); Rebuttal Testimony of Philip H. Mosenthal (dated May 9, 2011) ("Mosenthal Rebuttal Testimony") (Exh. INTR00041).

[74] Mr. Mosenthal's resume is provided as Exh. INT000002. *See also* Mosenthal Direct Testimony, at 1-3.

efficient building code rules, which were adopted on June 4, 2010 after issuance of the DEIS.[75] The Board ruled that Contention DEIS-1-G is a "contention of omission,"[76] and concluded that the "DEIS analysis of the need for power is incomplete because it *fails to account* for reduced demand caused by the adoption of an energy efficient building code in Texas, the implementation of which could significantly reduce peak demand in the ERCOT region."[77]

45. At about the same time that the Board issued LBP-11-07 admitting Contention DEIS-1-G, the NRC Staff issued the FEIS.[78] Unlike the DEIS, the FEIS evaluates the impact of the adoption of the energy efficient building code by Texas. For example, FEIS Section 8.2 states that Texas "adopted rules implementing the 2009 International Energy Conservation Code and 2009 International Residential Code as the basis for building codes for single family and other residential housing throughout the State, effective April 1, 2011 and January 1, 2012, respectively."[79] With respect to demand reduction from the energy efficient building code, FEIS Section 8.3 also states:

> Enhanced funding of energy conservation and regulatory actions, *such as the new residential building codes adopted by the State* and several municipalities within the State, may not be fully captured by the 2010 ERCOT forecast. However, new energy codes have been adopted continuously by Texas municipalities during the 2000-2010 period ahead of statewide actions in 2010 and much of their impact would have been included in the ERCOT forecast. For example, most of the large [cities] had adopted the 2006 or even the 2009 version of the International Energy Conservation Code before the State did (Energy Systems

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75 *See* DEIS Motion at 4; *South Texas Project*, LBP-11-07, slip op. at 41-48.

76 *South Texas Project*, LBP-11-07, slip op. at 46.

77 *Id.* at 48 (emphasis added).

78 *See* Exhs. NRC00003A to NRC00003D. Both the Staff and Applicant testimony provide an overview of the FEIS need for power analysis for STP Units 3 and 4. *See* Mussatti/Scott Direct Testimony, at 14-29; Pieniazek Direct Testimony, at 9-18.

79 Exh. NRC00003C, at 8-18.

> Laboratory 2010). The corresponding electricity savings would have been reflected in the trend in electricity consumption during the period that formed the basis for ERCOT's forecast. There is almost no currently available, reliable information that suggests the impacts of the *latest statewide code adoption*, ARRA-funded projects, or other very recent programs have been significant on a statewide basis or that they require a significant adjustment to the ERCOT forecasts.[80]

46. Therefore, the FEIS identifies the state energy efficient building code and considers its impact on projected demands, concluding that there is no reliable information to suggest that its impacts are significant with respect to a need for power.

47. The NRC Staff also conducted a sensitivity test in the FEIS of the need for power evaluation to account for recent developments that may affect the underlying ERCOT forecasts.[81] As part of the sensitivity test, the NRC Staff reduced the 2010 ERCOT firm load forecast to account for various new Texas energy efficiency programs, which would include the new energy efficient building code identified by the Intervenors.[82] The FEIS increased ERCOT's current energy efficiency adjustment (242 MW) by 5% of the change in cumulative growth from 2010 to 2012 in the ERCOT forecast and by 10% in and after 2013.[83] Accounting for this reduction in demand due to energy efficiency and retirements of plants that are older than 50 years, the FEIS concludes that there is a need for 6,400 MW of baseload power in 2020, which is greater than the output from two new nuclear units.[84] Thus, the FEIS accounts for

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[80] Exh. NRC00003C, at 8-26 (emphasis added).

[81] *See* Exh. NRC00003C, at 8-25 to -28; Pieniazek Direct Testimony, at 10.

[82] Exh. NRC00003C, at 8-25 to -28; Exh. NRC00003D, at E-75 to E-77; Pieniazek Direct Testimony, at 15.

[83] Exh. NRC00003C, at 8-25 to -26; Pieniazek Direct Testimony, at 15.

[84] Exh. NRC00003C, at 8-27.

uncertainties in future demand reductions due to energy efficiency, including the new energy efficient building code, and still finds a need for STP Units 3 and 4.[85]

48. In addition to the above consideration of the energy efficient building code in FEIS Chapter 8, the FEIS also considers comments on the DEIS alleging that the DEIS did not account for the ACEEE Report and reductions due to the state energy efficient building code.[86] In responding to these comments, the FEIS states:

> *Over the very long term (20 to 30 years), a new building code could be effective in reducing electricity consumption due to heating, cooling, and to some extent, lighting. Some of the potential savings would be in end uses such as lighting that are also being targeted by utility programs and municipal programs, so it is important not to double count. There are additional reasons to consider ACEEE projection speculative. The first is that in Texas, code adoption and enforcement occurs at a local level, and as noted by the commenter, many jurisdictions do so before the state updates its statewide standard. Many of the large metropolitan code-enforcing jurisdictions in Texas already had adopted the 2003, 2004, 2006, or 2009 model standards even though the statewide standard was the 2000 version (Energy Systems Laboratory 2010). Thus, the trend in energy savings from early adoption would have been embodied in the historical energy consumption data used to produce the ERCOT forecasts. The impact of imposing the 2009 standards would be significantly less than might otherwise be supposed, based on an engineering comparison of buildings with the new codes with the old codes. Second, because the codes would apply only to new structures, its effect depends on how many new structures are built under the new codes. Third, new codes would not address additional growth and electrification of household services (e.g., additional plug loads) in either new or existing homes. Finally, the codes must be enforced as well as adopted. Not all jurisdictions do this equally well, although the major metropolitan areas in Texas reportedly do a good job. In addition, the 15 percent savings figure discussed in the second comment must hold up in the field (there would have to be no take-back or rebound effects on energy use from lowered*

[85] *See* Exh. NRC00003C, at 8-27; Mussatti/Scott Direct Testimony, at 28-29; Pieniazek Direct Testimony, at 15; Tr. at 1715.

[86] Exh. NRC00003D, at E-75 to E-77; Pieniazek Direct Testimony, at 16-17.

> *cost of household services due to the more efficient buildings). ERCOT did not publish the underlying economic data for their 2010 forecast and the review team was not able to locate either good estimates of future construction in Texas or estimates of building-code-sensitive electricity use in new buildings so it was not possible to perform a quantitative estimate of the near-term impact of the new building code.* ***It is likely that many of the contemplated savings would be covered in the lower demand growth in the 2010 ERCOT forecast and in the sensitivity tests the review team conducted on the ERCOT forecast in Chapter 8.***[87]

Therefore, the FEIS fully addresses the issues raised by the Intervenors in Contention DEIS-1-G regarding the ACEEE Report.[88]

49. For these reasons, the omissions in the DEIS that are the subject of Contention DEIS-1-G have been fully addressed by the NRC Staff in FEIS Chapter 8 and Appendix E. As the Commission has held, "where a contention is 'superseded by the subsequent issuance of licensing-related documents' — whether a draft EIS or an applicant's response to a request for additional information — the contention *must* be disposed of or modified."[89] That includes situations in which a contention has gone to hearing.[90] In the instant case, based on the issuance of the FEIS by the NRC Staff, "the omission alleged in [Contention DEIS-1-G] has been cured and the DEIS is no longer defective."[91] Therefore, the Board finds that Contention DEIS-1-G is moot, and the Board dismisses the contention on that basis.

50. The Intervenors argued that the FEIS is not sufficient to cure the omission in the DEIS, because the FEIS only addresses the impacts of the new state energy efficient building

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[87] Exh. NRC00003D, at E-76 to E-77 (italics in original; bold font added); Pieniazek Direct Testimony, at 17. A survey of energy code adoption by various Texas cities is provided as Exh. STP000010.

[88] Pieniazek Direct Testimony, at 18.

[89] *McGuire/Catawba*, CLI-02-28, 56 NRC at 382 (emphasis added).

[90] *LES*, LBP-05-13, 61 NRC at 426.

[91] *Id.* at 411.

code qualitatively and as part of a quantitative sensitivity analysis in FEIS Table 8-5, rather than in the base forecasts in FEIS Tables 8-2 and 8-3.[92] However, the sensitivity analysis in the FEIS is a quantitative analysis.[93] More importantly, NEPA does not require any particular methodology for evaluating need for power, and any methodology (including qualitative analyses and sensitivity analyses) is acceptable under NEPA as long as it is reasonable.[94] The Intervenors did not present any evidence showing that the methodology used in the FEIS is unreasonable, and both the NRC Staff and Applicant have supported the evaluation of need for power in the FEIS in their testimony.[95] Accordingly, the Intervenors' criticisms of the methodology used in the FEIS do not provide a legally cognizable objection to use of the FEIS as a basis for mooting Contention DEIS-1-G.

51. Despite the fact that the contention is moot, the Board also addresses the merits of the contention below based upon the record.

C. The FEIS Need for Power Evaluation Is Reasonable and Complies with NEPA

52. The Intervenors argue that the DEIS understates the total available capacity in the ERCOT region because it does not account for demand reduction from the new energy efficient building code.[96] As discussed above, the NRC Staff revised the DEIS evaluation when it issued

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[92] *See* Tr. at 1829-30, 1858-60; Intervenors' Initial Statements of Position in Support of Contentions CL-2 and DEIS-1, at 6-7; Intervenors' Consolidated Response to Applicant's and Staff's Statements of Initial Positions, at 7.

