

STATE OF VERMONT  
PUBLIC SERVICE BOARD

Docket No. 7965

Petition of Vermont Technical College ("VTC") )  
for a certificate of public good, pursuant to )  
30 V.S.A. Section 248(j), authorizing the )  
construction and operation of a 375 kW )  
agricultural-methane electric generation facility )  
at VTC's campus in Randolph Center, Vermont )

Order entered: 4/17/2013

**I. INTRODUCTION**

This case involves a petition ("Petition") filed by Vermont Technical College ("VTC") requesting a certificate of public good ("CPG") under 30 V.S.A. § 248(j) to install and operate a 375 kW agricultural-methane generation facility ("the Project") at One Main Street on the VTC campus in Randolph Center, Vermont. In this Order, we conclude that the Project will be of limited size and scope, that the Petition does not raise a significant issue with respect to the substantive criteria of 30 V.S.A. § 248, that the public interest is satisfied by the procedures authorized by 30 V.S.A. § 248(j), and that authorizing the Project will promote the general good of the State.

**II. PROCEDURAL HISTORY**

On November 1, 2012, VTC filed a Petition with the Vermont Public Service Board ("Board") requesting a CPG under 30 V.S.A. § 248(j) to install and operate a 375 kW agricultural-methane electric generation facility at One Main Street on the VTC campus in Randolph Center, Vermont. VTC submitted prefiled testimony, proposed findings, and a proposed order pursuant to the requirements of Section 248(j). Robert E. Fletcher, Esq., Joseph S. McLean, Esq., and Diane M. Sherman, Esq., of Stitzel, Page & Fletcher, P.C., filed notices of appearance on behalf of VTC.

On November 13, 2012, Donald J. Einhorn, Esq., filed a notice of appearance on behalf of the Agency of Natural Resources ("ANR").

On December 6, 2012, Diane E. Zamos, Esq., filed a notice of appearance on behalf of the Agency of Agriculture, Food and Markets ("AAFM").

The Clerk of the Board issued notice of the Petition on December 21, 2012, to all entities specified in 30 V.S.A. § 248(a)(4)(C) and to other interested parties. The notice stated that any party wishing to submit comments as to whether the Petition raises a significant issue with respect to the substantive criteria of 30 V.S.A. § 248 should do so on or before January 18, 2013. A similar notice of the filing was posted on the Board's web site.

Also on December 21, 2012, the Clerk of the Board issued a memorandum requiring VTC to respond to 13 questions regarding the proposed Project.

On January 8, 2013, Timothy M. Duggan, Esq., filed a notice of appearance on behalf of the Department of Public Service ("DPS").

On January 14, 2013, Morris L. Silver, Esq., filed a notice of appearance on behalf of Green Mountain Power Corporation ("GMP"), along with a motion to intervene and a letter with comments on the merits of the Petition.

On January 16, 2013, VTC filed a request, assented to by the DPS, ANR, AAFM and GMP, for an extension of time to respond to one of the questions (#10, concerning the proposed effluent storage pond) contained in the Board's memorandum of December 21, 2013. The letter further requested that the other parties be granted additional time to submit comments in light of VTC's response to question 10.

By Order of January 17, 2013, the Board granted the requested extensions of time for VTC to respond to one of the Board's questions and for other parties to provide comments related to this response. The deadlines were extended to February 8, 2013, and February 19, 2013, respectively.

On January 18, 2013, AAFM filed a motion to intervene and comments on the Petition. The DPS also filed comments on that date. Also on January 18, 2013, VTC filed its responses to 12 of the Board's 13 questions.

On January 22, 2013, ANR filed comments on the Petition.

VTC filed its response to Board question 10 on February 12, 2013.

On February 19, 2013, the DPS filed comments in response to VTC's February 12 submission.

VTC filed a stipulation on March 14, 2013, that had been entered into among VTC, ANR and AAFM ("Stipulation"). Also on March 14, 2013, the Clerk of the Board issued a memorandum directing VTC to provide an assessment of the greenhouse gas impacts of any plans to transport off-site substrate to the Project, and inviting comments in response to VTC's greenhouse gas submission when made.

On March 15, 2013, the Board issued an Order granting the pending intervention motions of GMP and AAFM.

VTC filed its response to the Board's March 14 memorandum on March 22, 2013.

On March 29, 2013, the DPS and ANR filed comments in response to VTC's March 22 response.

### III. FINDINGS

1. VTC is the State's only technical college and a part of the Vermont State College system. VTC offers technical education in specialized areas of study related to agriculture, applied sciences, business, engineering, health sciences, and sustainability. Philip A. Conroy, VTC ("Conroy") pf. at 1.

2. VTC's main campus is in Randolph Center, Vermont, and consists of 544 acres, including residence halls for approximately 620 students, classrooms and labs, conference facilities, and the college farmstead, among other buildings and structures. Conroy pf. at 1; exh. Pet. 2.

3. VTC proposes to construct a 375 kW agricultural-methane electric generating facility on VTC's main campus that will consist of an anaerobic biodigester system and a 375 kW biogas electric generator. Conroy pf. at 3-4; Frank C. Reed, VTC ("Reed") pf. at 12.

4. VTC further proposes to construct a storage pond on the VTC farmstead, located off Water Street in Randolph Center, to avoid the need during the winter months to field-apply the liquid digestate that is a byproduct of the anaerobic biodigestation process the Project will use to

produce the methane that will fuel the generator. Michael J. Burke, VTC ("Burke") pf. at 7-8; Reed pf. at 2-3; exh. Pet. 3.

5. VTC intends to optimize the use of the college's agricultural waste by (a) generating electricity with the Project under Vermont's Sustainably Priced Energy Enterprise Development ("SPEED") program; (b) reducing the amount of organics being sent to landfills; (c) reducing greenhouse gas emissions, odor from manure, and the use of fossil fuel; and (d) providing a renewable source of animal bedding and fertilizer to the college and to area farms. Reed pf. at 12; Conroy pf. at 6-7.

