

STATE OF VERMONT  
PUBLIC SERVICE BOARD

Docket No. 7179

Petition of Green Mountain Dairy Farm, LLC, for a	)	Hearing at
certificate of public good, pursuant to 30 V.S.A.	)	Montpelier, Vermont
Section 248, authorizing the construction of a farm-	)	October 3, 2006
based methane-fueled electrical generating facility in	)	
Sheldon, Vermont	)	

Order entered: 11/6/2006

PRESENT: Gregg Faber, Hearing Officer

APPEARANCES: June Tierney, Esq.  
for Vermont Department of Public Service

David Englander, Esq.  
for Vermont Agency of Natural Resources

Ebenezer Punderson, Esq.  
Deppman & Foley, P.C.  
for Green Mountain Dairy Farm, LLC

Morris L. Silver, Esq.  
for Central Vermont Public Service Corporation

**I. INTRODUCTION**

This case concerns a petition filed by Green Mountain Dairy Farm, LLC ("Green Mountain Dairy Farm" or "Petitioner") requesting a certificate of public good ("CPG") under 30 V.S.A. § 248 authorizing the construction of a farm-based methane-fueled electrical generating facility located on the Petitioner's property in Sheldon, Vermont (the "proposed Project"). In this proposal for decision, I recommend that the Board grant the petition and issue a CPG to Green Mountain Dairy Farm, subject to certain conditions.

**II. PROCEDURAL HISTORY**

On April 19, 2006, Green Mountain Dairy Farm filed a petition ("Petition") and prefiled testimony with the Vermont Public Service Board ("Board") requesting a certificate of public

good ("CPG") under 30 V.S.A. § 248 authorizing construction of a farm-based methane-fueled electrical generating facility located on the Petitioner's property in Sheldon, Vermont.

On June 12, 2006, I convened a prehearing conference in this case. Appearances were entered by Ebenezer Punderson, Esq., of Deppman & Foley, P.C., for Green Mountain Dairy Farm; June Tierney, Esq., for the Vermont Department of Public Service ("Department" or "DPS"); David Englander, Esq., for the Agency of Natural Resources ("ANR"); and Morris Silver, Esq., for Central Vermont Public Service Corporation ("CVPS"). At the prehearing conference, the parties stated no objections to CVPS's April 24, 2006, motion to intervene, and I consequently granted CVPS's intervention request.

On July 6, 2006, I issued an Order approving a jointly stipulated schedule for the remainder of the docket.

On August 10, 2006, I conducted a site visit to the proposed project and, following the site visit, I convened a public hearing on the proposed project. Notice of the site visit and public hearing was published in the *St. Albans Messenger*, on July 20 and 27, 2006.

On September 19, 2006, Petitioner filed a stipulation ("Stipulation") with the Board reached among all parties in this docket, and within which all parties agreed that the Board should issue a CPG with certain conditions. The conditions address issues concerning interconnection, system impacts and impacts on ratepayers, and are described in more detail in the findings that follow. In addition, the parties waived their rights pursuant to 3 V.S.A. § 811 to comment on the proposal for decision in this matter provided the proposal for decision is consistent in all respects with the Stipulation and proposes that the Board adopt the Stipulation in its entirety. The Stipulation contains several conditions for approval of the proposed project.

On October 3, 2006, I conducted a technical hearing in this matter.

### **III. FINDINGS**

I present the following Findings of Fact to the Board, in accordance with 30 V.S.A. § 8.

#### **Project Description**

1. Green Mountain Dairy Farm is a Vermont limited liability company that owns and operates a large dairy farm in Sheldon. Pet. at 1.

