

STATE OF VERMONT
PUBLIC SERVICE BOARD

Petition of Entergy Nuclear Vermont Yankee,)
LLC, and Entergy Nuclear Operations, Inc.,)
For a Certificate of Public Good Pursuant to)
30 V.S.A. § 248 and 10 V.S.A. § 6522 to) PSB Docket No.
Construct a Second Independent Spent Fuel)
Storage Installation (“ISFSI”) at the Vermont)
Yankee Nuclear Power Station)

PREFILED TESTIMONY AND EXHIBITS OF T. MICHAEL TWOMEY

Mr. Twomey’s testimony explains why the Project is necessary for decommissioning and spent nuclear fuel management and discusses the economic benefit of the Project under Sections 248(b)(2) and (3). His testimony also concludes that the Project is consistent with the Vermont Comprehensive Energy Plan, as required under Section 248(b)(7). Mr. Twomey then explains why several other criteria under section 248(b), including Sections 248(b)(3), (6), (9), (10) and (11), do not apply to this Project. Finally, Mr. Twomey addresses the criteria specific to spent nuclear fuel storage facilities considered by the Board under 10 V.S.A. §§ 6522(b)(1)-(4).

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1 Q1. Please state your name, occupation and business address.

2 A1. My name is T. Michael Twomey. I am the Vice President, External Affairs, for Entergy
3 Wholesale Commodities, 440 Hamilton Avenue, White Plains, New York. I am also a
4 Vice President of Entergy Nuclear Vermont Yankee, LLC (or “ENVY”) and Entergy
5 Nuclear Operations, Inc. (to which I refer to in my testimony collectively as “Entergy
6 VY”)

7
8 Q2. Please describe your educational background and professional experience.

9 A2. As Vice President, External Affairs, for Entergy Wholesale Commodities, I am part of a
10 team that has executive responsibility of Entergy VY, and the Vermont Yankee Nuclear
11 Power Station (or “VY Station”). I have attached my resume, which further details my
12 experience and qualifications, as Exhibit EN-TMT-1.

13

14 Q3. Have you previously testified before the Board on behalf of Entergy VY?

1 A3. Yes. I testified in Docket 7862.

2

3 Q4. What is the purpose of your testimony?

4 A4. Entergy VY is proposing to construct a second dry-fuel-storage pad, or Independent
5 Spent Fuel Storage Installation (“ISFSI”) storage pad, which I will refer to as the
6 “Second ISFSI” or the “Project.” George Thomas, Senior Project Manager for Entergy
7 VY, provides a detailed description of the Project in his testimony. My testimony will
8 explain the need for the Project, particularly as it relates to decommissioning and spent
9 nuclear fuel management and the economic benefit of the Project. I will address several
10 other criteria under Section 248(b), including explaining several criteria that do not apply
11 to this Project. I will also address the criteria specific to dry storage facilities considered
12 by the Board under 10 V.S.A. § 6522(b).

13

14 **30 V.S.A. § 248(b) Criteria**

15 Q5. Please explain why the Project is needed at the VY Station.

16 A5. Entergy VY needs an ISFSI of sufficient size to hold all the spent nuclear fuel at the VY
17 Station until the Department of Energy (or “DOE”) transports the fuel off site. As Mr.
18 Thomas’s testimony explains, the Board approved the construction of the existing ISFSI
19 in 2006 in Docket 7082. The current ISFSI storage pad has sufficient capacity to hold 36
20 casks. The pad’s dimensions have 40 cask spaces in an eight-by-five array, but four
21 spaces accessible from the apron of the ISFSI must be kept open to allow for movement
22 of casks on the ISFSI storage pad. When Entergy VY petitioned for approval of the

1 existing ISFSI, it anticipated the need to construct an additional ISFSI storage pad when
2 the VY Station ceased operation. Entergy VY will need space to store 58 casks of spent
3 nuclear fuel following permanent shutdown of the VY Station in the fourth quarter of
4 2014. In addition, the proposed Second ISFSI storage pad provides capability to store up
5 to three additional casks of greater than Class C waste following permanent shutdown of
6 the VY Station in the fourth quarter of 2014. As currently planned, the Second ISFSI
7 storage pad is sized for an additional 25 cask spaces in a five-by-five arrangement. The
8 new configuration would have a combined 65 spaces. Setting aside the four spaces
9 needed to access each cask, the new configuration would have 61 spaces for storage
10 casks.