6. VTC has executed a SPEED standard-offer contract with the SPEED facilitator, dated April 20, 2011, for the sale of the electrical output generated by the facility. The contract specifies a maximum nameplate capacity of 375 kW. Conroy pf. at 4-5; exh. Pet. 4.

7. The standard-offer contract between VTC and the SPEED facilitator took effect on April 20, 2011, has a duration of 20 years, and includes prices over that period that range from \$135.90 per megawatt-hour in year 1 to \$150.30 per megawatt-hour in year 20. Exh. Pet. 4 at 3, 4, 14 and 17.

8. With the exception of a power pole and interconnection facilities located on the north side of Furnace Street, within the GMP right-of-way, the Project will be constructed entirely on the property of VTC. Conroy pf. at 3.

9. The Project will consist in part of a new single-story building, 100-feet long and 40-feet wide, to house the receiving tanks, electrical equipment and generator, a solid/liquid separator, a solid digestate storage room, and related facilities and equipment. The new building will consist of wood truss/wood frame construction situated on a concrete slab, with sheet metal siding and a standing seam metal roof. There will be four windows across the rear of the building and two on each gable end. The front of the building will contain three standard doors, each accompanied by an overhead door. Reed pf. at 3-4; exh. Pet. 22.

10. The new building will contain three primary interior areas: (a) a cogenerator/electrical and control rooms, on the southerly side; (b) a reception and substrate receiving area and solid/liquid separator, in the middle; and (c) a solid digestate storage room and loading area, on the north side. Reed pf. at 3.

11. The reception and substrate receiving area will contain (a) a 9,000-gallon tank designed to receive food processing residuals; (b) a second 9,000-gallon tank to receive fats, oils, and grease ("FOG"); (c) a third 9,000-gallon tank to receive other organic material; (d) a 1,250-gallon pasteurizer that can receive materials from any of the three 9,000-gallon tanks; and (e) a 16,000-gallon preparation tank that is intended to receive manure, dry organic materials, and substrates mixed from the other tanks and/or the pasteurizer. This area will also contain a solid/liquid separator. Reed pf. at 4.

12. Adjacent to the new building will be three silo-shaped tanks: (1) a 106,000-gallon, liquid-fill volume hydrolysis unit, located to the south of the building; (2) a 317,000-gallon liquid-fill volume digestion tank, which contains an integrated 93,000-gallon gas storage bladder, also located to the south of the building; and (3) a 115,000-gallon liquid digestate storage tank, located to the north of the building. Each tank will be installed on its own concrete base. The hydrolysis unit and the digestion tank will be heated. Reed pf. at 4-5.

13. An underground electrical cable and communications line, with related equipment, will run from the biodigester site generator to GMP-owned distribution facilities located off Furnace Road in Randolph Center. The construction of one new power pole is anticipated. Reed pf. at 5.

14. Feedstock will be delivered daily to the facility by truck, separated by material composition, and then mixed in the preparation tank. Reed pf. at 8.

15. Consistent with the requirements of the SPEED program, at least 51 percent of the feedstock used by the Project will be derived from agricultural operations — i.e., will consist of manure, feed waste, silage runoff, crop residue and culls, and/or energy crops. Reed pf. at 6.

16. The feedstock will first pass through the hydrolyzer for three to six days and will then spend between 21 and 42 days in the digestion tank, where the biogas produced by the digestion process will be captured and stored. Reed pf. at 8-9.

17. The biogas will then be burned in the generator to produce electricity. When there is more gas than can be used in the generator, the excess will be burned via an enclosed flare located approximately 60 feet to the south of the hydrolyzer and digestion tank. Reed pf. at 11.

18. The Project is designed as a combined heat and power (CHP) system. Heat produced by the generator will be used to heat various components of the biodigestion system and excess heat

will be diverted to a heat exchanger connected to the VTC hot water heating system. Reed pf. at 13.

19. VTC will retain title to any tradeable renewable energy credits, as defined in 30 V.S.A. § 8002(22), as well as the right to sell them separately pursuant to 30 V.S.A. § 8005a(k)(3). Reed pf. at 12-13; exh. Pet. 4 at 3, 4.<sup>1</sup>

### Discussion

Pursuant to 30 V.S.A. § 8007(b), the Board was required to implement, by rule or order, procedures governing the application and review of renewable energy projects with a plant capacity that is greater than 150 kW and is 2.2 MW or less. The Board did so in its Order of August 31, 2010, *In Re: Simplified Procedures for Renewable Energy Plants with a Capacity Between 150 kW and 2.2 MW* ("Section 8007(b) Order"), conditionally waiving several Section 248 criteria. Because the Project will have a plant capacity of 375 kW, we conclude that the Project meets the plant capacity requirement for conditional waivers of certain Section 248 criteria pursuant to 30 V.S.A. § 8007(b) and the Board's Section 8007(b) Order. These criteria are identified in the relevant sections below.

### **Orderly Development of the Region**

[30 V.S.A. § 248(b)(1)]

20. The Project will not unduly interfere with the orderly development of the region, with 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 21 and 22, below.

21. VTC provided notice of the Project to the Randolph Planning Commission and the Two Rivers Ottauquechee Regional Commission. Both bodies provided letters, dated December 6 and November 8, 2011, respectively, indicating that the Project will not unduly interfere with the orderly development of the region. Conroy pf. at 5; exhs. Pet. 5 and 7.

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1. The statutory references in the Petitioner's proposed findings of fact, the prefiled testimony of consultant Frank Reed, and the SPEED contract that has been marked as Petitioner's Exhibit 4 have been updated here to reflect the recent recodification of the relevant provisions.

22. The Randolph Town Plan includes goals and policies related to (a) the maintenance and enhancement of the Town's working farms, describing them as a key part of the local economy, and (b) the development of local sources of renewable energy to help the Town reduce its dependence on other energy sources. The Project will help the Town achieve these goals and advance these objectives. Conroy pf. at 5; exh. Pet. 6 at 34-35, 41-42, 76-78.