2. The farm milks 900 Holsteins with a total herd size of 1,750 Holsteins, and owns 1,200 tillable acres of land for crops. Pet. at 1.
3. Green Mountain Dairy Farm proposes to construct an electrical generating facility on the farm, using methane gas as the fuel for the generator. The methane gas will be derived by processing the farm's raw manure in an enclosed anaerobic digester located on the farm. Pet. at 2.
4. The generator is a 474 kVA 480 V synchronous generator that is expected to produce under 225 kW of electricity at peak output due to the relatively poor quality of the fuel as compared to natural gas. Stipulation Att. 1 at 5 (System Impact Study).
5. The proposed Project's generating unit will interconnect to the CVPS Sheldon 10 distribution circuit at Line 162, Pole 29-1+, via a 12.47 kV/480 V floating wye-delta generator step-up transformer. The development of the project will require that CVPS construct approximately 0.247 miles of new 12.47 kV three-phase distribution circuit and upgrade approximately 3.11 miles of existing 12.47 kV distribution circuit to three-phase. *Id.*
6. The power will be sold at wholesale to CVPS as part of the utility's voluntary renewable pricing program. Pet. at 2.
7. The proposed Project consists of a concrete enclosed manure digester (73' x 112' x 16') and a shed to house the generator (40' x 80'). The digester will be almost completely buried with only two-feet of the cover exposed. Rowell pf. at 2.
8. The proposed Project will be constructed entirely on the property of Green Mountain Dairy Farm in Sheldon. *Id.*
9. Unprocessed cow manure from the farm will be pumped directly from the receiving pit into the digester, where the manure will be mixed and heated to a temperature of 100° F. In a two-stage process lasting about 22 days from start to finish, the degradation of the raw manure will produce methane biogas and biosolids. The methane will be collected and used to fuel a reciprocating engine that will run a generator set and produce electricity. Rowell pf. at 2-3.
10. The biosolids will be pumped to a mechanical separator, where they will be further separated into liquid and solids. The solids will be further dewatered and used in other farm and commercial functions. The liquid waste will be spread on the fields as fertilizer. *Id.*

11. The digestion process will significantly reduce the odor and pathogens contained in the liquid and solid waste streams. *Id.*

**Review of the Project under Section 248's Criteria**  
**Orderly Development of the Region**

[30 V.S.A. § 248(b)(1)]

12. The proposed 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 13-14, below.

13. The Sheldon Selectboard has endorsed the proposed Project as being consistent with Sheldon's zoning regulations and Town Plan, and has stated that the Project will not adversely affect the orderly development of the Town. Rowell pf. at 3; exh. B.

14. The Northwest Regional Planning Commission also supports the proposed Project, as consistent with the Northwest Regional Plan. Rowell pf. at 3-4; exh. C.

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

[30 V.S.A. § 248 (b)(2)]

15. The proposed Project is required to meet the 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 and load management measures. This finding is supported by finding 16, below.

16. The output of the proposed Project will all be sold to CVPS as part of the utility's voluntary renewable pricing program. Power not sold through that program can be sold to meet regional need. The CVPS Least-Cost Integrated Resource Plan calls for development of a voluntary renewable pricing program, and it is part of the utility's strategy to use renewable energy to meet customer demands. This project represents a new renewable resource, for which there currently exists a market. Rowell pf. at 4.

**System Stability and Reliability**

[30 V.S.A. § 248(b)(3)]

17. CVPS conducted a System Impact Study to determine whether it was likely that the development of the proposed Project would have an undue adverse affect on electric system stability or reliability. The study indicates that the interconnected parallel operation of the proposed Project with the CVPS electric system should not have undue adverse impacts if certain operating conditions are included in the Interconnection Agreement between CVPS and Green Mountain Dairy Farm covering protection, generator tripping, lockout and restart. Exh. Joint-1 (Stipulation). The Stipulation agreed to by the parties provides that:

(1) Green Mountain Dairy Farm shall not operate the proposed Project until an Interconnection Agreement with CVPS has been finalized and filed with the Board that is consistent with the System Impact Study and that includes the completed Technical Requirements and Operating Protocols appendices.