[93] Mr. Pieniazek testified that the sensitivity analysis provided the quantitative analysis sought by the Intervenors. *See* Tr. at 1715-16.

[94] *See, e.g.*, *Pilgrim*, CLI-10-11, 71 NRC at 315-16.

[95] *See* Pieniazek Direct Testimony, at 9 (stating that Mr. Pieniazek endorses the need for power analysis in FEIS Chapter 8); Mussatti/Scott Direct Testimony, at 4 (explaining that both Mr. Mussatti and Dr. Scott were involved in preparing the need for power analysis in the FEIS).

[96] *South Texas Project*, LBP-11-07, slip op. at 41-42.

the FEIS to include consideration of the energy efficient building code. Regarding the new energy efficient building code, FEIS Section 8.2 states:

> Based on review team discussions with ERCOT staff (Scott 2010) and extensive examination of Texas public documents and websites, the review team concluded that while there may be some long-range impacts resulting from these programs not currently captured by the ERCOT models, there is almost no currently available, reliable information that suggests the impacts of these programs have been significant on a statewide basis or that they require a significant adjustment to the ERCOT forecasts.[97]

Due to these uncertainties, the Staff did not directly reduce the ERCOT demand projections to account for the energy efficient building code, and instead performed a sensitivity test. This approach is consistent with the well-established NRC adjudicatory principles, discussed below, governing review of need for power forecasts that allow for reasonable uncertainties.[98]

53. In the leading case, *Nine Mile Point*, the Appeal Board held that "inherent in any forecast of future electric power demands is a substantial margin of uncertainty," and therefore the applicant's projection of future need should be accepted if it is "reasonable."[99] As the Appeal Board held in a later case:

> [A] forecast that such need exists is not to be discarded as fatally flawed simply because the future course of events is sufficiently clouded to give rise to the possibility of a significant margin of error. Given the legal responsibility imposed upon a public utility to provide at all times adequate, reliable service – and the severe consequences which may attend upon a failure to discharge that responsibility – *the most that can be required is that the forecast*

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[97] Exh. NRC00003C, at 8-19.

[98] Additionally, the Commission has approved use of sensitivity analyses for NEPA evaluations. For example, in the *Pilgrim* license renewal proceeding, the Commission upheld the licensing board's reliance on the applicant's sensitivity analysis to reject an environmental contention. *Pilgrim*, CLI-10-11, 71 NRC at 299-300.

[99] *Nine Mile Point*, ALAB-264, 1 NRC at 365-67.

> *be a reasonable one in the light of what is ascertainable at the time made*.[100]

54. This standard has been endorsed by the Commission itself in *Carolina Power and Light Co.*, where it stated:

> The Nine Mile Point rule recognizes that every prediction has associated uncertainty and that long-range forecasts of this type are especially uncertain in that they are affected by trends in usage, increasing rates, demographic changes, industrial growth or decline, the general state of the economy, etc. These factors exist even beyond the uncertainty that inheres to demand forecasts: assumptions on continued use from historical data, range of years considered, the area considered, extrapolations from usage in residential, commercial, and industrial sectors, etc.[101]

55. Similarly, the Appeal Board in *Duke Power Co.* ruled that an applicant's load forecasts

> are [not] automatically suspect because they are inclined to be "conservative," that is to say they tend to project future loads closer to the high than to the low end of the demand spectrum. To be sure, if demand does turn out to be less than predicted it can be argued (as intervenor does) that the cost of the unneeded generating capacity may turn up in the customers' electric bills. . . . But should the opposite occur and demand outstrip capacity, the consequences are far more serious.[102]

56. And, more recently, the licensing board in the *Clinton* Early Site Permit proceeding stated that:

> [W]e are cognizant of the fact that a NEPA analysis often must rely upon imprecise and uncertain data, particularly when attempting to forecast future markets and technologies, and Boards (and parties) must appreciate the fact that such forecasts "provide no absolute answers," and must be "judged on their

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[100] *Kan. Gas & Elec. Co.* (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 328 (1978) (emphasis added).

[101] *Shearon Harris*, CLI-79-5, 9 NRC at 609-10.

[102] *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), ALAB-355, 4 NRC 397, 410 (1976).

> reasonableness." NEPA analyses are subject to a "rule of reason" which teaches that an environmental impact statement need only discuss "the significant aspects of the probable environmental impact of the proposed agency action."[103]

57. The FEIS approach for accounting for uncertainties in the demand forecasts due to the new energy efficient building code is consistent with the above NRC case law and NEPA. Additionally, because only a short amount of time has passed since the adoption of the new energy efficient building code, there is not enough reliable performance information to assess its potential quantitative effect on the most recent ERCOT forecast, and any such forecast is speculative.[104]

58. Despite the inherent uncertainties in predicting the reduction in power demand attributable to the new energy efficient building code, the FEIS includes potential effects of the energy efficient building code in its sensitivity test.[105] The FEIS thus accounts for future demand reductions due to energy efficiency, which include the new energy efficient building code.[106] Even with this reduction in demand, the sensitivity analysis shows a need for power from STP Units 3 and 4.[107] The approach to the energy efficient building code in the FEIS is "a reasonable one in the light of what is ascertainable at the time made,"[108] and it therefore satisfies NEPA.

59. Furthermore, the Commission has recognized that a need for power analysis does not need to precisely pinpoint *when* the need for power will exist, just *whether* it will exist. In

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[103] *Exelon Generation Co.* (Early Site Permit for Clinton ESP Site), LBP-05-19, 62 NRC 134, 167 (emphasis and citation omitted), *aff'd*, CLI-05-29, 62 NRC 801 (2005), *aff'd sub nom.*, *Envtl. Law & Policy Ctr. v. NRC*, 470 F.3d 676 (7th Cir. 2006).

[104] Pieniazek Direct Testimony, at 16; *see also* Mussatti/Scott Direct Testimony, at 32-33.

[105] *See* Exh. NRC00003C, at 8-25 to -28; Exh. NRC00003D, at E-75 to E-77; Pieniazek Direct Testimony, at 10, 15.

[106] *See* Exh. NRC00003C, at 8-25 to -28; Pieniazek Direct Testimony, at 16.

[107] Exh. NRC00003C, at 8-27; Mussatti/Scott Direct Testimony, at 28-29; Pieniazek Direct Testimony, at 10-11.

[108] *Wolf Creek*, ALAB-462, 7 NRC at 328.

Carolina Power and Light Co., the Commission endorsed the general rule that a one or two year deferral in need for power from a plant is not a legally sufficient basis for litigation. Quoting the Appeal Board in the *Nine Mile Point* decision discussed above, the Commission stated that the couple year difference was not a "statistically meaningful distinction" and is within the margin of uncertainty in demand forecasts.[109] As discussed above, the ACEEE Report (which is the basis for Contention DEIS-1-G) estimates 2,362 MW of savings in 2023 from a new energy efficient building code, which is equivalent to about two years of increase in demand in ERCOT.[110] Therefore, the savings estimated by the ACEEE Report only brings into question when a need for STP Units 3 and 4 will exist, not whether the need exists.

60. In summary, the Board finds that the FEIS contains a reasonable analysis of the energy savings to be obtained from the 2010 energy efficient building code in Texas. In particular, the sensitivity analysis in the FEIS is a reasonable approach to evaluating the savings from the new energy efficient building code, especially given the uncertainties inherent in evaluating energy savings from building codes. Although Mr. Mosenthal, the Intervenors' witness, would prefer a different method and concludes that the FEIS underestimates the need for power, Mr. Mosenthal never claimed that the sensitivity analysis in the FEIS was unreasonable. Since it is undisputed that the analysis in the FEIS is reasonable, the NRC Staff is entitled to a decision as a matter of law. As the Commission ruled in *Pilgrim*, NEPA allows agencies "to select their own methodology as long as that methodology is reasonable."[111]

61. Despite this finding, the Board also evaluates the more detailed analyses provided by the parties of the savings to be obtained from the 2010 energy efficient building code in

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[109] *Shearon Harris*, CLI-79-5, 9 NRC at 609-10 (quoting *Nine Mile Point*, ALAB-264, 1 NRC at 365).

[110] Pieniazek Direct Testimony, at 29.

[111] *Pilgrim*, CLI-10-11, 71 NRC at 315-16.

Texas. As discussed in the following sections, the more detailed analyses of the parties also demonstrate a need for power from STP Units 3 and 4.

D. Demand Savings from the Energy Efficient Building Code as Estimated in the ACEEE Report and Adjusted by the Parties

62. The March 2007 ACEEE Report is the basis for Contention DEIS-1-G, which alleges that the adoption of the new energy efficient building code *could* lead to a reduction in peak summer demand of 2,362 MW annually by 2023. This value was adopted in the Power Comments attached to Contention DEIS-1-G, which in turn are based upon the ACEEE Report.[112] The Power Comments also rely upon a one-page written testimony of a representative from the Environmental Defense Fund that was submitted during legislative hearings in April 2009 on the proposed Texas energy efficient building code rules.[113] But this testimony simply recites the Intervenors' position that the code potentially will reduce peak summer demand by 2,362 MW by 2023.[114] Furthermore, the Intervenors' witness, Mr. Mosenthal, testified that his analysis updates and "builds off" of the 2007 ACEEE Report.[115]

63. The ACEEE Report is over four years old, and all of the parties agreed that it does not reflect current conditions. The ACEEE Report advocated that Texas carry out nine individual energy demand savings policies, including recommendations that Texas adopt "more stringent building codes."[116] In an effort to persuade the Texas Legislature to adopt these demand savings policies, ACEEE calculated the potential demand savings for the entire state of

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[112] *See* DEIS Motion, at 4; Power Comments, at 4 & n.12; Pieniazek Direct Testimony, at 20; Exh. STP000008, at 48.

