PROPOSAL FOR DECISION

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7833

Petition of North Springfield Sustainable Energy Project LLC, for itself and as agent for Winstanley Enterprises, LLC, for a certificate of public good, pursuant to 30 V.S.A. Section 248, authorizing the installation and operation of a 25-35 MW wood-fired biomass electric generating facility to be located in the North Springfield Industrial Park in Springfield, Vermont, to be known as the "North Springfield Sustainable Energy Project"	))))))))	Hearings at Montpelier, Vermont March 14-15, April 1-2, 4, 2013

Order entered:

PRESENT: John J. Cotter, Esq., Hearing Officer

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I. INTRODUCTION

This case concerns a petition filed by North Springfield Sustainable Energy Project LLC ("NSSEP" or "Petitioner"), for itself and as agent for Winstanley Enterprises, LLC, seeking a certificate of public good ("CPG"), pursuant to 30 V.S.A. Section 248, authorizing the installation and operation of a proposed 25-35 MW wood-fired biomass electric generating facility in the North Springfield Industrial Park in Springfield, Vermont, to be known as the North Springfield Sustainable Energy Project (the proposed "Project"). In this Proposal for Decision, I recommend that the Vermont Public Service Board ("Board") deny the petition because the Project will unduly interfere with the orderly development of the region based on its trucking-related impacts to the local community. In the event the Board does not accept this recommendation, I propose that the Board impose several conditions in any order approving the Project.

In proposing this decision to the Board, I am cognizant of the fact that the Project would provide measurable benefits to the surrounding community and the state as a whole if it were constructed and operated; in particular, economic benefits in the form of increased jobs, wages and tax revenues. However, Section 248 requires that affirmative findings be made on each of the substantive criteria found in § 248(b) before the Board reaches the question of public good under § 248(a). And, while I have concluded that many issues arising from the petition could be addressed through the imposition of conditions, I cannot conclude that there are reasonable conditions that could be imposed to alleviate the undue impacts of the significant increase in truck traffic on two local streets leading to the entrance of the North Springfield Industrial Park that would attend the delivery of the wood chips needed to fuel the proposed facility. Accordingly, as described in more detail below, I am recommending that the Board deny the petition to construct and operate the Project because it would unduly interfere with the orderly development of the region and therefore fails to satisfy 30 V.S.A. § 248(b)(1).

Nothing in this Proposal for Decision should be construed to mean I have concluded that no commercial-scale, woody-biomass electric generation facility could be approved for construction and operation in Vermont. To the contrary, I recognize that, as a general

proposition, a woody-biomass electric generation facility could occupy an appropriate place in Vermont's energy portfolio, provided that such a facility is proposed for an appropriate, accessible location and would be operated so that it better comports with the requirements of Vermont and its ratepayers.

II. PROCEDURAL HISTORY

On December 22, 2011, NSSEP filed a petition with the Board requesting a CPG under 30 V.S.A. § 248 authorizing the construction of the Project – a 25-35 MW wood-fired biomass electric generating facility along with related improvements to be located in the North Springfield Industrial Park in Springfield, Vermont.

On January 31, 2012, a prehearing conference was held in this matter. Appearances were entered by: Kimberly Hayden, Esq., and Lisa Fearon, Esq.,[1] Downs Rachlin & Martin PLLC, on behalf of NSSEP; John Beling, Esq.,[2] and Jeanne Elias, Esq., on behalf of the Vermont Department of Public Service ("Department" or "DPS"); and Don Einhorn, Esq., and Judith Dillon, Esq., on behalf of the Agency of Natural Resources ("ANR"). In addition to these statutory parties, representatives of Vermont Natural Resources Council ("VNRC"), Beaverwood Energy, the Vermont Agency of Agriculture, Food and Markets ("AAFM"), Central Vermont Public Service Corporation ("CVPS"), the Town of Springfield, the Southern Windsor County Regional Planning Commission (together, "SWCRPC/Springfield"), and interested residents of North Springfield attended the prehearing conference.

On February 2, 2012, Hearing Officer McNamara[3] issued a Prehearing Conference Memorandum and Scheduling Order that established dates for a site visit and public hearing,

1. Attorney Fearon subsequently withdrew her appearance on behalf of NSSEP.

2. Geoffrey Commons, Esq., subsequently filed a substitute notice of appearance replacing attorney Beling.

3. John Cotter, Esq., a staff attorney at the Board, subsequently replaced Mr. McNamara as Hearing Officer in this proceeding.

motions to intervene, and a deadline for NSSEP to submit a proposed schedule for the remainder of the Docket.[4]

On February 28, 2012, a site visit was conducted to examine the Project site in the North Springfield Industrial Park, as well as from representative viewpoints in the area of the Project site. A public hearing was held that same evening at the Springfield High School. Forty-three members of the public spoke at the public hearing, the majority of whom opposed the Project. Concerns voiced by those opposed to the Project included impacts on air and water quality, aesthetics, increases in truck traffic, impacts on property values and tourism, and impacts on area forests. Those speaking in favor of the Project cited increases in economic activity and additions to the Springfield grand list, as well as positive jobs impacts in the town and region, including increased jobs in the area's logging sector. The Board also received numerous written comments on the Project. Again, the majority of these written comments opposed the Project, expressing concerns similar to those of the speakers at the public hearing. Written comments favoring the Project mirrored those expressed at the public hearing.

By Orders dated March 7 and 23, 2012, permissive intervention was granted to CVPS (hereinafter "GMP"),[5] SWCRPC/Springfield, the Town of Chester, AAFM, Springfield Regional Development Corporation ("SRDC"), North Springfield Action Group ("NoSAG"), and VNRC and National Wildlife Federation (together, "VNRC/NWF").[6]

On April 2, 2012, NSSEP filed a Motion to Alter or Amend the March 23, 2012, Order on intervention. NSSEP contended that the March 23 Order allowed parties to participate on the questions of need for, and the efficiency level of, the Project. However, NSSEP argued that it was exempt from demonstrating the need for the Project as normally required by 30 V.S.A.

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4. Docket 7833, Order of 2/2/12.

5. On June 15, 2012, the Board issued an Order in Docket 7770 approving a number of corporate transactions, some involving CVPS. Among those transactions was the merger of CVPS and Green Mountain Power Corporation ("GMP") with GMP remaining as the surviving entity. Accordingly, GMP is now the real party in interest and subsequent references in this Proposal for Decision will be to GMP rather than CVPS.

6. Docket 7833, Orders of 3/7/12 and 3/23/12.

§ 248(b)(2), and that plant efficiency is not relevant in Section 248 proceedings. NSSEP's motion was denied by Order dated April 30, 2012.[7]

Also on April 30, 2012, a Scheduling Order was issued setting forth a schedule for the remainder of the Docket.[8]

Consistent with the April 30, 2012, Scheduling Order, NSSEP filed supplemental testimony on June 1, 2012, addressing some concerns previously expressed by other parties by changing the Project design from a water-cooled system to an air-cooled system.

Several rounds of discovery were served upon NSSEP by other parties to the proceeding beginning on July 2, 2012.[9]

On September 7, 2012, NoSAG filed a Motion for Declaratory Ruling.[10] NoSAG's motion contended that the June 1, 2012, supplemental testimony submitted by NSSEP constituted a new Section 248 petition and that NSSEP did not meet the notice requirements for a new or amended petition, pursuant to Board rules. In addition, NoSAG asserted that NSSEP failed to supply a final and complete forest harvest plan, and that NSSEP's petition was incomplete without such a filing. NoSAG requested that the proceedings be stayed until such time as NSSEP filed a complete forest harvest plan and provided the notice required under Board rules and Section 248(f). NoSAG's motion was denied by Order dated October 10, 2012. However, that Order also made changes to the schedule to account for possible revisions to the

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7. Docket 7833, Order of 4/30/12 at 3-6 (*Order re: Motion to Alter or Amend*).

8. Docket 7833, Order of 4/30/12 (*Scheduling Order*).

9. Information exchanged during the discovery process led NSSEP to seek approval of a Protective Agreement and proposed Protective Order. Several parties objected to certain provisions in the Protective Agreement that the Board has, in the past, found to be an acceptable basis on which to grant Protective Orders. A variety of proposals were submitted seeking approval of amended versions of the standard Protective Agreement. On December 17, 2012, I issued a Protective Order re: Specified Discovery Documents granting confidential treatment to the documents that had given rise to the request for a Protective Agreement in the first instance. Because no other documents were claimed by NSSEP to be allegedly confidential, the need to rule on the newly proposed form of Protective Agreement was rendered moot. *See* Docket 7833, Order re: Specified Discovery Documents, and Order re: Protective Agreement, both dated 12/17/12.

10. NoSAG's motion was treated as a request for a stay because the September 7 filing did not fit the rule or the circumstances for a declaratory judgment action. Docket 7833, Order of 10/10/12 at 1 (*citing* PSB Rule 5.403).

forest harvest plan that was submitted as part of NSSEP's June 1, 2012, supplemental testimony and exhibits.[11]

On October 9, 2012, direct testimony was filed by NoSAG and the Department.

On October 10, 2012, direct testimony was filed by SWCRPC/Springfield, GMP, VNRC/NWF and ANR.

On October 16, 2012, NSSEP initiated discovery on the prefiled direct testimony of the non-petitioning parties. Additionally, on that same date, NSSEP filed supplemental direct testimony and exhibits regarding revisions to its forest harvest plan.

On October 18, 2012, an Order was issued establishing a schedule for discovery on NSSEP's revised forest harvest plan.

On November 16, 2012, AAFM filed direct testimony and exhibits.

On November 27, 2012, NSSEP filed rebuttal testimony and exhibits.

On November 28 and 29, 2012, direct testimony and exhibits were filed by ANR and the Department, respectively. The Department also filed supplemental direct testimony for one of its witnesses on November 30, 2012.

Discovery requests and responses were exchanged among the various parties during this time frame and continuing into January of 2013.

On January 14, 2013, VNRC/NWF filed a Motion to Amend Hearing Schedule. Responses to the motion were filed by NSSEP, the Department, ANR and NoSAG.

On January 25, 2013, I issued an Order cancelling the then-scheduled technical hearings and directing the parties to confer among themselves to arrive at a proposal for new hearing dates.[12]

On February 6, 2013, NSSEP filed a motion seeking a scheduling conference because the parties had failed to reach agreement on a new proposal for technical hearing dates. On that same date, NSSEP also filed a Motion to Compel seeking an order directing ANR to respond to certain discovery requests.

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11. Docket 7833, Order of 10/10/12 at 3-7.

12. Docket 7833, Order of 1/25/13 at 3-4.

On February 8, 2013, ANR filed a response to NSSEP's Motion to Compel.

On February 11, 2013, I issued an Order granting NSSEP's Motion to Compel.[13] Also on February 11, 2013, VNRC/NWF and ANR prefiled surrebuttal testimony and exhibits.

On February 15, 2013, NSSEP filed a Memorandum of Understanding between itself and AAFM (the "AAFM MOU").

On February 19, 2013, the Department and ANR prefiled surrebuttal testimony.

On February 21, 2013, NSSEP filed a Memorandum of Understanding between itself and GMP (the "GMP MOU").

On February 22, 2013, a scheduling conference was conducted by telephone to discuss new dates for technical hearings.

On February 28, 2013, I issued an Order establishing dates for technical hearings, and on March 11 and 25, 2013, I issued Orders regarding the scheduling of witnesses.[14]

On March 8 and 11, 2013, ANR and NoSAG filed objections to the admissibility of certain portions of the prefiled rebuttal testimony of NSSEP's witness, Daniel Ingold. On March 12, 2013, NSSEP voluntarily withdrew the portions of Mr. Ingold's rebuttal testimony to which ANR and NoSAG had objected.

On March 13, 2013, NSSEP filed amendments to the supplemental direct testimony of two of its witnesses, as well as a second Motion to Compel ANR to produce certain documents in response to earlier discovery requests served on ANR by NSSEP. Also, on March 13, 2013, NoSAG filed a letter stating its intent to object to the prefiled testimony of NSSEP witnesses Smith, Nelson and Raczynski during the technical hearing scheduled for March 14, 2013.

On March 14, 2013, NSSEP filed a Motion to Strike and Response to NoSAG's letter of March 13. Also on March 14, 2013, NoSAG filed a response to NSSEP's March 14 filing. NoSAG's objection to admissibility was overruled from the bench on March 14, 2013.[15]

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13. Docket 7833, Order of 2/11/13 at 7.

14. Docket 7833, Orders of 2/28/13, 3/11/13 and 3/25/13.

15. Tr. 3/14/13 at 101-02.

On March 20, 2013, ANR filed its response to NSSEP's second Motion to Compel, and on March 22, 2012, I issued an Order denying NSSEP's motion, but directing ANR to produce certain documents as a record request from the bench.[16]

On March 28, 2013, ANR filed a Motion to Alter or Amend, seeking amendment to the March 22, 2013, Order, requesting that it not be required to respond to the record request from the bench. NSSEP filed its response to ANR's motion on April 1, 2013. I denied ANR's motion from the bench during the technical hearing held on April 1.[17]

Technical hearings were held in the Board's hearing room at 112 State Street in Montpelier, Vermont, on March 14-15 and April 1-2 and 4, 2013.

On April 8, 2013, I issued an Order admitting the prefiled testimony and exhibits of VNRC/NWF witness Ann Ingerson into the evidentiary record, and on April 12, 2013, I issued an Order admitting certain exhibits moved into evidence by NSSEP during the April 4 technical hearings.[18]

On April 17, 2013, NSSEP filed a Motion for Reconsideration of the April 12, 2013, Order, requesting that additional exhibits be admitted into the evidentiary record.

Also on April 17, 2013, ANR filed its response to NSSEP's April 17 motion along with its own Motion for Reconsideration asking that certain exhibits found to be admissible in the April 12, 2013, Order be deemed inadmissible.

In an Order dated April 23, 2013, I granted in part NSSEP's Motion for Reconsideration, denied ANR's Motion for Reconsideration, and directed ANR to produce additional information with respect to two of the documents under consideration so that I could render a final ruling on the admissibility of those two documents.[19]

On April 26, 2013, ANR filed the information identified in the April 23 Order.

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16. Docket 7833, Order of 3/22/13 at 8-9.

17. Tr. 4/1/13 at 6.

18. Docket 7833, Orders of 4/8/13 and 4/12/13.

19. Docket 7833, Order of 4/23/13 at 3-4.

In an Order dated April 30, 2013, I sustained ANR's objection to the admissibility of these two documents.[20]

Briefs and reply briefs were filed by the parties on April 30 and May 14, 2013, respectively.

On July 3, 2013, NSSEP filed a Memorandum of Understanding between itself and Springfield ("Springfield MOU") and a separate Memorandum of Understanding between itself and ANR ("ANR MOU").

On August 6, 2013, I issued a Second Procedural Order re: Additional Process that established a schedule for consideration of the ANR MOU. In that same Order I declined to establish a schedule for consideration of the Springfield MOU because the signatories to the Springfield MOU did not seek to have their MOU entered into the evidentiary record. Accordingly, the terms and conditions of the Springfield MOU were not relied on in making my findings and recommendations to the Board in this Proposal for Decision.

On August 9 and 14, 2013, respectively, ANR and NSSEP filed testimony concerning the ANR MOU. NSSEP included a copy of the ANR MOU as an exhibit to its testimony.

On September 4, 2013, the Department and NoSAG each prefiled testimony addressing the ANR MOU.

On September 11 and 12, 2013, respectively, ANR and NSSEP each filed objections to the admissibility of the testimony of NoSAG's witness, Mr. Kischko, on grounds of competency and relevancy.

On September 18, 2013, in the absence of objection from any party, I issued an Order admitting into the evidentiary record the prefiled testimony and supporting exhibits filed by ANR and NSSEP on August 9 and 13, 2013, respectively, and by the Department on September 4, 2013.[21]

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20. Docket 7833, Order of 4/30/13 at 2-3.

21. Docket 7833, Order of 9/18/13 at 6.

On October 1, 2013, I issued an Order overruling the ANR and NSSEP competency objections to the admissibility of Mr. Kischko's testimony, and taking the relevancy objections under advisement.[22]

On October 14, 2013, a number of parties filed briefs in response to the ANR MOU. No party filed a reply brief addressing the ANR MOU.

III. PROJECT DESCRIPTION

Based on the evidence of record, I hereby report the following findings to the Board in accordance with 30 V.S.A. § 8(c).

Findings

1. NSSEP is a Delaware limited liability company with offices located at 36 Precision Drive, North Springfield, Vermont 05150. Pet. at 1.

2. NSSEP is an undertaking of Winstanley Enterprises, LLC, a family-owned and operated business that has redeveloped underutilized industrial properties in New England. Pet. at 1; Adam D. Winstanley, NSSEP ("Winstanley") pf. at 2.

3. To support development and operations, NSSEP joined Weston Solutions, Inc. ("Weston") as a development partner for the Project. Weston is an employee-owned company with its corporate office in West Chester, Pennsylvania, and offices throughout the United States. The Northeast Regional office is located in Concord, New Hampshire. Kathleen McGinty, NSSEP ("McGinty") pf. at 2-3.

4. For over 30 years, Weston has been involved in the permitting and development of projects utilizing cogeneration and renewable fuels. McGinty pf. at 3.

5. Weston currently has multiple cogeneration and renewable power projects in development ranging in size from 500 kW to 100 MW. McGinty pf. at 3.

6. The Project is a wood-fired 35 MW biomass electric generating facility that would be constructed on a 20-acre vacant but previously disturbed parcel of land owned by NSSEP on the

22. The relevancy objections are discussed later in this Proposal for Decision.

former Fellows Gear Shaper Factory property in the North Springfield Industrial Park. Pet. at 1-2.

7. The 35 MW figure refers to the nominal net capacity of the Project for the transmission voltage leaving the station. In the heat and mass balance analysis, NSSEP has calculated that in some cases the Project could generate over 40,000 kW. The highest turbine gross output would be 42,422 kW. Tr. 4/2/13 at 215-17 (H. Dana Smith, NSSEP ("Smith")).

8. The principal components of the Project include: (1) the boiler building (measuring approximately 145 feet long x 125 feet wide x 116 feet high); (2) the steam turbine generator building (measuring approximately 60 feet long x 125 feet wide x 44 feet high); (3) pollution abatement equipment and stack (measuring approximately 8 feet in diameter at the point of exhaust and 140 feet high); (4) six Hexacool air-cooled condenser ("ACC") modules (measuring approximately 275 feet long x 55 feet wide x 65 feet high); (5) three liquid storage tanks (including one 500,000-gallon raw-water storage tank to serve as a reservoir for process water and fire protection, a 50,000-gallon distillate fuel storage tank and a 15,000-gallon storage tank for anhydrous ammonia which is utilized by the pollution abatement equipment); (6) a transformer yard; (7) transport truck unloading facilities; and, (8) various fuel handling, transport and storage facilities, including a wood chip fuel shelter (measuring approximately 185 feet wide x approximately 200 feet long). Smith pf. (12/22/11) at 3-6, 15-16; Smith pf. (6/1/12) at 2-3, 5, 8, 11-13; Jeffrey A. Nelson, NSSEP ("Nelson") pf. (6/1/12 as revised 3/12/13) at 5; exh. Pet. Supp. JAN-1; tr. 4/2/13 at 197-98 (Smith).

9. The proposed location for the Project is a 20-acre parcel of land owned by NSSEP within the North Springfield Industrial Park. The site is a vacant lot to the east of 36 Precision Drive. Chauncey G. Morgan, NSSEP ("Morgan") pf. at 5.

10. Half of the area north of the Project site is used for the storage of drainage pipes by the Hancor, Inc. facility, and a large gravel pit borders the southern, eastern and the remainder of the northern border of the Project site. Morgan pf. at 5.

11. The environment in the immediate vicinity of the Project site is the existing North Springfield Industrial Park, which is comprised of large one and two-story industrial buildings

with predominantly metal and glass exteriors, flat roofs and beige or neutral coloration. Mark Kane, DPS ("Kane") pf. at 5.

12. The approach to the Project is along existing roadways serving other facilities within the industrial park. Exh. Pet. JEV-2 at 2.

13. Most of the Project's structural elements would be located in close proximity to the 36 Precision Drive facility, on the west end of the lot, and would occupy about 5 acres. Exh. Pet. JEV-2 at 2.

14. The largest Project building would house the boiler. It would be roughly 145 feet x 125 feet x 116 feet high. In front of the building would be duct work, the flue gas filter, a fuel oil tank, an ammonia tank, and the stack. Exh. Pet. JEV-2 at 2.

15. The stack would be located immediately to the north of the boiler building and would be approximately 8 feet in diameter and 140 feet high. Both the boiler building and stack would be painted a dark brown color. Other Project elements are likely to be a medium gray color. Exh. Pet. JEV-2 at 2.

16. West of the main building there would be a parking area for employees with approximately 21 spaces. Trucks entering the site would circle around the main boiler complex dropping off wood into a hopper, then exiting the site via an existing road next to 36 Precision Drive. Exh. Pet. JEV-2 at 2.

17. The Project would tie into GMP's Fellows Gear substation located on the southeast corner of the Project site. Smith pf. (12/22/11) at 3.

18. The Project would require replacement of the existing GMP distribution poles located at the Project's southerly property line with new poles that would be approximately 55-60 feet tall and would feature sub-transmission overbuild with distribution underbuild. Smith pf. (12/22/11) at 8.

19. NSSEP also proposes to construct a thermal loop to utilize waste heat from the Project. Waste thermal heat from the Project would be carried through a network of hot water piping and used to support a central heating service for the North Springfield Industrial Park commercial buildings ("District Heating System"). Smith pf. (12/22/11) at 13-15; exh. Pet. HDS-6; *see also* Smith pf. (6/1/12) at 9-11.

20. Heat energy for the District Heating System would be derived from steam from the second steam extraction port of the steam turbine generator. Steam extracted at this port has already passed through the high pressure stages of the steam turbine generator and has contributed to the production of electric power. Steam for the thermal loop would be available at the extraction source at 348 °F, 81 psia[23] and available by design in sufficient quantities to furnish up to 20 MM BTU (million British thermal units) to the heating system per hour. Extraction steam would heat the water circulating in the thermal loop for thermal utilization by the consumer. The system would be capable of delivery temperatures up to 300°F. The thermal loop is proposed to be a two-pipe, two-loop circuit on Precision Drive and Fairbanks Road. The delivery loop itself would utilize fully insulated steel pipe designed especially for use in district heating systems. Smith pf. (6/1/12) at 9-10; exh. Pet. Supp. HDS-8.

21. The piping configuration for the thermal loop is a double pipe, double loop configuration where one supply pipe and one return pipe exit the pumping station in one direction and another identical set of supply and return pipes exit the pumping station in another direction. Smith pf. (12/22/11) at 15.

22. In addition, NSSEP plans to include interconnection points to the District Heating System at the Main Street/Precision Drive and Main Street/Fairbanks Road locations to serve a so-called Community District Heating System. This would provide a potential opportunity for approximately 100 local residents to utilize the thermal loop to replace or augment their existing heating systems. Daniel Ingold, NSSEP ("Ingold") pf. (6/1/12 as revised 3/12/13) at 14.

23. Petitioner has committed to donate hot water to the Community District Heating System. Ingold pf. (6/1/12 as revised 3/12/13) at 15.

24. The original conceptual design for the Project, filed in December of 2011, utilized a water-cooled condenser technology and some of the by-product heat in a District Heating System that would serve the North Springfield Industrial Park. Ingold pf. (6/1/12 as revised 3/12/13) at 5.

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23. "Psia" stands for pounds per square inch absolute.

25. In response to concerns from the community, ANR, and others regarding the amount of process water required by the original design, NSSEP amended its petition on June 1, 2012, to revise the Project's design to utilize ACC technology in order to reduce the amount of process water needed for the Project. Ingold pf. (6/1/12 as revised 3/12/13) at 6.

26. The Project would make use of Bubbling Fluidized Bed ("BFB") combustor technology. The temperature of the fluid bed of the BFB would be 1,300°F to 1,600°F during plant operation. By design, the fluidized bed material is contained in open bottom hoppers, combustion air is introduced through a matrix of "bubble caps," and the bed material begins to "bubble" when heated, as if it were fluid. Smith pf. (12/22/11) at 8-9.

27. The selection of BFB technology offers several advantages over conventional stoker-grate technology, including: (1) more efficient combustion of the wood fuel and a corresponding reduction in the unburned carbon in the flue gas train; (2) due to the reduction in unburned carbon in the flue gas, it is not necessary to collect hot char in hoppers, eliminating the need for separation and re-injection equipment; (3) operating experience indicates that the BFB, by reason of a large mass of hot bed material, would have a more stable and constant combustion in the presence of fuel size and moisture variations commonly experienced in the fuel that would be fed from storage; and, (4) reduction in unburned char carry-over from the furnace combustion zone permits the option of a bag-house particulate collection system without additional equipment such as mechanical cyclone separators upstream of a filter bag house or, if used, an electrostatic precipitator. Smith pf. (12/22/11) at 11.

28. The air-cooled system proposed by NSSEP in its amended filing consists of multiple "Hexacool" units (Hexacool is the trade name of ACC units supplied by SPX Cooling Technology, Inc.). Each three-sided unit has heat exchangers, similar to car radiators, arranged vertically in a hexagonal shape when viewed from above. A fan at the top of each hexagon "cell" draws air through the heat exchangers. These units would be located where the water-cooled towers were to be placed in the original conceptual design. Ingold pf. (6/1/12 as revised 3/12/13) at 6; Smith pf. (6/1/12) at 2-3; exh. Pet. Supp. HDS-10.

29. The amount of water needed for the water-cooled design initially proposed by NSSEP would have been 500,000 to 550,000 gallons per day, and up to 740,000 gallons per day on dry summer days. The air-cooled system proposed for the Project would allow the Project to operate with materially less process water. The amount of water needed would be 30,000 gallons per day or less, mostly for boiler blow down and reverse osmosis backwash, and would not require a Groundwater Withdrawal Permit. Smith pf. (6/1/12) at 4; Ingold pf. (6/1/12 as revised 3/12/13) at 7; tr. 4/1/13 at 53 (Nelson).

