

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

) Docket No. 8880
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PREFILED TESTIMONY OF CHUCK SCHWER

On Behalf of the Vermont Agency of Natural Resources, Department of Environmental Conservation, Hazardous Waste Management Program

Summary of Testimony

Mr. Schwer is the Director of the Waste Management and Prevention Division within the Vermont Agency of Natural Resources, Department of Environmental Conservation. Mr. Schwer's testimony provides an overview of the applicable standards for non-radiological site restoration of the Vermont Yankee Nuclear Power Station (VYNPS). Mr. Schwer also explains the need for a complete non-radiological site investigation and characterization as a prerequisite for evaluating NorthStar's ability to comply with site restoration standards, including NorthStar's ability to achieve compliance within an estimated budget and avoid cost overruns.

Mr. Schwer sponsors the following exhibits:

- ANR-CS-1 Resume of Charles B. Schwer
- ANR-CS-2 NRC Docket No. 50-271-LT-2, Affidavit of Charles B. Schwer
- ANR-CS-3 Memorandum of Understanding (MOU) Among Entergy Nuclear Vermont Yankee, LLC, Vermont Yankee Nuclear Power Corporation, Central Vermont Public Service Corporation, Green Mountain Power Corporation, and the Vermont Department of Public Service (adopted by Public Service Board Order, Docket 6545, dated June 13, 2002)
- ANR-CS-4 Memorandum of Understanding (MOU) Among Entergy Nuclear Vermont Yankee, LLC, Entergy Nuclear Operations, Inc., Vermont Public Service Department, and Vermont Agency of Natural Resources (adopted by Public Service Board Order, Docket 7862, dated March 28, 2014)
- ANR-CS-5 October 2014 EVY Site Assessment Study

- ANR-CS-6 December 19, 2014 Entergy Post Shutdown Decommissioning Activities Report (PSDAR); Vermont Yankee Nuclear Power Station
- ANR-CS-7 Docket Nos. NRC-2015-0004, 50-271; Entergy Nuclear Operation, Inc., Vermont Yankee Nuclear Power Station Post-Shutdown Decommissioning Activities Report; Comments of the State of Vermont (filed March 26, 2015)
- ANR-CS-8 March 27, 2015 Entergy Response to ANR March 6, 2015 Request for Information and Records
- ANR-CS-9 June 5, 2015 Entergy Response to ANR May 15, 2015 Supplemental Request for Information and Records

1 **Q1. Please state your name, place of employment, and a description of your position.**

2 **A1.** My name is Charles (Chuck) B. Schwer. I am employed by the Vermont Agency of
3 Natural Resources (Agency) as the Director of the Agency's Waste Management and
4 Prevention Division (Division), which oversees the generation, management, disposal,
5 and remediation of non-radiological hazardous and solid wastes in the State of Vermont.

6 As Director, I manage an annual budget of approximately \$23M and provide overall
7 direction and supervision for the Division and its programs. I am responsible for the
8 supervision of 7 program managers and provide overall direction for the Division's
9 programs, including the Residual Waste and Emerging Contaminants Program, the
10 Hazardous Waste Management Program, the Solid Waste Management Program, the
11 Sites Management and Brownfields Response Program, the Emergency Response
12 Program, and the Storage Tanks and Salvage Yards Program. Also as Division Director,
13 I provide oversight and direction of Division priorities. Ensuring that the VYNPS site is

1 remediated in a timely manner that is protective of public health and environment
2 remains one of the highest priorities of the Division.

3 Recently, I assisted with the development and adoption of the Investigation and
4 Remediation of Contaminated Properties Rule, which became effective on July 27, 2017.
5 See **Exhibit ANR-GN-2**. This Rule protects the public health and the environment by
6 establishing regulations, procedures, and requirements for conducting investigations, and
7 corrective and remedial actions at sites where a release of hazardous materials has
8 occurred.

9 **Q2. Please describe your education, professional background, and tenure at the Agency**
10 **of Natural Resources.**

11 **A2.** I joined the Agency in 1990 as a supervisor/section chief in the Agency's Waste
12 Management and Prevention Division. Before my role as Director of the Division began
13 in 2014, I was the Section Chief of the Sites Management Section of the Division.