[113] *See* Power Comments, at 4 n.11 (citing Written Testimony of Kate Robertson, Environmental Defense Fund, House Energy Resources Subcommittee for Energy Efficiency and Renewables (Apr. 2, 2009)); Pieniazek Direct Testimony, at 20.

[114] Pieniazek Direct Testimony, at 20.

[115] Mosenthal Direct Testimony, at 4.

[116] Exh. STP000008, at 20; Pieniazek Direct Testimony, at 20-21.

Texas for each specific policy from years 2008 to 2023.[117] The starting point for these demand savings was 2006 peak summer demand data, based primarily upon ERCOT's 2006 "Capacity, Demand, and Reserves in the ERCOT Region" Report ("CDR Report").[118] Because the CDR Report is focused solely on the ERCOT region, the ACEEE Report scaled up ERCOT's projected peak summer demand values in order to cover the entire state of Texas, not just the ERCOT region.[119] The ACEEE Report estimated that the adoption of more stringent building codes could result in an annual peak summer demand reduction of 2,362 MW by 2023 in the entire state of Texas—the value relied upon by the Intervenors.[120] This value was based upon the assumption that the more stringent building codes would avoid 15% of the increase in demand from 2009 to 2020 and 30% of the increase in demand thereafter.[121]

64. The Board has previously recognized that the ACEEE Report is outdated, stating that we would be "scarcely surprised" if the ACEEE Report made "inapplicable assumptions about the implementation of an energy efficient building code" and also "[did] not perfectly forecast demand savings."[122] All of the parties agreed that the analysis in the ACEEE Report is outdated, and that the ACEEE Report's projection of a 2,362 MW peak demand savings by 2023 relied on assumptions that rendered the estimated savings too high. Specifically:

- All parties agreed that the ACEEE Report relies upon 2006 ERCOT data and therefore does not account for current ERCOT load forecasts (which forecast a

[117] Exh. STP000008, at 48; Pieniazek Direct Testimony, at 21; Mussatti/Scott Direct Testimony, at 36.

[118] *See* Exh. STP000008, at 6; Pieniazek Direct Testimony, at 22.

[119] Exh. STP000008, at 6-7; Pieniazek Direct Testimony, at 22; Mussatti/Scott Direct Testimony, at 36.

[120] Exh. STP000008, at 48; Pieniazek Direct Testimony, at 21.

[121] Exh. STP000008, at 25; Mussatti/Scott Direct Testimony, at 35.

[122] *South Texas Project*, LBP-11-07, slip op. at 47.

substantially lower increase in demand for power and therefore a substantially lower potential for savings due to the new energy efficient building code);[123]

- All parties agreed that the ACEEE Report makes forecasts for the entire state (not just the smaller ERCOT region that forms the basis for the need for power analysis for STP Units 3 and 4);[124]

- All parties agreed that the ACEEE Report assumes savings prior to the actual effective date of the new energy efficient building code;[125]

- All parties agreed that the ACEEE Report applies to peak load instead of baseload power demand; and[126]

- All parties agreed that the ACEEE Report assumes a 100% compliance rate with the new energy efficient building code, which is not realistic or consistent with the assumptions currently made by Texas.[127]

65. As discussed in more detail below, when the estimates in the ACEEE Report are adjusted to take these factors into account, the estimated savings from the new energy efficient building code is substantially reduced. Furthermore, the ACEEE Report acknowledges its own conservatism, stating that any purported savings may not be "realistically achievable."[128]

66. For these reasons, the Board finds that estimated savings of 2,362 MW in the ACEEE Report in the year 2023 is an overestimate of the savings to be achieved by the 2010 energy efficient building code in Texas. The Intervenors' testimony did not quantify the amount

[123] *See* Pieniazek Direct Testimony, at 22-23; Mussatti/Scott Direct Testimony, at 36-37; Mosenthal Direct Testimony, at 7.

[124] *See* Pieniazek Direct Testimony, at 23-24; Mussatti/Scott Direct Testimony, at 36-37; Mosenthal Rebuttal Testimony, at 10.

[125] *See* Pieniazek Rebuttal Testimony, at 4-5; Mussatti/Scott Direct Testimony, at 36, 38; Mosenthal Direct Testimony, at 6.

[126] *See* Pieniazek Direct Testimony, at 24-25; Mussatti/Scott Direct Testimony, at 45; Mosenthal Direct Testimony, at 6.

[127] *See* Pieniazek Rebuttal Testimony, at 11-12; Mussatti/Scott Rebuttal Testimony, at 4; Mosenthal Direct Testimony, at 8.

[128] Exh. STP000008, at 8.

of the overestimates, but such information was provided by the witnesses of the Applicant and the NRC Staff. The amount of the overestimate for each of these factors is discussed below.

1. Current ERCOT Load Forecasts

67. The 2007 ACEEE Report relies upon 2006 ERCOT projections, which are now outdated in comparison to the 2010 ERCOT projections used in the FEIS.[129] In 2006, ERCOT forecasted significantly higher increases in demand than it does now. The potential savings from new building codes identified in the ACEEE Report were proportional to ERCOT's predicted increase in demand. Because ERCOT is now forecasting a significantly smaller increase in demand, the potential savings identified by the ACEEE Report are correspondingly affected. If the methodology in the ACEEE Report were utilized in conjunction with the peak summer demand values from the May 2010 CDR Report—instead of the outdated 2006 values—the potential demand reduction tied to more stringent building codes would be reduced substantially.[130] The peak demand increase by 2023 forecasted using data from the May 2010 CDR Report[131] is only 52.1% of the peak demand increase by 2023 forecasted using data from the 2006 CDR Report.[132] To reflect ERCOT's current forecasts, the estimated demand savings

[129] Exh. STP000008, at 6; Pieniazek Direct Testimony, at 22; Mussatti/Scott Direct Testimony, at 37.

[130] *See* Pieniazek Direct Testimony, at 22-23.

[131] Exh. STP000006. ERCOT also prepared a December 2010 update to the May 2010 CDR Report, which is provided as Exh. STP000007.

[132] Pieniazek Direct Testimony, at 23. The NRC Staff used a factor of 65.5% rather than 52.1% to account for a smaller growth rate in peak load than estimated by the ACEEE Report. Mussatti/Scott Direct Testimony, at 38. This value was based upon the ratio of annual growth rates estimated by ERCOT in 2010 and the ACEEE Report. Mussatti/Scott Direct Testimony, at 38. Use of the ratio of annual growth rates rather than the ratio of differences in total peak loads, however, tends to overestimate the savings from the new energy efficient building code, because it does not account for the compounding effect of the reduced annual growth rates over the years. Pieniazek Rebuttal Testimony, at 8. Therefore, the Board finds that use of the 52.1% factor is appropriate. Nonetheless, even if the 65.5% factor were used, it would only change the peak load savings by approximately 244 MW, and would not affect the conclusion regarding need for power from STP Units 3 and 4. Pieniazek Rebuttal Testimony, at 8.

in the 2007 ACEEE Report must be reduced by the same amount (*i.e.*, this factor alone would reduce the estimated savings in the ACEEE Report by 1,131 MW).[133]

2. ERCOT as the Region of Interest

68. The need for power analysis for STP Units 3 and 4 used the ERCOT region as the region of interest, which accounts for approximately 85% of the power demand in the state of Texas.[134] Because the ACEEE Report is focused more broadly on the entire state of Texas, the 2,362 MW projected demand reduction in 2023 also applies to the entire state. The 2,362 MW savings in Texas would need to be multiplied by a ratio of 85/100 in order to cover only the ERCOT region.[135] This factor alone would reduce the estimated savings in the ACEEE Report by 354 MW (*i.e.*, (1-0.85) x 2,362 MW). When this value is multiplied by the factor of 52.1% as discussed above, the peak load savings estimated in the ACEEE Report would be reduced by 184 MW due to this factor.

3. Effective Date

69. The ACEEE Report assumed new building codes would take effect at the beginning of 2009.[136] The actual new energy efficient building code takes effect in 2011 and 2012.[137] Therefore, only savings achieved after 2010 should be counted as a result of Texas's adoption of the new energy efficient building code in 2010.[138] As shown in the ACEEE Report, the current and prior year savings in 2010 are 334 MW.[139] When these savings are adjusted to

[133] Pieniazek Rebuttal Testimony, at 11-12.

[134] Exh. NRC00003C, at 8-2; Pieniazek Direct Testimony, at 22; Mussatti/Scott Direct Testimony, at 37.

[135] Pieniazek Direct Testimony, at 23-24; Mussatti/Scott Direct Testimony, at 37.

[136] Exh. STP000008, at 25.

[137] Pieniazek Direct Testimony, at 18-19; Mussatti/Scott Direct Testimony, at 29; Mosenthal Direct Testimony, at 6.

[138] Mussatti/Scott Direct Testimony, at 36; Pieniazek Rebuttal Testimony, at 4-5; Mosenthal Direct Testimony, at 6.

[139] Exh. STP000008, at 48.

account for the above factors (*i.e.*, 52.1% to account for updated ERCOT projections and 85% to account for only the ERCOT region), the peak load savings would be reduced by 148 MW due to this factor.[140]

4. Compliance Rate

70. The ACEEE Report assumed 100% compliance with the new building codes. This is unrealistic because once a code is adopted, compliance levels fall short of 100%.[141] Texas has committed to reach a compliance rate of 90% by 2017.[142] If a 90% compliance rate is assumed, the estimated savings in the ACEEE Report would decrease by 236 MW when this factor is considered in isolation.[143] When these savings are adjusted to account for the above factors (*i.e.*, the factor of 52.1% to account for ERCOT's lower forecasts of increases in demand and the factor of 85% to account only for the ERCOT region), the peak load savings would be reduced by 105 MW due to this factor.