30. Water would be supplied by two sources: rooftop rainwater harvesting and municipal water from the Town of Springfield water system. Ingold pf. (6/1/12 as revised 3/12/13) at 8.

31. The amount of water required would be consistent throughout the year and it would be independent of weather conditions, so that even on peak design days (e.g., 95 degree summer days), less than 30,000 gallons of process water would be required. This is less than 5% of the peak design day water-based cooling system requirements originally proposed. Ingold pf. (6/1/12 as revised 3/12/13) at 7.

32. As a result of the significantly reduced water intake, the process wasteflow stream to a proposed subsurface leachfield was also significantly reduced with the air-cooled system. As a result, the leaching field area has been reduced to 25,000 square feet from the originally planned 200,000 square feet. Smith pf. (6/1/12) at 5.

33. The ACC cooling system does not produce a water vapor plume because air-cooled condensers do not rely upon water as the cooling medium. The boiler exhaust stack would still produce a vapor plume on cooler, high relative humidity days. Smith pf. (6/1/12) at 7.

34. The estimated cost of constructing the Project is approximately $168 million dollars. Exh. Pet. RWH-2 at 2.

35. The Project would have an operational footprint that extends well beyond its built footprint in the industrial park due to the ongoing need to harvest wood from area forests to fuel the boiler for the life of the Project. Findings 92 through 177, below.

36. The NSSEP wood-fueled boiler has an equipment life expectancy of 50 years or more. Ingold pf. reb. at 8.

37. Each year, the Project would consume approximately 450,000 green tons of wood fuel, of which approximately 300,000 green tons would be harvested from Vermont forests annually. Sandy Wilmot, ANR ("Wilmot") pf. at 6; Ingold pf. reb. hrvst. at 11-12.

38. The 300,000 green tons of wood to be harvested annually from Vermont's forests for consumption by the Project would be roughly equivalent to the amount of Vermont-sourced wood that is consumed by the existing McNeil and Ryegate woody-biomass electric generation facilities combined. Tr. 4/4/13 at 252 (Wilmot).

39. It is estimated that the Project's wood fuel demand would require 200 to 300 individual harvest operations each year in Vermont alone. Tr. 4/2/13 at 61 (Ingold); tr 4/4/13 at 253 (Wilmot).

40. Using NSSEP's estimate of 200 harvest operations in Vermont, the annual Vermont footprint of harvesting for the Project would be 20,000 acres. Tr. 4/2/13 at 66 (Ingold).

Discussion

In its petition, NSSEP seeks authority to construct and operate a "wood-fired 35 MW biomass electric generating facility."[24] However, various witnesses have testified to differing capacities for the generator, ranging as high as 42,422 kW.[25] In order to avoid potential confusion, if the Board approves the Project, I recommend that any such approval make clear that it authorizes the construction of a generator with a 35 MW net capacity, and a gross capacity not to exceed 42.5 MW.

Additionally, should the Board approve the Project, I recommend that the Board make it clear that any such approval does not include legal authorization for NSSEP to construct the District Heating System, including the interconnection points for the Community District Heating System, and therefore does not relieve NSSEP of any obligation it may have to secure any collateral permits that may be needed for that construction.

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24. Pet. at 1.

25. Tr. 4/2/13 at 215-17 (Smith).

An electric generation facility that requires a CPG under Section 248 is exempt from Act 250 and from local zoning.[26] However, where a proposed improvement does not bear a "reasonable relationship" to and cannot be considered part of an electric transmission or generating facility, having in mind the broad meaning to be ascribed to the word "facility," it does not fall within the Board's direct supervision under Section 248 and therefore is not exempt from otherwise applicable Act 250 or local zoning requirements.[27] In this case, I conclude that the proposed thermal heat loop does not bear the necessary reasonable relationship to, and cannot be considered part of, the electric generating facility so as to invoke the Board's direct supervisory authority. The petitioners in Dockets 7678 and 7679 sought to construct two wood-fired biomass electric generation facilities, and in each case proposed to use the waste heat from the boilers in an adjacent wood-pellet manufacturing facility. In both of those cases, the Board found that there was not a sufficient relationship between the electric generation facilities and the wood-pellet facilities to bring the latter within the Board's jurisdiction and thus exempt those facilities from review under Act 250 or local zoning. And, in those two cases, the wood-pellet facilities were somewhat more related to the generation facilities than the thermal loop proposed in this proceeding, because the boilers proposed in Dockets 7678 and 7679 would actually use waste wood from the pellet facilities as part of their fuel mix.[28]

If the wood-pellet facilities in Dockets 7678 and 7679 were not sufficiently related to the generating facilities in question to invoke the Board's direct supervisory authority under Section 248, then the thermal loop system proposal in this proceeding does not invoke the Board's direct supervisory authority either, and any Board approval of the Project would not relieve NSSEP from its obligations to seek and obtain any necessary Act 250 or zoning permits, as well as any other applicable collateral permits, for construction of the facilities serving that system.

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26. 10 V.S.A. § 6001(3)(D)(ii); 24 V.S.A. § 4413(b).

27. *Petition of Beaver Wood Energy Pownal*, LLC, and *Petition of Beaverwood Energy Fair Haven, LLC*, Dockets 7678 and 7679, Order of 4/1/11 at 9 (*quoting* Op. Vt. Att'y Gen., No. 715 (Aug. 5, 1971) at 172).

28. Dockets 7678 and 7679, Order of 4/1/11 at 12-14.

I am also aware that NSSEP and Springfield have executed the Springfield MOU which in part requires NSSEP to take additional responsibility for deploying certain infrastructure for the Community District Heating System beyond that which has been proposed in this proceeding. However, that MOU was not submitted into evidence and therefore cannot be considered by the Board in rendering its findings in this proceeding.[29] Accordingly, the findings above related to usage of the Project's thermal waste heat are limited to those supported by the evidentiary record in this proceeding.[30]

IV. REVIEW OF THE PROJECT UNDER THE SECTION 248 CRITERIA

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

Findings

41. The Project would unduly interfere with the orderly development of the region. This finding follows after due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality. This finding is supported by findings 42 through 55, below.

42. The Project is proposed to be located in the North Springfield Industrial Park. Morgan pf. at 4.

43. Currently, the industrial park experiences an average of 1,060 vehicle trips per weekday, with approximately 235 of those trips being made by heavy vehicles, including box and tractor trailer trucks. Exh. Pet. DS-2 at 4.

44. The Project would require, on average, the delivery of five truckloads of wood chips per hour. Peak hour deliveries could result in as many as 12 truckloads of wood chips per hour.

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29. 3 V.S.A. § 809(g).

30. Notwithstanding my conclusion that the Board does not have jurisdiction to authorize the construction of the District Heating System, I recommend the Board still evaluate whether the proposed system should be a required condition of approval for the Project as explained in the section of this Proposal for Decision addressing the public good.

Deliveries would occur Monday through Friday between the hours of 7:00 a.m. and 5:00 p.m. David Saladino, NSSEP ("Saladino") pf. at 3-4; tr. 3/14/13 at 149-50 (Saladino).

45. Seasonal variations in wood supply and transport conditions may result in varied delivery rates and extended delivery hours. Wet ground during mud season may limit wood supply for certain time periods, while higher delivery rates may occur prior to or immediately following mud season to maintain adequate fuel supplies. The Project has the capacity to process up to 12 delivery trucks in a single hour. Saladino pf. at 3-4.

46. Each delivery results in two truck trips, one entering the industrial park and one leaving the industrial park. Tr. 3/14/13 at 150 (Saladino).

47. Due to weight restrictions imposed by the Town of Springfield on bridges at both the western and eastern ends of Main Street, heavy vehicles are required to access the industrial park by a single route, turning from Route 10 onto South County Road, turning from South County Road onto Main Street, and then turning from Main Street into the industrial park on Precision Drive. Departing trucks must utilize the same roadways when leaving the industrial park. Exh. SWRCP-1 at 7-8; tr. 3/14/13 at 148-49 (Saladino).

48. During times of average deliveries, there would be ten truck trips per hour for a total of 100 truck trips per delivery day. Peak hour deliveries could result in 24 truck trips per hour and, although it is unlikely that peak hour conditions would last an entire delivery day, could potentially result in as many as 240 truck trips per delivery day. Tr. 3/14/13 at 149-50, 198-200 (Saladino).

49. The additional truck traffic that would be caused by the Project would result in an increase to existing truck traffic levels on the roads entering and exiting the industrial park of anywhere from roughly 50% to 100% based on average versus peak hour operating conditions. Findings 43 through 48, above.

50. The increase in truck traffic related to the Project would result on average in one truck trip every six minutes in addition to the existing truck trips on South County Road and Main Street. Peak hour trips would create an additional truck trip every 2.5 minutes on top of existing levels. Findings 44 and 48, above.

51. There are several residences located along South County Road and Main Street which would be passed by the Project's truck traffic. Tr. 3/14/13 at 89-90 Jean Vissering, NSSEP ("Vissering") and 153 (Saladino).

52. When two trucks approach the intersections of Route 10 and South County Road or Main Street and South County Road from opposite directions, one truck must stop prior to the intersection to allow the other truck to proceed. This is because the trucks must cross over into the oncoming lane of travel to negotiate these intersections. Exh. SWRPC-3 at 3.

53. The Town of Springfield Town Plan states that activities within the industrial park should focus primarily on industrial uses. However, the plan notes that large truck access to the industrial park is a problem because of the small residential streets leading to the park. As a result, the plan states a preference for activities in the park that do not rely on large truck access. Exh. Pet. JEV-3 at 81.

54. The Town of Springfield Town Plan states that the priority for growth in the industrial park is reuse of existing structures for industrial purposes. Pet. JEV-3 at 81.

55. The Town of Springfield Town Plan identifies the Springfield East Industrial Park as an area suitable for development of industry that relies heavily on trucks due to its access to Interstate 91. Pet. JEV-3 at 81.

Discussion

NSSEP and the Department both assert that the Project would not unduly interfere with the orderly development of the region. Both NSSEP and the Department point to provisions in the Town Plans of Springfield and Chester, as well as the Southern Windsor County Regional Plan, that support the use of wood biomass for energy uses. NSSEP and the Department also note the Project's proposed location in the North Springfield Industrial Park and state that this proposed location is consistent with the Springfield Town Plan's preference for locating new industrial activities within the industrial park.[31]

NoSAG contends that the Project would unduly interfere with the orderly development of the region, arguing that the Project would be inconsistent with the Springfield Town Plan as a

31. NSSEP Brief at 14-17; Department Brief at 4-5.

result of noise and light pollution, air pollution in the form of emissions from the stack, and increased truck traffic for fuel deliveries.[32]

The Project is proposed to be located in the industrial park, which, if it had better truck access, would appear to be a reasonable location for a woody-biomass electric generation facility. However, the industrial park has only limited access for the large trucks needed to deliver fuel to the Project. Due to municipal weight restrictions on bridges at both ends of Main Street, every truck is required to follow the same route both into and out of the industrial park, traveling on both Main Street and South County Road. Neither of these roads is wide enough to accommodate the necessary turning radius of a large truck without the truck crossing over into the opposite lane of travel to complete the turns onto and off of these two roads. Under current conditions without the Project, it is apparently not unusual for one truck to have to stop in advance of reaching one of these intersections to allow an oncoming truck to negotiate a turn by crossing over into the oncoming lane of travel.[33] During the course of a 45-minute observation period in March of 2012, the witness for SWCRPC/Springfield observed approximately 10 to 12 tractor-trailer type trucks negotiating the turns at the intersection of South County Road and Route 10. During that limited time period three conflicts occurred between trucks attempting to exit and enter South County Road at the same time, requiring one truck to stop before reaching the intersection to allow the oncoming truck to proceed. Additionally, the trucks were observed typically driving down the center of the road, even though South County Road is 29 feet wide. Similar conditions were observed at the intersection of South County Road and Main Street.[34]

Construction and operation of the Project at the proposed location would increase the amount of truck trips on South County Road and Main Street by anywhere from roughly 50% to

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32. NoSAG Brief at 13-15. NoSAG also discusses the height of the proposed stack in relation to air pollution and impacts to the nearby airport. *See* NoSAG Brief at 15-17. Those topics are addressed later in this Proposal for Decision in relation to air pollution and transportation systems. NoSAG also proposes several findings to demonstrate that the Project is inconsistent with certain regional standards. However, NoSAG did not provide any citations to the evidentiary record to support these proposed findings as required by PSB Rule 2.222.

33. *See* Finding 52.

34. Exh. SWRPC-3 at 3.

100% of current levels, increasing the likelihood of additional truck conflicts at the two intersections and exposing those living along the roads to the attendant impacts of a large increase in truck traffic on their residential streets, such as increased times of noise from trucks traveling on the roads, and from having to stop and accelerate again due to intersection conflicts.[35]

The Springfield Town Plan specifically recognizes the existing problem with large truck access because of the small residential streets leading to the industrial park, and states a clear preference for new businesses within the industrial park that do not rely on large trucks.[36] Rather, the plan identifies the Springfield East Industrial Park as an area suitable for development of industry that relies heavily on trucks due to its access to Interstate 91.[37] The plan also states a preference for activities in the industrial park that reuse existing buildings, rather than those that require construction of new buildings.[38]

Construction and operation of the Project in the industrial park would be counter to these express policies in the town plan and lead to a substantial increase in large truck traffic on Main Street and South County Road, which already are experiencing truck conflicts at their intersections under current conditions.

NSSEP's expert witness on orderly development and aesthetics examined the provisions in the town plan that discuss the industrial park for purposes of aesthetics analysis and concluded that the language regarding limited truck access was not related to aesthetics and therefore did not constitute a clear, written community standard for purposes of that analysis. However,

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35. Tr. 3/14/13 at 120-22 (Duncan).

36. "Large truck access in this area is a problem because of the small residential streets leading to the industrial area. Therefore, uses that do not require large truck access are preferred in this area." Exh. Pet. JEV-3 at 81.

37. "'Springfield East' Industrial Park – An area has been set aside for industrial development next to the Southeast Vermont Correctional Facility. This area has quick access to Interstate 91, and is therefore suited for industry with large volumes of trucks." Exh. Pet. JEV-3 at 81.

38. "The priority for growth in this area is the reuse of existing structures for industrial purposes." Exh. Pet. JEV-3 at 81.

NSSEP's expert did not consider the provisions discussed here when performing an orderly development review under criterion (b)(1).[39]

I recognize that the Project is consistent with other provisions of the Springfield Town Plan, including the promotion of renewable energy resources and the location of industrial activities within the industrial park.[40] However, in light of the town plan's language expressing a contrary goal, I conclude that a significant increase in truck traffic on the two residential streets leading to the industrial park would unduly interfere with the orderly development of the region, and I therefore cannot recommend that the Board make an affirmative finding under this criterion.

If the Board does not accept this recommendation and decides to approve the Project, I recommend several conditions related to deliveries of fuel to the Project site in the section of this Proposal for Decision that addresses impacts on transportation systems that would help limit, to some degree, impacts on residences located on these local streets.

Need for Present and Future Demand for Services

[30 V.S.A. § 248(b)(2)]

Findings

56. The Project would meet a need for present and future demand for service which could not otherwise be provided in a more cost-effective manner through energy conservation programs and measures and energy efficiency load management measures, including but not limited to those developed pursuant to the provisions of subsection 209(d), section 218c, and subsection 218(b) of Title 30. This finding is supported by findings 57 through 62, below.

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39. Tr. 3/14/13 at 77-79 and 92-93 (Vissering).

40. Exh. Pet. JEV-3 at 60. NSSEP also cites to the same page of the Springfield Town Plan in support of the harvesting of wood from area forests. However, the town plan's support for wood harvesting is specifically directed at harvesting wood for heating purposes, and does not mention the less efficient use of wood fuel to generate electricity.

57. The Project developers are in negotiations with Vermont distribution utilities for possible Purchase Power Agreements ("PPA"). However, there are no agreements yet in place. Tr. 4/2/13 at 173-74 (Ingold).

58. Absent a PPA with Vermont utilities, the Project would not help meet any Vermont needs for energy or capacity, nor would it help with meeting Vermont's renewable energy goals. Asa Hopkins, Department of Public Service ("Hopkins") pf. (10/9/12) at 6; Hopkins pf. sur. at 2; tr. 3/15/13 at 92-93 (Hopkins).

59. Absent any PPAs with Vermont utilities, the Project will likely operate as a merchant generator, selling its energy, capacity, and other attributes and products on the relevant open markets, in this case the ISO New England energy and capacity markets and potentially Renewable Energy Certificates ("RECs") on various state REC markets. Hopkins pf. (10/9/12) at 6.

60. It is possible that the Project could help meet a regional need for renewable energy because five New England States have adopted a Renewable Portfolio Standard ("RPS"). It is likely that the Project would meet the RPS eligibility requirements in at least one of those states. Hopkins pf. (10/9/12) at 8.

61. State RPS policies are subject to revision. Biomass electricity in particular may be the subject of eligibility changes due to its connection with forest health. Massachusetts recently tightened its RPS eligibility requirements for woody-biomass generating plants. Hopkins pf. (10/9/12) at 8.

62. Currently, there is ongoing conversation in New England about the appropriateness of woody biomass in the context of renewable portfolio standards. As a result, it is uncertain whether woody biomass generation in general, or this Project in particular, would be eligible to participate in any regional RPS programs going forward. Tr. 3/15/13 at 99 (Hopkins).

Discussion

NSSEP asserts that the Project meets the need criterion because it would contribute to the need of Vermont and the region for power generally and renewable power specifically. According to NSSEP, Vermont's renewable energy goals are directed at addressing the concerns

of Vermont as a state and as a regional presence as demonstrated by the state's participation in the Regional Greenhouse Gas Initiative. NSSEP also states that the Project's sale of RECs into the New England market, along with the jobs and other economic benefits that would result from the Project, would assist in meeting the goal of ensuring "'to the greatest extent possible the economic benefits of renewable energy in the state flow to the Vermont economy in general, and to the rate paying citizens of the state in particular.'"[41]

The Department takes the position that the Project would not assist in meeting Vermont's needs for energy, capacity or any renewable energy attributes absent a PPA between NSSEP and a Vermont distribution utility. The Department also notes that at this time there is excess capacity to generate needed energy on a regional basis, a situation that is expected to continue into the foreseeable future. Nonetheless, the Department contends that the Project meets the need criterion because the RECs that would be generated by the Project have value in the regional market and thus would assist in meeting the regional need for renewable power, though at the same time the Department acknowledges the uncertainty over the extent to which woody-biomass harvesting practices might impact the value of RECs from woody-biomass projects.[42]

NoSAG contends that the Project does not meet the need criterion due to the lack of a PPA with Vermont utilities, the existence of excess capacity on a regional level, and because the combined capacities of the McNeil and Ryegate biomass facilities already meet the state's goals for woody-biomass generation.[43]

I recommend that the Board find the Project meets the need criterion by virtue of its participation in the regional energy market and not because the Project meets a regional need for renewable energy. Based on the record in this case, it is not clear that the Project will meet a regional need for renewable energy because there are too many questions surrounding the Project's long-term qualifications to sell RECs to utilities in other New England states.

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41. NSSEP Brief at 20 (*quoting* 30 V.S.A. § 8001(a)(1)).

42. Department Brief at 6-7.

43. NoSAG Brief at 18.

As an initial matter, it is clear that the Project would not meet any state needs for capacity or energy, nor would it assist the state in reaching its renewable energy goals,[44] absent PPAs with Vermont utilities. However, the Board in the past has found the need criterion met where the output of a proposed generation facility would be sold into the regional market because such sales have the beneficial effect of placing downward pressure on regional wholesale prices, which in turn would benefit Vermont ratepayers to some degree.

For example, in Docket 7250, the Board stated:

> Here, we find that the Project would provide power that is needed by the region. The Project will add to the pooled resources that serve the region and should thereby contribute to lowering the wholesale price of power, which should, in turn, lead to lower retail costs for Vermont consumers. Thus, although there may not be a specific need in the short term for power in Vermont, the Project ultimately serves Vermont needs even without purchases by Vermont utilities.[45]

Similarly, in Dockets 4622/4724 the Board concluded the need criterion was met by the construction of a transmission interconnection between Hydro-Québec and the New England Power Pool, noting that "[a]s a state, we must bear a reasonable proportion of the region's responsibility in the provision of power."[46]

Furthermore, I am aware of Board precedent recognizing that renewable energy facilities can help meet a regional need for renewable energy. For example, in Docket 7156, the Board stated:

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44. 30 V.S.A. § 8002(17) defines renewable energy as "energy produced using a technology that relies on a resource that is being consumed at a harvest rate at or below its natural regeneration rate." Provided the Project harvests its wood fuel in a sustainable fashion in compliance with the ANR MOU, discussed later in this Proposal for Decision, it would presumably qualify as a renewable power facility under this definition. However, confirmation of such a presumption could only be made after analysis of the Project's rate of consumption of wood fuel harvested in Vermont compared to the regeneration rate of Vermont's forests.

45. *Amended Petition of Deerfield Wind, LLC*, Docket 7250, Order of 4/16/09 at 24.

46. *Petition of Vermont Elec. Power Co.*, Dockets 4622/4724, Order of 2/25/83 at 18 (discussing HV/DC transmission line across northeastern Vermont).

> UPC's Project would contribute to meeting the regional need for power generally while also helping to meet the region's need for renewable power.[47]

In Docket 6911, the Board found that a proposed project met the need criterion because:

> [n]ot only would EMDC's Project help meet the regional need for power in general, it would also help meet a regional need for renewable resources in particular.[48]

In both of these cases, as well as in Docket 7250, the Board recognized a project's ability to meet a regional need for renewable energy through the sale of RECs into the regional market. However, in each of these cases the ability of the projects to produce renewable energy and to participate in other New England states' REC markets was never in question. In this case, it is not clear that the output of the Project will remain eligible to satisfy the RPS of other New England states over the course of the Project's life. For example, Massachusetts recently tightened its eligibility standards for participation in its RPS program, requiring a woody-biomass plant to operate at a minimum efficiency level, and to achieve certain minimum greenhouse gas reductions over the course of 20 years.[49] Based on the minimum efficiency requirement alone, it appears the Project would not qualify for the Massachusetts program. Additionally, other New England states are examining the suitability of woody biomass in the context of renewable portfolio standards and therefore it is not certain whether woody-biomass generation in general, or this Project in particular, would be eligible in the long term to participate in any regional RPS programs. Therefore, there is no clear basis for determining that the Project would, in fact, assist in meeting a regional need for renewable power during the full course of its useful life.

Thus, based on the foregoing, I recommend the Board find that the Project meets the need criterion solely by virtue of its participation in the regional energy market.

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47. *Amended Petition of UPC Vermont Wind, LLC*, Docket 7156, Order of 8/8/07 at 29.

48. *Petition of EMDC, LLC*, Docket 6911, Order of 7/17/06 at 23.

49. *See* 225 CMR 14.00.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

Findings

63. The Project, with appropriate conditions, would not have an adverse impact on system stability and reliability. This finding is supported by findings 64 through 73, below.

64. The Project would interconnect with GMP's 46 kV transmission system running between the North Springfield Substation and Fellows Gear Substation. In order to create this interconnection, the 46 kV North Springfield-Fellows Gear line would be tapped and a line would be extended a short distance to the proposed facility. David P. Estey, NSSEP ("Estey") pf. at 4.

65. A feasibility study was performed in 2008 which examined the thermal, voltage, and short circuit conditions associated with a possible 30 MW generation facility and identified the following necessary upgrades in order to interconnect such a facility without adversely impacting system stability and reliability: (1) reconductoring of approximately 0.25 miles of 46 kV line between the North Springfield and Fellows Gear Substations; and (2) upgrade GMP's North Springfield substation with a new circuit breaker, associated relays and ancillary equipment and communications on the 46 kV line to the Fellows Gear Substation. Estey pf. at 5-6; exh. Pet. DPE-2 at 1.

66. The results of the feasibility study for a 30 MW biomass generation facility indicate that the 35 MW facility proposed by NSSEP would result in thermal overloads of the 477 kcmil[50] transmission conductors serving the vicinity. Estey pf. at 8.

67. Upgrades can be made to address the thermal overload issues. Estey pf. at 9-10.

68. NSSEP entered into the GMP MOU to avert potential adverse impacts on GMP's system should the Project interconnect with that system. Exh. Pet./GMP-1.

69. The GMP MOU requires NSSEP to complete both a System Impact Study ("SIS") through the Independent System Operator ("ISO") interconnection process and a Facilities Study. The GMP MOU further requires NSSEP to implement all upgrades and interconnection facilities

50. Kcmil refers to the size of the conductor. One kcmil is a unit of area equal to one thousand circular mils.

identified by these studies and to develop such operating protocols as are necessary or required to avoid adverse impacts on the safety, stability and reliability of GMP's electric system. Exh. Pet./GMP-1 at 3.

70. The GMP MOU provides that NSSEP must pay for the costs associated with the SIS and the Facilities Study, as well as the costs of implementation of any required upgrades and interconnection facilities. Exh. Pet./GMP-1 at 3.

71. The specifics of any upgrades that would be required to interconnect the Project would not be known until completion of the SIS and Facilities Studies. Therefore, at this time it is not possible to assess the impacts, if any, that such upgrades would have under the substantive criteria of Section 248. Tr. 3/15/13 at 130-31 (Jones).

72. Once the ISO interconnection process is completed, the GMP MOU provides that NSSEP and GMP would enter into an appropriate interconnection agreement to allow the parallel interconnected operation of the Project with GMP's system. Exh. Pet./GMP-1 at 3.

73. It is possible that the interconnection and operation of the Project could result in overall system losses on the GMP system. Tr. 3/15/13 at 132 (Jones).

Discussion

Provided that the terms and conditions of the GMP MOU are complied with, interconnection of the Project would not have an adverse effect on system stability or reliability.

NSSEP and the Department both assert that the Project can be operated without adverse impacts to system stability and reliability provided the SIS and Feasibility Study are completed and that all necessary upgrades and facilities identified in those studies are implemented.[51] The Department also proposes a number of conditions that would require NSSEP to file the results of the SIS with the Board, allow parties an opportunity to comment, and oblige NSSEP to comply with any conditions the Board might impose after reviewing the SIS results.[52]

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51. NSSEP Brief at 21-22; Department Brief at 8.