14 Other relevant work experience and positions include a position as Deputy Chief/Crew
15 Chief with the Vermont Hazardous Materials Response Team for the Department of
16 Public Safety; a position as Interim Solid Waste Program Manager with the Department;
17 a position on the Board of Directors for the Association of State and Territorial Solid
18 Waste Management Officials (ASTWMO) Region 1; and a member of the Board for the
19 Chittenden County Solid Waste District representing the Town of Huntington, Vermont.

20 I received my Masters of Science in Natural Resource Planning and Water Resources in

1 1986 from the University of Vermont. Prior to that, in 1982, I received a Bachelor of
2 Arts degree in Environmental Geology from St. Lawrence University. Other relevant
3 education and training includes successful completion of and graduation from the Agency
4 of Natural Resources' four-year Leadership and Management Training Program in 2001;
5 40-hour certification as a Hazardous Materials Response Technician in 1998; and
6 ongoing training as a member of the Vermont Hazardous Materials Response Team. I
7 regularly participated in radiological drills at the VYNPS and on a number of occasions I
8 directed teams that were conducting field measurements and tracking of simulated
9 radiological releases.

10 My resume is attached as **Exhibit ANR-CS-1**.

11 **Q3. While at the Agency, have you engaged in any training or classes related to your**
12 **work with non-radiological hazardous and/or solid wastes? If so, please identify**
13 **and describe.**

14 **A3.** In addition to the regular monthly training provided by the Hazardous Materials
15 Response Team, I also attend regular training opportunities organized by the Association
16 of State and Territorial Solid Waste Management Officials (ASTSWMO) and the
17 Northeast Waste Management Official Association (NEWMOA). These trainings
18 provide me the opportunity to stay abreast of the latest advances in the field of waste
19 management and site remediation.

20 Additionally, see Answer to Question 2 and **Exhibit ANR-CS-1**.

1 **Q4. What is the purpose of your testimony?**

2 **A4.** The purpose of my testimony is to describe the non-radiological site restoration standards
3 that apply to the VYNPS site, and why these specific site restoration standards are the
4 most protective of human health and the environment. Additionally, I explain my
5 concerns related to NorthStar Decommissioning Holdings, LLC's (NorthStar) cost
6 estimate for non-radiological site restoration activities in light of the fact that neither
7 NorthStar, Entergy Nuclear Vermont Yankee (ENVY), nor other Entergy entity has
8 provided the Agency with a complete non-radiological site investigation and
9 characterization report for the VYNPS site or a complete plan for generator closure of the
10 site. I also identify concerns regarding the adequacy of financial assurance for the
11 performance of non-radiological site restoration activities at the VYNPS site in light of
12 potential cost overruns, which could result from having incomplete plans for non-
13 radiological site restoration.

14 **Q5. Have you previously provided testimony to the Public Utility Commission, the
15 Environmental Court, or the District Commissions?**

16 **A5.** Yes. I have provided testimony in numerous enforcement cases before the Vermont
17 Superior Court Environmental Division.

18 **Q6. Please describe the scope of your review of the Petition.**

19 **A6.** My review of the Petition and the activities proposed therein is limited to issues related to
20 the generation, management and disposal of non-radiological wastes; releases and

1 remediation of non-radiological hazardous materials; and non-radiological site
2 restoration.

3 I have been involved in and supervise Agency employees who have been involved in a
4 number of proceedings, the filing of comments and other filings, and hearing related to
5 the closure of Vermont Yankee, including the State of Vermont's March 6, 2015
6 Comments on Entergy's proposed Post Shutdown Decommissioning Activities Report
7 (PSDAR).

8 I have also reviewed information related to and provided an affidavit in support of the
9 State of Vermont's Petition for Leave to Intervene and Hearing Request in the License
10 Transfer Proceeding, (Docket No. 50-271-LT-2). See **Exhibit ANR-CS-2**.