11 To complete decommissioning of the VY Station and enable eventual reuse of the
12 site, all spent fuel that has not already been placed in dry-cask storage will have to be
13 moved from the spent fuel pool to dry-cask storage. The existing ISFSI storage pad does
14 not have sufficient capacity to hold all of the spent fuel that exists at the site. The
15 December 23, 2013, Settlement Agreement among Entergy VY, the Vermont Public
16 Service Department (or “Department”), the Vermont Office of the Attorney General, the
17 Vermont Agency of Natural Resources (or “ANR”) and the Vermont Department of
18 Health (or “DOH”), recognizes, as one of the guiding principles for post-operation, that
19 “to facilitate decommissioning and overall closure of the VY Station, spent nuclear fuel
20 (“SNF”) should be moved from the spent fuel pool to dry cask storage in a timely
21 manner.” Construction of the Second ISFSI storage pad is necessary to achieve that goal.
22

1 Q6. Has Entergy VY discussed the need for the Project with State and local officials?

2 A6. Yes. Entergy VY provided 45-days' notice of the Project to the Town of Vernon
3 Selectboard, the Town of Vernon Planning Commission and the Windham Regional
4 Commission on May 15, 2014. Entergy VY also provided notice to the Department and
5 the Board at that time.

6 Entergy VY met with the Town of Vernon to discuss the Project on June 11,
7 2014. The Vernon Selectboard submitted a letter to Entergy VY indicating that the
8 Selectboard voted unanimously to support the Project, finding that it is in the best interest
9 of the Town of Vernon. Similarly, the Vernon Planning Commission voted unanimously
10 that the Project will not unduly interfere with the orderly development of the region, nor
11 overburden municipal and governmental services in the Town of Vernon. I sponsor
12 copies of the Vernon Selectboard and Vernon Planning Commission letters as Exhibit
13 EN-TMT-2

14 Additionally, the Windham Regional Commission (or "WRC") responded to the
15 45-day notice by letter dated June 13, 2014. Entergy VY plans to meet with the WRC to
16 discuss the Project. We expect that many of the issues raised in WRC's June 13 letter
17 will be addressed at that meeting and in the course of these proceedings. I sponsor a copy
18 of the WRC's letter as Exhibit EN-TMT-3.

19

20 Q7. Is the Project required to meet the need for present and future demand for electric
21 service?

1 A7. This criterion is inapplicable as traditionally applied, because the Project is not related to
2 continued production of electricity by the VY Station, but the Project is a necessary
3 incident of the VY Station's operation that the Board previously found was needed to
4 meet the then present and future demand for electric service in Dockets 6545, 6812 and
5 7862.

6 Moreover, there is the potential for the site to be eventually re-used in the future
7 for electric generation after decommissioning of the VY Station has been completed,
8 because of the site's proximity to VELCO's 345/115 kV Vernon Substation. By enabling
9 decommissioning, the Second ISFSI storage pad will facilitate such potential re-use of
10 the site and its existing high-voltage infrastructure and thereby help to meet the present
11 and future demand for service at that time.

12
13 Q8. Will construction of the Project provide an economic benefit to the State and its
14 residents?

15 A8. Yes. The Project will promote economic activity in Vermont during its construction.
16 Construction is expected to begin in mid-July 2015 and be completed by July 31, 2017.
17 The Project is also expected to provide a benefit to the local economy as employees and
18 contractors will likely contribute to local businesses that provide accommodations and
19 food services.