52. Department Brief at 8.

NoSAG contends that NSSEP has not demonstrated that the Project would not result in adverse impacts to system stability and reliability because the required studies have not yet been performed.[53]

I recommend that the Board find NSSEP has met this criterion by virtue of Mr. Estey's testimony and the GMP MOU. The combination of Mr. Estey's prefiled testimony and the requirements of the GMP MOU provides a sufficient evidentiary basis for such a finding, provided that the terms and conditions of the GMP MOU are followed. However, I note that interconnection and operation of the Project will require a number of upgrades or modifications to GMP's existing facilities that would serve the Project. Unless and until there is certainty that any required upgrades or modifications will be approved for construction, it makes little sense to allow construction of the Project to commence. Based on the foregoing, I recommend the Board impose the following conditions on any approval of the Project:

> The GMP MOU is adopted and its terms and conditions are hereby incorporated into this Order. NSSEP shall comply with the terms and conditions of the GMP MOU.
>
> NSSEP shall conduct the required System Impact Study and Facilities Study prior to commencing construction of the Project. The System Impact Study shall specifically address system losses, if any, that would result from interconnection and operation of the Project.
>
> NSSEP shall file the results of the System Impact Study and Facilities Study with the Board, and parties with standing on system stability and reliability shall have 14 calendar days to file comments on the studies.
>
> NSSEP shall implement all necessary or required system upgrades or interconnection facilities identified in the System Impact Study and Facilities Study at NSSEP's sole expense.

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53. NoSAG Brief at 19. NoSAG also proposes a finding regarding a lack of analysis on impacts to aesthetics and wetlands from any expansion of the North Springfield Substation that might be identified by the SIS and Facilities Study. The proposed finding is not relevant to a determination of system impacts from the Project. In any event, if the substation requires upgrades that would alter its footprint, any potential impacts from that activity would be analyzed in a separate Section 248 proceeding that would be necessitated by the upgrades.

NSSEP must obtain any required Board approval for any necessary upgrades identified in the System Impact Study and Facilities Study prior to commencing construction of the Project, including any Section 248 CPGs that may be required for the upgrades.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

Findings

74. The Project would result in an economic benefit to the state and its residents. This finding is supported by findings 75 through 89, below.

75. The Project is expected to generate significant new jobs, income and tax revenues. Richard W. Heaps, NSSEP ("Heaps") pf. at 4.

76. NSSEP performed an analysis using a regional economic model maintained by Regional Dynamics Inc. ("REDYN"). The REDYN model is a dynamic, multi-regional, endogenous, input-output economic and demographic model based on the North American Industrial Classification System. The model estimates a range of economic impacts such as employment, wages, and tax revenues. It also estimates demographic impacts. Exh. Pet. RWH-2 at 6.

77. Based on this analysis, the following economic gains are anticipated to result from the Project:

- the creation of over 600 jobs in Vermont during the Project's 18-month construction period, 400 of which would be in the two-county region of Windsor and Windham counties;
- the creation of over 160 new jobs in Vermont during the operation of the Project;
- a jobs payroll of nearly $9 million annually statewide during the operation of the Project;
- an increase in state tax revenues of approximately $4 million during construction, and approximately $3 million annually during the operation of the Project;
- approximately $15 million in annual wood purchases from local foresters, two-thirds of which is expected to come from Vermont sources; and,

- an approximately $2 million net annual increase to the budgeted revenues for the Town of Springfield, amounting to approximately 25% of property tax receipts at the current tax rate.

Heaps pf. at 5.

78. The Project would cost $168 million to construct, about $43.5 million of which would be spent on specialized equipment which may not be produced in Vermont. The remaining construction spending would have a direct and significant impact on Vermont employment. Construction would take approximately 18 months. Exh. Pet. RWH-2 at 2.

79. During its operation the Project would need approximately 28 employees and would have a payroll of approximately $2.1 million in today's dollars. Exh. Pet. RWH-2 at 2.

80. The Project would be fueled by wood products from the surrounding forest lands within an approximately 50-mile radius of the plant. The plant would purchase approximately $14.7 million per year in wood fuel from local suppliers beginning with operation of the plant. Exh. Pet. RWH-2 at 8.

81. It is possible that the Project would spur additional development in the North Springfield Industrial Park by turning the waste heat from the boiler into heating for the tenants of the industrial park. Exh. Pet. RWH-2 at 8.

82. During the last ten years, Vermont's population grew slowly, increasing by a total of 2.8%. Windsor County, which would host the Project, saw its population decline by 1.3% in the last decade. Neighboring Windham County barely grew, adding only 0.7% to its population. The Town of Springfield saw its population grow at a 3.3% rate, similar to that of Vermont as a whole. Exh. Pet. RWH-2 at 3.

83. During the last decade, which encompassed two recessions, employment in Vermont fell by 1.2%. Windsor County firms cut employment by 3.9%, while Windham County saw a 9% loss in jobs. Employers in the Town of Springfield cut 13.3% of their jobs during this period. Exh. Pet. RWH-2 at 4.

84. The presence of the Project would result in increased costs to the Town of Springfield due both to the presence of the plant and its employees and the potential increase in the number

of households from those employees that choose to reside in Springfield. Exh. Pet. RWH-2 at 9-11.

85. The increased costs to the Town of Springfield would be offset by additional tax revenues from the Project and any new households that result from employees who choose to reside in Springfield. The increase in revenues to the town would result in an annual net economic benefit of almost $2 million based on calculations for fiscal year 2011. Exh. Pet. RWH-2 at 11-12.

86. No impacts on the local tourism economy are expected from the Project. The Project would be located in an industrial park in North Springfield. U.S. Census reports show no lodging establishments, no food service businesses, and only one tavern in North Springfield. NSSEP identified only one food service establishment in North Springfield. Accordingly, North Springfield would not be considered a tourist destination. Exh. Pet. RWH-2 at 15.

87. Tourists traveling through North Springfield would have limited and brief views of the Project. Exh. Pet. RWH-2 at 15.

88. The Project would be located approximately three miles from the historic downtown area of the Town of Springfield. Exh. Pet. RWH-2 at 15.

89. It is possible that the residences closest to the Project would experience a loss in value. Exh. Pet. RWH-2 at 16.

Discussion

Pursuant to 30 V.S.A. § 248(b)(4), the Board must find that a proposed project "will result in an economic benefit to the state and its residents." Section 248 does not require the Board to quantify exactly how much economic benefit the state would receive from a proposed project, but only to determine that there will be some economic benefit.[54] Based on the evidence of record, I conclude that NSSEP has demonstrated that the Project would meet this criterion.

54. *In re Amended Petition of UPC Vermont Wind, LLC,* 2009 VT 19 at ¶¶ 5-11.

NSSEP maintains that economic activity from the Project would result in millions of dollars in state economic output, disposable income gains, state and local tax revenues, and other payments.[55]

The Department states that the Project would generate both short and long-term employment opportunities, and would also result in increased annual property tax revenues for the Town of Springfield, as well as for the State of Vermont.[56]

NoSAG claims that there would not be an economic benefit to the state and its residents from the Project because: (1) it is not truly a renewable energy facility; (2) the testimony by NSSEP's economics expert is unreliable; and (3) the proposed Project's fuel needs represent an inefficient use of the state's forest resources.[57]

I find the evidence of record demonstrates that there would be substantial economic gains from the Project, both during the construction and operational phases of the Project. Those gains include an increase in jobs at the Project, increases in annual state and town tax revenues, and increased purchases from area forest workers. It is possible that some of the neighboring property owners would see some downward pressure on their property values. However, the evidence convincingly demonstrates that the economic gains to be realized as a result of the Project far outweigh any potential reductions in the Springfield Grand List.

NoSAG's arguments regarding the unreliability of Mr. Heaps' testimony do not persuade me that the Project would not result in an economic benefit. Rather, they at most support the possibility that Mr. Heaps' conclusions regarding property value impacts were somewhat understated – any reasonable upward adjustment of those value-loss estimates would still not offset the significant increase to Springfield's Grand List that would result from Project construction and operation.[58]

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55. NSSEP Brief at 26.

56. Department Brief at 9.

57. NoSAG Brief at 19-28.

58. *See* exh. Pet. RWH-2 at 16; tr. 3/14/13 at 131, 135-37 (Heaps).

NoSAG's other two arguments – that the plant is neither a renewable energy facility nor an efficient use of resources – are not adequately developed. Furthermore, even assuming that NoSAG's assertions are correct, NoSAG does not explain how these two issues overcome the significant economic gains that would be realized by the construction and operation of the Project. Accordingly, I find that these arguments are without merit with respect to the question of economic benefit.

Aesthetics, Historic Sites, Air and Water Purity, the Natural Environment and Public Health and Safety

[30 V.S.A. § 248(b)(5)]

Findings

90. Subject to compliance with the conditions recommended below, the Project would not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment or the public health and safety, with due consideration having been given to the criteria specified in 10 V.S.A. §§ 1424a(d) and 6086(a)(1) through (8) and (9)(K). This finding is supported by findings 91 through 327, below.

The Natural Environment - Forest Health and Sustainable Harvesting

[30 V.S.A. § 248(b)(5)]

Findings

91. Absent a harvesting plan that is sufficient to protect long-term forest health and sustainability, the Project would have an undue adverse impact on Vermont's forest resources. This finding is supported by findings 92 through 177, below.

92. Vermont's land area is 5.92 million acres, 75% of which is forested. The United States Department of Agriculture Forest Service classifies 4.35 million acres as "timberland," or land that is fertile and accessible enough to produce wood as a crop and is not withdrawn from timber harvesting by statute or regulation. Steven J. Sinclair, ANR ("Sinclair") pf. at 3.

93. Vermont's forests are potentially renewable, but are limited in geographic extent and in potential growth rate. Going forward, the extent of forest in Vermont and the region is expected to decline. Although forest growth may be achieved through judicious use of forest management techniques, there is no certainty about how much growth can be expected. Sinclair pf. at 3.

94. The past 20 years of inventory data for Vermont show a slowing rate of forest growth. This decline is recognized as a natural result of forest maturation, but may also reflect human-caused effects such as poor past management practices, pollution, and climate change. Sinclair pf. at 3-4.

95. The latest data show a drop in the growth-to-removals ratio in Vermont's forests from 2.25:1.0 to 1.7:1.0. This decline represents a slowing of the forest growth rate as compared to the amount of wood being harvested and it is expected to continue. Wilmot pf. sur. hrvst. at 3.

96. The results of ANR's most recent statewide forest inventory showed an overall tree mortality rate for the period 1997 to 2007 at an all-time record high for Vermont. Investigating probable causes for mortality, ANR found evidence of mortality related to past forest practices, such as logging wounds on tree trunks leading to internal decay, as well as from balsam woolly adelgid (a non-native insect), ice storm damage, and beech bark disease (a non-native pathogen). Wilmot pf. at 8.

97. Additional results from the 2007 inventory report show that while Vermont's forests continue to increase in volume of wood, the rate of accumulation – the growth rate – has leveled off. At the same time, the area of forest land is shrinking as forests are converted to other uses. Wilmot pf. at 8-9.

98. The combination of maturing forests with a more static rate of growth, shrinking forest acres, increasing pressures from stress agents, and an increasing demand for wood, requires an exercise of caution in determining how forests are harvested. Forest health outcomes from harvesting are more unpredictable today than they were decades ago. Wilmot pf. at 9.

99. Vermont's forests are needed and in demand for many goods, services, and public benefits and values, beyond the existing and proposed increased demand for use in supplying wood energy needs. Sinclair pf. at 4.

100. Forest ecosystems are the basis for native biological diversity, wildlife habitat, natural communities, air and water quality, carbon sequestration, and numerous critical ecological processes. Forests provide food, fresh water, fuel, fiber and other goods; regulating services such as climate, water and disease regulation as well as pollination; supporting services such as soil formation and nutrient cycling; and cultural services such as educational, aesthetic and cultural heritage values, as well as recreation and tourism. Sinclair pf. at 4.

101. Through sustainable management, forests contribute to the resilience of ecosystems, societies, and economies while also safeguarding biological diversity and providing a broad range of goods and services for present and future generations. As a natural resource, Vermont's forests provide the fundamental basis for jobs and economic development through outdoor recreation, tourism and a diverse and changing forest products economy. Sinclair pf. at 4-5.

102. The economic importance of Vermont's forests is significant. In a predominantly rural state, the forest provides important jobs and payroll for 13,000 people and an important source of income for forest landowners. Forest-based manufacturing represents over 9% of Vermont's total manufacturing sales. Sinclair pf. at 5.

103. The sale of forest products adds $1 billion to the state's economy. Additionally, Vermont's forests attract millions of visitors to the state for recreation and tourism activities, contributing almost $500 million. Altogether, the contribution of forest-based manufacturing and forest-related recreation and tourism to Vermont's economy is approximately $1.5 billion. Sinclair pf. at 5.

104. Averaged over the last 10 years, roughly 1.2 million green tons of high-value products – sawlogs and veneer – and 1.5 million green tons of lower-quality wood have been harvested in Vermont each year. Residential firewood and pulp-quality wood are the major components of the low-quality category, and firewood now accounts for one-half or more of the lower-quality harvest volume. Wilmot pf. at 5.

105. The market for low-grade wood increases the potential for improved long-term forest management because it helps shield forestland from development pressure. Eric W. Kingsley, NSSEP ("Kingsley") pf. at 5.

106. Approximately 300,000 cords of firewood are harvested in Vermont annually. Also, about 2.8% of Vermont households burn at least some wood pellets for space heating. Currently, Vermont has one facility that manufactures wood pellets and numerous distributors of wood pellets. Wilmot pf. at 5.

107. Another primary use of wood is the forest biomass energy industry. Wood fiber, bark, twigs, and leaves burned for energy in a boiler to produce heat, or steam for generating electricity, are referred to as forest biomass and come from two sources: tree tops, and relatively low-quality stems of harvested trees in the form of whole tree chips. Wilmot pf. at 5.

108. Presently, Vermont contains numerous commercial, governmental, and industrial facilities that use wood heat. These facilities include at least five state office complexes, forty-five schools, three college campuses, one hospital, and several businesses. Vermont has more small-scale users of forest biomass for energy, chiefly for heat, than any other state in the region. Wilmot pf. at 5-6.

109. Vermont currently has two woody-biomass electric generation facilities: Burlington's 50 MW McNeil Generating Station and the Ryegate 20 MW plant. The McNeil Generating Station and the Ryegate Power Plant combined consume roughly 638,000 green tons of harvested chips annually, with less than one-half of that amount estimated to come from within Vermont. Wilmot pf. at 6; tr. 4/4/13 at 207-08 (Wilmot) (correcting number from Wilmot pf. at 6).

110. NSSEP proposes using 450,000 green tons of forest-derived fuel annually, and indicates that about 2/3 of that volume, or 300,000 green tons, would come from Vermont forests, with the remainder coming from out of state. The 300,000 green tons of wood to be harvested annually from Vermont's forests for consumption by the Project is roughly equivalent to the amount of Vermont-sourced wood that is consumed by the McNeil and Ryegate electric generation facilities combined. Wilmot pf. at 6; tr. 4/4/13 at 252 (Wilmot).

111. The Project's harvesting footprint on Vermont's landscape would be large and it would influence the entire landscape from which it draws its wood fuel. Tr. 4/4/13 at 218 (Wilmot).

112. It is estimated that the Project's wood fuel demand would require 200 to 300 individual harvest operations each year in Vermont alone. Tr. 4/2/13 at 61 (Ingold); tr. 4/4/13 at 253 (Wilmot).

113. Harvest sites could be as small as 25 acres and as large as 2,000 acres. Tr. 4/2/13 at 62 (Ingold).

114. Using NSSEP's estimate of 200 harvest operations in Vermont, the annual Vermont footprint of harvesting for the Project would be 20,000 acres. Tr. 4/2/13 at 66 (Ingold).

115. Because of the geographically broad and sustained impact to Vermont's forests, the Project's wood fuel must be procured and harvested in a way that promotes long-term forest health and sustainability. Wilmot pf. at 7.

116. Vermont's forests should be managed to achieve healthy and sustainable ecosystems, a prosperous and sustainable forest products industry, abundant recreational opportunities and a combination of ownership patterns that support a working forest landscape and large, unbroken tracts. Sinclair pf. at 7.

117. Forest health once was defined as the absence of threatening insect and disease pests, or weather-related disturbances. Since that time, a broader definition of healthy forests has been adopted by ANR. This broader definition views forests as a limited resource, and includes an updated understanding of the influence of harvesting practices on forest health, and the need to protect forests from unduly adverse effects, not just manage them for timber production. Wilmot pf. at 8.

118. Sustainable forests begin with healthy forests. Forest health consists of forested ecosystems that exhibit the long-term capacity for self-renewal of their ecological productivity, diversity, complexity and resiliency. The health of the forest includes the productive capacity of the soil, water and air, and their interaction to support all native biota and their functions. Managing forests sustainably involves working with ecological, social and economic systems to maintain forest health and provide basic goods and services, while preserving options for future generations. Wilmot pf. at 4.

119. In 2010, the Biomass Energy Resource Center ("BERC") published estimates of available wood fuel in Vermont, including a moderate scenario estimate of 894,000 green tons annually. Wilmot pf. at 6.

120. Given the amount of harvesting the Project would require on an annual basis, NSSEP is in a position to influence harvesting practices, the amount and type of wood materials remaining in forests, and thus forest health, on a significant portion of forest land within the state. The volume of harvesting required by the Project has the potential to negatively impact forest health in a significant manner if not planned and conducted appropriately. Wilmot pf. at 6-7.

121. Each forest stand has a unique set of predisposing conditions that factor into a stand's resistance to injury during a harvest and its ability to recover after harvesting operations. Such conditions include water-holding capacity, bedrock that supports soil nutrition, past land use practice, species and ages, and weather patterns, as well as a predisposition to future threats such as invasive pests, over-browsing, climate change, and acid deposition. Wilmot pf. at 9.

122. Each forest stand supports a unique range of natural resources and habitat features that contribute to forest health. Features might include natural communities, mast sites, wetlands or vernal pools, any of which may be negatively impacted by harvesting practices if they are not carried out prudently. Wilmot pf. at 10.

123. There are other factors besides harvesting that affect forest health. Forests are constantly changing, influenced by their environment and stress factors, as well as many dynamic processes. Harvesting activities are but one of many forest stressors, so harvest planning and practices need to account for these other potential multiple stress impacts. These other stressors include:

- Temperature and precipitation extremes, severe storms, or other weather-related stressors. Forest damage from these stressors may be localized or wide spread, incidental or severe, and as climatologists have shown, have been increasing over the past 50 years, with more erratic weather predicted.

- Native insects and diseases, which ebb and flow through cycles of high and low populations, and when abundant, can defoliate trees or result in other impacts that reduce forest productivity and weaken resistance.

• International movement of wood materials, which has increased the introduction of destructive non-native forest pests. ANR is currently monitoring for the emerald ash borer, an insect that has killed ash trees at an alarming rate. In Southeast Michigan, one of the early areas of infestation, a 30% mortality rate per year was recorded in stands with new infestations. This pest has been found near Vermont's borders in Quebec, New York and now in Massachusetts. There is an increased likelihood of Vermont infestations within the next few years.

• Years of acid deposition, which have altered forest soils and compromised soil nutrients and soil health. In susceptible forests this may result in reduced growth and resilience.

• Invasions from non-native plants and insects as well as pathogens, which are a growing concern from a forest productivity perspective. Regeneration is reduced where non-native invasive plant thickets permeate into forests. This is especially the case in Vermont's warmer, southern counties.

Wilmot pf. at 10-11.

124. Impacted forest components will vary from harvest site to harvest site. Therefore, the best approach for avoiding undue adverse effects from harvesting is to identify critical natural resource concerns and the harvesting standards needed to safeguard them based on the current understanding of forest science. Wilmot pf. at 12.

125. To support this approach, the following forest components should be accounted for in harvesting operations:

• Protection of species and areas of special concern, including necessary wildlife habitat, including deer yards, wetlands, vernal pools, bear mast areas, Rare, Threatened and Endangered species ("RTE"), and S1, S2 and S3 natural communities.

• Support for wildlife habitat and biodiversity through retention of snags, and down woody material.

• Renewal of soil health through retention of down woody material and limited soil disturbance.

• Adherence to laws and rules including Acceptable Management Practices and Heavy Cut.

• Management for non-native invasive plants to prevent transport and spread.

• Adherence to forest insect and disease quarantines and policies.

- Promotion of adequate regeneration and healthy residual stands.
- Preparation of forests for climate change adaptation (build resilience).

Wilmot pf. at 12-13.

126. All harvesting should follow written silvicultural prescriptions based upon accepted silvicultural practices reflecting stand conditions, landowner objectives, and referencing appropriate silvicultural literature and guides. Wilmot pf. at 32.

127. A natural community is an interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them. When these assemblages of plants and animals repeat across the landscape wherever similar environmental conditions exist, it is possible to describe these repeating assemblages as natural community types. ANR's Natural Heritage Inventory currently recognizes over 80 upland and wetland, forested and open natural community types in Vermont. Wilmot pf. at 13.

128. Each natural community type is assigned a State Rank that describes the rarity of that community type in Vermont. State Ranks include S1 (very rare), S2 (rare), S3 (uncommon), S4 (widespread), and S5 (common and widespread) and are assigned based on the number of known occurrences of the type, the total area occupied by the type, and the degree of threat to the type. The Natural Heritage Inventory considers a subset of natural community examples to be State Significant, which are the best examples of each natural community type. Wilmot pf. at 14.

129. S1, S2, and S3 natural community types are very rare to uncommon features in the Vermont landscape. These natural community types are typically associated with very specific environmental conditions and provide habitat for a disproportionate number of Vermont's rare species. Rare and uncommon natural community types are also those most likely to be susceptible to natural and human disturbance, including climate change. Wilmot pf. at 14-15.

130. Much work has been done over the past 25 years to identify species and natural communities that need protection. Harvesting operations need to make adjustments to ensure protection of S1, S2 and S3 natural communities as one measure of maintaining healthy forests. Wilmot pf. at 15.

131. The long-term maintenance of healthy and productive soils is one of the most vital requirements of sustainable biomass production. Forest soils support root anchorage, supply water and mineral nutrients for tree growth, provide habitat for numerous organisms, support hydrologic processes, provide a surface for operating harvesting machinery, and create favorable conditions for the decomposition and recycling of forest residues and wood ash. Wilmot pf. at 19.

132. Forest soil productivity contributes to forest biomass production. Unless forest biomass extraction processes maintain long-term productivity of forest soils, the system could lead to a decline in production. Wilmot pf. at 19-20.

133. Soil health is influenced by climate, plants and animals, landscape position, elevation, past land use including past harvesting practices, the passage of time, and current land use. Significant harm or benefits can result from forest management activities depending on how much organic material remains following a harvest, the level of erosion mitigation on skid roads and log landings, the level of soil disturbance from log extraction, and other factors. Wilmot pf. at 16-17.

134. Significant changes to soil nutrition have occurred through years of acid deposition. Acid deposition strips soils of calcium and magnesium, which are essential for plant growth, and can shift the balance of soil elements towards aluminum, which is toxic to plants and trees. Wilmot pf. at 17.

135. Sites inherently rich in calcium soil and bedrock are generally able to replenish nutrients to sustain healthy forests. On the other hand, nutrient poor sites can be predisposed to soil-related forest health problems. Wilmot pf. at 17.

136. Several recent studies showed poor tree recovery on sites with reduced calcium as compared to higher calcium sites. Even though harvesting has not created this soil nutrient imbalance, the imbalance can be exacerbated through additional nutrient depletion caused by improper harvesting practices. Wilmot pf. at 17.

137. Additional soil processes affecting soil health involve dynamics of soil organic matter. Soil organic matter is a complex and varied mixture of organic substances that includes plant and

animal residues at various stages of decomposition. Soil organic matter is a vital component of productive soils and plays a major role in soil water retention, cation exchange capacity, aeration, drainage, and nutrient availability. Wilmot pf. at 17-18.

138. Removing branches and foliage, as is done in whole-tree harvesting, that might otherwise be left in the forest to decompose, alters the cycling of organic matter from forest vegetation to the soil, especially when practiced on shorter rotations. Wilmot pf. at 18.

139. Woody material on the forest floor provides an important ecological function. Fine woody material ("FWM") includes live or dead trees and shrubs less than three to four inches in diameter at the large end. FWM is an important contributor to the organic layer of forest soils and it contains a high proportion of the nutrients found in woody plants when compared to the stems. Furthermore, FWM protects soils from erosion, provides important energy and nutrients to stream ecosystems, and live FWM – saplings and shrubs – is an important understory habitat component. Wilmot pf. at 18.

140. Coarse woody material ("CWM") includes dead and down wood such as logs greater than three to four inches in diameter at the small end, large branches, and stumps. CWM provides habitat for insects, fungi, microorganisms, and amphibians, and provides cover and runways for small mammals and winter den sites for bear and other wildlife. Wilmot pf. at 18.

141. CWM is also an important component of stream ecosystems because it provides cover for fish, helps create deeper pools, and provides a substrate for stream insects and microorganisms that are important food sources in streams, as well as being important in the maintenance of nutrient and hydrologic cycling. Wilmot pf. at 19.

142. Timber harvesting usually results in a significant decrease in surface soil organic matter for an appreciable time. This is typically attributed to increases in moisture and temperature that initiate higher levels of microbial decomposition. Therefore, the extraction of tops, branches, and leaves even further removes organic materials that would typically be returned to the soil to compensate for this loss. Wilmot pf. at 19.

143. Rebuilding what has been lost in soil organic matter, soil nutrients and down wood will strengthen the resilience of Vermont's forests, which is an important goal when other threats to

forest health are considered. This concept is especially important in this case since biomass harvesting typically relies on whole-tree harvesting, which can reduce woody material left on the forest floor when compared to more traditional harvesting techniques. Wilmot pf. at 20.