5. Summary of Adjustments in the Estimated Savings in the ACEEE Report

71. The Intervenors did not provide values that addressed only the adjustments in the ACEEE Report. As discussed in more detail in Section IV.E below, the estimated savings provided in Tables 1 and 2 of the Mosenthal Direct Testimony and Exh. INT000004 included estimated savings from future code updates. The specific values presented by the Staff and Applicant differed somewhat. The Staff estimated that the savings from the 2010 Texas energy efficient building code would be 1,167 MW in 2020, and the Applicant estimated that the

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[140] Pieniazek Rebuttal Testimony, at 5.

[141] Mosenthal Direct Testimony, at 8.

[142] Mussatti/Scott Direct Testimony, at 29, 34; Pieniazek Rebuttal Testimony, at 12.

[143] Pieniazek Rebuttal Testimony, at 12. This 90% assumed compliance rate is conservative compared to that offered by the Intervenors, who assumed initial compliance rates of 80% for commercial buildings and 60% for single family residential buildings which then ramp up to 90% compliance by 2017. Mosenthal Direct Testimony, at 8.

savings from the code would be 981 MW in 2023.[144] Rather than attempting to resolve the differences between the Staff and Applicant, the Board finds that a reasonable estimate of savings from the 2010 state energy efficient building code is approximately 1000 MW of savings in peak load in 2020.[145]

6. Baseload Power

72. The ACEEE Report is focused solely on peak summer demand, not baseload demand.[146] STP Units 3 and 4 are baseload power generating plants.[147] All of the parties agreed that the new energy efficient building code is likely to affect peak load more than baseload. For example, the Applicant's witness testified that "the codes are likely to reduce demand for electricity due to air conditioning, which affects the daytime summer peak loads but has little effect on baseload power demand which accounts for the demands during the entire day."[148] Similarly, the Staff's witnesses testified that the energy efficient building code would do "relatively little" to reduce baseload demand, and that the demand for baseload power "would not necessarily be affected" by the code.[149] And the Intervenors' witness likewise testified that building codes achieve the greatest savings during those times that buildings are used most, and therefore that "building codes have a tendency to flatten the load curves on the system."[150]

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[144] *See* Mussatti/Scott Direct Testimony, at 50; Pieniazek Rebuttal Testimony, at 9-10.

[145] The differences between the Staff and Applicant are attributable to differences in other assumptions, such as transmission line losses and savings from commercial buildings. *See, e.g.*, Pieniazek Rebuttal Testimony, at 9-10. The Board does not need to resolve the differences between the Applicant's and Staff's numbers, because the differences are relatively minor (several hundred MW) and do not affect any conclusions regarding need for power.

[146] *See* Pieniazek Direct Testimony, at 25; Exh. STP000008, at ix, 6, 48.

[147] Mussatti/Scott Direct Testimony, at 13; Pieniazek Direct Testimony, at 5.

[148] Pieniazek Direct Testimony, at 25.

[149] Mussatti/Scott Rebuttal Testimony, at 7-8.

[150] Mosenthal Direct Testimony, at 11.

Based upon this similar testimony from the parties, the Board finds that the new energy efficient building code in Texas is likely to have little or no effect on the demand for baseload power. As a result, the Board finds that the new energy efficient building code in Texas does not affect the conclusion in the FEIS that there is a need for new baseload capacity in ERCOT that exceeds the capacity of STP Units 3 and 4.[151] Based upon this finding alone, the Board resolves Contention DEIS-1-G in favor of the Staff and Applicant.

73. Nevertheless, the Applicant and the NRC Staff took a conservative approach to converting the savings in peak demand into a savings in baseload demand. The FEIS estimated that baseload generation accounts for approximately 44% of actual peak load and 39% of peak load requirements (which account for ERCOT's target reserve margin of 13.75%).[152] Therefore, to calculate the estimated baseload demand savings, the Applicant and NRC Staff conservatively multiplied the estimated peak load demand savings by 44%.[153] Thus, the estimated savings of approximately 1,000 MW savings in peak load savings corresponds to approximately 500 MW in baseload savings in 2020.[154]

74. The Intervenors did not distinguish between baseload and peak load generation, stating that "any reduction in the total loads can translate directly to reductions in the need for baseload capacity, since the 'peaker' units that supplement baseload would still exist and can still

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[151] *See* Exh. NRC00003C, at 8-27 to 8-32.

[152] Pieniazek Rebuttal Testimony, at 6; Exh. NRC00003C, at 8-26.

[153] Although the Applicant initially used the 39% value, it later agreed that 44% was the more appropriate value under these circumstances. *See* Pieniazek Rebuttal Testimony, at 6.

[154] The Staff calculated a baseload savings of 513 MW in 2020 (Mussatti/Scott Direct Testimony, at 50), and the Applicant calculated a baseload savings of 436 MW in 2023 (Pieniazek Rebuttal Testimony, at 9). As discussed above, the differences between the Staff and Applicant are attributable to various factors. The Board does not need to resolve the differences between the Applicant's and Staff's numbers, because the differences are relatively minor (less than 100 MW of baseload power) and do not affect any conclusions regarding need for power.

capture the same differential between the baseload generation and the actual peak."[155] This statement does not account for the fact that the energy generated by peak load plants is substantially more expensive than the energy generated by baseload plants, and in a deregulated market such as ERCOT, less expensive baseload generators would enter the market to supplant the peak load generators.[156] Additionally, many peaking units are simply not designed or do not have sufficient environmental permits to run as baseload units.[157] Therefore, the Board finds that it is appropriate to distinguish between savings in peak load and savings in baseload power.

75. To place these numbers discussed above in context, 500 MW of baseload savings corresponds to less than one-half of the capacity of one of the two new units at the STP site, and 1000 MW of peak load savings corresponds to less than one year of growth in the demand in ERCOT.[158] Therefore, even if the new energy efficient building code in Texas were assumed to have an impact on the demand for baseload, the Board finds that the impact (based upon the estimates in the ACEEE Report as adjusted for the factors agreed upon by all the parties) would not be sufficient to alter the conclusion that there is a need for power from STP Units 3 and 4.

7. <u>Conservatisms</u>

76. The analysis provided above is conservative in a number of respects.

77. First, the ACEEE Report acknowledges that savings in peak demand achieved through the implementation of various energy efficiency programs are purely notional.[159] The ACEEE Report states that "experience with actual [energy efficiency] programs suggests that

[155] Mosenthal Direct Testimony, at 11.

[156] Pieniazek Rebuttal Testimony, at 16; Mussatti/Scott Rebuttal Testimony, at 9.

[157] Pieniazek Rebuttal Testimony, at 17.

[158] *See* Exh. NRC00003C, at 8-22, 8-32; Pieniazek Direct Testimony, at 5, 29 (showing that each STP unit would provide over 1300 MW of generation and that the increase in peak load growth in ERCOT is expected to be about 1000-2000 MW).

[159] *See* Pieniazek Direct Testimony, at 25.

only a *portion* of this [savings in peak energy demand] is realistically achievable in the real world from programs and policies."[160] This qualification by the ACEEE Report would serve to reduce the amount of savings.[161] Under the "rule of reason" embodied in NEPA, there is no requirement to consider conditions that are not realistic.[162]

78. Second, as the Staff explained and was undisputed by the Intervenors, the estimated savings must hold up in the field in order to affect future electricity consumption.[163] Under the new code, a given level of comfort would require less energy and cost less to maintain, so customers may, for example, set their thermostats higher in winter and lower in summer than they would have under the old code, and this behavioral response would reduce the actual savings.[164] This type of behavior is recognized in the building energy community by the term "take-back" or "rebound" effect, and for space heating and space cooling the size of the loss of savings has been estimated in one recent survey article to be in the range of 1% to 30%.[165]

79. Third, the assumption of a 90% compliance rate with the new energy efficient building code is conservative. The Intervenors concluded that the compliance rate is likely to be lower in the years immediately following its effective date; the other parties have not disputed this.[166]

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[160] Exh. STP000008, at 8 (emphasis added); Pieniazek Direct Testimony, at 25.

[161] Pieniazek Direct Testimony, at 25.

[162] *See Vt. Yankee*, 435 U.S. at 551 (holding that NEPA does not require consideration of energy conservation issues "deemed only remote and speculative possibilities, in view of basic changes required in statutes and policies of other agencies-making them available, if at all, only after protracted debate and litigation not meaningfully compatible with the time-frame of the needs to which the underlying proposal is addressed") (quoting *NRDC v. Morton*, 458 F.2d 827, 837-38 (D.C. Cir. 1972)).

[163] Mussatti/Scott Direct Testimony, at 34.

[164] Mussatti/Scott Direct Testimony, at 34.

[165] Mussatti/Scott Direct Testimony, at 34; *see also* Exh. NRC000050, at Tbls. 1 and A7.

[166] Mosenthal Direct Testimony, at 8.

