

STATE OF VERMONT

PUBLIC SERVICE BOARD

Petition of Entergy Nuclear Vermont Yankee, LLC, and)
Entergy Nuclear Operations, Inc., for amendment of their)
certificates of public good and other approvals required)
under 10 V.S.A. §§ 6501-6504 and 30 V.S.A. §§ 231(a),)
248 & 254, for authority to continue after March 21, 2012,)
operation of the Vermont Yankee Nuclear Power Station,)
including the storage of spent-nuclear fuel)

Docket No. _____

SUMMARY OF PREFILED TESTIMONY OF JEFFREY TRANEN

Mr. Tranen’s testimony provides an assessment of whether continued operation of the Vermont Yankee Nuclear Power Station is required to meet the need for present and future demand for service, which could not otherwise be provided in a more cost-effective manner through energy conservation, energy efficiency, and load management, as required by Title 30 of the Vermont Statutes Annotated, Section 248(b)(2); whether such approval would be consistent with the 2005 Vermont Electric Plan, as required by Section 248(b)(7); and whether such approval would be consistent with Sections 248(b)(3), and (4), regarding reliability, stability and economic factors. The information provided in his assessment also addresses in part the objectives and general and specific issues to be addressed in the public-engagement studies required by Title 30, Section 254, in particular portions of the need and practical-alternatives assessments referenced in Section 254(b)(1)(B) and Section 254 (b)(1)(C).

Mr. Tranen sponsors the following exhibits:

- | | |
|------------------|-----------------------|
| Exhibit EN- JT-1 | Curriculum Vitae |
| Exhibit EN-JT-2 | Resources Relied Upon |

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PREFILED TESTIMONY OF JEFFREY TRANEN

I. INTRODUCTION

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

2 A1. My name is Jeffrey Tranen. My business address is 1170 5th Avenue, 5D, New York,
3 New York, 10029.

4 Q2. Please state your educational and professional background.

5 A2. I am an electrical engineer by training. I attended the Massachusetts Institute of
6 Technology, where I received a B.S. and M.S. in electrical engineering, and subsequently
7 an Electrical Engineer Degree (meaning I completed the course work, but not the
8 dissertation, for a Ph.D.).

9
10 From 1970 to 1997, I held a variety of positions at New England Electric Systems
11 ("NEES"), an electric utility holding company in New England. I had various
12 responsibilities at NEES, including the development of NEES's corporate resource plan
13 that fully integrated environmental, economic, and reliability objectives. From 1993 to

1 1997, I was President of a NEES subsidiary, New England Power Company, that
2 operated the wholesale generation and marketing business for NEES.

3
4 During my time at NEES, I served on numerous New England Power Pool (“NEPOOL”)
5 and North American Electric Reliability Council (“NERC”) committees. In addition,
6 from 1995 to 1997 I served as Chairman of the NEPOOL Management Committee and
7 played an instrumental role in starting up the New England Independent System Operator
8 (“ISO-NE”).

9
10 From September 1997 until March 1999, I was the CEO of the California Independent
11 System Operator Corporation. My tenure there covered the startup and first year of
12 commercial operation of the ISO (from April 1998 through March 1999), during which
13 time I had significant involvement in the evolution of the ISO Tariff and the policies
14 affecting the markets and billing and settlements.

15
16 From March 1999 to February 2000, I was President of Sithe Northeast, a holding
17 company that owned and operated generation in the ISO-run markets in place in New
18 England, New York, and PJM.

19
20 From May 2000 to the present, I have been a Senior Managing Director at Lexecon,
21 focusing on the challenges associated with electricity industry restructuring, including the
22 development of a Regional Transmission Organization (“RTO”) in New England, the

1 potential refunds associated with the electricity crisis in California, and assistance to the
2 Board of the California ISO in managing the ISO during a transition in management with
3 a focus on market redesign.

4
5 I have testified before state and federal regulatory commissions. Details regarding my
6 educational background and experience can be found in Exhibit EN-JT-1.