### Discussion

The December 6, 2011, letter from the Randolph Planning Commission states that the Project will not unduly interfere with the orderly development of the area, provided that the Board "deals with potential issues regarding increased vehicular traffic, toxicity of materials that result from the facility and noise that may constitute a nuisance to neighbors."<sup>2</sup> As confirmed by VTC in its responses to the Board's questions, in attaching such a qualification the Planning Commission was responding to expressions of public concern that VTC addressed at the local level.<sup>3</sup> The Planning Commission was not suggesting that any aspect of the Petition as submitted to the Board would interfere with the orderly development of the region.

### **Need for Present and Future Demand for Service**

[30 V.S.A. § 248(b)(2)]

23. Pursuant to the Board's Section 8007(b) Order, this criterion is waived.

### **System Stability and Reliability**

[30 V.S.A. § 248(b)(3)]

24. The Project will not adversely affect system stability and reliability. This finding is supported by findings 25 through 27, below.

25. A System Impact Study ("SIS") was prepared in connection with the Project. Exh. Pet. 9.

26. The SIS concludes that the Project will not affect system stability or reliability provided that the requirements outlined in the study are followed and that the interconnection facilities are constructed as provided in the SIS-related facilities report. Conroy pf. at 6; exhs. Pet. 9 and 10.

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2. Exh. Pet. 5.

3. See VTC "Responses to Public Service Board's Requests for Information Dated December 21, 2011" ("January 18 Filing"), filed on January 18, 2013, at 2.

27. VTC has agreed to adopt and to implement the recommendations and requirements of the SIS. Conroy pf. at 6.

**Economic Benefit to the State**

[30 V.S.A. § 248(b)(4)]

28. Pursuant to the Board's Section 8007(b) Order, this criterion is waived.

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

**Health and Safety**

[30 V.S.A. § 248(b)(5)]

29. The Project, as proposed, will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment, and public health and safety. This finding is supported by findings 30 through 85 below, which concern the criteria specified in 10 V.S.A. §§ 1424(a)(d) and 6086(a)(1)-(8)(A) and (9)(K), and greenhouse gas impacts.

**Outstanding Resource Waters**

[10 V.S.A. § 1424(a)(d) and 30 V.S.A. § 248(b)(8)]

30. The Project will not be located on or near any outstanding resource waters within the meaning of 10 V.S.A. § 1422(9). Conroy pf. at 12.

**Water and Air Pollution**

[10 V.S.A. § 6086(a)(1)]

31. The Project will not result in undue water or air pollution. This finding is supported by findings 32 through 39, below.

32. The Department of Environmental Conservation has determined that, as an agriculture-related project, the Project is exempt from operational stormwater permitting. Burke pf. at 3; exh. Pet. 36.

33. VTC has nevertheless designated areas on its site plan for stormwater management, the location of stormwater collector swales and diversion swales to control runoff on site and upslope of the site, and infrastructure to reroute the existing stormwater system around the biodigester facility site. Burke pf. at 3-4; exh. Pet. 17.

34. The stormwater collection, treatment, and detention system for the biodigester facility will be designed in conformance with the standards of the Vermont Stormwater Management



Manual. The Project will add more than 5,000 square feet of new impervious surface, with a resulting total area of impervious surface greater than one acre. The Project will be subject to the standards of the Vermont Stormwater Management Manual for water quality, groundwater recharge, channel protection and overbank flood protection. These standards will be met via a combination of a wet pond and grass channels. Burke pf. at 4.

35. VTC has a comprehensive nutrient management plan that assures protection of ground and surface waters and prevents over-fertilization. The plan will be updated in cooperation with AAFM to accommodate the effluent and separated solids produced by the biodigester. Christopher R. Dutton, VTC ("Dutton") pf. at 6; exh. Pet. 46.

36. The digestate pond has been designed to have sufficient storage capacity to ensure that no spreading of digestate will be necessary during the winter months. Burke pf. at 8.

37. The Project will make a positive contribution to air purity because raw manure and other organics will be digested, capturing methane and burning it to generate electricity. Although a byproduct of this burning is a greenhouse gas — carbon dioxide — its potency as a greenhouse gas is significantly lower than that of methane. Conroy pf. at 7; Reed pf. at 10.

38. The Project will result in emissions from burning methane in the generator and from the flare installed to burn excess methane from the biodigester. The Air Pollution Control Division of ANR has determined that the Project complies with ANR's standards for approval without the need for a separate air pollution control permit. ANR's determination letter included conditions that specify (a) the type of engine to be used; (b) the height of the engine exhaust stack (four feet); (c) the use of a properly designed flare to vent excess biogas; and (d) the annual reporting to ANR of the Project's air emissions. VTC has agreed to comply with these conditions. Exh. Pet. 11; Conroy pf. at 7.

39. The flare that will burn excess methane produced by the Project will be equipped with a screen to prevent blowout of the flame. VTC will operate the flare in accordance with the manufacturer's operation and maintenance recommendations. The flare will be equipped with an automatic ignition system to ensure immediate and continuous combustion of any biogas routed to it. VTC will register its air emissions with ANR annually in accordance with ANR's air pollution control regulations. Reed pf. at 11.

**Headwaters**

[10 V.S.A. § 6086(a)(1)(A)]

40. The Project is not located near any headwaters and will therefore not have any undue adverse impact on those resources. Conroy pf. at 9; exh. Pet. 16.

**Waste Disposal**

[10 V.S.A. § 6086(a)(1)(B)]

41. The Project will meet applicable health and environmental conservation regulations regarding the disposal of wastes. This finding is supported by findings 42 through 50, below.

42. The Project will improve the treatment of farm waste at both VTC's agricultural facilities and other farms that contribute waste to the Project inasmuch as the Project will not release untreated waste. Conroy pf. at 9.