11 **Q7. Please describe the Agency's regulatory authority over non-radiological materials**
12 **and non-radiological waste-related activities.**

13 **A7.** The Agency has regulatory authority over the generation, management, and disposition of
14 materials and wastes that are subject to regulation under 10 V.S.A. chapter 159. These
15 materials include non-radiological hazardous waste, including low-level mixed waste
16 (low-level radioactive waste mixed with non-radiological hazardous waste, hereinafter
17 referred to as "LLMW"); non-radiological hazardous materials; and non-radiological
18 solid wastes that are generated, disposed of, and/or otherwise managed as a part of
19 routine operations, other site-related activities, and decommissioning and site restoration.
20 Among other things, this authority includes the authority to respond to and employ
21 emergency mitigation measures with respect to spills and releases of non-radiological

1 hazardous materials; the authority to require investigation and corrective actions to be
2 performed by parties responsible for releases of hazardous materials and resulting
3 contamination of environmental media; the establishment of site restoration standards
4 governing remediation; and the authority to require management and disposition of non-
5 radiological wastes (solid and hazardous) in accordance with applicable regulations and
6 procedures.

7 It is my understanding that Petitioners do not contest the Agency's jurisdiction over non-
8 radiological site restoration standards at the VYNPS site. This understanding is based on,
9 in part, paragraph 5 of the Docket 7862 MOU (adopted by Board Order on March 8,
10 2014), which states that "EVY expressly acknowledges the State's jurisdiction over site
11 restoration." See **Exhibit ANR-CS-3**.

12 **Q8. Please identify the Agency regulations and standards that apply to non-radiological**
13 **remediation and restoration of the VYNPS site.**

14 **A8.** With respect to regulations and standards administered by the Waste Management and
15 Prevention Division, the following apply to non-radiological waste-related activities at
16 the VYNPS and remediation and restoration of the site:

- 17 • Vermont Hazardous Waste Management Regulations, effective December 31, 2016
18 (VHWMR);
- 19 • Investigation and Remediation of Contaminated Properties Rule, effective July 27,
20 2017;
- 21 • Solid Waste Management Rules, effective March 15, 2012;

- 1 • Underground Storage Tank Rules, effective October 1, 2011; and
- 2 • Aboveground Storage Tank Rules, effective August 15, 2017

3 The activities proposed in the Petition are subject to all other State laws and regulations,
4 including those administered by other State and federal entities to protect public health,
5 public safety, and the environment. These other laws and regulations include other
6 environmental regulations administered by the Agency of Natural Resources (such as the
7 Groundwater Protection Rule and Strategy), and by the Vermont Department of Health
8 (such as the Vermont Radiological Health Rule).

9 **Q9. Have any site restoration standards for the VNYPS been approved by the**
10 **Commission to date?**

11 **A9.** Yes. In addition to the current laws and regulations referenced in my response to
12 Question 8, my understanding is that former Public Utility Commission Orders and
13 related multi-party MOUs have set certain standards that govern site restoration of the
14 VYNPS. These standards include the following:

- 15 • Site restoration standards necessary to support use of the property without limitation
16 (excepting any independent spent fuel storage installation “ISFSI” and any perimeter
17 to it). ¶ 5 Docket 7862 MOU (adopted by Board Order on March 8, 2014).
- 18 • Prohibition of use of rubbleization (i.e., demolition of above-grade decontaminated
19 concrete structure into rubble that is buried on site) at the VYNPS site. ¶ 5 Docket
20 7862 MOU (adopted by Board Order on March 8, 2014).

- 1 • Removal of all structures. ¶ 3 Docket 6545 MOU, (adopted by Board Order on June
2 13, 2002) (see **Exhibit ANR-CS-4**); ¶ 5 Docket 7862 MOU (adopted by Board Order
3 on March 8, 2014);
- 4 • Regrading and reseeding the land, as appropriate. ¶ 3 Docket 6545 MOU (adopted by
5 Board Order on June 13, 2002).

6 **Q10. Why are the site restoration standards that you identify above most protective of**
7 **human health and the environment?**

8 **A10.** First, the VYNPS site must be restored to standards that “support use of the property
9 without limitation”. ¶ 5 Docket 7862 MOU. The Agency considers “without limitation”
10 to mean that the property is remediated to current regulatory standards that are most
11 protective of human health and the environment. This would mean that the site is
12 remediated to residential environmental media standards (i.e., remediation and restoration
13 achieves residual levels of contamination that are low enough to present an acceptable
14 risk in a residential setting). In contrast, restoring the site to industrial environmental
15 media standards would pose unacceptable risks in a residential setting. Restoring the site
16 to residential environmental media standards is the most protective of human health and
17 the environment.