7 Q3. For whom are you testifying?

8 A3. I am testifying on behalf of Entergy Nuclear Vermont Yankee, LLC, and Entergy
9 Nuclear Operations, Inc. (together “Entergy VY”), owner and operator, respectively, of
10 the Vermont Yankee Nuclear Power Station (“VY Station”) in Vernon.

11 Q4. What is the purpose of your testimony?

12 A4. Entergy VY proposes to relicense the VY Station for an additional 20 years beginning in
13 2012 when its current NRC operating license terminates. Section 248(b)(2) requires a
14 finding by the Public Service Board (the “Board”) that continued operation of the VY
15 Station is required to meet the need for present and future demand for service, which
16 could not otherwise be provided in a more cost-effective manner through energy
17 conservation, energy efficiency, and load management. Sections 248(b)(3) and (4)
18 require findings that the VY Station’s continued operation will not adversely affect
19 system stability and reliability and will result in an economic benefit to the state and its
20 residents. Section 248(b)(7) requires a finding that the VY Station’s continued operation
21 is in compliance with the 2005 Vermont Electric Plan (the “Plan”) or that there exists
22 good cause to permit continued operation. Entergy VY has asked me to provide my

1 assessment as to whether its proposed relicensing meets the standard in Sections
2 248(b)(2), (3) and (7). My testimony provides this assessment and also provides support
3 for Section 248(b)(4).

4
5 In addition, the public-engagement statute, 30 V.S.A. § 254, requires that the Vermont
6 Department of Public Service (the “Department” or “DPS”) arrange for studies to support
7 the General Assembly in its consideration of the extended operation of the VY Station
8 and that the Board consider the objectives of the studies and the general and specific
9 issues that the studies are required to address in its review of Entergy VY’s petition. Two
10 of the objectives of the studies overlap and are similar to the requirements of Section 248
11 (b)(2). Section 254 (b)(1)(B) requires that the studies identify and assess the potential
12 need for the operation of the VY Station and its long-term economic and environmental
13 benefits, risks and costs. Section 254 (b)(1)(C) requires that the studies assess all
14 practical alternatives to those set forth in the petition that may be more cost-effective or
15 that otherwise may better promote the general welfare. My testimony addresses portions
16 of these issues within the context of my Section 248 analysis and provides support for
17 positive findings regarding the potential need for and the value of the VY Station relative
18 to practical alternatives.

19 Q5. What resources have you relied upon in preparing your analysis?

20 A5. I have relied on resources listed in Exhibit EN-JT-2 as well as my 37 years of electricity
21 industry experience, most of which was spent in New England.

1 Q8. Describe why you believe that this requirement has been met.

2 A8. The Plan notes the major challenge facing electricity providers in Vermont of replacing
3 power contracts representing roughly two-thirds of the Vermont energy mix in the period
4 from 2012, when the Entergy VY contract ends, to 2015, when the Hydro-Quebec
5 contract ends.¹ The Draft Update to the 2005 Vermont Electric Plan (the “Plan Update”)
6 notes this same major challenge: “No issue in Vermont seems to loom larger in the
7 present energy planning environment than the approaching gap between committed
8 electricity supply and expected demand.”²

9
10 In addition, the Plan forecasts that both the demand for energy and peak requirements
11 will grow at a pace of roughly 1% through 2020.³ This forecast takes into account cost-
12 effective conservation, energy efficiency, and load management. The Plan Update
13 forecasts that the demand for electricity will grow at an annual average rate of 0.3% over
14 a twenty-year period if new DSM programs are pursued to their full cost effective and
15 achievable potential.⁴ A study prepared for the Vermont DPS by GDS Associates, Inc,
16 dated January 2007, concluded that “capturing the achievable cost effective potential for
17 energy efficiency in Vermont would reduce electric energy use by 19% by 2015.”⁵ If this

¹ 2005 Vermont Electric Plan, Executive Summary, page i.