Thereafter, Green Mountain Dairy Farm shall abide by all of the Technical Requirements and Operating Protocols contained in the Interconnection Agreement;

(2) Green Mountain Dairy Farm shall implement all of the recommendations of the System Impact Study at its own expense, specifically the 16,402 feet of single-phase to three- phase distribution system upgrade assumed in the System Impact Study, as well as the 1,305 feet of new three-phase distribution system construction assumed in the System Impact Study;

(3) Green Mountain Dairy Farm shall complete a Facilities Study and shall, at its own expense, install all equipment specified by the Facilities Study (which, among other things, could include, two new reclosers, anti-islanding equipment, and communications for remote tripping).

(4) CVPS ratepayers shall be held harmless from any expense associated with the development, construction, or operation of the proposed Project except such construction expenditures that are not required to ensure the safe and reliable operation of the proposed Project, but that are necessary to ensure the three-phase

distribution system upgrade is consistent with CVPS' least-cost planning strategy of capturing future reliability benefits for incremental costs, as contemplated in CVPS's 2003 Integrated Resource Plan.

(5) Green Mountain Dairy shall operate the proposed Project in compliance with the Vermont Agency of Natural Resources air pollution control permit. Draft permit AOP-06-030 for the construction and operation of the facility was issued on August 11, 2006.

Stipulation at 4-5.

### Discussion

The Stipulation provides that Green Mountain Dairy Farm would not interconnect the generators until the Operating Protocols and Technical Requirements have been reviewed and approved by the Board. I adopt this requirement.

#### **Economic Benefit to the State and Its Residents**

[30 V.S.A. § 248(b)(4)]

18. The proposed Project will provide economic benefits to the state. The proposed Project will make this farm more profitable, and it will serve as a model for other farms. Enhancing the economic viability of farms benefits not just the farmer but all of the ancillary services associated with farming. The general public will benefit from the odor reduction of the manure, the reduction of release in greenhouse gases, improved nutrient management and a locally produced power source. Rowell pf. at 4.

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

[30 V.S.A. § 248(b)(5)]

19. The proposed Project will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and the public health and safety. This finding is supported by findings 20 through 44, below, which are based on the criteria specified in 10 V.S.A. §§ 1424a(d) and 6086(a)(1) through (8), 8(A) and (9)(K).

**Outstanding Resource Waters**

[10 V.S.A. § 1424a(d)]

20. There are no watercourses in the vicinity of the proposed project that have been designated as Outstanding Resource Waters. Rowell pf. at 6.

**Air and Water Pollution**

[10 V.S.A. § 6086(a)(1)]

21. The proposed Project will not result in undue air or water pollution. This finding is supported by findings 22 through 33, below. An air pollution control permit from the Agency of Natural Resources is required for the project. Draft permit AOP-06-030 for the construction and operation of the facility was issued on August 11, 2006. Pursuant to the Stipulation, Green Mountain Dairy will operate the proposed Project in compliance with the ANR air pollution control permit. Stipulation at 5.

**Headwaters**

[10 V.S.A. § 6086(a)(1)(A)]

22. The proposed Project will not have an undue adverse impact on any headwaters, as there are no headwaters located in the vicinity of the site. Rowell pf. at 6.

**Waste Disposal**

[10 V.S.A. § 6086(a)(1)(B)]

23. The proposed Project will meet all applicable health and environmental conservation regulations regarding the disposal of waste and will not involve the injection of waste materials or any harmful or toxic substances into groundwater or wells. *Id.*

**Water Conservation**

[10 V.S.A. § 6086(a)(1)(C)]

24. The proposed Project will not utilize water during or after construction. *Id.*

**Floodways, Streams and Shorelines**

[10 V.S.A. §§ 6086(a)(1)(D), (E), & (F)]

25. The proposed Project will not be located within or near any floodways or shorelines, nor are there any floodways, shorelines, source protection areas necessary to wildlife habitat, or

known occurrences of endangered species along the CVPS distribution corridor. Rowell pf. at 6; Upton pf. at 4 (Attachment 4 to Stipulation).

26. The digestion process will significantly reduce the odor and pathogens contained in the liquid and solid waste streams. Rowell pf. at 2-3.