20 Construction of the Second ISFSI storage pad is also needed to decommission the
21 VY Station and enable eventual, economically beneficial reuse of the site. The VY
22 Station cannot be fully decommissioned until all of the spent fuel is moved to dry-cask

1 storage. In addition, maintaining the spent fuel pool in operation to store spent fuel
2 requires continued compliance with the NRC's requirements for a number of necessary
3 systems (including cooling water pumps, heat exchangers, demineralizers,
4 instrumentation and security systems) and the continued employment of plant operator,
5 maintenance and chemistry personnel to operate and maintain these systems. The cost of
6 such continued compliance and employment can be eliminated after the Second ISFSI
7 storage pad is constructed and the spent fuel is moved to dry-cask storage. Without the
8 Second ISFSI storage pad, the costs associated with keeping the spent fuel pool in
9 operation to store spent fuel would be paid from the nuclear decommissioning trust,
10 slowing the growth of the trust balance and delaying the time when major
11 decommissioning activities can begin and be completed and when the site can be re-used
12 for economically beneficial purposes.

13
14 Q9. Will the Project have any impact on non-nuclear public health and safety?

15 A9. No. Entergy VY discussed the Project with the Windham County Sheriff's Office and the
16 Vernon Fire Department. Effective June 24, 2014, the Windham County Sheriff's Office
17 will be the primary law enforcement entity in the Town of Vernon responsible for
18 responding to any calls for police services at the VY Station. The Windham County
19 Sheriff, Keith D. Clark, informed Entergy VY that the Sheriff's Office can provide
20 adequate police services for the Project without undue burden on the office. The Sheriff
21 concluded that the Project will not have an undue adverse effect on the public health and

1 safety of the Town of Vernon. I sponsor a copy of Sheriff Clark's letter with my
2 testimony as Exhibit EN-TMT-4.

3 Entergy VY also discussed the Project with the Vernon Fire Department. The
4 Vernon Fire Department informed Entergy VY that the department can provide adequate
5 fire protection services for the Project without unduly burdening the department. The
6 Chief of the Vernon Fire Department concluded that the Project will not have an undue
7 adverse effect on the public health and safety of the Town of Vernon. I sponsor a copy of
8 Vernon Fire Department Chief Todd Capen's letter with my testimony as Exhibit EN-
9 TMT-5.

10
11 Q10. Is the Project in compliance with the 2011 Vermont Electric Plan, sections 3, 4 and 5 of
12 the 2011 Vermont Comprehensive Energy Plan (or "CEP"), or does good cause exist to
13 permit the Project?

14 A10. As the Board recently found in Docket 7862, the CEP does not take any position with
15 respect to the operation of the VY Station or spent fuel management. The CEP is a
16 forward-looking document that assesses available energy resources to meet projected
17 future demand and sets policies, strategies and goals for future planning. It therefore
18 seems doubtful that the CEP is applicable to this Project, which is not related to future
19 energy needs and resources to meet them. Nonetheless, as I previously explained, the
20 Second ISFSI storage pad could potentially facilitate the eventual re-use of the VY
21 Station site for electric generation that could help to achieve the goals of present and
22 future CEPs.

1 Assuming, however, the Second ISFSI Project is not in compliance with the CEP,
2 there is good cause to allow the installation of the Second ISFSI Project, because it will
3 allow Entergy VY to decommission the VY Station and permit eventual economically
4 beneficial re-use of the site.

5

6 **Non-Applicable Section 248 Criteria**

7 Q11. Does the Project have any potential to impact the stability and reliability of the electric
8 system?

9 A11. No. As explained in the prefiled testimony of George Thomas, the Project does not have
10 any components that could adversely affect system stability or reliability.