² Draft Update to the 2005 Vermont Electric Plan, October 20, 2006, page 5.

³ 2005 Vermont Electric Plan, page 3-10, and Executive Summary, page iii.

⁴ Draft Update to the 2005 Vermont Electric Plan, pages 38 and 40.

⁵ Vermont Electric Energy Efficiency Potential Study, Final Report, January 2007, by GDS Associates, Inc., page 1.

1 were achieved, it would reduce demand to about 5% below current levels by 2015. In
2 this study, “achievable cost-effective potential” is defined as what can be attained at
3 aggressive funding levels and with a concerted, sustained campaign involving highly
4 aggressive programs and market interventions.⁶

5
6 All of these forecasts at best result in DSM measures holding the demand to roughly
7 current levels. This still leaves the very large gap of replacing the energy provided by the
8 Entergy VY and Hydro-Quebec contracts. Thus there is no question that there is a need
9 for Vermont supply after all cost-effective DSM measures are implemented.

10
11 Moreover, continued operation of the VY Station is required because it provides a
12 valuable resource to the New England region that helps Vermont electric customers from
13 economic, reliability, and environmental perspectives whether or not Vermont electricity
14 providers purchase power from Entergy VY. In Docket No. 6545, associated with the
15 sale of the VY Station, the Board stated “the general good of the state standard includes a
16 recognition of the value to Vermont of the benefits to the entire New England Power
17 Pool, from which Vermont purchases much of its power and upon which Vermont
18 depends for reliability.”⁷

⁶ id, page 7.

⁷ Cited in Order entered March 15, 2004, in Docket No. 6812 at 21.

1 I believe that relicensing also provides a valuable option to Vermont electricity providers
2 to achieve the goal of a diverse electric-supply portfolio that is encouraged in the Plan
3 and the Plan Update.

4 Q9. Why does the VY Station provide value to the region, and how does that help Vermont
5 electricity customers whether or not their electricity providers purchase power from
6 Entergy VY?

7 A9. First, the VY Station would help from an economic perspective by reducing the market
8 clearing price for energy in the ISO-NE market as compared to the price level if gas-fired
9 generation took the place of the VY Station in the ISO-NE dispatch. This is true of any
10 low-operating-cost generation or energy-efficiency resources, as shown in an analysis
11 published recently by ISO-NE. ISO-NE published a New England Electricity Scenario
12 Analysis on August 2, 2007.

13
14 This analysis explored the economic, reliability, and environmental impacts of various
15 resource outcomes for meeting the region's future electricity needs. The report notes, "In
16 the context of this analysis, adding large amounts of resources that produced large
17 amounts of electrical energy and had low operating costs and low emissions (as in the
18 nuclear and imports scenarios and sensitivity case that doubled energy efficiency)
19 reduced system-wide productions costs, energy prices, and emissions."⁸ There should

⁸ New England Electricity Scenario Analysis, August 2, 2007, page 7.

1 also be benefits associated with bilateral purchases of energy by the Vermont electricity
2 providers as a result of lower projected ISO-NE market prices.

3
4 These conclusions are also supported by a report presented to the Vermont General
5 Assembly on January 31, 2006, by the Department pursuant to Section 10 of Act 61
6 passed in 2005. The General Assembly asked the Department to report on the effect of
7 energy efficiency and renewable energy resources on the energy-market clearing price
8 and the implications for Vermont. The report estimated a reduction of roughly
9 \$0.41/megawatthours (“MWH”) in the energy-market clearing price for each 100
10 megawatts (“MW”) of round-the-clock load reduction for gas prices of \$8.00/mmbtu.⁹
11 With Vermont annual energy requirements at roughly 6 million MWH and the VY
12 Station at roughly 620 MW, this would lead to roughly \$15 million of savings annually
13 for Vermont. The study that developed the estimated price impact considered a 100 MW
14 round-the-clock load reduction, and it is unclear whether a 620 MW load reduction would
15 create roughly 6.2 times the reduction in market clearing price. However, I believe that it
16 is reasonable to assume that the benefit would be many millions of dollars.