144. Most, if not all, of the wood fuel for the Project would be harvested utilizing whole-tree harvesting operations. Tr. 4/4/13 at 192 (Sinclair).

145. Whole-tree harvesting involves the use of highly mechanized high-capacity equipment, and results in the extraction of the entire aboveground portion of the tree including the trunk, branches, and needles or leaves from the forest. Wilmot pf. at 20; exh. Pet. EWK-2 at 21.

146. The practice of whole-tree harvesting was developed as a means of extracting much higher yields per unit area from forests through the removal of biomass that, under other harvesting methods, would have remained on site to decompose. While the magnitude of forest biomass utilization depends on the silvicultural objectives for a site, whole-tree harvesting can effectively remove up to 96% of aboveground biomass. Wilmot pf. at 20-21.

147. Trees store nutrients in roots, stems, branches and leaves in various proportions, and differences do occur between species. However, the greatest proportion of nutrients is stored in branches and leaves. Traditionally, branches, leaves and roots were left in the woods following a harvest. Wilmot pf. at 21.

148. With more highly mechanized logging equipment, whole trees can be cut and brought to log landings where materials are separated into round wood and chip wood. This practice removes the leaves and branches from the forest, reducing soil organic matter and disrupting the nutrient cycle. Wilmot pf. at 21.

149. Retaining leaves and branches in the woods is one way to replenish soil nutrients while conducting whole-tree harvesting of wood material. Wilmot pf. at 21.

150. Whole-tree harvesting practices can also result in significantly reduced stand structural elements, such as snag density and down material, compared to other types of harvesting. Wilmot pf. at 21.

151. The more fine woody material that is left on site during harvest operations, the less risk there is to long-term soil productivity. Therefore, special considerations for retention will need

to be included for harvests that involve whole-tree harvesting to avoid undue adverse impacts to forest health. Wilmot pf. at 22.

152. The following retention standards are necessary to be protective of forest soil health when whole-tree harvesting is utilized:

For a Harvest of:	Drop and leave a minimum of:
Less than 50% basal area	2 trees > 14" diameter at breast height ("DBH") per acre, or 4 trees > 6" DBH per acre
More than 50% basal area	4 trees > 14" DBH per acre, or 6 trees > 6" DBH per acre

Wilmot pf. at 31; exh. Pet. Supp. DI-8 at 3.

153. If soils are compacted from heavy machinery, resulting in lower water holding capacity, recovery requires years of freezing and thawing action and root penetration to restore soil aeration. In order to protect soils, harvesting equipment should not be operated in conditions or in such a manner as to substantially alter the natural and productive properties of the soil. No more than 12% of a harvest area should be used for skid trails, roads and landings. Wilmot pf. at 11, 30; exh. Pet. Supp. DI-8 at 3.

154. There are four types of wildlife trees that must be considered for retention during forest biomass harvesting, including decaying live trees, cavity trees, snags, and mast-producing trees. Wilmot pf. at 29.

155. Decaying live trees provide habitat for insects and fungi, which provide food for other animals and contribute to the decay and recycling of wood. Over time, decaying live trees also contribute to other biodiversity values as they grow old and die, including cavity trees, snags, and large woody material. While decaying trees in all size classes provide biodiversity value, in general, the larger the decaying tree, the more valuable it is for biodiversity. Wilmot pf. at 29.

156. Cavity trees provide nesting and denning habitats for birds and mammals. Most cavities are created by "primary excavators" such as woodpeckers, and then used in later years by other species. Wilmot pf. at 29.

157. Snags are dead standing trees that provide habitat for insects and other organisms not found in live trees, and when fallen they contribute to large woody material. Wilmot pf. at 29.

158. The following retention standards for snags and live cavity trees, with retention of smaller trees when suitable trees of these size classes are not present, are necessary to protect long-term forest health in light of the harvesting required for the Project. However, the highest priority must be given to safety, with specific regard to OSHA regulations:

Structure	Minimum target per acre
Live decaying trees 12-18" DBH	4
Live decaying trees > 18" DBH	1
Snags > 10" DBH	5

Wilmot pf. at 30; exh. Pet. Supp. DI-8 at 12.

159. Mast trees provide nuts such as acorns and beechnuts as well as berries and other fruit consumed by wildlife. Mast is typically high-energy food that is important to the productivity and winter survival of animals such as squirrels, white-tailed deer, and bear, by allowing them to enter the winter in prime condition. Wilmot pf. at 29-30.

160. Non-native invasive plants pose serious problems in Vermont forests, especially in southern Vermont where many of these species are now established and in some cases abundant. Wilmot pf. at 22.

161. Higher average temperatures may enable invasive species to take advantage of disturbances in forests and out-compete native species. It is estimated that global warming will allow 48 percent of currently established invasive plants and animals to expand their northern distributions if temperatures warm to the degree anticipated. Wilmot pf. at 22.

162. The greatest harm from invasive plant species comes from their ability to replace native species and decrease tree regeneration. Invasive plants gain advantage when disturbances form gaps in the tree canopy, providing sunlight for their rapid growth. Managing these understory invasive plants before harvesting opens the canopy is essential for adequate regeneration of forest trees. Wilmot pf. at 22-23.

163. In areas where invasive plant populations are likely to respond to increased sunlight or soil disturbance, loggers must conduct appropriate pre-treatment of infestation before commencing harvesting. Wilmot pf. at 31.

164. There is a connection between the operation of harvesting equipment and invasive plants. Harvesting equipment can be a vector for moving plant material from one location to another, and therefore must be cleaned before moving from one forest site to another to avoid the spread of non-native invasive plants. Wilmot pf. at 23.

165. Adequate attention to regeneration, and the competition it may face once harvesting has occurred, will help prevent adverse harm to the development of future forests. The problems of invasive plant competition and over-browsing in some areas may mean that despite abundant regeneration at the time of harvest, these competing factors will reduce success. Wilmot pf. at 23-24.

166. Vermont is preventing the spread of unwanted non-native pests, like the emerald ash borer, hemlock woolly adelgid and the Asian long horned beetle, by restricting transport of firewood from areas already infested. Wilmot pf. at 23.

167. AAFM and NSSEP have entered into the AAFM MOU to address AAFM's concerns related to non-native pests. Exh. Pet./AAFM-1.

168. On July 3, 2013, NSSEP filed the ANR MOU which addresses all of the concerns raised by ANR's witnesses regarding impacts to long-term forest health and sustainability that harvesting for the Project might otherwise have on Vermont's forest resource. Provided that NSSEP complies with the terms and conditions of the ANR MOU, harvesting for the Project will not have an undue adverse impact on Vermont's forest resource. Exh. Pet. Supp. DI-8; Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3; Ingold pf. (8/14/13) at 2.

169. The ANR MOU contains provisions that address the potential for human-assisted movement of invasive species. These provisions are consistent with the provisions of the AAFM MOU addressing the same concern. *See* ANR MOU at 5-8; AAFM MOU generally.

170. Under the ANR MOU, NSSEP would submit harvesting plans for specific proposed harvests to a Forests, Parks and Recreation ("FPR") reviewer at ANR for review and approval prior to commencement of harvests. Exh. Pet. Supp. DI-8 at 8-10.

171. An acceptable review process for proposed harvesting plans would require the following:

> • For all harvest sites within Vermont from which wood fuel will be purchased by NSSEP, an NSSEP forester will visit the site with the landowner, harvester and/or forester and confer in developing a harvest plan that meets the harvest performance standards and the procurement criteria of the applicable Board-approved harvesting policy.
>
> • The NSSEP forester will develop a harvest notification to be sent digitally to the appropriate FPR reviewer. This notification will include the harvest plan, which at a minimum shall meet Use Value Appraisal plan criteria specifications, and contain GIS-based mapping data for the relevant natural resource attributes associated with the harvest site.
>
> • FPR will have fifteen calendar days in which to respond to the NSSEP forester with an approval, disapproval or a request for modification of the proposed harvest. No harvesting will begin before approval by FPR. If FPR does not respond within the initial fifteen-day period, the plans are by default approved by FPR.
>
> • If FPR responds with a request for modification, FPR will have up to fifteen additional calendar days to work with NSSEP to determine the plan modifications necessary to meet the applicable harvest standards. A site visit may be necessary during this period, which NSSEP shall assist in facilitating. On or before the fifteenth day, FPR will either approve the harvest plan with conditions or deny the harvest plan.

Sinclair pf. at 10-11; exh. Pet. Supp. DI-8 at 8-10.

172. On a quarterly basis, NSSEP would provide FPR with a summary of the quantity and geographic source (i.e., township level or most precise location) of all wood that has been procured for the Project. Exh. Pet. Supp. DI-8 at 11.

173. It is also necessary to identify the appropriate post-harvest measurements that can be used to rate success so that future harvest plans can rely on those results to tailor future harvests to improve success and avoid harms. Wilmot pf. at 12.

174. As a method for improving general knowledge of forest changes resulting from harvesting in the context of other stressors, and to better adjust harvest planning to protect forest health, harvest-monitoring data will be collected and reported to FPR on a reasonable percentage of operations annually. Indicators of forest health to use in monitoring should include:

- Species and areas of special concern (e.g., deer habitat, mast stands, wetlands)
- Biodiversity components (e.g., snags, down woody material)
- Soil health (e.g., down woody material, soil organic matter, soil disturbance)
- Presence of significant insect and disease pests
- Non-native invasive plants
- Regeneration and health of residual stands
- Climate change adaptation
- Mitigation measures for minimizing risk of moving non-native insects and diseases.

Wilmot pf. at 32-33; exh. Pet. Supp. DI-8 at 11-12.

175. FPR would take on the lead role for oversight of the harvesting associated with the Project if it is approved by the Board. ANR's knowledge of forests has expanded greatly in the past 30 years, and forest health and sustainability issues are central to the knowledge and expertise of FPR. Sinclair pf. at 8-9.

176. ANR would need to add at least two wood energy foresters to its staff to oversee the Vermont-sourced harvesting for the Project, with at least one of these foresters stationed near the Project site. ANR estimates that the amount of time associated with Project oversight would be the equivalent of two full-time positions. Sinclair pf. at 8, 11.

177. In addition to imposing necessary standards and guidelines to ensure that Project harvesting does not have an undue adverse impact on Vermont's forest resource, the ANR MOU also obligates NSSEP to fund ANR's oversight of the Project's Vermont-sourced harvesting. ANR estimates the costs of ANR's oversight of NSSEP's harvesting to be $200,000 annually, adjusted for inflation going forward. Sinclair pf. at 11; exh. Pet. Supp. DI-8 at 10.

Discussion

On July 3, 2013, NSSEP filed the ANR MOU, the terms and conditions of which require NSSEP to conduct harvesting for the Project in a manner that is designed to be protective of the long-term health and sustainability of Vermont's forest resource. The MOU also requires NSSEP to provide ANR with annual funding to address ANR's costs associated with FPR's review of forest harvesting plans, monitoring of forest health, monitoring for compliance with the applicable harvesting standards, and provision of technical assistance to wood suppliers regarding the harvesting standards. The annual funding amount would start at $200,000 and be adjusted annually using a recognized inflation index.

According to ANR, the ANR MOU addresses all concerns raised by its witnesses in their prefiled and live testimony on this subject, and as a result, the Project will not have an undue adverse impact on Vermont's forest resource as long as NSSEP complies with the terms and conditions of the ANR MOU. ANR asks that the Board impose compliance with the ANR MOU as a condition of any approval the Board may issue for the Project.[59]

Based on the evidence presented, I recommend that the Board find that harvesting for the Project can be done in a fashion that protects the long-term health and sustainability of Vermont's forests, provided it is done in compliance with the terms and conditions of the ANR MOU.

The harvesting standards required by the ANR MOU establish an approach to harvesting that is both quantitative and qualitative, looking beyond just the idea that growth must exceed removals for harvesting to be considered sustainable, with the goal of ensuring that what is left behind and what regenerates after a harvest are healthy and diverse. As ANR's witness testified, our understanding of what needs to be done to protect forest health and sustainability has evolved significantly since the McNeil and Ryegate facilities received their CPGs, and the harvest performance standards established by the ANR MOU take this into account, making specific provisions for harvesting systems and practices, soil health, wildlife habitat and natural communities, invasive plant species, historic resources, and forest health monitoring. The ANR MOU also sets forth best management practices to mitigate the risk of human-assisted movement

59. ANR Brief (10/14/13) at 1-2.

of invasive species associated with the transport of wood fuel for the Project. The ANR MOU addresses the need for retention of down woody material, requires that harvesting equipment be operated so as not to substantially alter the natural and productive property of the soil, limits the amount of area to be used for skid trials, roads and landings in a given harvest area, and provides structural retention guidelines for snags and live cavity trees.

The ANR MOU also establishes an appropriate system for development, review and approval of specific harvest plans, requires that certain terms intended to ensure proper application of applicable harvesting standards be included in all contracts between NSSEP and its fuel suppliers, requires NSSEP to retain adequate and qualified foresters to ensure proper implementation of and compliance with the applicable harvesting standards, and provides for post-harvest inspections and annual reporting requirements for NSSEP so that impacts to forest health from the harvesting can be understood and so that adjustments can be made to harvest planning and guidance to improve forest health going forward.

The ANR MOU also requires NSSEP to fund ANR's oversight of the harvesting process, from review and approval of specific plans for harvest sites, through post-harvest inspections, and review of ongoing annual reports on the impacts from Project harvesting. ANR estimates that the time demands associated with this work will be equal to two full-time equivalent positions for which ANR is currently without resources to staff.

In summary, I find that compliance by NSSEP with the ANR MOU will prevent any undue adverse impacts to Vermont's forest resource that might otherwise occur in the absence of the requirements of that MOU. I therefore recommend the Board impose the following conditions related to forest health and sustainability to prevent an undue adverse impact to natural resources should the Board approve the Project:

> The ANR MOU is adopted and its terms and conditions are hereby incorporated into this Order. NSSEP shall comply with the terms and conditions of the ANR MOU.
>
> NSSEP shall develop a harvesting plan that complies with the terms and conditions of the ANR MOU. NSSEP shall file its proposed harvesting plan with the Board, and parties with standing on the issue shall have 14 calendar days from the date of filing to file comments with the Board. NSSEP must receive Board approval of its proposed

harvesting plan prior to contracting with any fuel suppliers for wood to be harvested in Vermont.

The AAFM MOU is adopted and its terms and conditions are hereby incorporated into this Order. NSSEP shall comply with the terms and conditions of the AAFM MOU.

Public Health and Safety

[30 V.S.A. § 248(b)(5)]

Findings

178. Subject to the conditions recommended herein, the proposed Project would not have an undue adverse impact on public health and safety. This finding is supported by findings 180 through 284, below, regarding air and water pollution, municipal services and transportation systems, below.

Discussion

I conclude that, with appropriate conditions, the Project would not have an undue adverse impact on the public health and safety. Specifically, as detailed in the findings below, the Project would not cause undue adverse impacts on health and safety from noise, air pollution, impacts to municipal services or transportation impacts, provided the recommended conditions are imposed by the Board and met by NSSEP.

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

Findings

179. There are no waters in the immediate Project vicinity that have been designated as outstanding resource waters. Therefore the construction and operation of the Project would not result in an undue adverse impact under this criterion. Nelson pf. (12/22/11) at 4; exh. Pet. JAN-2 at 7.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

Findings

180. Subject to the conditions recommended below, the Project would not result in undue air or water pollution. This finding is supported by findings 181 through 218, below.

Air Pollution - Project Emissions

181. Air emissions from the Project are regulated by the U.S. Environmental Protection Agency ("EPA") and the Vermont Department of Environmental Conservation ("DEC"). Dale T. Raczynski, NSSEP ("Raczynski") pf. (12/22/11) at 4.

182. The Project is classified as a new major stationary source of air contaminants under Chapter 5 of the Vermont Air Pollution Control Regulations and therefore would be required to obtain a permit to construct as well as a permit to operate from DEC's Air Pollution Control Division. Raczynski pf. (12/22/11) at 5.

183. NSSEP has designed the Project so that it will meet the Vermont Air Pollution Control Regulations and New Source Review standards, and not violate National Ambient Air Quality Standards ("NAAQS"), Vermont Ambient Air Quality Standards ("VAAQS"), or Vermont Prevention of Significant Deterioration increments ("PSDI"). The Project is not subject to federal PSDI regulations because its emissions levels are lower than the amount needed to trigger such regulations. Raczynski pf. (12/22/11) at 3-5.

184. Air quality regulations establish a formula, known as Good Engineering Practice ("GEP"), for maximum stack height. GEP is the maximum stack height at which credit for dispersion can be taken in Vermont air permit applications, thus preventing the use of taller stacks rather than control equipment to comply with ambient air quality standards. Raczynski pf. reb. at 7; tr. 3/15/13 at 72, 75 (Raczynski).

185. If a stack height is below the GEP maximum stack height, a source must take into account downwash effects in its air dispersion modeling. The Project's stack height would be 140 feet, below the GEP height of 290 feet. Tr. 3/15/13 at 84 (Raczynski); Raczynski pf. reb. at 6.

186. NSSEP's dispersion analysis demonstrates that the selected stack height would allow the Project to comply with applicable standards. Raczynski pf. reb. at 7.

187. The Project is also subject to Most Stringent Emission Rate ("MSER") for greenhouse gas emissions under the Vermont air pollution regulations. Raczynski pf. (12/22/11) at 6.

188. NSSEP conducted an MSER analysis and an Air Quality Modeling Analysis, using AERMOD (11103), an EPA-approved air quality model. The results demonstrate that the Project would comply with all applicable state and federal regulations with respect to air quality. Raczynski pf. (12/22/11) at 3, 7, 15; Raczynski pf. (6/1/12) at 2.

189. The Project could emit up to 448,714 tons of CO2 Emissions – Equivalent ("CO2e") annually. Tr. 3/15/13 at 37 (Raczynski).

190. The Project would not cause or contribute to a violation of the NAAQS. Exh. Pet. DTR-2; Raczynski pf. (12/22/11) at 11.

191. Project impacts would be below the Vermont allowable PSDI. Raczynski pf. (12/22/11) at 11.

192. Petitioner submitted its Air Pollution Control Permit Application to the DEC in December 2011, and received its draft permit on August 9, 2012. Exh. NoSAG Cross-14; exh. Pet. Reb. DTR-7.[60]

193. The air permit application process relies on potential emissions limitations. Therefore, the numbers represent the maximum possible potential emissions of a pollutant from a source, assuming the facility ran 24 hours a day, 365 days a year, with no down time, and as such are conservative. Tr. 3/15/13 at 39-40 (Raczynski).

194. The Project would employ pollution control technology to meet MSER requirements, including use of a BFB boiler, which is designed to allow a wide range of fuels to be burned, taking into account all constituents expected to be found in the wood fuel to be burned, as well as

60. NSSEP received its final Air Pollution Control Permit to Construct on April 19, 2013, and submitted a copy of the final permit to the Board on April 23, 2013. However, the final permit is not part of the evidentiary record and I therefore do not rely on it for any proposed findings in this Proposal for Decision.

an air pollution control system following the boiler that would include a fabric filter and a Selective Catalytic Reduction device. Raczynski pf. (12/22/11) at 8-9; Raczynski pf. reb. at 2.

195. The Project may only use "natural wood," that is, untreated and uncontaminated wood from trees. Exh. Pet. Reb. DTR-7 at 20; Raczynski pf. reb. at 3.

196. NSSEP has proposed to fund a wood stove change-out program to help improve air quality for the North Springfield area as a result of concerns raised by residents and at public meetings concerning the Project. Ingold pf. (6/1/12 as revised 3/12/13) at 21.

197. NSSEP has proposed providing $350,000 towards the wood stove program, for which an implementing organization would need to be chosen, and anticipates that the amount of funding would be sufficient to replace at least 100 existing wood stoves with EPA-compliant wood stoves. Ingold pf. (6/1/12 as revised 3/12/13) at 21-22.

198. The wood stove program proposed by NSSEP is conceptual and does not envision utilizing the Washington State emissions standards for wood stoves, which are more stringent than the EPA standards. Heidi Hales, ANR ("Hales") pf. at 4.

199. The concept for the program also fails to: (1) address the need to encourage cleaner burning and more efficient units; (2) require that the old wood stoves are in fact in use at the time of the change-out; (3) require that the old wood stoves be destroyed; and (4) expressly address the need for professional installation of the new units. Hales pf. at 4.

200. The Project would not cause any objectionable odors. A thirty-day supply of wood fuel would be stored on-site and divided into two piles, each measuring approximately 35 feet high. Limiting the amount of wood fuel stored on site, as well as employing a first-in/first-out approach to the use of the stored fuel, would prevent the wood from decomposing and fermenting, and thus would prevent the release of any objectionable odors. Smith pf. (12/22/11) at 18.

Air Pollution - Noise

201. Background sound level monitoring was conducted at five locations around the Project site to characterize the existing noise environment. The five locations were chosen based on

proximity to the Project site and were representative of area groupings of residences. Exh. Pet. ECDD-2 at 10.

202. The distance from the Project site to the five background sound monitoring locations varied between as little as 1,100 feet to the southeast, to as much as 3,350 feet to the northwest. Exh. Pet. ECDD-2 at 12, 13, 14, 15, 17.

203. There are no federal or Vermont state noise standards. However, the World Health Organization's Guidelines for Community Noise recommend a limit of 55 dBA averaged over the day to protect against serious annoyance, and 45 dBA averaged over the night to protect against sleep disturbance. The U.S. Environmental Protection Agency has also established Protective Noise Level Guidelines. For most residential areas the protective level is 55 dBA Ldn.[61] Edward C.D. Duncan, NSSEP ("Duncan") pf. (12/22/11) at 3.

204. Modeling conducted by NSSEP shows that noise generated by the Project would meet a standard of 45 dBA (Leq) (8 hr)[62] averaged over the entire night (11:00 P.M. - 7:00 A.M.) outside of surrounding residences. During the day, the Project would meet a standard of 55 dBA (Leq) (16 hr) averaged over the entire day (7:00 A.M. - 11:00 P.M.) outside of surrounding residences. Duncan pf. (12/22/11) at 3-4; Duncan pf. (6/1/12) at 2.

205. The noise modeling shows that Project noise levels would be comparable to or less than existing background sound levels throughout neighboring residential areas averaged over the time periods of 11:00 P.M. - 7:00 A.M., and 7:00 A.M. - 11:00 P.M. Additionally, Project sound levels are projected to be comparable to or moderately higher than existing 90th-percentile sound levels (L90)[63] at neighboring residential areas. Exh. Pet. ECDD-2 at 25.

206. The noise modeling was based on the equipment to be used at the Project site and takes into account an increase in approximately two decibels from the addition of air-cooling fans associated with the switch to ACC cooling. The increase in noise associated with the cooling

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61. Ldn is the A-weighted, day-night Leq, where a penalty of 10 dB is applied to nighttime sound. Exh. Pet. ECDD-2 at 8.

62. Leq is the pressure weighted average sound level, over a specified period of time. Exh. Pet. ECDD-2 at 8.

63. The L90 is the sound level that is exceeded 90 percent of the time.

fans can be addressed through control technology such as the use of low noise fans or variable frequency drives. Tr. 3/14/13 at 104, 106, 112, 118 (Duncan); Duncan pf. (6/1/12) at 2.

207. The modeling performed also takes into account noise from wood delivery trucks entering the site, dumping their loads, and leaving the site. Tr. 3/14/13 at 104, 109, 121-23 (Duncan).

208. NSSEP's modeling did not calculate an average sound pressure level for the 10-hour period (7:00 AM - 5:00 PM) when the Project would normally be accepting deliveries of wood chips. If the average sound pressure level was calculated for that 10-hour period, it would be higher than the average for the 16-hour period utilized in NSSEP's calculations. Tr. 3/14/13 at 119-20 (Duncan).

209. Major construction of the Project would primarily take place at the Project site during the day. Any nighttime construction work would primarily take place indoors. Due to construction hours and distances to neighboring homes, construction noise levels would have a minimal impact on residences. Exh. Pet. ECDD-2 at 23.

Discussion - Air Pollution - Project Emissions

Subject to the conditions recommended below, the Project would not result in undue adverse air pollution from Project emissions.

NSSEP maintains that the Project would not result in an undue adverse impact to air quality because it has been designed to meet MSER emissions requirements and because it must comply with any air pollution control permit issued by DEC's Air Pollution Control Division.[64] Additionally, NSSEP contends that the burning of biomass is generally accepted to be a carbon-neutral activity, and that imposing any requirements related to carbon accounting or carbon neutrality would be inappropriate because there are no established standards on which to base any such requirements.[65] Lastly, NSSEP asserts that the Project would not result in any noxious

64. NSSEP Brief at 28-29, 34.

65. NSSEP Brief at 34-36.

odors due to the limited amount of time wood chips would be stored on-site prior to being combusted.[66]

ANR states that the Project must comply with the Vermont Air Pollution Control Regulations, and to ensure that the Project does comply with these regulations, recommends the Board include specific conditions in any CPG it issues requiring NSSEP to obtain the necessary DEC Air Pollution Control Division permits and comply with their terms and conditions prior to construction and operation of the Project as appropriate. ANR also recommends that the Board impose as a condition of approval the requirement that NSSEP comply with certain fuel harvesting standards to mitigate impacts from the Project's emission of up to 448,714 tons of CO2e annually. Lastly, in order to achieve the maximum benefit to air quality in the North Springfield region, ANR recommends that the Board adopt several provisions for the proposed wood stove change-out program and require compliance with them as a condition of any CPG issued for the Project.[67]

NoSAG contends that NSSEP has failed to show that the Project would not result in undue air pollution because the information contained in the application for the air quality permit, as well as the manner in which the Best Available Control Technology ("BACT") emissions limits were determined, were both flawed. NoSAG also asserts that the greenhouse gas emissions and BACT analysis are deficient because they do not include a quantitative discussion of the Project's thermal efficiency level and its effects on the emission of and BACT for these gases.[68] NoSAG also argues that NSSEP has failed to explain how the Project would comply with Section 5-241 of the Vermont Air Pollution Regulations which addresses discharges of air contaminants, and that operation of the Project would effectively eliminate greenhouse gas reductions achieved by Efficiency Vermont.[69] NoSAG also asserts that the stack height of 140

66. NSSEP Brief at 32-33.

67. ANR Brief at 50.

68. NoSAG Brief at 31.

69. NoSAG Reply Brief at 11-14.

feet is less than the required Good Engineering Practice height of 290 feet. The reduced stack height, according to NoSAG, results in diminished dispersion of Project emissions and causes undue air pollution.[70]

VNRC/NWF contend that the Project would result in undue air pollution due to the release of greenhouse gases from the combustion of the wood fuel and because the Project is an inefficient use of the wood resource. According to VNRC/NWF, the greenhouse gas emissions from the Project would result in significantly higher levels of CO2 in the atmosphere than the levels that would be released by a comparably-sized gas generation facility, and NSSEP's failure to conduct a carbon accounting prevents any determination of when the greenhouse gases released by the Project would be recaptured. Further, VNRC/NWF assert that the greenhouse gas emissions would inhibit the state's ability to meet the greenhouse gas reduction goals established by 10 V.S.A. § 578.[71]

Provided appropriate conditions are imposed on the construction and operation of the Project, the Project would not result in undue air pollution.