43. Not less than 51 percent of the feedstock for the Project will consist of agricultural materials – i.e., manure, feed waste, silage runoff, crop residue and culls, and energy crops. Reed pf. at 6.

44. The Project has been designed so that it can also accept feedstock from non-agricultural sources. Reed pf. at 6.

45. The only non-agricultural feedstock to be used by the Project are pre-consumer food residuals. These include food and kitchen preparation waste, residuals produced by commercial food-processing facilities, pre-consumer waste dairy products, and pre-consumer FOG. Reed pf. at 6-7.

46. The Project will accept only pre-consumer food residuals from producers that have received an indirect discharge permit from the Wastewater Management Division of ANR. Reed pf. at 7.

47. Subject to the 51-percent limitation, VTC will determine the feedstock mix based on the economics of the facility as driven by the "biogas yields" of the biodigester. Dutton pf. at 5.

48. Liquid effluent from the Project will be trucked from the Project site and either applied to farmlands or stored in the digestate pond being constructed as part of the Project. Dutton pf. at 6.

49. Separated solids from the facility will be used as bedding in the VTC barns and possibly at neighboring farms as well. VTC also anticipates using some of the solids as fertilizer. Dutton pf. at 6.

50. VTC's nutrient management plan will guide the use of liquid effluent and separated solids produced by the Project. VTC will update the plan in cooperation with AAFM to account for this production. Dutton pf. at 6.

### Discussion

In their responses to the Petition and VTC's subsequent submissions on the substance of its proposal, ANR and AAFM raised significant concerns about waste disposal issues. At the center of these concerns is the fact that VTC has not yet committed to a definitive feedstock "recipe" but intends to maximize the economic efficiency of the plant – which, in turn, means potentially taking full advantage of the ability to rely on feedstock that is 49 percent non-agricultural without compromising the facility's status as a SPEED project.<sup>4</sup>

ANR and AAFM are further concerned that VTC determined — after filing the Petition — that a 2 million gallon storage pond described in the Petition would not be adequate to preclude the need to field-spread effluent during the winter months as required by the applicable regulations.<sup>5</sup> Finally, ANR objects to the fact that the prefiled testimony submitted with the Petition uses terminology that ANR considers to be inconsistent with the Solid Waste Management Regulations that were promulgated by ANR in March, 2012.<sup>6</sup> According to ANR,

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4. See Dutton pf. at 5 ("We will comply fully with any and all regulatory requirements" but "intend to operate the biodigester economically"). The requirement that at least 51 percent of the substrate must come from agricultural sources is set forth in *Investigation Re: Establishment of a Standard Offer Program for Qualifying Sustainably Priced Energy Enterprise Development ("SPEED") Resources*, Docket 7533, Order of 10/28/09 at 6-7.

5. See VTC "Response to Public Service Board Request 10" ("February 12 Filing"), filed on February 12, 2013, at 2 (attributing the need for a larger effluent pond, in part, to the fact that VTC learned after it filed its petition that "the amount of FOG inputs would need to be more limited than originally anticipated"). FOG inputs will now be limited to 1 percent of feedstock but estimates of effluent production have risen to 2.4 million gallons over a 180-day period. *Id.* VTC characterizes this as "close to a worst-case scenario in terms of total effluent production," but nevertheless acknowledges that when the project goes on line it will likely employ something "very similar" to the associated feedstock mix of 51 percent agricultural inputs, 48 percent food processing residuals and 1 percent FOG. *Id.* at n.1.

6. See Letter of Donald J. Einhorn, Esq., to Susan M. Hudson, Clerk of the Board, January 17, 2013, at 1-2 and January 18 Filing at 9.

this made it difficult to determine whether VTC planned to comply with the most recent regulatory requirements that limit the use of non-farm feedstock.

However, the Stipulation entered into among VTC, ANR and AAFM resolves these issues in a manner that permits us to determine that the Project will meet applicable health and environmental conservation regulations regarding the disposal of wastes as required by Section 248(b)(5). The Stipulation calls for the inclusion in the CPG of conditions to assure that the Project (a) is consistent with AAFM's General Permit for Medium Farm Operations; (b) is subject to a nutrient management plan that meets the standards promulgated by AAFM and the National Resource Conservation Service ("NRCS"); (c) includes an effluent pond that is likewise consistent with AAFM and NRCS standards; (d) will not employ a feedstock mix of more than 1 percent food residuals unless the prescribed processes in the Solid Waste Management Rules for increasing this percentage are followed; and (e) includes an effluent storage pond that is fully permitted by ANR, including authority to discharge stormwater. Further, VTC expressly agreed that in future filings and submissions to the Board, ANR and AAFM, VTC would use terminology that is consistent with the terminology used in the Solid Waste Management Rules. VTC likewise agreed that it would provide a copy to ANR of any updates to VTC's nutrient management plan that is either reasonably requested by AAFM or otherwise required under the general permit for medium farm operations.

**Water Conservation**

[10 V.S.A. § 6086(a)(1)(C)]

51. Pursuant to the Board's Section 8007(b) Order, this criterion is waived.

**Floodways**

[10 V.S.A. § 6086(a)(1)(D)]

52. The Project is not located in a floodway. Conroy pf. at 9; exh. Pet. 16.

**Streams**

[10 V.S.A. § 6086(a)(1)(E)]

53. No improvements will be located on stream banks or in the immediate vicinity of any stream. Conroy pf. at 9; exh. Pet. 16.

**Shorelines**

[10 V.S.A. § 6086(a)(1)(F)]

54. The Project is not located near any shorelines. Conroy pf. at 9; exh. Pet. 16.

**Wetlands**

[10 V.S.A. § 6086(a)(1)(G)]

55. The Project will not have any adverse impact on wetlands. Although there are wetlands in the vicinity of the Project, neither the Project nor any related construction activity will impact any wetland or wetland buffer. Conroy pf. at 9-10; Burke pf. at 4-5; Pet. exhs. 16 and 17.