80. Moreover, the estimated savings in baseload demand is an inherently conservative value because it does not account for the fact that the new energy efficient building code is likely to have little or no effect on baseload demand.[167] Therefore, the estimated baseload demand savings are inherently a conservative value.[168]

81. Finally, the estimated savings also are conservative in that they do not account for the fact that some municipalities previously implemented the new energy efficient building code.[169] As explained by the NRC Staff, municipalities representing more than half of the population of Texas had enacted either the 2006 or 2009 IECC before the 2010 Texas building code, with the average throughout the state being the 2006 IECC.[170] The 2006 IECC represents a savings of 9.9% to 22.1% relative to the 2001 IECC.[171] Thus, a large portion of the building code savings estimated in the Mosenthal Direct Testimony was already being achieved prior to the enactment of the 2010 energy efficient building code in Texas.[172] The Staff concluded that "[t]here is no way to easily calculate what this proportion is or predict what the local adoption rate would have been, but it is likely to be significant."[173]

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[167] Pieniazek Direct Testimony, at 25; Mussatti/Scott Rebuttal Testimony, at 8.

[168] Pieniazek Direct Testimony, at 25.

[169] Pieniazek Direct Testimony, at 27; Mussatti/Scott Direct Testimony, at 30-32; Mussatti/Scott Rebuttal Testimony, at 4-5.

[170] Mussatti/Scott Direct Testimony, at 30-32; *see also* Exh. STP000010.

[171] Mussatti/Scott Direct Testimony, at 30. Indeed, these savings between the 2001 IECC and the 2006 IECC are almost equivalent to the Intervenors' estimated savings of 11.4% and 20% between the 2001 IECC and the 2009 IECC. Mosenthal Direct Testimony, at 7. As discussed in the Mussatti/Scott Rebuttal Testimony, at 5-6, 9, by using the 2001 code rather than the 2006 code as the baseline, Mr. Mosenthal's estimated savings are too high by a factor of two to three due to this factor alone.

[172] Pieniazek Rebuttal Testimony, at 14-15; Mussatti/Scott Direct Testimony, at 32.

[173] Mussatti/Scott Direct Testimony, at 32.

82. While the Intervenors disagreed with the magnitude of the savings that would be embedded within the ERCOT forecasts,[174] they agreed "that some proportion of code savings are likely implicitly embedded in the ERCOT forecast."[175] The Board does not need to quantify the impact because neither the Applicant nor the Staff reduced its estimated savings from the energy efficient building code to account for this impact; however, there is no dispute that failing to account for this impact renders the estimated savings conservative.

8. Summary of Savings to Be Achieved by the 2010 Energy Efficient Building Code in Texas

83. As discussed above, all of the parties agreed that the savings estimated by the ACEEE Report to be achieved by the energy efficient building code in Texas need to be adjusted to address a number of factors.[176] Based upon those adjustments, the Board has found that the

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[174] *See* Mosenthal Rebuttal Testimony, at 3-9. Mr. Mosenthal stated that major Texas cities only recently adopted codes, and therefore the effects of these codes would not yet be apparent in ERCOT forecasts. *See* Mosenthal Rebuttal Testimony, at 4-5. Mr. Mosenthal's analysis, however, only evaluated the largest cities and the most recent energy code adoptions. For example, Mr. Mosenthal only looked at six major Texas cities (Houston, Dallas, San Antonio, Austin, El Paso, and Fort Worth), while the NRC Staff evaluated all jurisdictions with populations greater than 25,000. Mussatti/Scott Direct Testimony, at 53-56. Additionally, Mr. Mosenthal only looked at the most recent code adoption (*e.g.*, Dallas adopted the 2009 IECC which is effective in 2011), while the NRC Staff evaluated the codes in effect as of March 2010 (*e.g.*, Dallas had adopted the 2006 IECC) demonstrating that some municipalities already adopted earlier codes. *See* Mussatti/Scott Direct Testimony, at 54. For these reasons, Mr. Mosenthal's analysis is incomplete and does not account for some of the savings due to earlier code adoption. The Board finds that the NRC Staff provided a reasonable evaluation showing that the average code adopted throughout Texas was the 2006 IECC before adoption of the 2009 IECC, not the 2001 IECC as assumed by the Intervenors.

[175] Mosenthal Rebuttal Testimony, at 4.

[176] The NRC Staff would make a couple of additional corrections to the estimated savings in the ACEEE Report. First, the Staff would provide credit for the effects of transmission line losses of energy. Mussatti/Scott Direct Testimony, at 37. It is unclear, however, whether the ACEEE Report accounted for transmission line losses. *See* Pieniazek Rebuttal Testimony, at 6. The ACEEE Report includes no discussion of these losses. Because the peak demand savings predicted by the ACEEE Report appear to be tied to the ERCOT load forecasts (*See* Exh. STP000008, at 7), which would include transmission line losses, it is reasonable to assume that the savings in the ACEEE Report already account for these losses. Pieniazek Rebuttal Testimony, at 6. Even accounting for the transmission line losses, however, would not materially impact the need for power evaluation, because Mr. Pieniazek estimated that the losses would only decrease the peak load savings by 73 MW. Pieniazek Rebuttal Testimony, at 6-7. Second, the Staff would add separately calculated savings for commercial buildings. Mussatti/Scott Direct Testimony, at 39-45. As indicated on page 25 of the ACEEE Report (Exh. STP000008), the Report explicitly accounted for savings due to "residential and commercial building codes." Additionally, the Staff indicated at the hearing that Appendix C.2 of the ACEEE Report (Exh. STP000008, at 56) addresses

savings would be approximately 1000 MW of peak load demand in 2020. The Board also has found that the energy efficient building code would have little or no effect on baseload demand. Nevertheless, the Board has conservatively assumed that 1000 MW of peak load savings is roughly equivalent to 500 MW of baseload savings in 2020.

84. Use of these values has the following impact on the need for power in 2020 as provided in the FEIS:

	Need without Savings from 2010 Building Code (FEIS Table 8-3 and page 8-31)	**Savings from 2010 Building Code**	**Need with Savings from 2010 Building Code**
Peak Load Demand (without Retirements)	5,115 MW	1,000 MW	4,115 MW
Peak Load Demand (with Retirements)	17,551 MW	1,000 MW	16,551 MW
Baseload Demand (without Retirements)	1,995 MW	500 MW	1,495 MW
Baseload Demand (with Retirements)	6,845 MW	500 MW	6,345 MW

85. The estimated savings provided above are derived from the ACEEE Report, as adjusted for several factors that all parties accepted. However, the Intervenors raised several

commercial energy savings, and these are included in Appendix A of the ACEEE Report; thus, the ACEEE Report already addresses savings from commercial buildings. *See* Tr. at 1784. Even accounting for these additional savings, however, would not materially impact the need for power evaluation, because they would only increase the savings by approximately 323 MW for peak load and 142 MW in baseload in 2020. Mussatti/Scott Direct Testimony, at 45. Third, the Staff would add additional savings for industrial buildings. Mussatti/Scott Direct Testimony, at 39, 45-49. These savings, however, are minor: 7.5 MW savings in peak load and 3.3 MW savings in baseload in 2020. Mussatti/Scott Direct Testimony, at 49. Accounting for these savings would not materially impact the need for power evaluation.

additional issues, including issues related to future updates to the state building codes and savings from renovations of buildings. Those issues are addressed below.

E. Future Updates to Building Codes

86. The Intervenors assumed that there will be future updates to the building codes, and Texas will adopt those updates.[177] Mr. Mosenthal assumed savings of 20% (residential) and 11% (commercial) for use of the 2009 IECC relative to the 2001 IECC.[178] However, due to assumed code improvements in future years, Mr. Mosenthal assumed that those values would substantially increase (for residential, to 39% in 2015, to 45% in 2020, and to 55% in 2025; for commercial, to 22% in 2015, to 29% in 2020, and to 32% in 2025).[179] Thus, a large portion of the Texas energy efficient building code savings predicted by Mr. Mosenthal for 2015, 2020, and 2025 appears to be attributable to anticipated future code updates, not to the energy efficient building code adopted in 2010.[180] However, as explained below, future code updates are outside the scope of Contention DEIS-1-G.

87. As originally proposed by the Intervenors, Contention DEIS-1-G referred to "reduced demand *caused by the adoption* of the International Energy Conservation Code."[181] As the bases for proposed Contention DEIS-1-G, the Intervenors referenced page 4 of the Power Comments.[182] In turn, the Power Comments referenced the fact that the State Energy Conservation Office had announced that Texas would be adopting the IECC 2009 building

[177] Mosenthal Direct Testimony, at 9.

[178] Mosenthal Direct Testimony, at 7; Pieniazek Rebuttal Testimony, at 13.

[179] Exhs. INT000003, INT000004; Mosenthal Direct Testimony, at 9; Pieniazek Rebuttal Testimony, at 13-14.

[180] *See* Exhs. INT000003, INT000004; Pieniazek Rebuttal Testimony, at 14.

[181] DEIS Motion, at 4 (emphasis added).

[182] *See id.*

code.[183] Thus, both the proposed contention and its bases only addressed the IECC 2009 building code. Neither proposed Contention DEIS-1-G nor its bases, as provided in the Power Comments, mentioned future code updates.

88. The Commission has stated that "[w]here an issue arises over the scope of an admitted contention, NRC opinions have long referred back to the bases set forth in support of the contention."[184] The arguments made by the Intervenors regarding future code updates are unrelated to their bases for Contention DEIS-1-G. For these reasons, savings from future code updates are outside the scope of Contention DEIS-1-G.

89. Furthermore, the Intervenors fare no better when consideration is given to Contention DEIS-1-G as admitted by the Board. The wording of the contention as admitted by the Board refers to "reduced demand *caused by the adoption* of an energy efficient building code in Texas."[185] This language is clearly retrospective when referring to the energy efficient building code—it does not encompass future code updates. Furthermore, the Board admitted Contention DEIS-1-G based upon the fact that Texas adopted a new energy efficient building code in June 2010. In particular, the Board's decision at several places explicitly referred to the June 2010 adoption of the energy efficient building code by Texas.[186] For example, in noting that Contention DEIS-1-G is a contention of omission, the Board stated:

> At oral argument, NRC Staff conceded that the DEIS does not consider the effects of an energy efficient building code in the ERCOT region. The principal reason for this omission is that

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[183] Power Comments, at 4.