As an initial matter, I do not find NSSEP's position that the Project should be considered carbon neutral absent a demonstration to that effect to be persuasive. While prior thinking was that woody-biomass electric generation facilities were carbon neutral, the understanding of the carbon impacts of these facilities has evolved. For example, in order to participate in the Massachusetts RPS program, a woody-biomass generator must now demonstrate that a facility would operate at a minimum efficiency and achieve specified greenhouse gas reductions over the course of 20 years when compared to a natural gas-fueled generator.[72] The EPA, which historically has considered woody-biomass generators to be carbon neutral, is now contemplating a carbon accounting system that uses the gross emissions at the stationary source, and then incorporates a biogenic accounting factor that reflects changes in forest carbon stocks. Under

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70. NoSAG Brief at 16-17.

71. VNRC/NWF Brief at 15-26.

72. *See* 225 CMR 14.00.

such a system, while the results would be less than gross emissions, they would rarely be carbon neutral.[73] The time required to sequester the greenhouse gases released by the Project would be measured in decades, or in the case of forest regeneration failures, not at all.[74] And, while a carbon accounting is not a required component of NSSEP's petition, in the absence of one demonstrating otherwise, the evidence of record does not support a finding of carbon neutrality for the Project.

However, the lack of demonstrated carbon neutrality does not in and of itself require a finding of undue air pollution impacts from the Project. Vermont has adopted the Vermont Air Pollution Control Regulations and issues related permits which NSSEP must obtain and comply with.[75] The Air Pollution Control Regulations were promulgated under Chapter 23 of Title 10 of the Vermont Statutes Annotated. The purpose of Chapter 23 is to:

> achieve and maintain such levels of air quality as will protect human health and safety, and to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state and facilitate the enjoyment of the natural attractions of this state.[76]

Accordingly, compliance with the Air Pollution Control Regulations, including obtaining and complying with any required permits, would work in support of a finding that the Project would not result in undue air pollution.

However, while compliance with the Air Pollution Control Regulations and any required permits issued thereunder supports a finding of no undue air pollution from the Project, it is not necessarily sufficient in and of itself to make that finding given the amount of greenhouse gas emissions that would be produced through the combustion of the wood fuel required by the Project. By law, it is the policy of the State of Vermont to reduce greenhouse gas emissions. By

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73. Wilmot pf. at 26.

74. Wilmot pf. at 26.

75. NoSAG's concerns over Section 5-241 of the Vermont Air Pollution Regulations are misplaced as that section is specifically addressed in the draft air permit. *See* exh. Pet. Reb. DTR-7 at 26.

76. 10 V.S.A. § 551(a).

statute, Vermont has established goals to reduce greenhouse gas emissions from 1990 base levels of 25 percent by January 1, 2012, 50 percent by January 1, 2028, and, if practicable using reasonable efforts, 75 percent by January 1, 2050.[77] The carbon released by the Project would, at least in the shorter term, interfere with efforts to achieve these goals because carbon released in each year of operation would not be sequestered until future years, possibly not for decades, and in the case of forest-regeneration failures, not at all. Accordingly, it is imperative that the Project source its Vermont-based fuel in a sustainable manner that promotes long-term forest health to minimize the Project's potential to interfere with these statutory goals. The ANR MOU, discussed above, will help ensure such a result.

The proposed wood stove change-out program is another positive component that can help support an affirmative finding that there would be no undue air pollution from the Project, provided it receives more definition and incorporates measures to maximize the greenhouse gas reduction benefits it is intended to produce. ANR correctly contends that NSSEP's proposal is only conceptual and fails to specifically address many important issues that would maximize the benefits of the program. In order to maximize the effects of the proposed program, ANR recommends that the program address the following:

- Guidance on the design of the wood stove change-out program must be provided to the implementing organization.

- Eligible wood stoves for replacement must be in current use and not be EPA-certified.

- The program should first focus on accomplishing change-outs in the Springfield area and then expand to achieve a sufficient level of participation to utilize all of the funding.

- There should be a requirement that the old wood stoves be destroyed, and documentation certifying the fact of such destruction must be presented.

- All new wood stoves should, at a minimum, meet the State of Washington emissions standards.

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77. 10 V.S.A. § 578(a).

- Options for new units should encourage the installation of the cleanest emitting and most efficient wood and pellet stoves, as well as potentially providing for the installation of alternative heating units, such as geothermal heating units.

- All replacement units should be professionally installed by certified installers.

- Documentation should be provided to ANR and the Board verifying that program conditions have been met and reporting on the number of change-outs accomplished.

- To maximize the success of this program, ANR encourages the implementing organization to provide guidance and/or training on the proper use and maintenance of the new heating units, particularly new wood stoves.[78]

These recommendations strike me as both reasonable and necessary for the proposed program to succeed. Accordingly, the Board should strongly encourage NSSEP to work with ANR to formalize the proposed program and address each of the concerns listed above and then require NSSEP to submit the program for Board review and approval. The program should be approved and active prior to the start of commercial operations of the Project.

Lastly, I find NoSAG's positions with respect to deficiencies in the air permit application, the height of the stack, and the efficiency of the Project to be without merit.[79]

First, the completeness of information in the air permit application is a matter to be addressed before the permitting authority, in this case the Air Pollution Control Division of ANR. While it is possible for a party to appeal the issuance of a permit for a renewable energy facility to the Board,[80] unless and until such an appeal is filed, NoSAG's argument to the Board at this time on the completeness of that application is premature.

Second, while the GEP height for the stack is 290 feet, constructing a stack of that height is not required. GEP determines the stack height that is high enough to avoid downwash effects from nearby buildings or structures. It is also the maximum height for which credit for

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78. *See* Hales pf. at 5-6.

79. With respect to efficiency, NoSAG's arguments are relevant to the questions of natural resource impacts and public good.

80. 10 V.S.A. § 8506.

dispersion can be taken in a Vermont air permit application. While NoSAG is correct that a height greater than GEP would result in more dispersion, an air permit application would not be allowed to take credit for this extra height and would need to use the GEP height in its dispersion analysis. This prevents the use of tall stacks in lieu of air pollution control equipment to achieve compliance with the NAAQS.[81] Conversely, when a stack is built lower than GEP, an applicant for an air permit must account for downwash effects in the air pollution analysis and install the necessary controls to meet the required emissions standards. This is a permissible approach and one that NSSEP has taken with respect to the Project.[82]

Lastly, with respect to NoSAG's efficiency argument, while higher efficiency may be a desirable outcome, the proposed Project's efficiency level does not in and of itself compel a conclusion that its operation would result in undue air pollution. Rather, the conditions discussed above, which I recommend the Board impose on NSSEP, facilitate the conclusion that the Project would not result in undue air pollution even with the expected thermal efficiency level attendant to the Project.

Accordingly, I recommend the Board impose the following conditions on any approval of the Project:

> NSSEP shall comply with all applicable Vermont Air Pollution Control Regulations.
>
> NSSEP shall obtain and comply with all necessary DEC Air Pollution Control Division permits. Copies of permits required for construction shall be filed with the Board prior to commencement of construction, and copies of permits required for operations shall be filed with the Board prior to commencement of operations.
>
> NSSEP shall not store more than a 30-day supply of wood chip fuel at the Project site. Stored fuel shall be utilized on a first in/first out basis.
>
> NSSEP shall develop a substantive proposal for its proposed wood stove change-out program consistent with the recommendations of ANR. NSSEP shall file its proposal for Board review. Parties with standing on the issue will have

81. Raczynski pf. reb. at 6-7.

82. Raczynski pf. reb. at 7.

14 calendar days from the date of filing to file comments with the Board. NSSEP must receive Board approval of and activate its proposed program prior to commencement of commercial operations.

Discussion - Air Pollution - Noise

With the conditions recommended below, the Project would not result in undue air pollution from Project noise.

NSSEP maintains that the Project would meet a noise standard set forth in guidelines developed by the World Health Organization ("WHO"). According to NSSEP, based on the WHO guidelines, the appropriate noise standard for the Project would be a maximum sound pressure level of 55 dBA (Leq) (16 hr) averaged over the entire day (7:00 A.M. - 11:00 P.M.), and 45 dBA (Leq) (8hr) averaged over the entire night (11:00 P.M. - 7:00 A.M.) outside of surrounding residences. According to modeling performed by NSSEP, the Project would comply with these standards.[83]

NoSAG contends that the Project would result in excessive noise levels in the surrounding community and that the Project would violate the noise requirements of the Springfield Town Plan.[84] NoSAG did not propose an alternate noise standard.

The Department asserts that there would be no undue noise impacts provided several conditions are imposed. The Department's recommended conditions are that NSSEP be required to perform and file modeling results for noise impacts for: (1) a one-hour Leq average daytime noise standard for facility operations; (2) a 10-hour Leq average daytime noise standard for facility operations between 7:00 A.M. and 5:00 P.M.; and (3) truck entry and exit noise at the property boundary using the Town of Springfield noise standard of 80 dBA 60 minutes per 24 hours. Parties would then have fourteen days from the date of the filing to file comments with the Board. NSSEP would then be subject to any additional requirements imposed by the Board

83. NSSEP Brief at 33; Duncan pf. (12/22/11) at 3-4.

84. NoSAG Brief at 13-15, 30.

following the Board's review of the additional modeling.[85] Like NoSAG, the Department did not propose any specific noise standard.

No party recommended any period of sound monitoring for Project operations.

Based on the evidence of record, I recommend the Board impose the noise standard proposed by NSSEP. The standard is based on WHO guidelines intended to be protective of health, and no other party has actually proposed an alternative workable standard or offered testimony as to why NSSEP's proposal is inappropriate. I do however, recommend one modification to NSSEP's proposed standard. I recommend that the Board, as it has done in prior proceedings,[86] impose an interior standard for the nighttime period to be protective of sleep for nearby residents.

NoSAG's witness, Mr. Kischko, testified that the industrial park is already the source of a great deal of noise and that the Project would add substantially to that noise level.[87] However, the record evidence, using modeling performed under professionally recognized methods, shows that the Project-specific sound pressure levels would be comparable to or even less than the existing background sound levels averaged over the same time periods proposed by NSSEP for the noise standard. Thus, while the Project would add to existing noise from the industrial park, it would not significantly increase sound pressure levels to surrounding residences. In fact, the modeling shows that Project-specific sound pressure levels are comparable to or only moderately higher than existing L90 background sound levels. The L90 is the existing level of background sound that is exceeded 90 percent of the time, and is thus a relatively quiet level for a given area. Additionally, NSSEP, through its noise consultant, has recommended several mitigating measures to reduce noise from the Project.

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85. Department Brief at 19-20.

86. *See* Docket 7628, Order of 5/31/11 at 165.

87. Kischko pf. at 20.

With respect to the Springfield Town Plan, it does not actually contain any specific standards related to noise levels, and NoSAG does not provide an explanation of what specific standard in the town plan would be violated by operation of the Project.

I further recommend that the Board decline to adopt the Department's noise modeling recommendations for two reasons. First, while I was concerned about NSSEP's initial testimony proposing 16-hour daytime and 8-hour nighttime averaging periods, under questioning during the technical hearing NSSEP's witness provided what I find to be an adequate explanation as to why a one-hour Leq – which has been used in prior Board approvals of wind generation facilities – is not needed here. In wind generation situations, there can be prolonged periods of non-operation due to the wind not blowing hard enough to turn the turbine blades. Averaging in these potential periods of non-operation could offset shorter periods where the turbines may be operating well above an acceptable noise level. However, unlike wind turbines, NSSEP's Project is not dependent on an intermittent resource such as the wind to operate. Rather, the Project would operate steadily throughout the day, thus alleviating the concerns that are intended to be addressed by the one-hour Leq imposed by the Board for wind projects.

Second, while I also initially considered the possibility of utilizing 7:00 A.M. to 5:00 P.M. as a 10-hour averaging period for determining compliance with a daytime noise standard, my review of the evidentiary record has persuaded me that the NSSEP proposal is acceptable. I acknowledge that including the time period between 5:00 P.M. and 11:00 P.M. in the daytime average as proposed would have the effect of somewhat diluting noise levels that occur between 7:00 A.M. and 5:00 P.M. when wood chips are expected to be delivered. However, the modeling shows that the expected sound levels would be equal to or less than existing sound levels averaged over the same time periods proposed by NSSEP.[88] Additionally, the modeling assumes up to 12 truck deliveries per hour when the average is expected to be five deliveries per hour, and it included them in the nighttime modeling even though deliveries are not expected during the night. In spite of the inclusion of the trucks, the modeling still shows decreasing sound levels at night. Thus, I conclude that the additional sound created by the

88. *See* finding 205, above.

Project would not cause a significant increase to sound levels already emanating from the industrial park. Lastly, the decrease in sound levels occurring after 5:00 P.M. from the cessation of fuel deliveries is beneficial as a practical matter as this is the time when many residents would be returning home at the end of the day. Similarly, I propose elsewhere in this Proposal for Decision a condition that no wood fuel be delivered on Saturdays or Sundays, so the reduced sound levels would also be in place on weekends, when residents are also more likely to be at home.

In addition to the proposed nosie standard, NSSEP's consultant proposed several additional mitigation measures that are appropriate for adoption by the Board and I therefore include them in the recommended conditions below in the event the Board approves the Project. I am also including a recommended condition restricting hours of construction consistent with prior Board Orders approving significant projects.

> NSSEP shall construct and operate the Project so that project-related sound levels at any existing surrounding residences do not exceed 55 dBA (exterior)(Leq) (16 hr) between 7:00 A.M. and 11:00 P.M., and 45 dBA (exterior)(Leq)(8 hr) or 30 dBA (interior bedrooms)(Leq)(8 hr) between 11:00 P.M. and 7:00 A.M.
>
> The boiler building, turbine building, wood processing building, the fuel reclaimer enclosures, and the fly ash conveyor enclosures shall have an acoustical rating of approximately Sound Transmission Class (STC) 45 or above.
>
> All outdoor conveyors can be open on the sides, but shall have a top cover. Conveyor openings in buildings and the fuel reclaimers shall be covered with two layers of vinyl sound barrier or comparable sound attenuating material. The material can have vertical slits that allow material to flow through.
>
> The ACC cooling unit fans shall be low noise or variable speed fans.
>
> Major construction activities for the Project shall occur only on weekdays between the hours of 7:00 A.M. and 7:00 P.M. and 8:00 A.M. and 5:00 P.M. on Saturdays. No construction will be allowed on Sundays or federal or state holidays. Indoor construction activities may take place outside of the restricted hours provided those activities do not result in sound levels in excess of the standard imposed for Project operations.

Findings - Water Pollution

210. With the conditions recommended below, the Project would not result in undue water pollution. This finding is supported by findings 211 through 218, below, and by the specific findings under the criteria of 10 V.S.A. §§ 6086(a)(1)(A) through (G), below.

211. The Project would be required to obtain authorizations under the following permits: (1) General Permit ("GP") 3-9015: New Stormwater Discharges to Waters that are not Principally Impaired by Collected Stormwater Runoff; (2) GP 3-9020: Stormwater Runoff from Construction Sites; and, (3) GP 3-9003: Vermont's National Pollutant Discharge Elimination System ("NPDES") Multi-Sector General Permit ("MSGP"). Exh. Pet. Supp. GAN-2 at 1.

212. NSSEP has developed both construction and operational phase stormwater management plans to ensure the proper management of stormwater runoff from the Project site prior to discharge to waters of the state. Appropriate permit authorizations would be obtained from DEC. Nelson pf. (12/22/11) at 5; Nelson pf. (6/1/12 as revised 3/12/13) at 6-7; exh. Pet. Supp. JAN-1.

213. NSSEP intends to harvest rooftop runoff from the existing 8.7 acre roof at the 36 Precision Drive building. Nelson pf. (6/1/12 as revised 3/12/13) at 5.

214. The collected runoff water would be used as process water in the NSSEP plant. Nelson pf. (6/1/12 as revised 3/12/13) at 4.

215. Approximately 4.6 million gallons of stormwater and snowmelt is discharged annually from the 36 Precision Drive building in an uncontrolled manner to an unnamed tributary of the Black River. Tr. 4/1/13 at 38 (Nelson).

216. The building at 36 Precision Drive is not required to have stormwater control measures because it predates such permitting requirements. Tr. 4/1/13 at 38 (Nelson).

217. Even after the rooftop harvesting, which would remove approximately 50% of the water runoff, the amount that would continue to be discharged in an uncontrolled manner would be substantial. Tr. 4/2/13 at 30 (Ingold).

218. NSSEP has indicated that it would discuss improvements to manage the remaining uncontrolled discharge, but has not made a commitment to actually implement improvements. Tr. 4/2/13 at 31-39 (Ingold).

Discussion - Water Pollution

Provided NSSEP obtains the required discharge permits, the Project would not result in undue water pollution from discharges at the Project site in the North Springfield Industrial Park.

ANR requests that the Board require NSSEP to make improvements to the uncontrolled stormwater outfall from 36 Precision Drive to improve water quality in the unnamed tributary of the Black River. I decline to make this recommendation to the Board. The uncontrolled stormwater discharge from the roof of the 36 Precision Drive building is the result of the building predating stormwater permitting requirements. In the absence of the Project, the discharge levels would continue unabated at current levels. If the Board approves the Project, the amount of the uncontrolled discharge would be reduced by as much as 50% due to the proposed rooftop harvesting of process water. Thus, not only does the Project not result in any undue impacts to water quality, it would actually result in a substantial benefit to existing conditions and I recommend the Board find that this benefit is enough to support a finding of no undue water pollution without requiring NSSEP to take any further steps. That said, I do recommend the Board strongly encourage NSSEP to review the potential for taking reasonable measures that would further mitigate the impacts of the remaining uncontrolled runoff.

For the foregoing reasons, I recommend the Board impose the following condition on any approval of the Project:

> NSSEP shall obtain authorizations under and comply with the terms of the following permits: (1) GP 3-9015: New Stormwater Discharges to Waters that are not Principally Impaired by Collected Stormwater Runoff; (2) GP 3-9020: Stormwater Runoff from Construction Sites; and, (3) GP 3-9003: Vermont's MSGP. Copies of permits required for construction shall be filed with the Board prior to commencement of construction, and copies of permits required for operations shall be filed with the Board prior to commencement of operations.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

Findings

219. The Project's as-built footprint site would not be located within lands that meet the criteria for defining headwaters and there are no stream channels associated with the study area. Nelson pf. (12/22/11) at 5; exh. Pet. JAN-2 at 7.

220. Harvesting of fuel for the Project from Vermont's forests could have an undue adverse impact on headwaters if it is not done in an appropriate manner. Findings 118 through 122, above.

221. Compliance with the terms and conditions of the ANR MOU would ensure that Project harvesting would not result in undue adverse impacts to Vermont headwaters. Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

Findings

222. With the conditions recommended below, the Project would meet applicable health and environmental conservation department regulations regarding the disposal of waste and would not involve the injection of waste materials into groundwater or wells. This finding is supported by findings 223 through 230, below.

223. Process wastewater from the Project would be returned to the groundwater via a proposed on-site subsurface leachfield, which would be permitted in accordance with the Vermont Underground Injection Control ("UIC") Rule. Nelson pf. (12/22/11) at 6.

224. The system is proposed to be permitted and constructed for a volume of water to be discharged of up to about 30,000 gallons per day ("gpd"). However, while the leachfield would be able to accommodate 30,000 gpd, it is anticipated that the Project would discharge less than that, somewhere in the range of 22,000 gpd. Nelson pf. (6/1/12 as revised 3/12/13) at 3; tr. 4/1/13 at 48 (Nelson).

225. The composition of the process water would consist only of boiler blowdown water. The contents of the blowdown water discharge were incorporated into the analysis of the Project's compliance with UIC permit requirements. Tr. 4/1/13 at 46, 49, 51 (Nelson); *see also* tr. 4/2/13 at 202-203, 219, 220 (Smith).

226. The proposed leachfield would not affect any existing underground sources of drinking water or any aquifers with the potential for use as drinking water sources. The subsurface infiltration of process water would not involve the injection of toxic or hazardous substances into groundwater or wells. Permits issued by the DEC under the Vermont UIC Rule provide safeguards in the form of requirements for ongoing routine monitoring of groundwater chemistry and reporting of the results to DEC. Nelson pf. (12/22/11) at 6-7; Nelson pf. (6/1/12 as revised 3/12/13) at 3-4.

227. NSSEP proposes to install containment structures for the 50,000-gallon distillate fuel storage tank, the 15,000-gallon anhydrous ammonia storage tank, the fuel truck unloading area, and all Project transformers, with a capacity sufficient to contain 120% of the maximum volume of liquid contained in each of these structures. Tr. 4/2/13 at 211-14 (Smith).

228. Changing the capacity of a containment structure requires only a minor adjustment. Tr. 4/2/13 at 214 (Smith).

229. The Project would be considered to be a Large Generator of wood ash as defined in the State of Vermont Comprehensive Wood Ash Management Procedure. The Project would generate up to 12,000 tons per year of wood ash material (fly ash and bottom ash combined). Smith pf. (12/22/11) at 24.

230. The Project plans to contract comprehensive beneficial use management and handling services for the wood ash, including permitting, monitoring, compliance, and reporting. Smith pf. (12/22/11) at 24.

Discussion

Provided NSSEP obtains the required Vermont UIC permit and contracts for comprehensive beneficial use management and handling services for the wood ash produced by the Project, including permitting, monitoring, compliance, and reporting, the Project would meet

applicable health and environmental conservation department regulations regarding the disposal of waste and would not involve the injection of waste materials into groundwater or wells.

NoSAG contends that NSSEP has not adequately demonstrated that the Project would not result in the injection of waste materials into groundwater or wells because NSSEP did not provide the chemical constituents that would be injected into the proposed leachfield from the boiler blowdown process, used periodically to clean the boiler. NoSAG asserts that not only did NSSEP fail to provide the make-up of the wastewater to the Board, it also failed to provide that information to ANR for the UIC permitting process.[89]

I am not persuaded by NoSAG's contentions and characterization of the evidence. NSSEP witnesses testified that the specific chemical constituents that are introduced into the boiler blowdown process are not needed to determine compliance with UIC requirements. Rather, the relevant information is the makeup of the wastewater when it exits the blowdown process because of chemical reactions that occur during that process. According to NSSEP's witness, the output wastewater makeup was provided to ANR for the Vermont UIC permit review, and the wastewater makeup would be consistent with Vermont UIC requirements.[90] Since it is the output wastewater that would be injected into the ground, I find no basis to conclude that there would be undue adverse impacts, provided the Vermont UIC permit is obtained and complied with, simply because the input chemicals to the blowdown process were not provided in this proceeding. Additionally, Mr. Nelson has submitted unrebutted testimony that the wastewater stream to be injected into the leachfield would comply with all applicable health and environmental conservation department regulations regarding the disposal of waste and would not involve the injection of waste materials into groundwater or wells. Therefore, subject to the conditions recommended below, I conclude that NSSEP has met its burden under this criterion.

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89. NoSAG Brief at 32-33, 45-48; NoSAG Reply Brief 14-16.

90. Tr. 4/2/13 at 202-04, 219 (Smith); tr. 4/1/13 at 46-48 (Nelson).

I recommend the Board impose the following conditions on any approval of the Project. I also recommend, consistent with prior Board decisions, that the containment structures proposed by NSSEP be increased from 120% capacity levels to 150% capacity levels.

> NSSEP shall obtain the necessary DEC Underground Injection Control permit and comply with its terms and conditions. NSSEP shall file copies of the permit with the Board and parties with standing on the issue will have 14 calendar days to file comments on the permit.
>
> NSSEP shall contract with a reputable firm to handle the transportation and disposal of the Project's wood ash. All wood ash from the Project shall be handled and disposed of in accordance with the Vermont Comprehensive Wood Ash Management Procedure.
>
> NSSEP shall install containment structures for the 50,000-gallon distillate fuel storage tank, the 15,000-gallon anhydrous ammonia storage tank, the fuel truck unloading area, and all Project transformers. The containment structures shall be of sufficient capacity to contain 150% of the maximum volume of liquid contained in each of these structures.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

Findings

231. The Project design considers water conservation through the use of ACC technology and rainwater and snowmelt harvesting to reduce the need to rely on other water sources for the Project. This finding is supported by findings 232 through 235, below.

232. Rooftop runoff would be collected from the existing 8.7-acre roof of the 36 Precision Drive building, and also from a proposed 3.5-acre fabric structure covering the wood chip fuel storage area. Rainfall and snowmelt runoff collected from these structures would be stored in a proposed 500,000 gallon tank, located at the Project site. The capacity of the tank would be allocated as follows: 200,000 gallons reserved solely for fire protection, 200,000 gallons for process water use, with empty space, or freeboard, making up the additional capacity. Nelson pf. (6/1/12 as revised 3/12/13) at 5; exh. Pet. Supp. JAN-1; tr. 4/1/13 at 28 (Nelson).

233. Rainwater harvesting has the combined benefits of reducing stormwater discharge and providing a water source that does not affect existing water supplies. Nelson pf. (6/1/12 as revised 3/12/13) at 4.