17
18 In addition I would expect that the presence of the VY Station would also reduce the
19 fixed costs of achieving the Regional Greenhouse Gas Initiative (“RGGI”) goals for the
20 region by reducing the demand for investment in other resources necessary to achieve the

⁹ Vermont DPS Report to the Legislature pursuant to Section 10 Act 61, January 31, 2006, table 1 page 3.

1 goals. Also from an economic perspective, I expect that the operation of the VY Station
2 would reduce transmission losses by virtue of having generation closer to load in
3 Vermont than would likely be the case without the VY Station.
4

5 Second, the VY Station would likely reduce the dependence of the region on gas-fired
6 generation and thus enhance reliability. The ISO-NE scenario analysis concluded that
7 “across all scenarios and sensitivity cases, gas-fired power plants tended to be among the
8 last plants dispatched (the so-called marginal units) to serve typical daily loads in New
9 England to meet demand. These plants set the wholesale electric energy clearing prices
10 in most hours of the year, approximately 90% of the time.”¹⁰ As noted in the Plan, the
11 almost exclusive reliance on gas-fired generation for expansion in New England has
12 raised concerns about overdependence on gas and the potential for fuel-supply
13 disruptions and thus lower reliability.¹¹ The presence of additional base-load energy,
14 such as the VY Station, would typically reduce the reliance on gas-fired generation.
15

16 Third, the relicensing of the VY Station will help the region meet challenging
17 environmental goals in the future, especially related to the reduction in CO₂. Vermont
18 Governor Jim Douglas signed the RGGI Memorandum of Understanding on December
19 20, 2005, which supports aggressive reduction in CO₂ emissions from fossil-fired power
20 plants. Also, the Vermont General Assembly passed Acts 123 and 168 that were

¹⁰ Id, page 6.

¹¹ 2005 Vermont Electric Plan, page 7-19.

1 supportive of these goals and noted that the use of low- and zero-carbon generation is one
2 of the best means to achieve these goals.¹² The presence of a nuclear base-load unit in
3 the region significantly reduces the amount of energy produced by fossil-fired generation.
4 Many nuclear units have been retired in New England over the past decade, and none of
5 the approximately 30 new nuclear unit announcements are targeted for New England.¹³
6 Thus, continued operation of the VY Station may be the only way that New England can
7 continue to have even its current level of nuclear resources in its energy mix for many
8 years to come with the associated benefits in meeting the RGGI goals.

9 Q10. Describe why you believe that the VY Station provides a valuable option to Vermont
10 electricity providers to achieve the goal of a diverse electric-supply portfolio that is
11 encouraged in the Plan and the Plan Update?

12 A10. With roughly two-thirds of their energy coming from the Entergy VY and the Hydro-
13 Quebec contracts, Vermont electricity providers will have to replace most of their current
14 portfolio between 2012 and 2015. The Department is in the process of conducting a
15 comprehensive, statewide public-engagement process on energy planning (Vermont's
16 Energy Future) focused on energy-supply choices facing the state beginning in 2012 and
17 beyond. As part of this process, the DPS provided a background document that discussed
18 the options and issues to consider. The document states: "The most likely option for
19 nuclear power for Vermont on an ongoing basis primarily revolves around the Vermont
20 Yankee Plant.... Vermont utilities could purchase the output from other nuclear facilities

¹² Vermont Statutes, Title 10 Section 578, and Title 30 Section 255.

¹³ NERC 2007 Long Term Reliability Assessment 2007-2016, October 2007, Table 1, pages 84-85.