**Sufficiency of Water and Burden on Existing Water Supply**

[10 V.S.A. §§ 6086(a)(2) and (3)]

56. Pursuant to the Board's Section 8007(b) Order, this criterion is waived.

**Soil Erosion**

[10 V.S.A. § 6086(a)(4)]

57. The Project will not result in unreasonable soil erosion or 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 58 through 64, below.

58. VTC's consulting engineers developed a grading plan for the Project that calls for (a) the east side of the proposed buildings to act as a retaining wall, allowing the grade to be dropped up to six feet outside the building; (b) a 1.5:1 rip-rap slope to achieve reasonable grades on the wet side of the site; and (c) terracing the grading in the areas of the tanks to maintain flat spots for the tank installation. Burke pf. at 3.

59. Consistent with Construction General Permit 3-9020, the Department of Environmental Conservation has authorized VTC's proposed stormwater discharge from the activities associated with the construction of the Project's buildings, tanks, roads and associated infrastructure. Burke pf. at 5; exh. Pet. 38.

60. The U.S. Soil Conservation Service has mapped the Project site as "Buckland extremely stony loam and Cabot stony silt loam." The soils are poorly drained and have a moderate potential for erodability. VTC's consulting engineers estimate the disturbed area for the Project to be approximately 1.8 acres. The grading plan minimizes cuts and fills to the

greatest extent possible and maintains existing drainage patterns on the site. The Project is planned for construction in a single phase during one construction season. All erosion control measures will be in place prior to any earth disturbance. Burke pf. at 5-6.

61. Permanent and temporary erosion control measures will be incorporated into the design of the Project in conformance with design guidance provided by the Department of Environmental Conservation's Standards and Specifications for Erosion Prevention and Sediment Control. This is expected to mitigate the potential flooding and erosion by using grass-lined swales and sheet flow over vegetated terrain, and by establishing permanent vegetation to ensure no untreated stormwater runoff leaves the site. Burke pf. at 7.

62. With respect to permanent erosion control, the road and parking areas will be designed to hug the ground contours as much as possible. Where larger cuts and fills are necessary to meet transportation requirements, stabilization measures such as stone-lined swales and rip-rap slopes have been incorporated so as to stabilize the site permanently. Burke pf. at 6.

63. The conceptual planning provides for establishment of permanent vegetation on all areas not otherwise covered with driveways, buildings, or related infrastructure. Burke pf. at 6.

64. With respect to temporary erosion control measures, (a) before any work commences, all clearing limits and areas not to be disturbed will be clearly marked and delineated with barrier fencing or flagging; (b) before any work commences, all erosion control shown on the erosion control plan will be installed; (c) as work begins, stabilized construction entrances must be constructed; (d) as work begins, topsoil in disturbed areas must be stripped and stockpiled, with such stockpiles enclosed in continuous silt fence containment at the toe of the stockpile; (e) as work begins, erosion control measures must be inspected weekly or after a rainfall event producing a stormwater discharge, and maintained continuously until permanent vegetation is established in the disturbed watershed; (f) disturbed areas must be topsoiled, seeded, and mulched immediately after finish grades are achieved; (g) the stabilized construction entrance must be maintained as often as needed; (h) dust must be controlled with the timely application of calcium chloride or water on all roadways or disturbed areas until vegetation has been established; and (i) sediment must be disposed of on-site in a stable upland area with a sediment barrier perimeter. Burke pf. at 7.

**Transportation Systems**

[10 V.S.A. § 6086(a)(5)]

65. The Project will not cause unreasonable congestion or unsafe conditions with respect to transportation systems. This finding is supported by findings 66 through 69, below.

66. The Project includes a new paved access road, 16 feet wide, to provide access to the biodigester site from the existing circulation roads on the VTC campus. The road will have a maximum slope of 11 percent, a minimum inside curve radius of 50 feet, and the ability to accommodate a tractor-trailer of 62 feet from front to rear axle. Burke pf. at 2-3.

67. The area of pavement in front of the Project's building will allow a tractor-trailer of 62 feet from front to rear axle to turn around with some difficulty; a tractor-trailer of 50 feet from front to rear axle as well as smaller trucks will be able to turn around with no difficulty. Burke pf. at 3.

68. On a daily basis, VTC expects no more than one truckload of manure to be delivered to the Project and no more than one truckload of liquid effluent to be removed. Dutton pf. at 6.<sup>7</sup>

69. Off-farm feedstock will be delivered to the Project by tanker trucks that will reach the site via Exit 4 on Interstate 89, traveling to the VTC campus nearby on Vermont Route 66 and entering the area of the Project by way of an existing campus access drive. VTC estimates that no more than 12 loads of feedstock will be delivered from off-farm sources per week. Dutton pf. at 7.

**Educational Services**

[10 V.S.A. § 6086(a)(6)]

70. Pursuant to the Board's Section 8007(b) Order, this criterion is waived.

**Municipal Services**

[10 V.S.A. § 6086(a)(7)]

71. The Project will not place an unreasonable burden on the ability of the local government to provide municipal or governmental services. VTC consulted with Randolph's Town

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7. According to VTC's filing of January 18, 2013, the daily truckload of liquid effluent would leave the facility via the same vehicle that delivers the one daily truckload of incoming manure. January 18 Filing at 3.

manager, who verified that the Project will have no impact on Randolph's ability to provide municipal services. Conroy pf. at 10; exh. Pet. 19.

**Aesthetics, Historic Sites, and Rare and Irreplaceable Natural Areas**

[10 V.S.A. § 6086(a)(8)]

72. The Project will not have an undue adverse impact on the scenic or natural beauty, aesthetics, historic sites, or rare and irreplaceable natural areas. This finding is supported by findings 73 through 81, below.