234. The collection of rooftop runoff from 36 Precision Drive and the proposed wood chip fuel shelter would be able to provide approximately 6.9 million gallons (Mgal) of the Project's 8.4 Mgal annual demand. This accounts for the majority of the Project's annual demand (82%). In a worst-case scenario involving a very dry year, the overall availability of rooftop runoff is projected to be approximately 5.8 Mgal of the 8.4 Mgal, or 69% of projected overall demand. Nelson pf. (6/1/12 as revised 3/12/13) at 5-6.

235. Use of an ACC system in lieu of a water-cooled system reduces the amount of water needed for the Project from between 500,000 and 550,000 gallons per day, and up to 740,000 gallons per day on dry summer days, to 30,000 gallons per day or less. Smith pf. (6/1/12) at 4; Ingold pf. (6/1/12 as revised 3/12/13) at 7; tr. 4/1/13 at 53 (Nelson).

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

Findings

236. A portion of the study area for the proposed thermal loop north of Main Street is within a 100-year Federal Energy Management Agency floodway associated with Great Brook. If the thermal loop is built on the south side of Main Street there would not likely be any impacts on the floodway. Exh. Pet. JAN-2 at 7.

Discussion

As a condition of approval of the Project, to avoid impacts to the floodway associated with Great Brook I recommend the Board impose the following requirement:

> NSSEP shall construct the proposed thermal loop so that it is on the south side of Main Street to avoid impacts to the adjacent floodway.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

Findings

237. A portion of NSSEP's delineation of the top of slope along the bank of Great Brook is within the study area for the proposed thermal loop, north of Main Street. If the thermal loop is built on the south side of Main Street, there would not likely be impacts on Great Brook. Exh. Pet. JAN-2 at 7.

238. Harvesting of fuel for the Project from Vermont's forests could have an undue adverse impact on streams if it is not done in an appropriate manner. Finding 239, below.

239. Stream crossings used during harvesting have been a particular area of concern in eliminating discharges of sediment. Forestry continues to be an area worthy of efforts to reduce sedimentation and phosphorous loading to state waters. Exh. Pet. Harvesting Reb. DI-3 at 85.

240. Compliance with the terms and conditions of the ANR MOU would ensure that the harvesting of fuel for the Project would not result in undue adverse impacts to Vermont streams. Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3.

Discussion

Compliance with the terms and conditions of the ANR MOU and construction of the thermal loop on the south side of Main Street as required by the condition recommended above would prevent undue adverse impacts from the Project on Vermont streams.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

Findings

241. There are no shorelines within or adjacent to the NSSEP Project study area. Exh. Pet. JAN-2 at 7.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

242. The proposed Project's built footprint would not violate the rules relating to significant wetlands, and would not have an undue adverse effect on wetlands. This finding is supported by finding 243, below.

243. Based on the results of NSSEP's field delineation, there are no areas that would meet either the United States Army Corps of Engineers' or ANR's jurisdictional requirement for wetlands within the NSSEP Project study area. No vernal pools or potential vernal pools were identified during the investigation. Exh. Pet. JAN-2 at 7.

244. Harvesting of fuel for the Project from Vermont's forests could have an undue adverse impact on wetlands if it is not done in an appropriate manner. Findings 118 through 122, above.

245. Compliance with the terms and conditions of the ANR MOU would ensure that Project harvesting would not result in undue adverse impacts on Vermont wetlands. Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

Findings

246. Sufficient water exists to meet the needs of the Project and the Project would not cause an unreasonable burden on an existing water supply. This finding is supported by findings 247 through 250, below.

247. Water needs for the Project include domestic water for employees at the site and process water needs for the operation of the biomass facility. No wells are planned to be drilled to supply the Project with water. Nelson pf. (12/22/11) at 10-12; Nelson pf. (6/1/12 as revised 3/12/13) at 3.

248. The domestic water needs for the Project are approximately 500 gallons per day, based on 28 employees at 15 gallons per employee per day. The Springfield Water Department municipal system currently services the North Springfield Industrial Park and is able to produce

about 313,500 gallons per day of water in excess of current peak water needs. There is sufficient water supply available from the municipal system to support the domestic water needs for the Project. Nelson pf. (12/22/11) at 11.

249. There is sufficient water available for the proposed Project's process water needs. The Project is being designed with ACC technology, which means that the total process water usage would be less than 30,000 gallons per day. The Project's water needs would be met primarily through water supplied from rooftop water collection. The water harvested from rooftops would be supplemented with municipal water provided by the Town of Springfield. Nelson pf. (6/1/12 as revised 3/12/13) at 2-3.

250. After rooftop runoff, the Project's remaining water needs, approximately 1.5 Mgal in an average year, or 18% of total demand, would be met by using municipal water provided by the Town of Springfield system. In a very dry year, 2.5 Mgal, or 29% of the water needs, would be met using municipal water. It is expected that no more than approximately 23,000 gallons of municipal water would be needed on any given day. The Town of Springfield's water system has sufficient capacity to meet this water need, as noted in an allocation letter from the Town of Springfield. Nelson pf. (6/1/12 as revised 3/12/13) at 6; tr. 4/1/13 at 28-29 (Nelson).

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

Findings

251. With the conditions recommended below, the Project would not cause unreasonable soil erosion or a reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result. This finding is supported by findings 252 through 258, below.

252. The Project would require both an operational phase stormwater permit – GP 3-9015: New Stormwater Discharges to Waters that are not Principally Impaired by Collected Stormwater Runoff – and a construction phase stormwater discharge permit – GP 3-9020: Stormwater Runoff from Construction Sites. Exh. Pet. Supp. JAN-2 at 1.

253. The proposed Project's stormwater management and erosion control plans have been developed in accordance with the DEC's Standards and Specifications for Erosion Prevention and Sediment Control. Nelson pf. (12/22/11) at 13; Nelson pf. (6/1/12 as revised 3/12/13) at 6-7.

254. The stormwater management system was designed to meet all applicable requirements of the DEC Stormwater Management Rule, and the Vermont Stormwater Management Manual. Nelson pf. (6/1/12 as revised 3/12/13) at 7.

255. Harvesting of fuel for the Project from Vermont's forests could cause unreasonable soil erosion or a reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result if it is not done in an appropriate manner. Findings 131 through 153, above.

256. Stream crossings used during timber harvesting have been a particular area of concern in eliminating sediment discharges. Exh. Pet. Harvesting Reb. DI-3 at 85.

257. In order to protect soils, timber harvesting standards must require that harvesting equipment shall not be operated in conditions or in such a manner so as to substantially alter the natural and productive properties of the soil. In addition, no more than 12% of a harvest area should be used for skid trails, roads and landings. NSSEP has agreed to these restrictions in the ANR MOU. Wilmot pf. at 30; exh. Pet. Supp. DI-8 at 3.

258. Compliance with the terms and conditions of the ANR MOU would ensure that Project harvesting would not result in undue adverse soil erosion. Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

Findings

259. With the conditions recommended below, the Project would not cause unreasonable congestion or unsafe conditions with respect to transportation. This finding is supported by findings 260 through 278, below.

260. The Petitioner commissioned a Traffic Impact Study which was conducted by RSG, Inc. Exh. Pet. Reb. DS-1.

261. The Traffic Impact Study concluded that "construction of the proposed North Springfield Sustainable Energy Project will not cause undue adverse traffic or safety conditions on the surrounding road network." Exh. Pet. Reb. DS-1 at 39.

262. The Vermont Department of Transportation ("VTrans") reviewed the Traffic Impact Study prepared by RSG. Joseph Segale, Department[91] ("Segale") pf. at 2.

263. The proposed Project's Traffic Impact Study was prepared consistent with the VTrans Traffic Impact Study Guidelines, as revised 2008, and follows standard traffic engineering protocols. Segale pf. at 2.

264. The Project is located close to the confluence of several state highways, including Vermont Routes 10, 11, 106 and 103, and would be accessed by employees and fuel suppliers from all directions. Saladino pf. at 2.

265. The majority of the equipment and material used to construct the facility would be transported within Vermont over state and local highways and delivered to a designated laydown area on the property at 36 Precision Drive and would be done in accordance with applicable permits and requirements. Morgan pf. at 11.

266. During operations, wood fuel is expected to be delivered within Vermont by truck. These trucks would access the facility via Precision Drive which is the current practice with all truck traffic entering and leaving the industrial park. Morgan pf. at 11.

267. The Project is expected to utilize, at full capacity, approximately 420,500 tons of fuel each year. This means that during typical operation, the plant would receive approximately five truck deliveries per hour on weekdays from 7:00 A.M. to 5:00 P.M. Saladino pf. at 3.

268. Seasonal variations in wood supply and transport conditions may result in varied delivery rates and extended delivery hours. Wet ground during mud season may limit wood supply for certain time periods, such that higher delivery rates may occur prior to or immediately

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91. On November 29, 2012, Mr. Joseph Segale of VTrans submitted prefiled testimony in this Docket as a witness for the Department. That testimony was subsequently adopted at the technical hearing by Mr. Rajnish Gupta, another VTrans employee, and was admitted into evidence at the March 14 technical hearing. Tr. 3/14/13 at 215 (Gupta).

following mud season to maintain adequate fuel supplies. The Project has the capacity to process up to 12 delivery trucks in a single hour. Saladino pf. at 3-4.

269. The addition of Project-generated traffic is not expected to significantly increase intersection delays at any intersection studied. These delays would increase by no more than 1 second on all approaches under all scenarios. Level of Service[92] is projected to remain within acceptable limits. Saladino pf. at 5.

270. Even if the Project were to operate with the maximum amount of truck traffic of 12 trucks per hour, as opposed to the predicted average of five trucks per hour, there would be no significant delays in traffic, and the Level of Service would remain acceptable, with traffic conditions generally free flowing. Tr. 3/14/13 at 151 (Saladino).

271. The Petitioner's traffic witness, Mr. Saladino, updated his testimony and traffic study in 2012 to reflect changes in the surrounding counties where the wood fuel supply is expected to be coming from. While the percentages of fuel per county changed, the changes to the updated traffic study were relatively minor. The largest increase at any given intersection was at most two new peak hour trips under average delivery conditions, and five new peak hour trips under maximum fuel resupply conditions. Saladino pf. reb. at 2; exh. Pet. Reb. DS-1; tr. 3/14/13 at 156-57 (Saladino).

272. The amount of traffic to be generated by the Project was conservatively estimated to be high, but at 42 vehicles per hour is relatively minor. The impact on congestion is negligible because this small amount of traffic is quickly dispersed over a network of roads. Personal vehicles and commercial truck traffic generated by the Project would not exacerbate the patterns and causes of accidents at high crash locations in the study area; and there is adequate stopping sight and corner sight distances at intersections proximate to the Project site. Segale pf. at 2-3.

273. Consistent with discussions Petitioner has had with the SWCRPC, NSSEP has agreed to schedule wood chip truck deliveries to reduce impacts to certain roads during the winter ski

92. Level of Service is a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. Exh. Pet. DS-2 at 17.

season. Further, NSSEP would avoid making deliveries on Fridays after 2:30 P.M. during the winter ski season. Ingold pf. reb. at 2.

274. NSSEP does not anticipate accepting deliveries at any time of the year on Saturdays or Sundays. Ingold pf. reb. at 2; tr. 3/15/13 at 18, 20 (Winstanley).

275. NSSEP has agreed with SWCRPC's recommendation for the need to establish a fair distribution of truck traffic along the various optional routes to the Project site. To accomplish this, NSSEP proposes that the wood chip delivery truck traffic would be monitored over the first year of operation, and NSSEP staff would meet with stakeholders, including regional and town officials and SWCRPC, to evaluate and respond to actual impacts of the various routes in order to fairly distribute the impacts caused by the additional truck traffic associated with the Project. Ingold pf. reb. at 2.

276. The Project site is located within the approach cone to the Hartness Airport. Morgan pf. at 12.

277. On June 6, 2013, the Federal Aviation Administration ("FAA") issued a Determination Of No Hazard To Air Navigation for the proposed Project's stack, the tallest structure that would be constructed as part of the Project. Exh. Board-3.[93]

278. The FAA determination imposes both a lighting requirement and a date by which construction of the stack must commence or else the determination will expire. Exh. Board-3 at 1-2.

Discussion

NSSEP and the Department agree that the increased traffic levels that would result from construction and operation of the Project would not result in undue congestion or unsafe

93. It is my intent to admit the June 6, 2013, FAA determination into the evidentiary record as Exhibit Board-3. Any party wishing to object to the admission of the document should present its objection, along with the reasons therefore, when it files its comments on this Proposal for Decision. If no such objection is filed, the exhibit shall be deemed to be admitted into the evidentiary record.

conditions on the region's roads. However, unlike the Department, NSSEP does not propose any conditions to ensure that result.[94]

The Town of Springfield and SWCRPC state that they would not oppose the Project with respect to traffic conditions provided the Board imposes several conditions on NSSEP. Those conditions include: (1) construction of a new access road from Route 10 to the North Springfield Industrial Park; (2) a one-to-three year monitoring period, with regular stakeholder meetings, to evaluate and respond to actual delivery impacts on the various fuel supply routes and to fairly distribute any negative impacts from the increased truck traffic; (3) refraining from making fuel deliveries on Fridays between 2:30 P.M. and 5:30 P.M. during ski season, and no fuel deliveries taking place between 8:00 P.M. and 6:00 A.M. to avoid undue noise impacts along the various routes; (4) NSSEP to make commercially reasonable efforts through its fuel supply contracts to ensure that deliveries are not concentrated at one intersection, with traffic being distributed pro rata as feasible among Springfield, Weathersfield, Cavendish and Chester, and (5) NSSEP to maintain truck trip information sufficient to monitor, evaluate and mitigate, where possible, impacts from the truck traffic.[95]

NoSAG asserts that the Traffic Impact Study is flawed because it lacks specific information regarding the source and routing of wood fuel deliveries.[96] NoSAG also contends that the Project is poorly located and would impact flying conditions for aircraft utilizing Hartness Airport.[97]

I recommend the Board find that the Project would not result in undue congestion or unsafe conditions with respect to transportation, provided the conditions recommended below are imposed. The record evidence demonstrates that the delivery of fuel to the Project site would result in only slight delays at some intersections, including the key intersections at Route 10 and

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94. NSSEP Brief at 76; Department Brief at 22-23.

95. Springfield/SWCRPC Brief at 1-3.

96. NoSAG Brief at 42-43.

97. NoSAG Brief at 15-16.

South County Road, and South County Road and Main Street, through which all fuel deliveries would eventually have to pass. The reason delay times at these two important intersections would not be unduly increased is because of the low level of existing traffic, which would allow the trucks time to negotiate the turns without causing significant traffic backups.

To be clear, my recommendation here is distinguishable from my earlier recommendation regarding orderly development of the region. That recommendation is not based on traffic congestion at the final intersections leading to the North Springfield Industrial Park. Rather, it is based on the inappropriate use of South County Road and Main Street, two local residential streets, as a travel corridor for the fuel delivery trucks in light of the Springfield Town Plan's express vision for development in the industrial park that does not rely on such truck traffic.

I agree with NoSAG that there is some degree of uncertainty in the Traffic Impact Study due to variety in the geographic origins of the wood fuel that would be delivered to the Project site. However, with a proper condition governing the monitoring and regulation of traffic flows, deliveries could occur in a manner that would distribute Project-generated traffic across the region so that undue congestion does not occur.

I do not recommend that the Board require NSSEP to construct a new access road from Route 10 to the industrial park as requested by Springfield and SWCRPC. I decline to make this recommendation primarily because a review of aerial photography of the area in question indicates a high likelihood that construction of such a road would require the condemnation of private property, including the demolition or removal of a number of residential structures between Main Street and Route 10 west of South County Road.[98] Given that the Project would not meet any Vermont-specific need in the absence of PPAs with Vermont utilities for the Project's output, I conclude it would be inappropriate to impose such a condition due to these attendant impacts.[99]

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98. *See* Exh. Pet. CGM-2.

99. I realize that NSSEP and Springfield have executed the Springfield MOU which in part requires NSSEP to provide financing to the Town of Springfield so that the town can build a new access road between Route 10 and the industrial park. However, that MOU was not submitted into evidence and therefore cannot be considered by the

(continued...)

With respect to the proposed Project's impacts on aircraft utilizing Hartness Airport, I recommend the Board rely on exhibit Board-3, the FAA's Determination Of No Hazard To Air Navigation, as evidence in making its independent determination that the Project would not result in unsafe conditions to those aircraft, provided the conditions imposed in the determination are complied with. The lighting requirement would address concerns regarding visibility of the Project's stack to approaching aircraft, and the December 6, 2014, deadline for commencing construction would serve to ensure that any subsequent material changes in the use of the airport can be addressed.

I recommend the Board impose the following conditions on any approval of the Project to protect against undue adverse impacts from the Project on transportation:

> NSSEP shall monitor wood chip delivery truck traffic over the first year of Project operation, and NSSEP staff shall meet regularly with stakeholders, including regional and town officials and SWCRPC, to evaluate and respond to actual impacts of the various routes in order to fairly distribute the impacts caused by the additional truck traffic associated with the Project.
>
> NSSEP shall develop and file with the Board a traffic monitoring plan to document and verify the wood chip delivery truck traffic pattern during the initial year of Project operations. This monitoring plan shall be filed no less than 90 calender days prior to the commencement of wood chip deliveries to the Project site. The monitoring plan shall collect and maintain sufficient information to monitor, evaluate and mitigate, where possible, impacts from the truck traffic. Parties shall have 30 calendar days after the submission of the monitoring plan to file comments thereon. NSSEP must obtain Board approval of its monitoring plan prior to taking delivery of wood chips at the Project site.
>
> Within 60 calendar days after the completion of one year of Project operations, the results of the traffic monitoring plan along with a report of stakeholder input on traffic impacts shall be filed with the Board. Parties with standing shall have 30 calendar days after the submission of the monitoring results and stakeholder input

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99. (...continued)
Board in rendering its findings in this proceeding. 3 V.S.A. § 809(g). Additionally, any agreement whereby NSSEP would provide financing for a road to be built and owned by the town is different from the SWCRPC/Springfield proposed condition that the Board require NSSEP to actually construct such a road, a proposed condition I recommend the Board decline to adopt for the reasons discussed above.

report to file comments. In the event parties believe an additional monitoring period is needed they shall explain their reasons therefor at that time.

Wood chip deliveries shall be limited to Monday through Friday between the hours of 7:00 A.M. and 5:00 P.M. Where circumstances beyond NSSEP's control require, such as prior to and immediately following mud season, delivery hours may be extended until 7:00 P.M. No deliveries may occur on Saturdays or Sundays, or state or federal holidays, and in no event shall deliveries occur between the hours of 7:00 P.M. and 7:00 A.M.

Deliveries shall be distributed pro rata, to the extent feasible, among Springfield, Weathersfield, Cavendish and Chester, and deliveries shall be distributed so that the majority of deliveries are not concentrated at one intersection. This restriction does not apply to the Route 10 and South County Road or the South County Road and Main Street intersections.

NSSEP shall schedule wood chip truck deliveries in consultation with SWCRPC to reduce impacts on certain sensitive roads during winter ski season. Further, NSSEP will not authorize or schedule deliveries on Fridays after 2:30 P.M. during the winter ski season.

NSSEP shall comply with the requirements of the FAA Determination Of No Hazard To Air Navigation dated June 6, 2013. (Exhibit Board-3).

Educational Services

[10 V.S.A. § 6086(a)(6)]

Findings

279. The Project would not impose an unreasonable burden on the ability of a municipality to provide educational services. This finding is supported by findings 280 through 282, below.

280. The Project is expected to attract approximately seventeen new residents that would result in seven new households in the Town of Springfield. Heaps pf. at 12.

281. The 2010 population of Springfield was determined by the Census Bureau to be 9,373. If seventeen new residents were added to the total, the increase would be only two-tenths of one percent. Exh. Pet. RWH-2 at 9.

282. Any increased demand on educational services that may result would be offset by the revenues the Project would generate for the town. Morgan pf. at 12.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

Findings

283. The Project would not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services. This finding is supported by findings 280 and 281, above, and finding 284, below.

284. The combined net impact to the Springfield municipal budget from the Project and the seven new households is estimated to be $1,976,210. This would be an annual net benefit from the Project. The Town could choose to spend this additional revenue on new services with no cost to residents, or it could choose to keep services constant, except those new services needed for the plant and the new residents, and lower its property tax rate, and therefore, tax bills. Exh. Pet. RWH-2 at 12.

Aesthetics

[10 V.S.A. § 6086(a)(8)]

Findings

285. The Project would not have an undue adverse impact on the scenic and natural beauty of the area or aesthetics. This finding is supported by findings 286 through 309, below.

286. The Project would be a biomass electric generating facility sited on a roughly 20-acre parcel within the North Springfield Industrial Park, which is located southwest of the Village of North Springfield. Kane pf. at 5.

287. The built environment in the immediate vicinity of the Project site is the existing North Springfield Industrial Park, which is comprised of large one- and two-story industrial buildings with predominantly metal and/or glass exteriors, flat roofs and beige or neutral coloration. Kane pf. at 5.

288. The existing site plan includes large parking and vehicle service areas for loading and unloading, roadways with limited naturalized landscape, and support structures. Exterior, pole-mounted lighting fixtures would be located within the parking areas. Kane pf. at 5.

289. The Project would be comprised of a main steam generator building, an emissions stack, a cooling tower structure, an outdoor storage area for the wood fuel, conveyors and support roads and electric infrastructure. The existing GMP Fellows Gear substation is located at the far eastern corner of the site. Kane pf. at 6.

290. Power generated from the Project would be delivered from the switchyard via an existing single-pole, three-phase distribution circuit that serves the industrial park to the Fellows Gear substation. NSSEP plans on increasing the height of five or six of these poles and adding the 46 kV conductor from the Project to the top of these new poles. Kane pf. at 7.

291. The Project is to be located within the village of North Springfield which sits along the Black River and is generally surrounded by numerous smaller hills that create a highly varied topography. The two most prominent peaks in the area are Hawkes Mountain (elevation 2,092 feet) and Mt. Ephram (elevation 1,480 feet). By comparison, the site on which the Project is proposed has a base elevation of around 578 feet. The nearby Hartness Airport, located about one mile to the north and east, sits on a bench of land at a similar elevation to the Project site. Between the airport and the Project site is the village of North Springfield which is nominally lower in elevation. Exh. DPS-MK-3 at figure 2; exh. DPS-MK-4 at figure 3; Kane pf. at 7-8.

292. The landscape within the general vicinity of the Project is bowl-like with hills rising upwards and surrounding the area. Most of these hills are relatively small, but in the aggregate they increase the overall sense of visual isolation of the Project site relative to other areas nearby, including Springfield and Chester. As a result, the range of the viewshed appears to be very small and extends no more than three miles from the highest point of the Project. Kane pf. at 8.

293. Visibility of the Project would be limited from surrounding residential areas. This is particularly true within the village of North Springfield which, although less than a mile away from the Project, is separated from the industrial park by a significant patch of mature forest and an existing gravel operation, which both effectively limit views. The village area also has a slightly lower elevation which further helps reduce views toward the Project site. Kane pf. at 9.

294. The upper portion of the Project's 140-foot stack and the top of the boiler building are likely to be visible from a few residential areas within and immediately surrounding the village

of North Springfield, a section of French Meadow Road, as well as the Pine Grove Cemetery. Vissering pf. (12/22/11) at 3.

295. The Hexacool ACC units, which would be lower in height than the turbine building, would be visible from limited portions of French Meadow Road, Baker Road, Fairbanks Road, Main Street near the entrance to the industrial park, and Baltimore Road. Existing trees would partially screen portions of the three southernmost towers. Vissering pf. (6/1/12) at 2; exhs. Pet. Supp. JEV-1, JEV-2 and JEV-3.

296. The Project's wood fuel shelter would have an aesthetic impact. The fabric covering would have a slight sheen in contrast with the wood chips and it would be slightly higher in maximum elevation than the stockpiled wood chips. The top of the fuel shelter might be visible from a few village locations where foreground trees do not provide screening, as well as from limited portions of French Meadow Road and Baker Road. Some residents along Fairbanks Road and Main Street near the entrance to the industrial park may be able to see a portion of the shelter behind other buildings within the industrial park and behind the proposed turbine building. The fuel shelter may also be slightly visible from Baltimore Road, but it would be seen from most locations along with other buildings in the industrial park. Vissering pf. (6/1/12) at 3-4.

297. The wood fuel shelter would reduce the possibility of blowing wood chips or dust, and would give a neater appearance to an area that would otherwise have an appearance of visual clutter if the Project is built, including piles of wood chips, vehicles and other equipment. The fabric covering for the shelter would be a darker color so as to blend in with the other structures. Vissering pf. (6/1/12) at 3.

298. Certain areas of the Project have been designed so that night operations are not normally required, and lighting in those areas would be used only when operations were necessary. These fixtures would normally be off and would require operator control to be activated. Smith pf. (12/22/11) at 19.

299. Where operations require additional lighting, that lighting would be restricted in use and would have downward shield fixtures. Michael Buscher, NSSEP ("Buscher") and Vissering pf. reb. at 3.

300. Light shields reduce offsite impacts by reducing glare and uplight and there would be minimal light levels extending beyond any of the property boundaries. Tr. 3/14/13 at 40 (Buscher).

301. While the viewshed for the Project is relatively small, its aesthetic impact on surrounding areas would be adverse due to the Project's scale, height, lighting and vapor plume. Kane pf. at 13-15.

302. The proposed buildings and wood shelter enclosure would combine to present a facility of noticeably larger scale than any which currently exists in the industrial park in which the Project is proposed to be located. Kane pf. at 13.

303. The boiler structure, at approximately 116 feet, and the stack, at approximately 140 feet, would be dramatically taller than any existing structure in the industrial park and surrounding area. They would be distinctive and noticeable from numerous vantage points. Kane pf. at 14.

304. The normal operational lighting of the Project would be similar to existing night lighting in the industrial park. However, fuel loading and maintenance operations during evening hours would require illumination of a much larger portion of the site, making it visually distinctive when seen from viewshed areas during those times. Kane pf. at 15.