1 in New England, but Vermont's degree of leverage and long-term relationship is with
2 Vermont Yankee."¹⁴

3
4 In addition, in its recently published 2007 Integrated Resource Plan, Green Mountain
5 Power Corporation ("GMP") noted (at page 12): "At present, our most promising
6 replacement portfolio includes favorable renegotiated contracts with one or both of the
7 major expiring resources." Stress testing of various options also led GMP to conclude (at
8 page 13): "This analysis suggests that the portfolio GMP choose include significant
9 elements of Vermont Yankee, Hydro Quebec, and renewable energy generation."

10
11 Given the benefit that a nuclear resource can provide to Vermont electricity providers in
12 meeting the RGGI goals for the state as well as the diversity of fuel sources, continued
13 operation of the VY Station provides a valuable option for Vermont electricity providers.
14 This diversity of fuel in the Vermont energy portfolio could provide important price
15 stability. The ISO-NE Scenario Analysis showed the high potential future variability of
16 the average clearing price for wholesale electric energy, driven by the price of gas, with
17 average clearing prices ranging from roughly \$40/MWH to \$100/MWH in 2006
18 \$/MWH.¹⁵ A long-term contract with Entergy VY, including stable pricing mechanisms,
19 could mitigate some of this variability.

¹⁴ Vermont's Energy Future, A Deliberative Polling Event, November 3-4, 2007, Burlington, VT, page 37.

¹⁵ New England Electricity Scenario Analysis, Figure 5-1, page 50.

1 IV. SECTION 248(b)(3)

2 Q11. What is required to satisfy Section 248(b)(3)?

3 A11. The continued operation of the VY Station cannot adversely affect system stability and
4 reliability.

5 Q12. Why do you believe that this requirement has been met?

6 A12. In Docket No. 6812 relating to the upgrade in capacity of the VY Station, Entergy VY
7 committed to a number of actions required by ISO-NE to support a finding that Vermont
8 Yankee could not adversely affect system stability and reliability.¹⁶ The continued
9 operation of the VY Station does not propose to change the electrical characteristics of
10 the facility from those that were previously found to have met the requirements of this
11 section.

12 V. SECTION 248(b)(4)

13 Q13. What is required to satisfy Section 248(b)(4)?

14 A13. The continued operation of the VY Station must result in an economic benefit to the state
15 and its residents.

16 Q14. Why do you believe that this requirement has been met?

17 A14. There are numerous economic benefits to Vermont and its residents that are described in
18 the testimony of Messrs. Wiggett and Heaps and in my testimony. They describe
19 substantial estimated economic benefits associated with shared energy revenues above a
20 strike price, tax revenues and payroll and service expenditures that would be made by

¹⁶ Order entered March 15, 2004, in Docket 6812, at 23-24.

1 Entergy VY. In Section III of this testimony, I described the economic benefits that
2 would accrue to Vermont associated with the price of electricity whether or not Vermont
3 electricity providers purchased power from Entergy VY, including a reduction in the
4 market clearing price, an associated reduction in bilateral contract prices, a reduction in
5 the fixed costs of achieving the RGGI goals, and a reduction in transmission losses. In
6 addition, I described how the VY Station provides a valuable option to Vermont
7 electricity providers.

8 VI. SECTION 248(b)(7)

9 Q15. What is required to satisfy Section 248(b)(7)?

10 A15. Section 248(b)(7) requires a finding by this Board that continued operation of the VY
11 Station is in conformance with the Plan or that there exists good cause to permit
12 continued operation.

13 Q16. Describe why you believe that this requirement has been met.

14 A16. I believe that continued operation of the VY Station provides significant value to
15 Vermont's electricity consumers and thus is in conformance with the Plan and that there
16 exists good cause for approving Entergy VY's application in any event. I believe this
17 value includes:

- 18 • *Economics*: the price that Vermont electricity consumers pay for power is likely to be
19 lower if the VY Station continues to operate. In addition, Vermont electricity
20 providers will have a valuable option to include some portion of the VY Station in
21 their energy mix to achieve a diverse supply portfolio that is encouraged in the Plan
22 and the Plan Update.