[184] *McGuire/Catawba*, CLI-02-28, 56 NRC at 379; *see also Seabrook*, ALAB-899, 28 NRC at 97 & n.11 (stating that the "intervenor is not free to change the focus of its admitted contention, at will, as the litigation progresses").

[185] *South Texas Project*, LBP-11-07, slip op. at 48.

[186] *Id.* at 42, 47-48.

> Texas only adopted an energy efficient building code after publication of the DEIS.[187]

The Board's decision admitting Contention DEIS-1-G never mentioned future code updates.

90. As the Commission has stated: "Our own longstanding practice requires adjudicatory boards to adhere to the terms of admitted contentions."[188] Because future code updates are not mentioned or contemplated in Contention DEIS-1-G as admitted by the Board, issues related to future code updates are outside the scope of the contention.

91. Furthermore, after referring to the June 2010 statute in Texas, the Board stated:

> For the same reasoning that a proposed rule or proposed law may not support an admissible contention, i.e., its ultimate effect is at best speculative, a newly adopted rule or law may support an admissible contention, i.e., it now has indisputable legal effect. Here, the adoption of building code rules by Texas presents new and materially different information not previously available, upon which Intervenors may rest their proposed contention. See 10 C.F.R. § 2.309(f)(2)(i), (ii); see also Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), CLI-10-27, 72 NRC __, __ (slip op. at 17-18) (Sept. 30, 2010).[189]

Obviously, if a proposed rule or proposed law is not sufficient to support a proposed contention because "its ultimate effect is at best speculative," the same is doubly true with respect to future code updates that have not yet been proposed.

92. In that regard, the Intervenors' assumptions regarding future code updates are entirely unsupported and speculative. First, even assuming that updates to the building codes will be issued in the future, there is nothing in the Texas law that would require the state automatically to adopt such code updates, and it is speculative that Texas will adopt such

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[187] *Id.* at 47.

[188] *Claiborne*, CLI-98-3, 47 NRC at 105.

[189] *South Texas Project*, LBP-11-07, slip op. at 42 n.233.

updates.[190] In fact, it is undisputed by all parties that Texas did not adopt the code updates that were issued in 2003 and 2006.[191] Furthermore, even assuming that Texas were to adopt future code updates, the content of those updates (and thus the savings to be achieved by those updates) is speculative.[192] In that regard, the Mosenthal Direct Testimony provides no support for achieving 39% to 55% residential energy savings between 2015 and 2025 based on updated building codes.[193] Instead, the demand savings projected in the Mosenthal Direct Testimony for future building code updates are speculative.[194] In fact, ERCOT itself does not include in its forecasts the effects of regulations that do not yet exist.[195]

93. As a result, Mr. Mosenthal's assumed savings from future code updates are not only outside the scope of this contention, they are speculative and inappropriate under NEPA and NRC case law.[196] Nonetheless, as discussed in Section IV.G.3 below, even if the Intervenors' estimated demand savings (which include future building codes) are considered, there still is a need for power from STP Units 3 and 4.

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[190] *See, e.g.*, Tr. at 1725-26. Texas does not automatically adopt updates to the IECC code. Instead, as provided in 34 Tex. Admin. Code § 19.52, the State Energy Conservation Office considers whether to adopt code updates.

[191] *See* Tr. at 1738, 1758-59, 1810.

[192] *See* Mussatti/Scott Rebuttal Testimony, at 4, 7, 9.

[193] Pieniazek Rebuttal Testimony, at 14. The Mosenthal Direct Testimony references a Texas A&M University, Energy Systems Laboratory ("ESL") study (Exh. INT000016) and a Department of Energy ("DOE") estimate of building savings from IECC 2012 (Exh. INT000017); however, neither supports these assumed residential energy savings. *See* Mosenthal Direct Testimony, at 9. Instead, the ESL study supports a roughly 20% single-family, residential savings based on the adoption of the 2009 IECC and DOE estimates a 30% increase in energy savings—both residential and commercial—when the 2012 IECC is compared to its 2006 predecessor. These values do not support the Intervenors' calculations.

[194] Pieniazek Rebuttal Testimony, at 14; Mussatti/Scott Rebuttal Testimony, at 6-7.

[195] Mussatti/Scott Rebuttal Testimony, at 7.

[196] *See, e.g.*, *Vt. Yankee*, ALAB-919, 30 NRC at 44 (citing *Limerick Ecology*, 869 F.2d at 739) (holding that consideration of "remote and speculative" impacts is not required); *Nat'l Enrichment*, CLI-05-20, 62 NRC at 536 (holding that NEPA does not require consideration of speculative impacts).

F. Renovations

94. In his rebuttal testimony, Mr. Mosenthal claimed that his demand savings estimate is "likely significantly low because I only estimated savings from new construction, which typically represents only a percent or two of the total electrical load in any given year."[197] He then claims that, accounting for savings from renovations, the total savings would be 2 to 3 times higher than he estimated.[198]

95. This issue was never raised by NINA or the NRC Staff in its direct testimony or exhibits, and was raised for the first time in the Mosenthal Rebuttal Testimony. As the Board has stated, the "rebuttal testimony and rebuttal exhibits are not to advance any new affirmative claims or arguments that should have been, but were not, included in the party's previously filed initial written statement."[199] Therefore, the issue of renovations was not properly raised by the Intervenors.

96. Nonetheless, even if the issue of renovations were considered, it would not affect the outcome of the evaluation of need for power for several reasons.

97. First, as explained in the Pieniazek Surrebuttal Testimony, the ACEEE Report accounted for savings from renovations.[200] In particular, Appendices C.1 and C.2 of the ACEEE Report address potential savings from residential and commercial building, including savings due to renovations of existing buildings.[201] In turn, the potential savings in Appendices C.1 and

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[197] Mosenthal Rebuttal Testimony, at 10.

[198] Mosenthal Rebuttal Testimony, at 10.

[199] Initial Scheduling Order, at 15 (Oct. 20, 2009) (unpublished).

[200] Pieniazek Surrebuttal Testimony, at 4-5.

[201] *See* Exh. STP000008, at Tbls. C.1 and C.3 (referring to savings from "existing" residential and commercial buildings).

C.2 were used to determine the estimated savings in Appendix A of the ACEEE Report,[202] which provides the estimated savings of 2,362 MW in 2023 from more stringent building codes.[203] Since the estimates in the ACEEE Report already account for savings from renovations, Mr. Mosenthal's attempt to add a further amount for savings from renovations amounts to impermissible "double counting."[204]

98. Second, Mr. Mosenthal's estimation is based on a number of errors and is inconsistent with his earlier testimony. For example, Mr. Mosenthal incorrectly assumed that energy savings from renovating a home would be equivalent to savings during construction of a home. Such an assumption is flawed, because renovations typically affect only a small portion of an existing house and because existing buildings are typically smaller than new buildings.[205] Under questioning by the Board, even Mr. Mosenthal agreed that renovation of part of a building does not require the entire building to be brought up to code, and that some renovations do not require compliance with code requirements; thus, savings from renovating a building will likely be less than savings from new construction.[206] Additionally, Mr. Mosenthal's claim that savings from renovations would be 2 to 3 times larger than savings from new construction directly

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[202] Exh. STP000008, at 52, 56.

[203] Exh. STP000008, at 48.

[204] Pieniazek Surrebuttal Testimony, at 4-5.

[205] Pieniazek Surrebuttal Testimony, at 7; Exh. NRC000066, at 1-2. The Pieniazek Surrebuttal Testimony, at 6-7, also identifies a number of other flaws in the methodology of Mr. Mosenthal. During questioning by the Board, even Mr. Mosenthal identified factors that call his assumptions into question. For example, Mr. Mosenthal testified that the total ERCOT demand includes loads other than from residential and commercial buildings and therefore it may not be appropriate to multiply the total demand by 4% to determine the savings due to renovations (Tr. at 1825); not all renovations require a permit and therefore would not be subject to the 2009 building codes (Tr. at 1825); and renovations do not require that an entire existing building be brought up to current codes (Tr. at 1825-26).

[206] *See* Tr. at 1825-26.

contradicts his testimony that the "codes primarily impact new construction."[207] In that regard, the Intervenors' own exhibits state that new construction represents a very large percentage (80%) of the load growth in Texas.[208] Mr. Mosenthal provided no basis for concluding that 2 to 3 times this amount of load would be impacted each year by renovations.

99. Third, the Staff prepared an analysis of the energy savings from renovations. That analysis accounted for both the limited extent that renovations affect existing buildings and the amount of energy actually consumed by existing buildings.[209] Based upon that analysis, the Staff concluded that the savings from renovations in 2020 would be approximately 324 MW for peak load and 143 MW for baseload.[210] This represents a small portion of the overall savings from the energy efficient building code as discussed in Section IV.D.8 above.

100. The Board finds that savings from renovations were included in the estimated savings provided in the ACEEE Report, and therefore that it is inappropriate to add further savings due to renovations onto the amount of savings identified in the ACEEE Report. Furthermore, even if further consideration is given to savings from renovations, the Board finds by a preponderance of the evidence that the Staff's analysis of renovations is reasonable and that there are fundamental flaws in the methodology used by the Intervenors to calculate savings from renovations. Moreover, as discussed in Section IV.G.3 below, even if the Intervenors' estimated savings (which include savings from renovations) are considered, there still is a need for power from STP Units 3 and 4.