73. The Project will be located on the northeastern edge of the built portion of the VTC campus. It will be adjacent to campus maintenance facilities, the student garage, and the school's automotive technology building. A steep drop in grade separates the Project from these facilities. Since the Project is at the bottom of this grade, the Project is not visible from the west. The area south of the Project consists of agricultural fields; the first roads to provide public viewing opportunities of the Project are more than 0.5 miles away and will be completely screened by landform and existing vegetation. Michael J. Buscher, VTC ("Buscher") pf. at 6.

74. The components of the Project will resemble agricultural structures and nearby campus buildings. Buscher pf. at 7-10.

75. The project buildings are on the northeast corner of the VTC campus roadway system, with the closest land uses being other college campus buildings and surrounding farmland. There is a small public campground 1,110 feet to the north of the Project and the village buildings of Randolph Center are 1,110 feet to the west of the Project. Exh. Pet. 13 at 1. The site of the proposed liquid digestate storage pond is east of the village buildings of Randolph Center, on the VTC farm, and is not in the vicinity of any residential buildings. Exh. Pet. 3.

76. The Project will be visible from various points within the Vermont Veterans Memorial Cemetery, particularly from its southern portion. Landscape trees and vegetation will significantly limit these views during the times that trees are foliated. The biodigester will be visible within the context of the overall VTC campus. Buscher pf. at 7.

77. The Project will also be visible from Furnace Road, which provides the approach to the cemetery, and from parts of a public campground located near the intersection of Furnace Road and Main Street. Buscher pf. at 7-8; Exh. Pet. 3.



78. In these areas, the silo-shaped tanks of the Project will give the project the appearance of providing a border of agricultural structures along the fields that separate the VTC campus from the Furnace Street area that includes the cemetery and the campground.

79. There are no historic sites or rare and irreplaceable natural areas in the Project area that will be adversely impacted. Conroy pf. at 8, 11; Pet. exhs. 12 and 16.

80. The largest source of sound from the biodigester facility will be the generator. Sound propagation modeling determined that the highest daytime and nighttime sound levels in the area surrounding the generator will be at the campground north of the Project, where the highest predicted noise levels are 43 dBA averaged during the daytime and 28 dBA averaged overnight. The nighttime instantaneous maximum sound level is expected to be 30 dBA. These levels are within the guidelines of the World Health Organization ("WHO") for protecting against annoyance and sleep disturbance. Kenneth H. Kaliski, VTC pf. at 3.

81. Provided that (a) the generator is enclosed inside a building and fitted with a silencer that is rated at 65 dB at 10 meters or better; (b) with respect to truck deliveries, external loader operations are restricted to daytime hours (7:00 a.m. to 7:00 p.m.); and (c) the loader used at the facility is retrofitted with a low-impact backup alarm to the extent allowed by law, the Project will have no undue adverse impact on aesthetics with regard to noise. Kaliski, pf. at 3; exh. Pet. 13 at 18-19.

### Discussion

Although the biodigester and its surrounding structures will be visible from some surrounding areas, including portions of the Vermont Veterans' Cemetery, we conclude that the visual impacts will not be adverse within the meaning of Section 248(b)(5). We base that determination on the fact that the structures will be seen against the backdrop of the existing campus and will be of a character that is consistent with both the agricultural setting and the other campus buildings. Since we find no adverse impacts, it is not necessary to apply the so-called "Quechee Test" by which we determine whether any adverse impacts are undue.<sup>8</sup>

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8. See *Petition of Charlotte Solar LLC*, Docket 7844, Order of 1/22/13, at 25 (describing Quechee test).

**Necessary Wildlife Habitat and Endangered Species**

[10 V.S.A. § 6086(a)(8)(A)]

82. The Fish and Wildlife Department of ANR has concluded that the Project will have no impact on fish and wildlife habitat and there are no known rare, threatened or endangered species on or near the Project site. Exh. Pet. 20.

**Development Affecting Public Investments**

[10 V.S.A. § 6086(a)(9)(K)]

83. The Project will not unnecessarily or unreasonably endanger any public or quasi-public investment in any facility, service or lands, or materially jeopardize or interfere with the function, efficiency or safety of, or the public's use or enjoyment or access to any facility, services or lands. This finding is supported by finding 84, below.

84. The Project will protect and enhance public investment in Vermont's state college system and will not interfere with the public's use of VTC and its land. Additionally, while the Project will use public highways, and will be visible from portions of the Vermont Veteran's Memorial Cemetery, neither the public investment in those resources nor the public's use and enjoyment of, or access to, those facilities will be endangered by the Project. Conroy pf. at 11-12.

**Greenhouse Gas Impacts**

[30 V.S.A. § 248(b)(5)]

85. Carbon dioxide is 25 times less potent as a greenhouse gas than is methane and, thus, to the extent the Project burns methane that would otherwise be released into the environment via traditional feedstock decomposition there is a significant net reduction in greenhouse gas impacts notwithstanding the fact that the methane combustion releases carbon dioxide into the atmosphere. Reed pf. at 10.

**Discussion**

The record does not permit a precise determination of the extent to which the greenhouse gas benefits of the Project's methane consumption are offset by the transportation-related carbon dioxide emissions. In a recently decided case, we amended a previously issued CPG for an agricultural-methane facility close to the Canadian border to allow it to receive up to ten

truckloads of off-farm substrate per month from Massachusetts. We concluded that the greenhouse gas emissions from such activity would not significantly offset the greenhouse gas reductions arising out of the Project's methane consumption.<sup>9</sup> Our Order in that proceeding stated that "any future petitions for a CPG that include the proposed transport of off-site substrate [should] include an assessment of greenhouse gas impacts."<sup>10</sup>

VTC's Petition, filed approximately six weeks later, does not contain such an assessment. Accordingly, following our information request of March 14, 2013, VTC filed a rough estimate of the net greenhouse gas benefits of the Project based on certain assumptions about the source of most of the off-farm-substrate.<sup>11</sup>