- 1 • *Environmental*: the emissions impacts of the regional generation mix and potentially
2 the supply portfolios of Vermont electricity providers are likely to be lower if the VY
3 Station continues to operate.
- 4 • *Reliability*: the electricity service provided to Vermont's electricity consumers is
5 likely to be more reliable if the VY Station continues to operate.
- 6 • *Regional Responsibility*: the Board has recognized the benefits of membership in
7 NEPOOL, and continued operation of the VY Station is consistent with Vermont
8 meeting its responsibilities as a part of the New England region.

9 Q17. Describe why you believe that the price that Vermont electricity consumers pay for
10 power is likely to be lower if the VY Station continues to operate.

11 A17. I provided the basis for this belief in my ninth answer.

12 Q18. Describe why you believe that continued operation of the VY Station will provide a
13 valuable option for Vermont electricity providers to achieve a diverse supply mix and
14 thus greater price stability.

15 A18. I provided the basis for this belief in my tenth answer.

16 Q19. Describe why you believe that the emissions impacts in the region of the regional
17 generation mix and potentially the Vermont supply portfolio are likely to be lowered if
18 the VY Station continues to operate.

19 A19. I believe that it is likely that if the VY Station were not relicensed, the energy that would
20 replace Vermont Yankee in the regional supply mix would come from fossil-fuel
21 generation, predominantly from gas-fired units. In its Scenario Analysis, ISO-NE
22 concluded: "In summary, the results of the Scenario Analysis suggest that, absent policy

1 changes, natural gas resources will be the capacity of choice. The addition of natural gas
2 resources is consistent with recent experience, the types of resources in the queue,
3 projections of net revenues exceeding the annual revenue requirements for inexpensive
4 units, and the air emissions constraints, including RGGI.”¹⁷

5
6 Current ISO-NE forecasts are not projecting that energy efficiency will eliminate growth
7 in energy requirements. While studies for Vermont have shown that it is possible that
8 over time, aggressive energy efficiency programs can roughly eliminate the growth in
9 demand, this has yet to be demonstrated and has not been adopted on a region-wide basis.
10 The most recent ISO-NE Regional System Plan, dated October 18, 2007 (at Table 3-2 on
11 page 23), predicts annual growth in net energy for load of 1.2% with Summer peak
12 demand growing at 1.7% annually.

13
14 Further, while there are significant renewable resources that are being proposed in the
15 region and there are regulatory mandates to rely more on renewable resources than in the
16 past, I believe that it is unlikely that renewable resources will be able to meet all of the
17 future supply requirements.

18
19 Much of the proposed renewable supply is wind generation. While there is a large
20 theoretical potential for wind in New England, this is vastly different from estimates of

¹⁷ New England Electricity Scenario Analysis, August 2, 2007, page 8.

1 what may be economic and permissible. For example, Levitan Associates, Inc., did a
2 study for ISO-NE on the theoretical potential for wind generation, rather than the amount
3 that can be successfully permitted and commercially developed. The study concluded
4 that there was a theoretical potential for about 39,000 MW of wind generation in Maine.¹⁸
5 The study also noted that the Maine Public Utilities Commission concluded in a January
6 2005 report that the potential for wind power development that is economic,
7 environmentally sound, and publicly acceptable is about 1000 MW.¹⁹ Even the 1000
8 MW has yet to be demonstrated. Further, wind generation, by its nature, has a low
9 capacity factor and is not a replacement for base-load generation such as a nuclear unit.

10
11 Thus I believe the most likely replacement in the regional generation mix for the VY
12 Station if it were not relicensed would be gas-fired generation, which currently dominates
13 the queue of proposed generation in New England.²⁰ The energy to replace VY Station
14 power would come from some combination of these units and other marginally economic
15 fossil-fuel generation.

16
17 This generation would have air emissions in the region that would be avoided if the VY
18 Station continues to operate. Each year ISO-NE performs a “marginal emission rate”

¹⁸ Technical Assessment of Onshore and Offshore Wind Generation Potential in New England, 5/1/07 Study for ISO New England by Levitan and Associates, Inc., page (iv).