18 The prohibition on rubblization (i.e. burial of rubble on site) and the requirement to
19 remove all structures are most protective of human health and the environment because
20 these requirements help to eliminate any risk of latent or residual contamination that may
21 enter the environment from underground structures or buried rubble. Specifically, the

1 structures—and rubble from these structures—at the VYNPS site may be contaminated
2 or contain materials that are contaminated with non-radiological contamination as a result
3 of decades of operation as an industrial site and construction practices at the time the
4 facility was built. In addition, if contaminated underground structures are left in place or
5 contaminated concrete is buried on site there is the potential that residual contamination
6 could remain undetected below the surface, spread over time, and pose a risk to public
7 health and the environment.

8 Additionally, allowing underground structures to remain in place may limit future uses of
9 the site and/or may restrict future owners in the future development of the site due to the
10 inability to construct or install other infrastructure (e.g., foundations, wells, piping, etc.)
11 on or around the areas where underground structures remain.

12 The Board’s requirement to re-grade and re-seed the VYNPS site after decommissioning
13 and site restoration is consistent with the Board’s requirement that the site be restored to
14 support unlimited use, including residential use.

15 **Q11. Did the Commission approve a process for establishment of additional site**
16 **restoration standards for the VYNPS site?**

17 **A11.** Yes. The MOU adopted by Board Order in Docket 7862, in paragraph 5, states that “By
18 December 31, 2014, Entergy VY shall complete and shall provide to PSD, ANR, and
19 VDH a site assessment study of the costs and tasks of site restoration of the VY Station
20 site. The site assessment study also shall include, without limitation, a full assessment of
21 non-radiological conditions at the VY Station site.” Paragraph 5 of the MOU also states

1 that “[f]ollowing completion of this site assessment study, ENVY, PSD, ANR, and VDH
2 shall work in good faith to determine in a timely and cost-effective manner overall site
3 restoration standards” for the VYNPS site.

4 ENVY has not provided the State with a complete assessment of non-radiological
5 contamination at the VYNPS site. ENVY provided the State of Vermont a Site
6 Assessment Study on October 17, 2013. See **Exhibit ANR-CS-5**. The Agency identified
7 several gaps and deficiencies in the scope of the Study, and requested that the
8 deficiencies be addressed in the final version of the PSDAR. See **Exhibit ANR-GN-7**.
9 The Agency also requested additional information and documents related to specific
10 areas of the site that warranted further investigation for contamination, information
11 related to plans and timelines for conducting site investigation and remedial activities, as
12 well as a plan and timeline for a proposal to manage and dispose of non-radiological
13 hazardous waste from the site as necessary for closure of the site under the VHWMR.
14 The Agency’s requests for additional information included issuing two Requests for
15 Information and Records to ENVY on March 6, 2015 and May 14, 2015. See **Exhibits**
16 **ANR-SS-3** and **ANR-SS-5**.

17 The Agency did not receive a response from ENVY to its comments on the 2013 Site
18 Assessment Study. ENVY’s final PSDAR, submitted to the NRC on December 19, 2014,
19 (**Exhibit ANR-CS-6**) neither addressed the major gaps and deficiencies of the Site
20 Assessment Study as identified by the Agency. The Agency identified the outstanding

1 gaps and deficiencies in a filing made to the Nuclear Regulatory Commission on March
2 6, 2015. See **Exhibit ANR-CS-7**.