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[207] Mosenthal Rebuttal Testimony, at 6.

[208] Exhs. INT000003, INT000004 (see headings at top left hand portion of the page); *see also* Tr. at 1813.

[209] *See* Exh. NRC000066, at 1-2.

[210] Exh. NRC000066, at 2.

G. Need for Power from STP Units 3 and 4

101. STP Units 3 and 4 are baseload units, each with a net electrical output of approximately 1,300 MW. Initial commercial operation of STP Units 3 and 4 could occur as early as 2018, but may occur later.[211] Furthermore, as explained by the NRC Staff, it evaluates the need for power through the third year of commercial operation, or 2020 in the case of STP Units 3 and 4.[212] Therefore, the Board considered whether there is a need for 2,600 MW of baseload power in the ERCOT region in the 2018-2020 time period.

102. This section evaluates the need for power from STP Units 3 and 4 based on various calculations performed by the parties, including: (1) FEIS; (2) ACEEE Report with adjustments as agreed by all of the parties; and (3) the Intervenors' proposed savings from existing and future building codes and renovations. As shown below, regardless of the calculation, there is still a need for power for STP Units 3 and 4.

1. Need for Power Based on FEIS

103. To achieve ERCOT's target reserve margin of 13.75%, the FEIS states that there is a need for about 5,115 MW of additional power generation resources in 2020, without accounting for any unit retirements.[213] After accounting for the retirements of power plants over 50-years old, FEIS Table 8-3 shows that the need for power more than triples: in 2020 there is a need for about 17,551 MW.[214] These values are for peak load. As stated in the FEIS, these values can be correlated to baseload power by multiplying by a factor of 0.39. When this correlation is made, there is a need for 6,845 MW of baseload power in the year 2020 after

[211] Pieniazek Direct Testimony, at 5.

[212] *See* Mussatti/Scott Direct Testimony, at 14-15.

[213] Exh. NRC00003C, Tbl. 8-3; Mussatti/Scott Direct Testimony, at 28.

[214] Exh. NRC00003C, Tbl. 8-3; Mussatti/Scott Direct Testimony, at 28.

accounting for potential retirements of plants greater than 50-years old, and 1,995 MW of baseload power without any retirements.[215]

104. As discussed in Section IV.B above, the FEIS also provided a sensitivity analysis, which included reduced demand due to new energy efficiency programs (including new state building codes). To achieve the target reserve margin of 13.75%, the FEIS sensitivity analysis states that there is a need for about 3,200 MW of additional power generation resources in 2020, without accounting for any unit retirements.[216] After accounting for the retirements of power plants over 50-years old, the FEIS sensitivity analysis shows a substantially higher need for power: in 2020 there is a need for about 15,700 MW.[217] These values are for peak load. As stated in the FEIS, there is a need for 6,111 MW of baseload additions in the year 2020 after accounting for potential retirements of plants greater than 50-years old, and 1,261 MW without any retirements.[218] Both of these values account for reduced demand due to new energy efficiency programs.

105. The FEIS concluded that these calculations show a need for power from STP Units 3 and 4.[219]

106. As indicated above, the need for baseload power in 2020 is somewhat less than the net generating capacity of STP Units 3 and 4, when no retirements of existing plants are considered. However, consideration of plant retirements is reasonable. As part of its CDR reports, ERCOT routinely provides figures which depict its demand forecasts relative to

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[215] Exh. NRC00003C, at 8-31; Mussatti/Scott Direct Testimony, at 28.

[216] Exh. NRC00003C, at 8-30.

[217] Exh. NRC00003C, at 8-31.

[218] Exh. NRC00003C, Tbl. 8-6; Mussatti/Scott Direct Testimony, at 28.

[219] Exh. NRC00003C, at 8-31, 8-32.

generation available, assuming that all plants that are 30, 40, or 50 years old retire.[220] The assumption that generation plants would retire at 50 years is conservative. This is illustrated by NRG Energy's experience with plant retirements.[221] The average age at retirement for NRG Energy plants that have retired since the market opened to competition in 2002 is 39.5 years, which is much less than the conservative assumption that generation units retire at 50 years.[222] Additionally, it is likely that plants younger than 50 years old will retire due to cost or environmental reasons.[223] For these reasons, the Board finds that it is appropriate to account for plant retirements. Ignoring likely retirements of older plants would be akin to a worst-case analysis, which is not required by NEPA.[224]

2. Need for Power Based on ACEEE Report with Adjustments

107. As discussed in Section IV.D above, all parties agree that the estimated savings in the ACEEE Report should be adjusted downward to account for a number of factors, such as the reductions in estimated growth in demand in ERCOT, the fact that the ACEEE Report estimates are for all of Texas rather than the smaller ERCOT region, a later effective date of the codes than assumed in the ACEEE Report, and code compliance rates of less than 100%.

108. When the figure of 2,362 MW in the ACEEE Report is adjusted to account for factors that all parties agree should be taken into account, this figure is equivalent to a

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[220] *See, e.g.*, Exh. STP000006, at 33; Tr. at 1723; Mussatti/Scott Direct Testimony, at 22.

[221] Pieniazek Rebuttal Testimony, at 17-18.

[222] Pieniazek Rebuttal Testimony, at 18.

[223] Pieniazek Rebuttal Testimony, at 18-19. For example, the Environmental Protection Agency is considering new regulations to implement Section 316(b) of the Clean Water Act that could require power plants with once-through cooling systems to retrofit to cooling towers in order to minimize potential adverse impacts related to cooling water withdrawals. Pieniazek Rebuttal Testimony, at 18-19. ERCOT has estimated that this one factor could result in the retirement of over 8,000 MW of generation, an amount that dwarfs the entirety of the savings from the energy efficient building code and could result in a great need for power in 2015. Exh. STP000029, at i; Pieniazek Rebuttal Testimony, at 19.

[224] *Robertson*, 490 U.S. at 354-55, 359.

conservative estimate of 1,000 MW of peak load demand savings and 500 MW of baseload demand savings in 2020. The latter number for baseload demand savings is very conservative. As discussed in Section IV.D.6 above, the energy efficient building code is expected to affect peak load and have little or no effect on baseload demand.

109. As discussed in Section IV.D.8 above, in 2020, the FEIS estimates a need for 17,551 MW of peak power and 6,845 MW of baseload power, assuming retirements of generating plants that are older than 50 years. Even when 1,000 MW of peak power and 500 MW of baseload power are subtracted from the values in the FEIS to account for energy savings from the 2010 building code, there still would be a need for 16,551 MW of peak load power and 6,345 of baseload power in 2020.[225]

110. These values are much larger than the generation from STP Units 3 and 4.[226] Therefore, the Board finds that there is a need for power for STP Units 3 and 4 when taking into account the adjusted savings derived from the ACEEE Report due to the 2010 energy efficient building code in Texas.

3. Need for Power Based on Intervenors' Values in Testimony

111. As discussed in Section IV.E above, the Board finds that it is not appropriate to consider savings from future code updates. Nevertheless, even if such savings are considered, there still would be a need for power from STP Units 3 and 4. Based upon the Intervenors' own

[225] Even if retirements are not considered, there is a need for 5,115 MW of peak load in 2020, as discussed in Section IV.D.8 above. Subtracting 1,000 MW to account for the new energy efficient building code still leaves a need for 4,115 MW in 2020. Similarly, even if it is very conservatively assumed that the 2010 building code will produce 500 MW savings in baseload power in 2010, there still would be a need for 1,495 MW of baseload power in 2020, assuming no retirements of existing plants. This exceeds the capacity of one of the new STP units, and given the very conservative assumptions does not indicate a lack of need for both of the new STP units. Furthermore, given that the growth in demand in ERCOT is 1,000 to 2,000 MW per year (Pieniazek Direct Testimony, at 29), any shortfall in baseload demand would be recovered within about two years. Based upon the principles in *Shearon Harris* discussed above (CLI-79-5, 9 NRC at 609-10), such a short period does not affect the conclusion that there is a need for power from STP Units 3 and 4.

[226] Pieniazek Direct Testimony, at 27-28.

values in their testimony, there is a need for power from STP Units 3 and 4 even considering future code updates. Table 1 of the Mosenthal Direct Testimony (which includes savings from future code updates) shows that with retirements there is a need for 14,265 MW in 2020.[227] This value is much larger than the output of STP Units 3 and 4, and Mr. Mosenthal agreed that this value shows a need for power from STP Units 3 and 4.[228] Additionally, without retirements, Table 1 of the Mosenthal Direct Testimony shows a need for 1,828 MW in 2020,[229] which is only slightly less than the combined capacity of STP Units 3 and 4.[230]

112. In Table 1, Mr. Mosenthal relied upon the firm load based upon FEIS Table 8-5, which represented the sensitivity study that included savings from energy efficiency programs, including the energy efficient building code.[231] Because FEIS Table 8-5 already includes a reduction to account for new energy efficiency programs, Table 1 in the Mosenthal Direct Testimony engaged in double-counting by also subtracting an additional savings for the energy efficient building code.[232] The Mosenthal Direct Testimony should have used the firm load forecast in FEIS Table 8-3, and then subtracted the Intervenors' estimate of savings due to the new energy efficient building code, which would have resulted in an increase of 1,201 MW in the values for 2020 in Table 1 of the Mosenthal Direct Testimony.[233] When that double-counting

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[227] Mosenthal Direct Testimony, at 10. Table 2 in the Mosenthal Direct Testimony, at 13, as revised, is identical to Table 1.