VTC contemplates up to 12 truckloads per week — a significantly larger number of truck deliveries than the number at issue in the case we decided last August. At this time, the precise nature of the greenhouse gas impacts attributable to the Project's transportation activities is not known because the source of much of the substrate — i.e., food processing residuals, likely but not certain to be whey from yogurt processing — is likely to vary during the life of the Project.<sup>12</sup>

That said, VTC nevertheless has attempted to estimate the Project's net greenhouse gas benefits by making assumptions about the major source of the off-farm substrate. Specifically, VTC has had conversations with 3 in-state and 3 out-of-state food processors who "have indicated an interest in establishing a contractual relationship with it once the college is engaged in construction activities."<sup>13</sup> Based on these conversations, VTC estimates a range from 63 metric tons of carbon dioxide for a source in Rutland, Vermont, to 282 metric tons for a source in Portland, Maine.<sup>14</sup> Using the data from the supplier furthest from the VTC campus — i.e., the one in Maine — VTC maintains that the resulting 282 metric tons of carbon dioxide

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9. See *Petition of Chaput Family Farms*, Docket 7542, Order of 8/21/12 at 15.

10. *Id.*

11. See Response to Public Service Board Memorandum, dated March 21, 2013, and filed on March 22, 2013 ("March 21 Filing").

12. January 18 Filing at 10.

13. March 21 Filing at 4.

14. *Id.*

emissions compares favorably to the estimated 896<sup>15</sup> metric tons of carbon dioxide that "will not enter the atmosphere as a result of the project's operation."<sup>16</sup>

ANR, in turn, identifies significant flaws in this analysis but offers its critique "for information purposes only" because the Agency has executed the Stipulation, which provides that the Petition overall meets the Section 248(b)(5) criteria.<sup>17</sup> ANR points out that VTC's reliance on the Greenhouse Gas Equivalencies Calculator assumes that the avoided greenhouse gas emissions of the biodigester are equal to the emissions of an equivalent amount of electricity generated by existing facilities on the grid, which implies that the greenhouse gas emissions from the biodigester itself would be zero.<sup>18</sup> ANR further observes that calculating a single estimate of emissions does not recognize inherent uncertainties in the analysis, further noting that it is not appropriate simply to assume only "one-way" greenhouse gas impacts for truck trips to the VTC campus from the source(s) of the substrate.

Like ANR, the DPS has concluded that the greenhouse gas analysis submitted by VTC should not be an impediment to the issuance of a CPG at this time. According to the DPS, the benefits of avoided methane emissions, combined with the greenhouse gas impacts of avoided fossil fuel generation from elsewhere on the grid, "are highly likely to outweigh the added greenhouse gas impacts of the anticipated twelve deliveries of food residuals per week."<sup>19</sup>

On balance, we find the conclusions of the DPS to be persuasive. Given the potency of methane as a greenhouse gas when compared to carbon dioxide, and given that at least some of

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15. The figure of 896 metric tons of carbon dioxide, in turn, is the result of certain calculations VTC performed using an online tool that is publicly available from the Environmental Protection Agency ("EPA") at <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>. Specifically, VTC began by estimating that the Project will generate approximately 3,285,000 kilowatt-hours of electricity annually. VTC relied on only a portion of that output — 1,270,550 kilowatt-hours — explaining that it was "[a]ttributing 49% of this total to the off-farm feedstock." March 21 filing at 3. VTC then plugged the 1,270,550 kilowatt-hours into EPA's "Greenhouse Gas Equivalencies Calculator" to arrive at its figure of 896 metric tons.

16. March 21 filing at 3.

17. Letter of Donald M. Einhorn, Esq., to Susan M. Hudson, Clerk of the Board, dated March 28, 2013.

18. Memorandum of Jeff Merrell and Brian Woods, ANR Air Pollution Control Division, to Donald J. Einhorn, Esq., dated March 28, 2013 ("ANR Memorandum") at 1. ANR further points out that, even assuming the EPA tool were appropriate for estimating the biodigester's avoided greenhouse gas emissions, it would provide an estimate that is overly generous inasmuch as its formula is based on a 2009 national average of emissions from non-baseload resources. According to ANR, this average is 34 percent greater than the comparable average for New England. *Id.*

19. Letter of Timothy M. Duggan, Esq., to Susan M. Hudson, Clerk of the Board, dated March 28, 2013, at 1.

the sources of food processing residuals under consideration are relatively close to Randolph, this Project is likely to have a net positive greenhouse gas impact.

Still, we hesitate to grant a CPG to VTC that authorizes it to truck food processing waste to the site without regard for the distances traveled and those resulting greenhouse gas emissions. Accordingly, prior to commencement of operation, we will require VTC to submit for our review a detailed list of the sources of the non-farm substrate for the Project. Our review of this information will consider the greenhouse gas impacts of the associated truck transportation. Accordingly, when VTC submits this list for review, it must disclose the number of truck-miles associated with the transportation of non-farm substrate and must include the kind of analysis that addresses the concerns expressed by ANR in this case. Once we have confirmed the sources of off-farm substrate will not have unacceptable greenhouse gas impacts, we will allow the Project to operate without further review of these sources as long as VTC does not increase the transportation impacts of the deliveries, as measured in truck-miles.

#### **Existing or Planned Transmission Facilities**

[30 V.S.A. § 248(b)(10)]

86. The Project can be served economically by existing or planned transmission facilities without undue adverse impacts on Vermont utilities or customers. VTC will assume the costs of all necessary system upgrades to interconnect the generation facility to the GMP system. The proposed Project will not have any undue adverse impact on GMP or its customers. Conroy pf. at 6, 12.

#### **IV. CONCLUSION**

Based upon all of the above evidence, we conclude that the proposed Project will be of limited size and scope, that the petition does not raise a significant issue with respect to the substantive criteria of 30 V.S.A. § 248, that the public interest is satisfied by the procedures authorized by 30 V.S.A. § 248(j), and the proposed Project will promote the general good of the State.