3 Though ENVY partially responded to the Agency's Requests for Information and
4 Records (see **Exhibit ANR-CS-8** and **Exhibit ANR-CS-9**), the responses were lacking in
5 several respects. First, much of the additional information provided in the responses was
6 unclear or raised additional questions and issues. Additionally, ENVY failed to provide
7 substantive responses to a majority of the Agency's information requests related to
8 ENVY's plan for addressing areas of concern on the site, including a comprehensive plan
9 for investigation and remediation of non-radiological waste contamination at the site:
10 namely, ENVY failed to adequately characterize all potentially impacted areas; did not
11 adequately characterize lead in building materials; and did not address possible PCB
12 contamination in wire sheathing, caulking, and paints throughout the plant site. In its
13 responses, ENVY asserted that many of the Agency's questions and requests for
14 additional site-related information were "premature" and/or could not be answered "until
15 other information becomes available, including the development of site restoration
16 standards". See **Exhibit ANR-CS-9** (multiple references in chart). Entergy also suggests
17 that the Agency's authority to request additional non-radiological site characterization
18 and other data is preempted by the Atomic Power Act and "intrude[s] impermissibly in
19 the NRC decommissioning process." See **Exhibit ANR-CS-8** (page 3 of Goodwin
20 Proctor letter, dated March 27, 2015).

1 **Q12. What changes do Petitioners propose to the site restoration standards you have**
2 **identified?**

3 **A12.** NorthStar proposes several changes to the site restoration standards I identified in my
4 response to Questions 8 and 9.

5 First, NorthStar's Petition proposes site restoration in accordance with soil screening
6 values for industrial sites, which is inconsistent with the requirement to conduct site
7 restoration in accordance with standards that allow for "unrestricted use" of the property,
8 which require restoration in accordance with residential standards for both soil and
9 groundwater. See **State PFT at 30:19 – 31:3**.

10 Second, NorthStar is proposing removal of underground structures (including pipes) to 4
11 feet below grade. See **State PFT at 31:10-31:17**. This is inconsistent with the current
12 requirement to remove all structures.

13 Third, NorthStar is also proposing to rubblize and reuse concrete rubble on the VYNPS
14 site. See **State PFT at 31:18-32:7**. The Commission has explicitly prohibited the use of
15 rubblization and reuse of concrete rubble on the VYNPS site, including rubble
16 originating from "decontaminated buildings".

17 Lastly, NorthStar's proposal for site restoration of the VYNPS is inconsistent with the
18 obligation to comply with all other applicable Vermont laws and regulations. The
19 IROCPP was an Agency procedure that defined both the required planning process and
20 standards for responsible parties in performing non-radiological site investigation and

1 corrective actions (including remediation and restoration) as a result of a release of
2 hazardous materials. The IROCPP has since been superseded by adoption of the
3 Agency’s Investigation and Remediation of Contaminated Properties Rule on July 27,
4 2017. NorthStar’s plan for site restoration includes compliance with the IROCPP
5 standards and NorthStar has stated that it “will not be subject to any future revised
6 version of the IROCPP or replacement of the IROCPP unless such revised version or
7 replacement were mandated by federal law”. See **State PFT at 30:18-31:3**.

8 **Q13. Do you have any concerns with the Petitioners’ proposal to allow structures to**
9 **remain in place and bury rubble on-site?**

10 **A13.** Yes. As I mentioned above, the removal of all structures, including complete removal of
11 all underground structures, and the prohibition of rubblization and reuse of concrete
12 rubble on-site is most protective of public health and the environment. I have specific
13 concerns about NorthStar’s proposal to remove structures to 4 feet below grade and
14 rubblize and reuse concrete on site).

15 First, no environmental sampling results have been provided to the Agency on any
16 underground structures or piping on the property to determine the actual degree and
17 extent of any non-radiological contamination of or in proximity of those structures (such
18 as asbestos-containing material, lead-based paint, PCBs, or other non-radiological
19 contaminants). Though NorthStar indicates that such characterization will take place,
20 NorthStar has not submitted a complete plan that explains when such sampling and
21 characterization will be performed, what methods of sampling and characterization will

1 be used, and or a plan for remediation of any contamination identified. This is
2 particularly important given the fact that it is not clear exactly what structures (i.e. pipes,
3 tanks, ductwork) NorthStar proposes to leave in place below four feet in addition to the
4 building structure.

5 Additionally, while NorthStar states that it will only use concrete for reuse that has been
6 sampled and meets approved site release criteria, NorthStar has not produced a complete
7 plan for when and how it will conduct such sampling, including what sampling methods
8 will be used, or a plan for remediation of any contamination of rubble material to be
9 reused on site.