[228] *See* Mosenthal Direct Testimony, at 10.

[229] Mosenthal Direct Testimony, at 10.

[230] Mr. Mosenthal did not distinguish between effects of energy savings on baseload and peak load. *See* Mosenthal Direct Testimony, at 11. The Board uses Mr. Mosenthal's assumption in applying his testimony here.

[231] Exh. NRC00003C, at 8-28.

[232] Pieniazek Rebuttal Testimony, at 15.

[233] The difference in firm load forecasts in FEIS Table 8-3 and Table 8-5 is substantial. In 2020, the difference is 1,056 MW (73,863 MW – 72,807 MW). Furthermore, since line B of Tables 1 and 2 in the Mosenthal Direct Testimony multiplies the firm load by the target reserve margin of 13.75%, the impacts are even greater. When

is eliminated, there would be a need for 3,029 MW in 2020, assuming no retirements.[234] This clearly shows a need for power from STP Units 3 and 4 in 2020.[235]

113. As discussed in Section IV.F above, the Board finds that renovations do not need to be addressed separately as part of this contention. However, even if the renovations savings predicted by Mr. Mosenthal were accepted as valid, those savings do not change the conclusion that there is a need for power from STP Units 3 and 4, when retirements of old plants are considered. FEIS Table 8-3 shows a net need, when accounting for retirements of old generating plants, of 17,551 MW in 2020.[236] Even if that amount is decreased by 2,800 to 4,200 MW in 2020 as specified on page 10 of the Mosenthal Rebuttal Testimony, there would still be a need for more than 13,000 MW of peak load power in 2020. This conclusion is very conservative because the values in the Mosenthal Rebuttal Testimony account for savings from future building codes that have not yet been enacted by Texas.[237]

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multiplying the differences between FEIS Tables 8-3 and 8-5 by 1.1375, the double-counting in Tables 1 and 2 of the Mosenthal Direct Testimony becomes 1,201 MW in 2020. This error alone is equivalent to about one of the STP units. Pieniazek Rebuttal Testimony, at 15.

[234] Pieniazek Rebuttal Testimony, at 20.

[235] Pieniazek Rebuttal Testimony, at 20. The values in Table 1 of Mr. Mosenthal's Direct Testimony include estimated savings due to future building code updates. As discussed in Section IV.E above, such estimated savings are outside the scope of Contention DEIS-1-G and are speculative. Therefore, it is inappropriate to consider such estimates in determining the need for power from STP Units 3 and 4. Mr. Mosenthal's testimony and worksheet (Exh. INT000004) do not provide any estimated savings that exclude the savings attributable to future building code updates. During his oral testimony, Mr. Mosenthal stated that he did not know how much savings he attributed to future building code updates, but that the impact was substantial. Tr. at 1812-13. Based upon the Board's own rough calculations using Exh. INT000004, it appears that Mr. Mosenthal attributed approximately 480 MW of savings in 2020 to future code updates. For example, Exh. INT000004 indicates the savings from the existing energy efficient building code is about 100 MW per year in 2012 and 2013. Beginning in 2014, Exh. INT000004 includes the effects of future building code updates, with the annual MW savings jumping as high as 193 MW (in 2018). If the annual MW savings in Exh. INT000004 are reduced to 100 MW for the years 2014-2020, the cumulative difference would be about 480 MW. When this value is added to the 3,029 MW actually specified by Mr. Mosenthal, his estimated need for power in 2020 would increase to approximately 3,500 MW, without any retirements.

[236] Exh. NRC00003C, at 8-22.

[237] Pieniazek Surrebuttal Testimony, at 10.

114. Even if retirements are not considered and Mr. Mosenthal's estimated savings from renovations are considered, there still would be a need for power from STP Units 3 and 4 in 2020 when the speculative savings from future building code updates are excluded. FEIS Table 8-3 shows a need of 5,115 MW peak load power in 2020, when retirements are not considered.[238] Subtracting the savings of 2,800 – 4,200 MW in 2020 provided on page 10 of the Mosenthal Rebuttal Testimony (which includes the inappropriate factor for renovations as well as credit for speculative future building code updates), there still would be a need of 915 to 2,315 MW in 2020, which is somewhat less than the capacity of STP Units 3 and 4. However, when savings from future building codes are excluded, Mr. Mosenthal's savings drop to approximately 900 to 1,000 MW in 2020.[239] Multiplying that value by Mr. Mosenthal's factor of 2 to 3 to account for renovations yields a savings of 1,800 to 3,000 MW in 2020. Subtracting that value from the need of 5,115 MW as provided in the FEIS yields a need of approximately 2,115 to 3,315 MW, which is sufficient to encompass the capacity of STP Units 3 and 4.[240]

115. Furthermore, even given the savings postulated by the Intervenors, those savings only correspond to one or two year's worth of growth in demand in ERCOT.[241] In fact, even assuming Mr. Mosenthal is correct on all accounts, he concludes that 2020 is "the first year of a need for power under [his] conservative analysis."[242] A delay of one to two years in the need for STP Units 3 and 4 would not change the conclusion that there is a need for power from STP Units 3 and 4. The Commission has recognized that a need for power analysis does not need to

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[238] Exh. NRC00003C, at 8-22.

[239] Pieniazek Surrebuttal Testimony, at 9.

[240] Pieniazek Surrebuttal Testimony, at 10-11.

[241] *See* Pieniazek Direct Testimony, at 29; Tr. at 1723.

[242] Mosenthal Rebuttal Testimony, at 14.

precisely pinpoint *when* the need for power will exist, just *whether* it will exist. In *Shearon Harris*, the Commission endorsed the general rule that a one or two year deferral in need for power from a plant is not a legally sufficient basis for litigation. The Commission stated that the couple year difference is not a "statistically meaningful distinction" and is within the margin of uncertainty in demand forecasts.[243]

116. Finally, the Board notes that, during his oral examination, even Mr. Mosenthal admitted that there is a need for power from STP Units 3 and 4 in 2020.[244] Therefore, the Board finds by a preponderance of the evidence that there is a need for power for STP Units 3 and 4 when the values proffered by the Intervenors in their testimony are considered.

4. Summary of Need for Power After Considering Energy Efficient Building Code

117. In summary, based on the evidentiary record in this proceeding, the Board finds by a preponderance of the evidence that there is a need for power from STP Units 3 and 4, even accounting for the savings from the energy efficient building code in Texas. Therefore, the Board resolves Contention DEIS-1-G in favor of the Applicant and the NRC Staff.

V. SUMMARY FINDINGS OF FACT AND CONCLUSIONS OF LAW

Based upon a review of the entire hearing record and the foregoing discussion, the Board concludes as follows:

118. Contention DEIS-1-G is moot because the omissions that are the subject of the contention have been addressed by the FEIS.

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[243] *Shearon Harris*, CLI-79-5, 9 NRC at 609-10 (quoting *Nine Mile Point*, ALAB-264, 1 NRC at 365).

[244] Tr. at 1817.

119. The FEIS provides a reasonable evaluation of the impact of the 2010 Texas energy efficient building code and the need for power from STP Units 3 and 4, and therefore the FEIS complies with NEPA.

120. All parties agree that there is a need for power from STP Units 3 and 4, when retirements of 50-year old plants are taken into account. It is conservative to assume that only 50-year old plants will retire.

121. The preponderance of the evidence also shows that there is a need for power from STP Units 3 and 4, even if retirements of existing plants are not taken into account.

122. NINA and the NRC Staff have met their burden of proof as to Contention DEIS-1-G, and thus Contention DEIS-1-G is resolved in favor of the NRC Staff and NINA.

VI. ORDER

WHEREFORE, IT IS ORDERED, pursuant to 10 C.F.R. §§ 2.1210 and 51.104(a)(3), that the Intervenors' Contention DEIS-1-G is resolved on the merits in favor of the NRC Staff and Nuclear Innovation North America LLC.

IT IS FURTHER ORDERED, this Partial Initial Decision will constitute a final decision of the Commission forty (40) days from the date of issuance (or the first agency business day following that date if it is a Saturday, Sunday, or federal holiday, *see* 10 C.F.R. § 2.306(a)), unless a petition for review is filed in accordance with 10 C.F.R. § 2.1212, or the Commission directs otherwise.

IT IS FURTHER ORDERED that any party wishing to file a petition for review on the grounds specified in 10 C.F.R. § 2.341(b)(4) must do so within fifteen (15) days after service of this Partial Initial Decision. The filing of a petition for review is mandatory for a party to have exhausted its administrative remedies before seeking judicial review. Within ten (10) days after service of a petition for review, parties to the proceeding may file an answer supporting or

opposing Commission review. Any petition for review and any answer shall conform to the requirements of 10 C.F.R. § 2.341(b)(2)-(3).

Although this ruling resolves all matters before the Board in connection with Contention DEIS-1-G, Staff issuance of COLs under 10 C.F.R. Part 52 relative to STP Units 3 and 4 must abide, among other things, the resolution of admitted Contention FC-1 and issuance by the Commission of a decision regarding the uncontested, mandatory hearing portion of this proceeding.

Respectfully submitted,

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Dated in Washington, D.C.
this 30th day of November 2011

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	Docket Nos. 52-012-COL
	)	52-013-COL
NUCLEAR INNOVATION NORTH AMERICA LLC	)	
	)	
(South Texas Project Units 3 and 4)	)	November 30, 2011

CERTIFICATE OF SERVICE

I hereby certify that on November 30, 2011, copies of "Nuclear Innovation North America LLC's Proposed Findings of Fact and Conclusions of Law for Contention DEIS-1-G" were served by the Electronic Information Exchange on the following recipients:

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