11

12 Q12. Is Entergy VY required to prepare a least-cost integrated-resource plan, or “IRP”?

13 A12. No. Entergy VY is not obligated to prepare and submit for approval an IRP, because
14 Entergy VY is a wholesale utility that does not distribute or transmit electricity to the
15 public. The Board has reached this conclusion in multiple orders, most recently in
16 Docket 7862.

17

18 Q13. Will the Project be served economically by existing or planned transmission facilities
19 without an undue adverse effect on Vermont utilities or customers?

20 A13. Yes. As explained in the prefiled testimony of George Thomas, the Project will not
21 require any changes to the transmission facilities required for the VY Station, and the

1 existing 12.4 kV AC distribution line connecting to the site is adequate to provide service
2 for security and lighting equipment at the ISFSI.

3
4 Q14. Does the Project involve a waste to energy facility or a facility that produces electric
5 energy using woody biomass, as considered by Section 248(b)(9) and (11)?

6 A14. No. The Project does not involve a waste to energy facility or a facility that produces
7 electric energy using woody biomass. Therefore, these criteria do not apply to the
8 Project.

9
10 **10 V.S.A. § 6522(b) Criteria**

11 Q15. What measures does Entergy VY have in place to provide adequate financial assurances
12 for the management of spent nuclear fuel?

13 A15. Initially, Entergy VY plans to recover spent fuel costs from the federal government
14 because these costs are caused by DOE's breach of its obligation to remove the spent fuel
15 under its contract. Under Section 302(a)(5)(B) of the Nuclear Waste Policy Act, 42
16 U.S.C. § 10222(a)(5)(B), DOE was required to commence disposing of commercially-
17 generated spent fuel no later than January 31, 1998, in return for the payment of fees by
18 utilities and others that generated or held title to the spent fuel. As the Board is aware,
19 DOE is in breach of its commitment, as no off-site, fuel-storage facility is currently
20 available.

21 Entergy VY has sued the DOE to recover damages caused by the DOE's breach
22 of its contractual obligation to accept spent fuel. Entergy VY has already recovered

1 approximately \$41 million for damages incurred through April 30, 2008, as a result of
2 DOE's breach. *Entergy Nuclear Vermont Yankee, LLC et al. v. United States of America*,
3 Docket No. 03-2663C (Fed. Cl. March 12, 2013). Consistent with the Federal Circuit
4 decision in a prior case that spent fuel plaintiffs may only bring claims for damages after
5 they have incurred the damages, *Indiana Michigan Power Co. v. United States*, 422 F.3d
6 1369, 1376-1378 (Fed. Cir. 2005), Entergy VY expects to continue pursuing damages as
7 they arise and, in fact, on April 24, 2014 filed its "Round 2" complaint to recover
8 damages incurred after April 30, 2008. Entergy VY expects that the direct costs of spent
9 fuel storage will be recoverable until the DOE removes the fuel from the VY Station,
10 apart from the cost of capital during the period between incurring the costs and
11 recovering them from the DOE.

12
13 Q16. What other assurances are there that Entergy VY has adequate financial resources
14 available for the management of spent nuclear fuel?

15 A16. The NRC regulates Vermont Yankee's funding for spent fuel management. It is worth
16 noting that the NRC's requirements in that regard are quite conservative because they do
17 not take account of future recoveries resulting from the DOE's breach of its contract to
18 remove spent fuel.

19 NRC regulations under 10 C.F.R. § 50.54(bb) required Entergy VY to submit,
20 five years before expiration of its original operating license, "written notification to the
21 Commission for its review and preliminary approval of the program by which the
22 licensee intends to manage and provide funding for the management of all irradiated fuel

1 at the reactor following permanent cessation of operation of the reactor until title to the
2 irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its
3 ultimate disposal in a repository.” Entergy VY submitted its program to the NRC on
4 March 21, 2007, and supplemented that submission on October 14, 2008 to show a
5 planned additional \$60 million deposit into the decommissioning fund that Entergy VY
6 expected to use to fund spent fuel management. On February 3, 2009, the NRC found
7 that “the VY spent fuel management program complies with 10 CFR 50.54(bb) and
8 approved the program on a preliminary basis.” On October 8, 2009, the NRC approved
9 on a preliminary basis an Update to Spent Fuel Management Plan for the VY Station that
10 took into account the then-reduced balance of the VY Station’s nuclear decommissioning
11 trust (at the end of 2008) as a result of the financial crisis that began in 2007.