10 **Q14. Is the Agency able to conduct a meaningful review of NorthStar's proposal for non-**
11 **radiological remediation and restoration of the VYNPS site?**

12 **A14.** No. As I indicated in my Response to Question 11 above, the Agency has, since 2015,
13 requested certain information regarding ENVY's proposed plans for non-radiological site
14 investigation and remediation, and a proposal for the management of non-radiological
15 hazardous waste generated at the site to achieve generator closure standards. The Agency
16 has received insufficient responses to many of these requests, and has additional concerns
17 about the petition.

18 Gerold Noyes is an Environmental Engineer with the Agency's Sites Management
19 Section with the Division that I manage. Mr. Noyes' Pre-filed testimony in this docket
20 identifies that of the site assessments of the VYNPS site conducted to date, none are
21 complete or meet the minimum requirements for a site investigation as required under the

1 Agency's Investigation and Remediation of Contaminated Properties Rule. See **Noyes**
2 **PFT (Answer 16)**. In fact, with the exception of the outdated 2001 ECS Phase I and
3 Phase II Environmental Site Assessment Report, no other assessment includes the results
4 of environmental sampling or otherwise identifies the degree and extent of non-
5 radiological contamination. See **Noyes PFT (Answer 17)**. As Mr. Noyes concludes,
6 without an understanding of the scope and extent of non-radiological contamination, the
7 Agency is not able to determine what corrective actions are required to protect human
8 health and the environment from non-radiological releases and remediate the
9 contamination at the site. Therefore, the Agency cannot determine whether NorthStar has
10 identified the full range of corrective actions required at the VYNPS site and, in turn,
11 whether its cost estimates for site restoration work are accurate.

12 Additionally, Mr. Simoes, Environmental Analyst with the Agency's Hazardous Waste
13 Management Program, points out in his Pre-filed testimony that the information provided
14 by Petitioners to date is not sufficient to enable a comprehensive understanding of the
15 plan for management of non-radiological hazardous waste generated on-site. In addition
16 to not receiving a generator closure plan for closure of the VYNPS in accordance with
17 VHWMR Subchapter 3 § 7-309(c), the Agency does not have sufficient information
18 regarding the methods by which materials will be characterized to determine whether
19 they are non-radiological hazardous waste, and therefore does not have sufficient
20 information regarding the plan for management and disposal of non-radiological
21 hazardous waste. See **Simoes PFT at (Answers 13 – A15)**. Without this information,
22 the Agency is unable to assess whether the proposed activities in the Petition are

1 sufficient to comply with management and disposal requirements for non-radiological
2 hazardous waste, including generator closure requirements.

3 **Q15. Are cost estimates for non-radiological site investigation, remediation, and**
4 **restoration (including management of non-rad hazardous waste management)**
5 **dependent on adequate site and waste characterization data? If so, what are the**
6 **implications of having inadequate data on cost estimates for these activities?**

7 **A15.** Yes. As Mr. Noyes and Mr. Simoes explain in their respective Pre-filed testimony,
8 the costs associated with remediation of non-radiological contamination and the
9 management and disposal of non-radiological hazardous waste are directly dependent on
10 several factors, including the amount and type of hazardous waste at the site, what
11 corrective actions are required to protect public health and the environment and remediate
12 the site, and costs associated with ultimate disposition of contaminated materials. In the
13 absence of information related to the scope and extent of non-radiological hazardous
14 contamination, an adequate plan for characterization of non-radiological wastes, and a
15 plan for management and disposal of wastes on site and generated through site-related
16 activities, there is significant uncertainty regarding what is required and what it will
17 ultimately cost to clean up the non-radiological contamination and complete site
18 restoration. Furthermore, without detailed plans for accomplishing these tasks, the
19 Agency cannot make a determination as to whether NorthStar's costs estimates for non-
20 radiological remediation and site restoration are accurate. The inability to accurately
21 estimate associated costs for non-radiological site clean-up and remediation could
22 ultimately result in cost overruns.

1

2 **Q16. Do you have any other concerns regarding the Petition filed by Entergy and**
3 **NorthStar? If so, please explain them.**

4 **A16.** Yes. These concerns are expressed through the Pre-filed Testimony of Gerold Noyes
5 and Steve Simoes.

6 **Q17. Does this conclude your testimony?**

7 **A17.** Yes.