305. While the formation of vapor plumes from the stack is dependent on a number of atmospheric variables, such plumes are anticipated to occur and would indisputably create unique visual impacts. Kane pf. at 15.

306. The aesthetic impact of the Project would not be unduly adverse because it would not shock or offend the average person due to the limited visibility of Project structures and because the Project would be in keeping with the industrial park setting for which it is proposed. Kane pf. at 16-17.

307. The aesthetic impact of the Project would not be unduly adverse because the Project would not violate any clear written community standards intended to preserve the aesthetics or

scenic beauty of the area based on a review of the 2009 Springfield Town Plan, the 2009 Southern Windsor County Regional Plan, and the 2010 Chester Town Plan. Kane pf. at 18-22.

308. The aesthetic impact of the Project would not be unduly adverse because NSSEP has proposed reasonably available steps to mitigate the Project's visual impacts and improve the harmony of the Project with its surroundings. These would include siting the Project in an existing industrial park, the use of darker colors for Project structures, the lowering of lighting pole heights, the use of LED lighting, and the use of minimal lighting, where safety permits, to reduce visual impacts. The change in Project design to ACC technology virtually eliminates any vapor plumes from the cooling towers, although occasional plumes would still occur at the stack. Kane pf. at 22-24.

309. One final mitigating step would be for NSSEP to maintain communication with nearby residences and the Stellafane Observatory and to notify them if the outdoor lighting would be fully on for an extended period of time. If, for example, plant maintenance would require a week of night operations, notifying these parties would help reduce impacts from the Project on its immediate surroundings. Kane pf. at 24.

Discussion

NSSEP and the Department both assert that the Project would result in an adverse, but not undue, aesthetic impact. Both parties point to the limited viewshed, the Project location within the existing industrial park, and several mitigating steps that NSSEP has proposed to reduce aesthetic impacts. Both parties also contend that the Project would not run counter to any clear, written community standards intended to preserve the scenic beauty of the area based on their review of the town plans of Springfield and Chester, and the Southern Windsor County Regional Plan.[100]

NoSAG contends that the Project would result in an undue adverse impact to aesthetics because of the size of the Project's infrastructure and the fact that it would be significantly out of compliance with Springfield's zoning ordinance, which prohibits structures greater than 60 feet in height. NoSAG also asserts that the depictions and characterizations provided by NSSEP's

100. NSSEP Brief at 80-81; Department Brief at 14-16.

aesthetics witness are inaccurate and therefore should not be accepted. NoSAG points to increased visual impacts from the switch to ACC technology and the addition of the covered fuel shelter in support of its position. NSSEP also notes that noise from the ACC cooling fans would be audible in the surrounding area. Lastly, NoSAG points out that it is unknown what, if any, changes would be required at the substation that would service the Project, and what aesthetic impacts might result from any required modifications.[101]

In determining whether a proposed project would have an undue adverse impact on aesthetics, the Board has adopted the Environmental Board's Quechee test. The Board has previously summarized the Quechee analysis as follows:

> In order to reach a determination as to whether the project will have an undue adverse effect on the aesthetics of the area, the Board employs the two-part test first outlined by the Vermont Environmental Board in Quechee, and further defined in numerous other decisions.
>
> Pursuant to this procedure, first a determination must be made as to whether a project will have an adverse impact on aesthetics and the scenic and natural beauty. In order to find that it will have an adverse impact, a project must be out of character with its surroundings. Specific factors used in making this evaluation include the nature of the project's surroundings, the compatibility of the project's design with those surroundings, the suitability of the project's colors and materials with the immediate environment, the visibility of the project, and the impact of the project on open space.
>
> The next step in the two-part test, once a conclusion as to the adverse effect of the project has been reached, is to determine whether the adverse effect of the project is "undue." The adverse effect is considered undue when a positive finding is reached regarding any one of the following factors:
>
> 1. Does the project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area?

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101. NoSAG Brief at 29-30. Any aesthetic impacts that might result from modifications to the substation will be addressed in the event a petition is filed proposing any such modifications. Attempting to address speculative aesthetic impacts in this proceeding would be premature.

> 2. Have the applicants failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings?
>
> 3. Does the project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area?[102]

In addition to the Quechee analysis, the Board's consideration of aesthetics under Section 248 is "significantly informed by overall societal benefits of the project."[103]

In the current proceeding, no party disputes that the Project would result in an adverse aesthetic impact. There would be an adverse impact due to the scale, height, lighting requirements and vapor plume associated with the Project. Accordingly, an analysis of whether that adverse impact would also be undue must be performed under the second part of the Quechee test.

The first step in evaluating whether the Project would have an undue adverse aesthetic impact is to determine whether the Project would violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area. I agree with NSSEP and the Department that the Springfield and Chester Town Plans, as well as the Southern Windsor County Regional Plan, do not contain any clear written community standards related to aesthetics or scenic beauty that the Project would violate. Each of these plans either identifies particular sites as, or describes the characteristics of, scenic locations. The Project is not located in, nor would it impact, any areas considered scenic in these plans. Other discussions of aesthetic values in these plans are general in nature and therefore do not constitute clear, written community standards under the Quechee test. All three plans do express concerns about lighting impacts, and in the case of the Springfield Town Plan, there is an overlay district intended to afford some protection from lighting impacts for the Stellafane Observatory. The proposed Project is not within the Stellafane Observatory overlay district, and all other discussion about nighttime

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102. *Amended Petition of UPC Vermont Wind*, Docket 7156, Order of 8/8/07 at 64–65.

103. *In Re: Northern Loop Project*, Docket 6792, Order of 7/17/03 at 28.

lighting in the three plans is again general in nature and therefore not considered a clear, written community standard under Quechee.[104]

NoSAG points to the Springfield zoning ordinance that restricts building heights to no more than 60 feet as a clear, written community standard that would be violated by the Project.[105]

I disagree with NoSAG that the Springfield Zoning ordinance is applicable to this analysis. Projects developed under Section 248 are expressly exempt from local zoning requirements.[106] By urging the Board to apply the Quechee test in a manner that relies on local zoning standards from which Section 248 projects are statutorily exempt, NoSAG is advocating for what would amount to back-door zoning, an end result which would frustrate the legislated policy behind exempting Section 248 projects from both local zoning and Act 250 in the first instance. Accordingly, I decline to treat the height restriction in Springfield's zoning ordinance as a clear, written community standard for the purpose of evaluating the aesthetic impacts of the Project pursuant to Section 248. I note that this legal conclusion is consistent with how the Board has previously addressed this question:

> Given our statutory charge, we also conclude that zoning regulations are not the most appropriate source for a clear, written community standard under the Quechee test, as applied by the Board in Section 248 proceedings. Because towns often grant exceptions and variances to these ordinances on a case-by-case basis, it is difficult to rely on a zoning ordinance as a clear and consistent statement of a community's policies or standards. The ability of a town to grant zoning variances will, in many cases, result in different zoning standards being applied depending upon the individual circumstances of the permit application. Therefore, it is more appropriate to rely on the town plan as the primary source of clear written community standards.[107]

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104. Kane pf. at 18-22.

105. NoSAG Reply Brief at 6-7.

106. 24 V.S.A. § 4413(b).

107. Docket 7628, Order of 5/31/11 at 86-87. *See also Petition of Georgia Mountain Community Wind, LLC*, Docket 7508, Order of 6/11/10 at 53 (discussing exemption of Section 248 projects from local zoning).

The second step in evaluating whether the Project would have an undue adverse aesthetic impact is to determine whether NSSEP has taken generally available mitigating steps which a reasonable person would take to improve the harmony of the Project with its surroundings. I conclude that NSSEP has met this requirement. While there is no way to entirely screen the visibility of the Project from the surrounding area, it bears noting that the proposed location is within an existing industrial park with a limited surrounding viewshed. NSSEP has developed a lighting plan designed to minimize light trespass through the use of shielded lighting and the Project would use the minimum amount of lighting required for safety purposes. The installation of the fuel storage structures, while adding infrastructure to the Project site, would actually create some beneficial effects when compared to what would exist in the absence of the fuel shelters, assuming the Project were actually constructed. The shelters would inhibit the blowing of chips and dust from the fuel piles and would reduce the visual clutter that otherwise would be present if the fuel piles were not covered. NSSEP has also proposed to utilize darker colors for the Project's infrastructure to render it visually less intrusive. Lastly, the change from water-cooled technology to the ACC technology, while requiring larger cooling structures, would eliminate the water vapor plume associated with the water-cooling units.

The final step under the Quechee analysis is to determine whether the Project would be shocking or offensive to the average person. Given the proposed Project's location in an existing industrial park, the use of darker colors for Project infrastructure and the limited viewshed, I conclude that the average person would not be shocked or offended at the sight of the Project. I acknowledge that it is on a larger scale and significantly taller than existing structures in the industrial park. However, it is the type of activity one would not be surprised to find in an industrial park, and is not so out of scale that its visual appearance would rise to the level of shocking or offensive given its context and somewhat limited views.

NoSAG raises the issue of noise related to the ACC fans as part of its aesthetics argument. I have addressed the issue of noise in the previous section in this Proposal for Decision dealing with Public Health and Safety. Provided the Project complies with the noise standards I have recommended therein, I conclude that noise from the Project would not cause an

undue adverse aesthetic impact. The evidence of record shows that Project-related noise is expected to be comparable to or even below existing background noise levels at surrounding residences and supports the conclusion that any increase in existing sound levels would not be significant and would be of a character consistent with activities in an industrial park.

In sum, to address any lighting impacts from the Project, I recommend the Board impose the following condition on NSSEP in any approval of the Project:

> NSSEP shall file with the Board a proposed protocol for notifying surrounding neighbors as well as a point of contact at the Stellafane Observatory when increased levels of lighting will be utilized for an extended period of time. Parties with standing on the issue will have 14 calendar days to file comments with the Board on the proposed protocol. NSSEP must obtain Board approval for the notice protocol prior to commencing commercial operations.[108]

Historic Sites

[10 V.S.A. § 6086(a)(8)]

Findings

310. The Project would not have an undue adverse effect on historic resources. This finding is supported by findings 311 and 312, below.

311. NSSEP evaluated the Project's potential impacts to historic buildings and structures, historic districts, historic landscapes and settings within the Project's Area of Potential Effect, an area within a ½-mile radius of the proposed site. The Project would not have an undue adverse effect on historic resources. Morgan pf. at 11.

312. The Vermont Division for Historic Preservation issued comments on the Project on April 16, 2013.[109] The state survey archaeologist visited the site several times in 2011 and 2012

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108. I am not suggesting that NSSEP should personally notify all individuals residing in the immediate area of the industrial park. Rather, NSSEP should propose some method for making the information public and readily accessible.

109. I intend to admit the April 16, 2013, Historic Preservation comments into the evidentiary record as exhibit Board-4. Any party wishing to object to the admission of the document should present its objection, along with the reasons therefore, when it files its comments on this Proposal for Decision. If no such objection is filed, the exhibit

(continued...)

to assess potential archaeological resources and determined that no historic sites or archeologically sensitive areas were identified in the Project area. The Division of Historic Preservation concluded that "the North Springfield Sustainable Energy Project will have **No Effect** on any historic sites listed on or eligible for inclusion on the State Register of Historic Places." Exh. Board-4 (emphasis in original).

Rare and Irreplaceable Natural Areas

[10 V.S.A. § 6086(a)(8)]

Findings

313. The built footprint of the Project would not have an undue adverse effect on any rare and irreplaceable natural areas ("RINAs"). There are no RINAs on or near the Project site. Nelson pf. (12/22/11) at 14; Nelson pf. (6/1/12 as revised 3/12/13) at 8.

314. Harvesting of fuel for the Project from Vermont's forests could have an undue adverse impact on RINAs if it is not done in an appropriate manner. Findings 113 through 130, above.

315. Compliance with the terms and conditions of the ANR MOU would ensure that Project harvesting would not result in undue adverse impacts on any RINAs. Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3.

Wildlife, Including Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

Findings

316. The built footprint of the Project would not destroy or significantly imperil necessary wildlife habitat or any endangered species. Nelson pf. (12/22/11) at 14; Nelson pf. (6/1/12 as revised 3/12/13) at 8.

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109. (...continued)
shall be deemed to be admitted into the evidentiary record.

317. Harvesting of fuel for the Project from Vermont's forests could have an undue adverse impact on wildlife, necessary wildlife habitat and RTE species if it is not done in an appropriate manner. Findings 318 through 322, below.

318. Necessary wildlife habitat can include deer wintering areas, wetlands, vernal pools, mast producing areas and S1, S2 and S3 natural communities. These are all components of a healthy forest and need to be protected during harvesting operations. Wilmot pf. at 12.

319. RTE species are also components of a healthy forest and need to be protected during harvesting operations. Wilmot pf. at 12.

320. Wildlife habitat and biodiversity in general can be enhanced or diminished through forest management practices. One feature of this forest health component is residual woody material. Down woody material serves several ecological functions. Leaving tree tops, snag trees, and some large diameter down trees after a harvest helps maintain habitat, food sources, and forest floor structure to maintain biodiversity potential. These materials, along with foliage, help replenish soil nutrition. Wilmot pf. at 15-16.

321. During the last full forest inventory of the state (2007), measurements of down woody material were recorded to evaluate forest integrity. Results showed a lack of larger diameter down wood – greater than 8" diameter – indicating lower quality habitat for some wildlife species. Retaining more down wood following harvesting would improve this essential forest function. Wilmot pf. at 16.

322. In addition to down wood, other structural characteristics support a diversity of animal and plant species, including large diameter live trees, dead or snag trees, and down trees. Wilmot pf. at 16.

323. Compliance with the terms and conditions of the ANR MOU would ensure that Project harvesting would not result in undue adverse impacts to wildlife, necessary wildlife habitat or RTE species. Wilmot pf. (8/9/13) at 2-3; Sinclair pf. (8/9/13) at 2-3.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

Findings

324. The Project would not unnecessarily or unreasonably endanger the public or quasi public investment in public facilities, services or lands, or materially jeopardize or interfere with the function, efficiency or safety of, or public's use or enjoyment of or access to the public facility, service or lands. This finding is supported by findings 325 through 327, below.

325. The Project would not directly abut or directly impact any public resources. There are several public resources that would have distant views of the Project, but they would not be unduly impacted. Morgan pf. at 12-13.

326. The Project would not unduly impact Hartness Airport. Exh. Board-3; findings 277 and 278, above.

327. Lighting from the Project would not result in sky glow and would result in minimal or no light trespass to the Stellafane Observatory. Buscher and Vissering pf. reb. at 7; tr. 3/14/13 at 40 (Buscher).

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

Findings

328. NSSEP is not a regulated electric utility and is therefore not required to prepare a least-cost integrated resource plan. Therefore, this criterion is inapplicable.

Compliance with Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

Findings

329. The Project is consistent with the Department's *20-Year Electric Plan*. This finding is supported by findings 330 and 331, below.

330. The *Electric Plan* is explicit in its concern that use of the state's biomass resource for any purpose should be carefully considered and should take into account the use's impact on forest health. In particular, the *Electric Plan* recommends that the State "ensure that sustainable, monitored forest management practices and efficiency serve as the guiding principles for use of biomass resources." Hopkins pf. (11/29/12) at 5.

331. Operation of the Project in accordance with the terms and conditions set forth in the ANR MOU would ensure sustainable, monitored forest management practices, and would therefore be consistent with the *2011 Vermont Electric Plan*. Hopkins pf. (9/4/13) at 3.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

Findings

332. There are no waters in the immediate Project vicinity that have been designated as outstanding resource waters. Therefore the construction and operation of the Project would not result in an undue adverse impact under this criterion. Nelson pf. (12/22/11) at 4; exh. Pet. JAN-2 at 7.

Waste-to-Energy Facility

[30 V.S.A. § 248(b)(9)]

Findings

333. The Project does not involve the construction of a waste-to-energy facility. Therefore, this criterion is inapplicable.

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

Findings

334. The Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. This finding is supported by findings 335 through 337, below.

335. NSSEP entered into the GMP MOU to address potential adverse impacts on GMP's system should the Project interconnect with that system. Exh. Pet./GMP-1.

336. The GMP MOU requires NSSEP to complete both an SIS through the ISO interconnection process and a Facilities Study. The GMP MOU further requires NSSEP to implement all upgrades and interconnection facilities identified by those studies and to develop such operating protocols as are necessary or required to avoid adverse impacts to the safety, stability and reliability of GMP's electric system. Exh. Pet./GMP-1 at 3.

337. The GMP MOU requires NSSEP to pay for the costs associated with the two required studies, as well as the costs of implementation of required upgrades and interconnection facilities. Exh. Pet./GMP-1 at 3.

Discussion

Provided the terms and conditions of the GMP MOU are complied with, the Project could be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. Earlier in this Proposal for Decision I recommended a specific condition to that effect and reiterate that recommendation here.[110]

V. GENERAL GOOD OF THE STATE

[Section 248(a)]

Pursuant to Section 248(a)(2), no company or person may begin site preparation for, or commence construction of, a generation facility unless the Board first finds that construction of such generation facility will promote the general good of the state and issues a certificate of public good to that effect. While Section 248(b) requires the Board to find that a proposed generation project will meet specific criteria enumerated in subsection (b) of the statute, before it may issue a CPG the Board must also determine, pursuant to Section 248(a), that a proposed project promotes the general good of the state. As this Board has previously explained:

> In essence the factors enumerated in subsection (b) are "conditions precedent" to the ultimate conclusion that a proposal is consistent with the general good of the

110. *See* findings 64 through 73 and related discussion, above.

> state, rather than being full proof of that conclusion. In other words, they are necessary, but they may not be sufficient.[111]

In making its determination under Section 248(a), the Board considers whether the benefits of a proposed project outweigh its potentially adverse impacts.[112]

In this Proposal for Decision, I recommend positive findings under all of the criteria of Section 248(b), in some cases with significant conditions, with the exception of criterion (b)(1) which addresses orderly development of the region. In the event the Board does not accept my recommendation with respect to orderly development of the region, I conclude that the Board should consider under Section 248(a) a number of unique issues associated with the Project relating to the general good of the state. Those issues are the lack of power contracts with Vermont utilities for the output of the Project, greenhouse gas emissions and carbon accounting, and the thermal efficiency of the Project in relation to its use of Vermont's forest resource.

1. Purchase Power Agreements

As discussed above in the section on need for the Project, NSSEP does not yet have any PPAs with Vermont utilities for the sale of the Project's output.[113] In prior cases involving wind generation facilities that have been proposed by non-utility merchant generators, the Board has found that the projects would not provide sufficient benefit to promote the general good of the state absent the developers entering into stably priced purchase power agreements with Vermont utilities for a substantial portion of the projects' output.[114] The Project in this proceeding, if approved, would utilize some 300,000 tons of green wood harvested from Vermont's forests on

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111. *Georgia Mountain Community Wind*, Docket 7508, Order of 6/11/10 at 80 (quoting *Twenty-four Electric Utilities*, Docket 5330, Order of 10/12/90 at 46).

112. Docket 7628, Order of 5/31/11 at 140.

113. *See* findings 57 through 62 and related discussion, above.

114. *See Amended Petition of UPC Vermont Wind*, Docket 7156, Order of 8/8/07 at 38-40; *Petition of Deerfield Wind*, Docket 7250, Order of 4/16/09 at 42-44; and *Georgia Mountain Community Wind*, Docket 7508, Order of 6/11/10 at 82-83.

an annual basis.[115] It would also annually release up to 448,714 tons of greenhouse gas emissions.[116] While I recommend to the Board that these burdens associated with hosting the plant not be found undue, I recommend that the Board impose a condition that NSSEP be required to enter into contracts with Vermont distribution utilities for a significant percentage of the Project's output. The burdens of hosting the Project, while not undue, are not insignificant. Absent such contracts, Vermont would merely host the Project and its associated burdens without Vermont consumers utilizing any of the electricity it would produce. This unbalanced result leads me to recommend the Board find that the Project would not promote the general good of the state because, in the absence of appropriate PPAs with Vermont utilities, the burdens of hosting the Project would outweigh its benefits.[117]

Accordingly, I recommend the following condition be imposed on any approval for the Project:

> NSSEP shall enter into long-term contracts with Vermont distribution utilities for no less than 75% of the Project's output. To the extent possible, and recognizing the potential for variations in the Project's fuel costs, such contracts shall contain controls to limit pricing volatility to the purchasing utilities. NSSEP shall certify compliance with this condition prior to the commencement of commercial operations.

2. Greenhouse Gas Emissions and Carbon Accounting

Findings

338. Operation of the Project would emit up to a maximum of 448,714 tons of CO2e per year. Tr. 3/15/13 at 38-39 (Raczynski).

339. The carbon released by the Project would undercut the state's greenhouse gas reduction goals because carbon released in each year of operation would not be sequestered until future years. Wilmot pf. at 27.

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115. *See* finding 110, above.

116. Tr. 3/15/13 at 38-39 (Raczynski).

117. As discussed earlier in this Proposal for Decision, the Project would not meet any state-specific need for energy, capacity, or renewable power attributes in the absence of PPAs with Vermont utilities.

340. At the stack, wood combustion releases more greenhouse gases than most fossil fuels. Ann Ingerson, VNRC/NWF ("Ingerson") pf. sur. at 9.

341. When used to generate electricity, wood combustion releases approximately four times as many greenhouse gases as natural gas combustion per megawatt-hour generated. Ingerson pf. sur. at 14.

342. It is important to know when the Project would have a net carbon benefit. Tr. 4/2/13 at 125 (Ingold).

343. NSSEP has not performed any carbon accounting, modeling or life-cycle emission analysis for the Project. Tr. 3/15/13 at 46-49 (Raczynski).

344. NSSEP does not know when the Project would result in a carbon-beneficial outcome. Tr. 3/15/13 at 45-48 (Raczynski); tr. 4/2/13 at 127-128 (Ingold).

345. Knowing when the Project would result in a carbon-beneficial outcome would allow for an assessment of the Project's impacts on the state's attempts to meet legislated greenhouse gas reduction goals. Findings 338 to 344, above; Kischko pf. at 28.

Discussion

The State of Vermont has legislated policy goals related to the reduction of greenhouse gas emissions in the state. Pursuant to 10 V.S.A. § 578:

> It is the goal of the state to reduce emissions of greenhouse gases from within the geographical boundaries of the state and those emissions outside the boundaries of the state that are caused by the use of energy in Vermont in order to make an appropriate contribution to achieving the regional goals of reducing emissions of greenhouse gases from the 1990 baseline by:
>
> (1) 25 percent by January 1, 2012;
>
> (2) 50 percent by January 1, 2028;
>
> (3) if practicable using reasonable efforts, 75 percent by January 1, 2050.

As noted earlier in this Proposal for Decision, the carbon released by the Project would interfere with efforts to achieve these goals because carbon released in each year of operation

would not be sequestered until future years, possibly not for decades, and in the case of forest-regeneration failures, not at all.[118]

NSSEP is correct that Section 248 does not require it to conduct a carbon accounting for the Project, nor do amendments to Section 248 that expressly incorporated greenhouse gas impacts for Board consideration under subsection (b)(5) apply to this proceeding because the amendments took effect after the petition in this matter was filed. However, the fact that the legislature passed recent amendments to Section 248 that require the Board to consider greenhouse gas impacts does not compel the conclusion that the Board is prohibited from considering such impacts for petitions filed prior to the effective date of those amendments under the Board's more general charges to ensure that projects do not have an undue impact on the natural environment and that they promote the general good of the state. Additionally, in its charge to examine the public good it is appropriate to examine the Project's impacts in the context of the state's legislated policy goals for reducing greenhouse gas emissions.

Because the record is lacking any information based on which the Board can conclude when, or if, the Project would have a beneficial carbon impact, and in light of the state's legislated policy goals under 10 V.S.A. § 578, compliance with the terms and conditions of the ANR MOU is imperative for a finding of public good for the Project. And while there is no evidence based on which to conclude when the Project will have a net carbon benefit, a fuel harvesting plan that would ensure successful and healthy regeneration of Vermont's forests after harvesting would help to mitigate the greenhouse gas impacts the Project would have. Absent the assurances that such a fuel harvesting plan would provide, I would not be able to recommend that the Board find the Project would promote the general good of the state. I therefore reiterate here my earlier recommendation that NSSEP be required to comply with the terms and conditions of the ANR MOU as a condition of any Board approval of the Project.

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118. *See* finding 339, above.

3. Thermal Efficiency of the Project

Findings

346. Even under the most optimistic projections for the use of the District Heating System, the Project would operate at an annual average thermal efficiency no higher than 28.1%. Timothy Maker, VNRC/NWF ("Maker") pf. sur. at 4.

347. Full utilization of the proposed thermal loop is unlikely, so the efficiency of the Project is not likely to achieve an efficiency of 28%. Maker pf. at 17.

348. Thermal uses of wood for energy (residential wood stoves, pellet stoves and boilers, institutional woodchip heating, industrial process energy and biomass district heating) are far more efficient than the Project, with seasonal efficiencies greater than 60%, and some greater than 80%. Maker pf. at 11.

349. As more users turn to wood for heat, whether it be by residential users of firewood or larger commercial, educational, or government users with larger heating needs, there is little doubt that supplies would tighten and costs would increase. Ingerson pf. at 4; Maker pf. at 8-9.

350. The highest wood-fired CHP efficiencies are in "heat led" applications, where the biomass plant is run primarily to meet a heat load and electric production follows the heat load. Maker pf. at 12-13.

351. The proposed annual use of 300,000 green tons of wood from Vermont's forests would reduce opportunities to use that fuel for more efficient uses in the future. Wilmot pf. at 27.

Discussion

Vermont's forests are potentially renewable, but limited in geographic extent and in potential growth rate, and the extent of forest in Vermont and the region is expected to decline.[119] Averaged over the last 10 years, roughly 1.2 million green tons of high-value products (sawlogs and veneer) and 1.5 million green tons of lower-quality wood have been harvested in Vermont each year. Residential firewood and pulp-quality wood are the major components of the low-quality category, and firewood now accounts for one-half or more of the lower-quality harvest volume. Approximately 300,000 cords of firewood are harvested in

119. *See* finding 93, above.