12 The NRC will again review Entergy VY’s funding for spent fuel management
13 after Entergy VY files its post-shutdown decommissioning activities report (or
14 “PSDAR”). The PSDAR is required by 10 C.F.R. § 50.82(a)(4) to include “the projected
15 cost of managing irradiated [i.e., spent] fuel.” Under 10 C.F.R. § 50.82(a)(8)(vii), after
16 filing its PSDAR, Entergy VY also is required annually by March 31 to file a report on
17 “the status of its funding for managing irradiated fuel.” The latter report must include the
18 amount of funds accumulated to cover the cost of managing spent fuel, the projected cost
19 of managing spent fuel until title to the fuel and possession of the fuel is transferred to
20 DOE, and a plan to obtain additional funds to cover any shortfall between the
21 accumulated funds and projected cost. These filings provide the NRC the means to
22 continually assess the adequacy of funds for spent fuel management.

1 In order to use funds in the decommissioning trust for spent fuel management,
2 Entergy VY also will be seeking an exemption from the NRC under 10 C.F.R. § 50.12.
3 Entergy VY expects to file for that exemption in conjunction with submission of its
4 PSDAR. Entergy VY's exemption request will provide the NRC another opportunity to
5 consider the adequacy of Entergy VY's funding for spent fuel management and to
6 establish any appropriate conditions on the use of decommissioning trust funds for that
7 purpose.

8 Pursuant to the December 23, 2013 Settlement Agreement that the Board
9 considered in Docket No. 7862, Entergy VY will be providing a site assessment study of
10 the costs and tasks of radiological decommissioning, spent fuel management, and site
11 restoration of the VY Station by December 31, 2014. That study will provide the Board
12 and the parties to this proceeding additional information concerning spent fuel management
13 costs.

14
15 Q17. Are there any other assurances that Entergy VY has adequate financial resources
16 available for the management of spent nuclear fuel?

17 A17. Entergy VY has two credit agreements totaling \$70 million in place – a \$35 million credit
18 agreement with Entergy International Holdings, Ltd., LLC and a second \$35 million
19 credit agreement with Entergy Global, LLC – that are available as a source of funding for
20 spent fuel management in the near term. Entergy VY's NRC ownership and operating
21 license, which will remain in effect after the VY Station ceases operation at the end of
22 2014, requires that these credit agreements remain in place. Until such time as the NRC

1 removes that requirement from the operating license, these credit agreements provide a
2 source of funding for spent fuel management activities.

3
4 Q18. What commitments has Entergy VY made to remove all spent fuel from Vermont to a
5 federally certified long-term storage facility in a timely manner; consistent with
6 applicable federal standards?

7 A18. Under the MOUs in Dockets 6545 and 7082, Entergy VY committed to “use its
8 commercial best efforts to ensure that the high-level SNF stored at the [VY] Station is
9 removed from the site in a reasonable manner and as quickly as possible to an interim or
10 permanent location outside of Vermont.” Under paragraph 17 of the MOU in Docket
11 7862, that commitment remains in full force and effect. That commitment applies to all
12 spent fuel stored at the VY Station.