¹⁹ Id. Page 8

²⁰ ISO-NE Interconnection Request Queue, 12/12/07.

1 analysis, which estimates the air emissions that would have been produced by New
2 England generation if demand had been higher. This analysis can be used as a rough
3 proxy for the impact of a VY Station shutdown. In the most recent analysis, ISO-NE
4 estimated marginal emission rates of 1.75 lbs/MWH for SO₂, 0.54 lbs/MWH for NO_x,
5 and 1107 lbs/MWH for CO₂.²¹ Based on estimated annual production of 4,991,633
6 MWHs for the VY Station, continued operation of the VY Station would reduce annual
7 emissions in New England by roughly 8.75 million pounds of SO₂, 2.7 million pounds of
8 NO_x, and 5.5 billion pounds of CO₂. I would expect these numbers to decline over time
9 as older, higher-emitting generating units are retired.

10
11 These air emission reductions associated with continued operation of the VY Station are
12 benefits for the region whether or not Vermont electricity providers purchase power from
13 Entergy VY. However, as I noted earlier, continued operation of the VY Station creates a
14 valuable option for Vermont to include nuclear power in the Vermont energy portfolio,
15 which would allow these environmental benefits to be associated with the Vermont
16 energy portfolio directly.

17 Q20. Does the Plan address nuclear plant environmental impacts?

18 A20. The Plan discusses the status of high-level and low-level nuclear waste disposal, but takes
19 no position with regard to how to value the impacts associated with those issues.²² The
20 Plan does contemplate the continued operation of the VY Station after the expiration of

²¹ “2005 New England Marginal Emission Rate Analysis,” pages 17-18.

²² Plan at 4-8, 4-9.

1 its current operating license, while recognizing that a high degree of uncertainty exists as
2 to that occurring.²³

3
4 The Board considered the issue of nuclear externalities in its decision on the VY Station
5 uprate. They pointed out that there is no agreed-upon methodology for determining
6 externalities associated with nuclear energy and concluded that it is reasonable to assume
7 that the avoided fossil-fuel externalities associated with the operation of the VY Station
8 offset the nuclear externalities.²⁴

9
10 While the Board has not subsequently addressed the issue of nuclear externalities to my
11 knowledge, the State has taken actions since then that are more supportive of nuclear
12 power. As previously mentioned, Governor Douglas signed the RGGI MOU on
13 December 20, 2005, and the General Assembly passed new laws, as I described in my
14 ninth answer, that are supportive of low- or zero-carbon emissions generation. Further,
15 Dr. Lester notes in his testimony in this filing that the life-cycle greenhouse-gas
16 emissions from nuclear generation are at most a few percent of the greenhouse-gas
17 emissions from fossil-powered plants.

²³ Plan at 1-1.

²⁴ Order entered March 15, 2004, in Docket No. 6812, at 34.

1 Q21. Please describe why you believe that the electricity service provided to Vermont's
2 electricity customers is likely to be more reliable if the VY Station is relicensed.

3 A21. The Board has already taken the position, as I noted in my eighth answer, that grid
4 reliability is appropriately considered on a regional basis. The ISO-NE 2007 Regional
5 System Plan forecasts that additional supply is required for the region, absent retirements,
6 by 2010.²⁵ The Regional System Plan contemplates that the Forward Capacity Market
7 will result in the development of sufficient resources to meet the region's need for
8 capacity.²⁶ While the preliminary indications for the capacity market are very positive,
9 the actual development of new resources must still take place. There is clearly
10 uncertainty that adequate new resources will be constructed and operable by 2012 to
11 ensure regional reliability, whereas the VY Station is already operating.

12
13 Further, this does not address the issue of fuel diversity. As I noted in my ninth answer,
14 continued operation of the VY Station provides additional diversity in the regional
15 generation mix, which enhances reliability.