Vermont annually. Also, about 2.8% of Vermont households burn at least some wood pellets for space heating. Another primary use of wood is the forest biomass energy industry. Wood fiber, bark, twigs, and leaves burned for energy in a boiler to produce heat, or steam for generating electricity, are referred to as forest biomass and come from two sources: tree tops, and relatively low-quality stems of harvested trees in the form of whole tree chips, which in turn come from forest management harvests and land clearing, or development and sawmill residue. Presently, Vermont contains numerous commercial, governmental, and industrial facilities that use wood heat. These facilities include at least five state office complexes, forty-five schools, three college campuses, one hospital, and several businesses. Vermont has more small-scale users of forest biomass for energy, chiefly for heat, than any other state in our region.[120]

NoSAG and VNRC/NWF both contend that the petition should be denied because the Project, without a higher level of thermal efficiency, would run counter to the state's goals for reducing greenhouse gas emissions. Additionally, both point to competition for the use of Vermont's forest resource between the Project and other, more thermally efficient uses of that resource; competition that could increase costs for those other more efficient uses.[121]

The Department recommends that the Board impose conditions regarding use of the waste heat from the Project. Specifically, the Department recommends that NSSEP be required to file with the Board, 120 days prior to the commencement of operations:

> a plan for monitoring and measuring the total amount of thermal waste heat generated by the facility and the total amount of thermal waste heat actually utilized, and by whom, during the first year of operation, along with a proposal and a recommendation on how and whether to increase the utilized amount over the life of the facility. The plan shall include a provision to conduct an annual review of the thermal waste heat utilization achieved and to propose adjustments to the target amount of waste heat utilization for the coming year.[122]

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120. *See* findings 104 through 108, above.

121. VNRC/NWF Brief at 25; NoSAG Brief at 24-27.

122. Department Reply Brief at 2.

Parties would have 21 days to comment on the proposed plan once it is filed.[123]

While there is no statutorily applicable minimum standard of efficiency that NSSEP must demonstrate to receive a CPG for the Project, the Board must still find that the Project would promote the general good of the state. The question of the Project's thermal efficiency is relevant to this analysis because it asks whether the Project's use of a significant volume of Vermont's forest resource makes sense in light of other more efficient competing uses. I acknowledge that the wood that would be used by the Project is, under BERC's moderate scenario wood supply estimate, considered available even after all current uses are accounted for. However, as more users turn to wood for heat, whether it be residential users of firewood or larger commercial, educational, or government users with larger heating needs, there is little doubt that supplies would tighten and costs would increase. Additionally, the wood that is currently unharvested remains in the forest to sequester carbon, raising the question of whether it makes sense to remove that wood from that function to burn it and release additional greenhouse gases in what is a relatively lower efficiency process compared to other potential uses.

These considerations again emphasize the importance of compliance with the terms and conditions of the ANR MOU. If we are to allow uses of Vermont's forest resources for projects with lower thermal efficiencies, it is critical that it be done in a manner that ensures the most rapid forest regeneration possible taking into account the various aspects of forest health discussed earlier in this Proposal for Decision. Absent such safeguards, I would not be able to recommend to the Board that use of Vermont's forest resource at the thermal efficiency levels projected for the Project would promote the public good.

I recommend that the Board not adopt the condition proposed by the Department. First, there is no statutory minimum efficiency level that the Project is required to meet. Second, the Department is not actually proposing an efficiency standard for the Project to meet. During cross-examination the Department's witness, Dr. Hopkins, declined to recommend a specific

123. Department Reply Brief at 2.

standard.[124] The problem with the Department's recommendation is that it seeks to set a standard after the Project would be constructed and operating. That would leave two options: one, set a standard that the Project could meet based on its operational experience; or two, set a standard above that operational experience and potentially set the Project up for failure. The first option is somewhat meaningless unless operational experience demonstrates significant use of the waste heat, and the second option is unfair to NSSEP. In the absence of a specific proposal that has been subjected to discovery and evidentiary testing in the contested case process, I recommend the Board not adopt the Department's proposed condition. However, I do believe that reporting on the usage of the Project's waste heat could be useful to the Department for planning purposes. Accordingly, I recommend the Board adopt a slightly modified version of the Department's proposed reporting requirement as follows:

> 120 calendar days prior to the commencement of operations NSSEP shall file with the Board a plan for monitoring and measuring the total amount of thermal waste heat generated by the facility and the total amount of thermal waste heat actually utilized during each calendar year of operations. Parties shall have 21 calendar days subsequent to the filing of the proposed plan to file comments with the Board. NSSEP must obtain Board approval for its monitoring plan prior to commencing commercial operations. Reports generated pursuant to the plan shall be filed with the Department of Public Service within 60 calendar days of the end of each calendar year in which the Project operates.

I am not recommending that NSSEP be required to file the annual reports with the Board or to serve them on other parties because I am not recommending any specific efficiency standard that NSSEP would need to comply with. In the event any party wishes to obtain copies of the annual reports, they may do so through the Department or NSSEP. In the event NSSEP fails to comply with this condition, then the Department would be able to bring that to the Board's attention.

NSSEP has also proposed the construction of the District Heating System and installation of interconnection points for a Community District Heating System to potentially improve the thermal efficiency of the Project. I recommend the Board require NSSEP to implement its

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124. Tr. 3/15/13 at 95-96 (Hopkins).

proposal as a condition of any approval for the Project because the potential use of some measure of the thermal waste heat from the Project would, in combination with the fuel harvesting practices established by the ANR MOU, weigh in favor of finding that the Project would promote the general good of the state. However, as discussed earlier in this Proposal for Decision, I do not believe the Board has direct supervisory authority over this proposed infrastructure and NSSEP must therefore obtain any necessary collateral permits for its construction, including any required Act 250 permits or amendments and any local zoning permits. Accordingly, I recommend the Board impose the following condition if it approves the Project:

> NSSEP shall construct and operate the District Heating System as proposed, and install the interconnection points for the Community District Heating system as proposed, and shall make available for use in these systems the amount of heat as described in its testimony. NSSEP must obtain any necessary collateral permits for the construction, including any necessary Act 250 permits or amendments and any local zoning permits.

VI. DECOMMISSIONING PLAN

Findings

352. NSSEP has not submitted a decommissioning plan for the Project for the Board's review and consideration. Ingold pf. reb. at 7-9.

353. NSSEP intends to operate the Project for as much as 50 years and then re-purpose the building for another use within the industrial park. Ingold pf. reb. at 8-9.

354. If required to submit a decommissioning plan, NSSEP is willing to work with the Department on the details of a plan. Ingold pf. reb. at 9.

Discussion

I recommend that the Board require NSSEP to file a decommissioning plan for the Project as a condition of any approval of the Project.

PSB Rule 5.402(C)(2) requires a non-utility petitioner seeking a CPG to construct a generation facility of more than 1 MW to file a plan for decommissioning the project at the end of its useful life. Other than the minimum capacity requirement, the rule makes no exceptions

and makes no distinctions among the various types of generation facilities. Additionally, NSSEP has not specifically sought a waiver of the requirements of PSB Rule 5.402(C)(2).

NSSEP has not filed a decommissioning plan and seeks to justify this omission by comparing the Project to wind facilities on ridgelines, stating that the Project here has a much longer useful life and is located in an industrial park, thus enabling the building to be re-purposed once it ceases to be used to house the biomass generating equipment. According to NSSEP, unlike wind projects, the Project facilities can continue to serve a useful purpose in an appropriate setting even after the useful life of the generating equipment has expired.[125]

NSSEP's position fails to recognize a variety of factors that make a decommissioning plan necessary and appropriate for the Project. First, NSSEP appears to assume that its Project, if approved, would prove to be economically viable for a period of up to 50 years. While that is certainly the preferred outcome if the Project gets permitted and constructed, there is no guarantee that such would be the case. Given the Springfield Town Plan's stated policy favoring reuse of existing structures in the industrial park, it wouldn't be appropriate to create the potential for additional unused structures. The same concerns apply even if the Project operates for the expected 50-year useful life period. There is no guarantee that a tenant would be interested in occupying the building once it ceases to be used to generate electricity. And, in any event, there would be costs, perhaps substantial ones, in re-purposing the structure. For example, it seems unlikely that a different use would require the 140-foot high stack, the ACC cooling towers, the generator, the boiler, the distillate fuel storage tank or the anhydrous ammonia storage tank. NSSEP's proposed approach leaves too much to circumstance and raises the possibility of an abandoned building and related infrastructure. Accordingly, I recommend the Board impose the following as a condition of any approval of the Project:

> NSSEP shall file a proposed decommissioning plan, including a proposed funding mechanism for decommissioning. The funding mechanism shall be bankruptcy remote and structured solely for the benefit of the Board, consistent with decommissioning funding mechanisms previously approved by the Board for other merchant generators. The proposed decommissioning plan may take into

125. Ingold pf. reb. at 7-9.

> account the location and potential reasonable re-use of the Project infrastructure at the end of commercial operations. Parties with standing shall have 14 calendar days to file comments on the proposed decommissioning plan. NSSEP must receive Board approval of its proposed decommissioning plan prior to the commencement of Project construction.

VII. EVIDENTIARY MATTERS IN NEED OF RESOLUTION

1. NoSAG Objection to NSSEP Expert Witness Competence

NoSAG renews its objection in its brief to the competency of several expert witnesses offered by NSSEP.[126] NoSAG objects to the testimony of these witnesses because they are offering expert testimony on engineering matters without being licensed or registered as professional engineers in Vermont. NoSAG contends that these witnesses should not have been allowed to testify because Vermont law requires registration or licensing as a professional engineer prior to an individual providing professional engineering services in the state.[127]

NoSAG first raised this objection on March 14, 2013. The various pieces of testimony in question were prefiled on December 22, 2011, June 1, 2012, November 27, 2012, and February 8, 2013. PSB Rule 2.216(C) provides that:

> Objections to the admissibility of prefiled testimony or exhibits shall be filed in writing not more than thirty days after such evidence has been prefiled or five days before the date on which such evidence is to be offered, whichever is earlier.

Under the most generous reading of this rule, NoSAG's objection would have been timely for the testimony filed on February 8, 2013, if it had been filed on or before March 11, 2013, and then only with respect to that final round of testimony. That said, I believe that even that reading of the rule would be too generous given that each of the witnesses challenged by NoSAG first prefiled testimony on December 22, 2011, and the grounds on which NoSAG rests its objection existed at that time. Any objections based on their competency should therefore have been raised no later than January 23, 2012.

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126. The witnesses at issue are Mr. Duncan, Mr. Nelson, Mr. Raczynski and Mr. Smith. NoSAG's first objection was overruled from the bench on March 14, 2013. Tr. 3/14/13 at 101-02.

127. NoSAG Brief at 49-51.

NoSAG contends that this matter was brought to the Board's attention on February 27, 2012, in comments filed by Mr. Kischko, who was not a party in this contested case proceeding with the requisite standing to raise evidentiary objections. Mr. Kischko eventually became a witness for NoSAG, which was granted permissive intervention by Order dated March 23, 2012.[128] At that time, NoSAG should have raised its witness objections and sought a waiver of the 30-day filing deadline in PSB Rule 2.216(C). For NoSAG to wait almost a year from the date of its intervention until the first day of technical hearings to object to the testimony of a number of key NSSEP witnesses is simply unacceptable.[129] Sustaining such an objection, in the event it had substantive merit, would result in significant undue prejudice to NSSEP because it would eliminate any opportunity for NSSEP to meaningfully respond.

Additionally, even if the objection had been raised in a timely fashion, I would recommend the Board find that NoSAG's position is without merit. The Board's concern when presented with expert testimony is whether or not the witness is qualified through appropriate knowledge, skill, experience, training or education to provide testimony on the matter at issue.[130] In this case, NoSAG does not attempt to challenge the witnesses' credentials on these grounds. Rather, NoSAG's objection is premised upon the fact that the witnesses are not registered or licensed as professional engineers in Vermont, thereby equating their testimony with providing professional engineering services in Vermont without the credentials required by law. The witnesses for NSSEP have testified before the Board and given their opinions based on their knowledge, skill, experience, training or education as required by V.R.E. 702. They have not provided the Board with professional engineering services. The issue of whether or not some of NSSEP's witnesses may have provided professional engineering services to NSSEP in disregard of Vermont law is not a matter for the Board to resolve as it lies beyond the Board's jurisdiction.

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128. Mr. Kischko never sought intervention in his own right.

129. *See State v. Kinney*, 170 VT 239, 253 (2000) (objections must be made in a timely fashion).

130. *See* V.R.E. 702 (establishing requisite qualifications for expert witness testimony).

Accordingly, I again reject NoSAG's position and overrule its objection to the testimony of Mr. Duncan, Mr. Nelson, Mr. Raczynski and Mr. Smith.

2. NSSEP and ANR Objection to Relevance of NoSAG Testimony

As a result of the July 3, 2013, filing of the ANR MOU, I established a schedule for consideration of the contents of that MOU. Part of that schedule included the prefiling of testimony by non-signatories to the MOU.[131]

On September 4, 2013, NoSAG prefiled the testimony of its witness, Mr. Kischko, addressing the impacts of the ANR MOU ("Kischko testimony").

On September 11 and 12, 2013, objections to the admissibility of portions of the Kischko testimony were filed by ANR and NSSEP, respectively, with both parties asserting that Mr. Kischko was not qualified to testify as an expert on forestry matters and, to the extent the Kischko testimony addressed matters outside of the area of forestry, it was irrelevant to the consideration of the ANR MOU.

On October 1, 2013, I issued an Order overruling the ANR and NSSEP competency-based objections and taking the relevancy objections under advisement.

For the reasons discussed below, in this Proposal for Decision I also overrule the ANR and NSSEP objections based on relevance.

Relevant evidence is evidence "having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence."[132] All relevant evidence is generally admissible.[133] Therefore, the admissibility of the Kischko testimony turns on whether it has a tendency to support or diminish the existence of a fact that is of consequence to the determination of NSSEP's petition.

The Kischko testimony was filed during a phase of this proceeding that concerned itself with the sufficiency of the terms and conditions of the ANR MOU to guard against undue

131. Docket 7833, Order of 8/6/13 at 6.

132. V.R.E. 401.

133. V.R.E. 402.

adverse impacts to the long-term health and sustainability of Vermont's forest resource. Portions of the Kischko testimony are direct criticisms of the sufficiency of the ANR MOU to meet that objective and therefore constitute relevant and admissible evidence. Other portions of the Kischko testimony do not deal directly with that question, but instead go to the point that even if the ANR MOU is effective at protecting forest health, it does not improve other aspects of the Project, such as thermal efficiency, greenhouse gas emissions, and region-wide, as opposed to state-wide, forest impacts. While these topics are one step removed from the specific question of whether the ANR MOU will protect the long-term health and sustainability of Vermont's forest resource, they are not so tenuous as to be irrelevant to the ultimate determination in this proceeding. The effectiveness of the ANR MOU in ensuring a sustainable forest resource is related to questions of efficient uses of that resource, the ability of our forests to sequester carbon and the release of carbon when woody biomass is combusted.

Thus, for the foregoing reasons, the ANR and NSSEP relevancy objections to the admission of the September 4, 2013, prefiled testimony of Robert F. Kischko are overruled and that testimony is hereby admitted into the evidentiary record.

VIII. CONCLUSION

For the reasons set forth above, I conclude that the Project would unduly interfere with the orderly development of the region and therefore recommend that the Board not issue a certificate of public good for the Project. However, if the Board declines to accept my conclusion and nonetheless issues a CPG, I recommend that it do so subject to the conditions set forth below.

> The GMP MOU is adopted and its terms and conditions are hereby incorporated into this Order. NSSEP shall comply with the terms and conditions of the GMP MOU.
>
> NSSEP shall conduct the required System Impact Study and Facilities Study prior to commencing construction of the Project. The System Impact Study shall specifically address system losses, if any, that would result from interconnection and operation of the Project.

NSSEP shall file the results of the System Impact Study and Facilities Study with the Board, and parties with standing on system stability and reliability shall have 14 calendar days to file comments on the studies.

NSSEP shall implement all necessary or required system upgrades or interconnection facilities identified in the System Impact Study and Facilities Study at NSSEP's sole expense.

NSSEP must obtain any required Board approval for any necessary upgrades identified in the System Impact Study and Facilities Study prior to commencing construction of the Project, including any Section 248 CPGs that may be required for the upgrades.

The ANR MOU is adopted and its terms and conditions are hereby incorporated into this Order. NSSEP shall comply with the terms and conditions of the ANR MOU.

NSSEP shall develop a harvesting plan that complies with the terms and conditions of the ANR MOU. NSSEP shall file its proposed harvesting plan with the Board, and parties with standing on the issue shall have 14 calendar days from the date of filing to file comments with the Board. NSSEP must receive Board approval of its proposed harvesting plan prior to contracting with any fuel suppliers for wood to be harvested in Vermont.

The AAFM MOU is adopted and its terms and conditions are hereby incorporated into this Order. NSSEP shall comply with the terms and conditions of the AAFM MOU.

NSSEP shall comply with all applicable Vermont Air Pollution Control Regulations.

NSSEP shall obtain and comply with all necessary DEC Air Pollution Control Division permits. Copies of permits required for construction shall be filed with the Board prior to commencement of construction, and copies of permits required for operations shall be filed with the Board prior to commencement of operations.

NSSEP shall not store more than a 30-day supply of wood chip fuel at the Project site. Stored fuel shall be utilized on a first in/first out basis.

NSSEP shall develop a substantive proposal for its proposed wood stove change-out program consistent with the recommendations of ANR. NSSEP shall file its proposal for Board review. Parties with standing on the issue will have 14 calendar days from the date of filing to file comments with the Board. NSSEP

must receive Board approval of and activate its proposed program prior to commencement of commercial operations.

NSSEP shall construct and operate the Project so that project-related sound levels at any existing surrounding residences do not exceed 55 dBA (exterior)(Leq) (16 hr) between 7:00 A.M. and 11:00 P.M., and 45 dBA (exterior)(Leq)(8 hr) or 30 dBA (interior bedrooms)(Leq)(8 hr) between 11:00 P.M. and 7:00 A.M.

Construction of the boiler building, turbine building, wood processing building, the fuel reclaimer enclosures, and the fly ash conveyor enclosures shall have an acoustical rating of approximately Sound Transmission Class (STC) 45 or above.

All outdoor conveyors can be open on the sides, but shall have a top cover. Conveyor openings in buildings and the fuel reclaimers shall be covered with two layers of vinyl sound barrier or comparable sound attenuating material. The material can have vertical slits that allow material to flow through.

The ACC cooling unit fans shall be low noise or variable speed fans.

Major construction activities for the Project shall occur only on weekdays between the hours of 7:00 A.M. and 7:00 P.M. and 8:00 A.M. and 5:00 P.M. on Saturdays. No construction will be allowed on Sundays or federal or state holidays. Indoor construction activities may take place outside of the restricted hours provided those activities do not result in sound levels in excess of the standard imposed for Project operations.

NSSEP shall obtain authorizations under and comply with the terms of the following permits: (1) GP 3-9015: New Stormwater Discharges to Waters that are not Principally Impaired by Collected Stormwater Runoff; (2) GP 3-9020: Stormwater Runoff from Construction Sites; and, (3) GP 3-9003: Vermont's MSGP. Copies of permits required for construction shall be filed with the Board prior to commencement of construction, and copies of permits required for operations shall be filed with the Board prior to commencement of operations.

NSSEP shall obtain the necessary DEC Underground Injection Control permit and comply with its terms and conditions. NSSEP shall file copies of the permit with the Board and parties with standing on the issue will have 14 calendar days to file comments on the permit.

NSSEP shall contract with a reputable firm to handle the transportation and disposal of the Project's wood ash. All wood ash from the Project shall be

handled and disposed of in accordance with the Vermont Comprehensive Wood Ash Management Procedure.

NSSEP shall install containment structures for the 50,000-gallon distillate fuel storage tank, the 15,000-gallon anhydrous ammonia storage tank, the fuel truck unloading area, and all Project transformers. The containment structures shall be of sufficient capacity to contain 150% of the maximum volume of liquid contained in each of these structures.

NSSEP shall construct the proposed thermal loop so that it is on the south side of Main Street to avoid impacts to the adjacent floodway and the Great Brook.

NSSEP shall monitor wood chip delivery truck traffic over the first year of Project operation, and NSSEP staff will meet regularly with stakeholders, including regional and town officials and SWCRPC, to evaluate and respond to actual impacts of the various routes in order to fairly distribute the impacts caused by the additional truck traffic associated with the Project.

NSSEP shall develop and file with the Board a traffic monitoring plan to document and verify the wood chip delivery truck traffic pattern during the initial year of Project operations. This monitoring plan shall be filed no less than 90 calendar days prior to the commencement of wood chip deliveries to the Project site. The monitoring plan shall collect and maintain sufficient information to monitor, evaluate and mitigate, where possible, impacts from the truck traffic. Parties shall have 30 calendar days after the submission of the monitoring plan to file comments thereon. NSSEP must obtain Board approval of its monitoring plan prior to taking delivery of wood chips at the Project site.

Within 60 calendar days after the completion of one year of Project operations, the results of the traffic monitoring plan along with a report of stakeholder input on traffic impacts shall be filed with the Board. Parties with standing shall have 30 calendar days after the submission of the monitoring results and stakeholder input report to file comments. In the event parties believe an additional monitoring period is needed they shall explain their reasons therefor at this time.

Wood chip deliveries shall be limited to Monday through Friday between the hours of 7:00 A.M. and 5:00 P.M. Where circumstances beyond NSSEP's control require, such as prior to and immediately following mud season, delivery hours may be extended until 7:00 P.M. No deliveries may occur on Saturdays or Sundays, or state or federal holidays, and in no event shall deliveries occur between the hours of 7:00 P.M. and 7:00 A.M.

Deliveries shall be distributed pro rata, to the extent feasible, among Springfield, Weathersfield, Cavendish and Chester, and deliveries shall be distributed so that the majority of deliveries are not concentrated at one intersection. This restriction does not apply to the Route 10 and South County Road, or the South County Road and Main Street intersections.

NSSEP shall schedule wood chip truck deliveries to reduce impacts on certain sensitive roads during winter ski season. Further, NSSEP will not authorize or schedule deliveries on Fridays after 2:30 P.M. during the winter ski season.

NSSEP shall comply with the requirements of the FAA Determination Of No Hazard To Air Navigation dated June 6, 2013. (Exhibit Board-3).

NSSEP shall file with the Board a proposed protocol for notifying surrounding neighbors as well as a point of contact at the Stellafane Observatory when increased levels of lighting will be utilized for an extended period of time. Parties with standing on the issue will have 14 calendar days to file comments with the Board on the proposed protocol. NSSEP must obtain Board approval for the notice protocol prior to commencing commercial operations.

NSSEP shall enter into long-term contracts with Vermont distribution utilities for no less than 75% of the Project's output. To the extent possible, and recognizing the potential for variations in the Project's fuel costs, such contracts shall contain controls to limit pricing volatility to the purchasing utilities. NSSEP shall certify compliance with this condition prior to the commencement of commercial operations.

120 calendar days prior to the commencement of operations NSSEP shall file with the Board a plan for monitoring and measuring the total amount of thermal waste heat generated by the facility and the total amount of thermal waste heat actually utilized during each calendar year of operations. Parties shall have 21 calendar days subsequent to the filing of the proposed plan to file comments with the Board. NSSEP must obtain Board approval for its monitoring plan prior to commencing commercial operations. Reports generated pursuant to the plan shall be filed with the Department of Public Service within 60 calendar days of the end of each calendar year in which the Project operates.

NSSEP shall construct and operate the District Heating System as proposed, install the interconnection points for the Community District Heating system as proposed, and shall make available for use in these systems the amount of heat as described in its testimony. NSSEP must obtain any necessary collateral permits

for the construction, including any necessary Act 250 permits or amendments and any local zoning permits.

NSSEP shall file a proposed decommissioning plan, including a proposed funding mechanism for decommissioning. The funding mechanism shall be bankruptcy remote and structured solely for the benefit of the Board, consistent with decommissioning funding mechanisms previously approved by the Board for other merchant generators. The proposed decommissioning plan may take into account the location and potential reasonable re-use of the Project infrastructure at the end of commercial operations. Parties with standing shall have 14 calendar days to file comments on the proposed decommissioning plan. NSSEP must receive Board approval of its proposed decommissioning plan prior to the commencement of Project construction.

Prior to Project construction, NSSEP shall notify the Board and the parties that it has complied with all pre-construction requirements and that it intends to commence construction of the Project.

Prior to accepting any fuel deliveries at the Project site, NSSEP shall notify the Board and parties that it has complied with all pre-delivery requirements and that it intends to commence accepting fuel deliveries at the Project site.

Prior to commencing commercial operations, NSSEP shall notify the Board and parties that it has complied with all pre-operational requirements and that it intends to commence commercial operations at the Project site.

This Proposal for Decision has been served on all parties to this proceeding in accordance with 3 V.S.A. § 811.

Dated at Montpelier, Vermont, this _____ day of _____, 2013.

_____

John J. Cotter, Esq.
Hearing Officer

IX. ORDER

IT IS HEREBY ORDERED, ADJUDGED, AND DECREED by the Public Service Board of the State of Vermont that:

1. The findings, conclusions and recommendations of the Hearing Officer are adopted.

2. The project as proposed, in accordance with the evidence and plans submitted in this proceeding, will not promote the public good of the State of Vermont in accordance with 30 V.S.A. § 248.

3. The petition of North Springfield Sustainable Energy Project LLC to install and operate a 25-35 MW wood-fired biomass electric generating facility to be located in the North Springfield Industrial Park in Springfield, Vermont, is denied.

Dated at Montpelier, Vermont, this _____ day of _____, 2013.

_____)
) PUBLIC SERVICE
)
_____) BOARD
)
) OF VERMONT
_____)

OFFICE OF THE CLERK

FILED:

ATTEST:_____
Clerk of the Board

NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@state.vt.us)

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and Order.