### **V. ORDER**

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

1. The proposed installation and operation of a 375 kW agricultural-methane electrical generating facility on the campus of Vermont Technical College ("VTC") at One Main Street in Randolph, Vermont ("Project") by VTC will promote the general good of the State of Vermont in accordance with 30 V.S.A. § 248, and a certificate of public good ("CPG") to that effect shall be issued.

2. Construction, operation, and maintenance of the proposed Project shall be in accordance with the plans and evidence as submitted in this proceeding. Any material deviation from these plans or a substantial change to the Project must be approved by the Board. Failure to obtain advance approval from the Board for a material deviation from the approved plans or a substantial change to the Project may result in the assessment of a penalty pursuant to 30 V.S.A. §§ 30 and 247.

3. VTC shall comply with the recommendations contained in the December 15, 2011 System Impact Study ("SIS"). VTC shall pay for all costs associated with the recommendations in the SIS and all interconnection costs.

4. Prior to constructing the effluent storage pond, VTC shall submit to the Board and the Agency of Agriculture, Food and Markets ("AAFM") final plans for the pond, which shall be certified by the Natural Resources Conservation Service ("NRCS") as compliant with its NRCS-VT Conservation Practice Standard 313.

5. Prior to constructing its proposed effluent storage pond, VTC shall apply for and obtain from the Agency of Natural Resources ("ANR") all necessary and appropriate permits and approvals related thereto, including but not limited to authorization to discharge stormwater under Vermont's Construction General Permit.

6. At least 51 percent of the feedstock used by the Project shall be derived from agricultural operations, produced for some other purpose than solely that of providing a fuel source for generation. For purposes of assuring compliance with this requirement, VTC shall

calculate, on a quarterly basis, the amount of feedstock derived from agricultural operations that is utilized in its biodigester facility by utilizing volume as the measurement basis, and shall report the same to the Board and the AAFM.

7. For determining compliance with its CPG and in connection with all future filings and submissions to the Board, ANR, and AAFM, VTC shall use terminology that is consistent with the terminology used in the Vermont Solid Waste Management Rules when referring to feedstock that is not derived from agricultural operations.

8. VTC shall not use more than one percent food residual in its feedstock without the prior approval of ANR. If VTC proposes to use more than a *de minimis* amount of food residual (i.e., more than one percent under current Solid Waste Management Rules) in its feedstock, prior to commencing such use VTC shall apply for and obtain from ANR all necessary and appropriate permits and approvals, including without limitation a solid waste certification or "insignificant waste management event" approval, as applicable. If VTC proposes to use more than one percent of food residual in its feedstock, it may do so without seeking an amendment to its CPG provided that (a) the total amount of feedstock derived from non-agricultural operations shall not exceed 49 percent of total feedstock; (b) VTC has obtained all necessary approvals from ANR; and (c) any increased use of food residual will not result in a "substantial change" to the approved Project, as defined in PSB Rule 5.408.

9. VTC shall not apply any liquid digestate to forest land without obtaining the prior approval of ANR's Department of Forest, Parks and Recreation.

10. Prior to operation of the Project, VTC shall submit to the Board and ANR a list of its sources of non-agricultural feedstock, which the Board will review for the purpose of determining whether the transportation-related greenhouse gas impacts outweigh the greenhouse gas benefits otherwise provided by the Project.

11. VTC shall be limited to 12 truckload deliveries of non-agricultural feedstock per week and shall not increase the number of truck-miles associated with the transportation of non-agricultural feedstock to the Project without the prior approval of the Board.

12. VTC shall assure that the generator is fitted with a silencer that is rated at 65 dB at 10 meters or better, that external loader operations are restricted to daytime hours (7:00 a.m. to

7:00 p.m.), and that the loader used at the facility is retrofitted with a low-impact backup alarm to the extent allowed by law.

13. Prior to operation of the Project, VTC shall enter into an interconnection agreement with Green Mountain Power Corporation ("GMP") and file the agreement with the Board and the Department of Public Service "(DPS)".

14. Prior to interconnection of the generator with the GMP system, VTC shall provide the Board and the DPS with written documentation that the Project meets the applicable codes and standards listed in PSB Rule 5.510.

15. Prior to operation of the Project, VTC shall prepare a revised nutrient management plan that meets the applicable standard of the NRCS as determined by AAFM and shall provide the Board, the DPS and AAFM with documentation that VTC has met this requirement.

16. VTC shall copy ANR on any updates to its nutrient management plan that are either reasonably requested by AAFM or otherwise required under the General Permit for Medium Farm Operations.

17. Prior to operation of the Project, VTC shall demonstrate to the satisfaction of AAFM that its waste management structures meet the applicable standard under 6 V.S.A. § 4815 as determined by AAFM and shall provide the Board and the DPS with documentation that VTC has met this requirement.

18. Prior to proceeding with construction, VTC shall obtain all necessary permits and approvals under ANR's Solid Waste Management Rules and shall provide the Board and the DPS with documentation that VTC has met this requirement.

19. Prior to proceeding with construction, VTC shall obtain all other necessary permits and approvals. Construction, operation, and maintenance of the Project shall be in accordance with such permits and approvals, and with all other applicable regulations.

20. Prior to commencing construction, VTC shall file with the Board, the parties in this docket, and the adjoining landowners, a letter stating that it has fulfilled all requisite CPG conditions and that VTC intends to commence construction of the Project.



Dated at Montpelier, Vermont, this 17th day of April, 2013.

<u>s/James Volz</u>	)	
	)	
	)	
<u>s/David C. Coen</u>	)	PUBLIC SERVICE
	)	
	)	BOARD
	)	
<u>s/John D. Burke</u>	)	OF VERMONT

OFFICE OF THE CLERK

FILED: April 17, 2013

ATTEST: s/Judith C. Whitney  
Deputy 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.*