16
17 Finally, the Plan recognizes that reliability is enhanced where generation is located
18 relatively near load.²⁷ Thus, Vermont's electricity service is more reliable with the
19 continued operation of the VY Station than it would be if the VY Station were to close.

²⁵ ISO NE 2007 Regional System Plan, October 18, 2007, page 2.

²⁶ *Id.*

²⁷ Plan at 1-7.

1 Q22. Please describe why continued operation of the VY Station is consistent with Vermont
2 meeting its responsibilities as a part of the New England region.

3 A22. The Plan recognizes that “Vermont does not operate as an island,”²⁸ but is instead tightly
4 integrated with the other New England states. Accordingly, the Plan identifies a number
5 of policy areas, such as transmission planning, where Vermont collaborates with the rest
6 of the region. As a general matter, the Plan takes a regional view of reliability and
7 environmental matters.

8 Q23. Has the Board recognized this regional responsibility for the state of Vermont?

9 A23. Yes. In its order approving the uprate, the Board said:

10 The Board concluded in Dockets 4622/4724 that the
11 construction of a transmission interconnection between
12 Hydro-Quebec and the New England Power Pool met the
13 criteria of Section 248(b)(2), noting that “[a]s a state, we
14 must bear a reasonable proportion of the region’s
15 responsibility in the provision of power.”²⁹
16

17 Q24. Is approval of Entergy VY’s application consistent with these regional-responsibility
18 criteria?

19 A24. Yes. As I previously testified, retirement of the VY Station will most likely lead to
20 increased generation from fossil-fueled units in other states. By approving Entergy VY’s
21 application, the Board can help ensure that Vermont continues to provide a significant
22 share of the electricity its customers consume. Further, this generation does not produce
23 harmful air emissions. Also as I noted, maintaining the VY Station in the New England

²⁸ Plan at ii.

²⁹ Order entered March 15, 2004, in Docket No. 6812, at 21-22.

1 supply stack is likely to have a dampening effect on spot (and bilateral) prices and to
2 support Vermont reliability. Finally, retaining nuclear capacity enhances the diversity of
3 the region's fuel mix.

4 VII. SECTION 254(b)(1)(B) AND SECTION 254 (b)(1)(C)

5 Q25. Explain the requirements of Section 254(b)(1)(B) and Section 254(b)(1)(C).

6 A25. Section 254 of Title 30, Vermont Statutes Annotated, read together with Section 248
7 requires that Entergy VY file its petition for approval of continued operations with the
8 Vermont General Assembly. In support of consideration of the petition by the General
9 Assembly, the Department is required to conduct certain "public-engagement" studies
10 described in Section 254(b). Under Section 254(b)(1)(B), the studies are required to
11 identify and assess the potential need for the operation of the facility and its long-term
12 economic and environmental benefits, risks and costs. Under Section 254(b)(1)(C), the
13 studies are to assess all practical alternatives to the VY Station that may be more cost-
14 effective or that otherwise may better promote the general welfare. These studies are to
15 be considered by the Board in its review of Entergy VY's petition for approval of
16 continued operations of the VY Station after March 21, 2012.

17 Q26. How does your above testimony with respect to Section 248 also support these
18 assessments?

19 A26. The considerations reflected in Section 254(b)(1)(B) overlap in significant respects with
20 the requirements of Section 248(b)(2), Section 248(b)(3), Section 248(b)(4), and Section
21 248(b)(7). In addressing those Section 248 requirements earlier in my testimony, I have

1 explained why the VY Station is needed and how continued operation would provide
2 economic, reliability and environmental benefits to Vermont and the region.

3
4 The considerations reflected in Section 254(b)(1)(C) overlap, as well, with the
5 requirements of Section 248(b)(2). My earlier testimony addresses alternatives to the VY
6 Station and the advantages of continued operation of the VY Station relative to those
7 alternatives.

8 Q27. Does this conclude your testimony?

9 A27. Yes.