13 The DOE is contractually obligated to remove spent fuel from the VY Station,
14 although the date when it will perform this obligation is unclear at this time. As the Blue
15 Ribbon Commission on America’s Nuclear Future recognized in its January 26, 2012,
16 report, creating a safe, long-term solution for managing and disposing of the nation’s
17 spent nuclear fuel and high-level radioactive waste is an issue of national concern that
18 requires a consent-based solution. Under these circumstances, I do not believe that the
19 NRC will authorize the transportation of the VY Station’s spent nuclear fuel to, and the
20 storage of that spent nuclear fuel at, a site in another state without the agreement of that
21 state’s government. Consequently, there is little that Entergy VY can do on its own to
22 facilitate the removal of the VY Station’s spent fuel from Vermont. But when a solution

1 is developed to allow for the shipment of spent fuel from the VY Station site to a site
2 outside the state, Entergy VY will avail itself of that solution in a timely manner.

3
4 Q19. Has Entergy VY developed a spent fuel management plan that will facilitate the eventual
5 removal of spent fuel in an efficient manner?

6 A19. Yes. Entergy VY submitted to the Board a Spent Fuel Management Plan in 2006,
7 pursuant to the Board's order in Docket 7082 and 10 V.S.A. § 6522(b)(3). The plan was
8 most recently updated on June 26, 2014. George Thomas is sponsoring a copy of the
9 plan as Exhibit EN-GT-2. The plan indicates the need for the Second ISFSI storage pad
10 to be constructed as a part of decommissioning. As currently planned, Entergy VY will
11 transfer all the spent fuel in the spent fuel pool to dry-cask storage in two loading
12 campaigns, one in 2019 and one in 2020. The plan also includes procedures for the
13 transfer of spent fuel to a permanent repository as may be designated and approved by the
14 DOE at the earliest possible date.

15
16 Q20. The fourth criterion of Section 6522(b) requires that Entergy VY be in substantial
17 compliance with any memorandum of understanding entered between the state and the
18 applicant. First, can you identify the MOUs Entergy VY has entered with the state?

19 A20. Entergy VY has entered into MOUs with the state in the following dockets:

- 20 • Docket 6545
- 21 • Docket 6812
- 22 • Docket 7082

- Docket 7862

Entergy VY also entered into an Access Memorandum of Understanding in Docket 6545 that is intended to provide the State Nuclear Engineer with access to information necessary to monitor the VY Station's operation and management. In Docket 7862, Vermont's State Nuclear Engineer at that time testified that his access under the Docket No. 6545 Access MOU has been "very good."

Q21. Please summarize your position with respect to whether or not Entergy VY is in substantial compliance with these memoranda of understanding that Entergy VY entered into with the State.

A21. Entergy VY is currently in substantial compliance with all MOUs entered with the State. With regard to the MOUs in Docket 6545 and 7082, Entergy VY's operation beyond March 21, 2012, and storage of spent fuel from operation beyond that date, was effectively ratified by the Board's order in Docket 7862. Entergy VY is currently in compliance with all other applicable provisions of the Docket 6545 MOU. In 2009, Entergy VY determined that it was in noncompliance with one of the requirements of the Docket 7082 MOU and self-reported that noncompliance to the Board; that noncompliance was addressed through a settlement agreement among the parties in Docket 7544.

Apart from these issues that have now been addressed, Entergy VY has fulfilled its commitments to the State, including making the substantial payments required under the MOUs in Dockets 6545 (\$17.9 million in excess revenue sharing for 2013-2014),

1 6812 (\$15.2 million in State benefit fund payments), 7082 (\$15.6 million in Clean Energy
2 Development Fund payments), and 7862 (\$2 million for economic development, \$5.3
3 million for the Clean Energy Development Fund, and an initial \$10 million for the Site
4 Restoration Trust). These payments – on top of the taxes paid by Entergy VY based on
5 the VY’s Station’s generation, local tax payments, and the multiplier effects of the plant’s
6 highly trained and well-paid work force – have provided hundreds of millions of dollars
7 of economic benefit to Vermont and its citizens.

8

9 Q22. Does this conclude your testimony?

10 A22. Yes, at this time.