27. The closest small stream is approximately 800 to 1,000 feet away from the proposed Project site. *Id.* at 6.

28. There are several small drainages and streams crossed by the CVPS distribution line, but all but one are in existing corridor and/or in open fields, so there will be no tree cutting along or near the banks. Upton pf. at 4.

### **Wetlands**

[10 V.S.A. § 6086(a)(1)(G)]

29. There are no mapped wetlands or areas of standing water in the vicinity of the proposed Project. Rowell pf. at 6.

30. There is a stream crossing in the CVPS distribution corridor associated with a Class 2 wetland. The wetland consists of two mapped wetland areas on opposite sides of Woods Hill Road, which are connected by a smaller wetland along the stream and therefore constitute one contiguous wetland under the Vermont Wetland Rules. The wetland is primarily forested, with some emergent vegetation along the south side of the road adjacent to the proposed line. As with the stream, the existing CVPS distribution line crosses the wetland in a wooded cross-country corridor. In its proposed alignment, all new CVPS distribution poles will be placed in existing road fill and trimming will be minimized. Existing CVPS pole 5 must remain to serve a residence, but the two spans between existing poles 4 and 6 will be retired, eliminating approximately 250 feet of cross-country line and associated tree cutting. Upton pf. at 4-5; exhs. CVPS-TOU-1, 2.

31. There is a Class 2 wetland associated with a small drainage near proposed CVPS pole 10 on Line 1. The CVPS distribution line will follow the existing corridor in this location, and the poles are located in an open field. No tree cutting will be required. Upton pf. at 5; exhs. CVPS-TOU-1, 2.

32. Alan Quackenbush of the Vermont Wetlands Office has reviewed the CVPS distribution project, approved the new pole locations as proposed, and determined that a Conditional Use Determination is not required. Upton pf. at 5.

33. The only potentially significant wetland impact is associated with the Class 2 wetland on Woods Hill Road. The CVPS distribution line's roadside location will avoid all impacts from construction equipment, and avoid any significant impact from tree clearing, especially since a short cross-country wetland crossing will be removed. Aesthetic impacts will be minor, since distribution lines already exist along Route 105 and Woods Hill Road, and the line as proposed will have the same appearance as other three-phase distribution lines in similar settings all around the state. Therefore, the proposed Project will have no significant impact upon wetlands. *Id.* at 5-6.

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

[10 V.S.A. §§ 6086(a)(2) & (3)]

34. The proposed Project will not require the use of any water. Rowell pf. at 6.

**Soil Erosion**

[10 V.S.A. § 6086(a)(4)]

35. The proposed Project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water. This finding is supported by findings 36 - 37, below.

36. The only soil disturbance will be related to the construction of the digester, generator building and solids building. Rowell pf. at 6.

37. There will be no impacts from soil erosion related to the CVPS distribution line upgrades: earth disturbance will be limited to pole locations, and all work will be performed directly from maintained roads. Upton pf. at 4.

**Transportation**

[10 V.S.A. § 6086(a)(5)]

38. The proposed Project will not cause unreasonable congestion or unsafe conditions with respect to any affected means of transportation. Rowell pf. at 6.

39. The proposed Project will use unprocessed cow manure from the Green Mountain Dairy Farm; therefore, transportation of manure from other locations will be unnecessary. *Id.* at 2.

### Discussion

Transportation of unprocessed manure from other farms or locations to supplement the manure produced on the farm may have impacts on the transportation system. While the Petitioner has not proposed transporting additional manure, we conclude that a condition requiring further Board approval prior to utilization of manure from other locations is necessary to avoid potential adverse impacts to the transportation system. Therefore, we have added this condition to the Order and CPG.

#### **Educational Services**

[10 V.S.A. § 6086(a)(6)]

40. The proposed Project is unrelated to and will not cause any burden on the ability of any municipality to provide educational services. *Id.*

#### **Municipal Services**

[10 V.S.A. § 6086(a)(7)]

41. The proposed Project will not require any municipal or governmental services. *Id.*

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

[10 V.S.A. § 6086(a)(8)]

42. The proposed Project will not have an undue adverse effect on the scenic or natural beauty of the area, or upon aesthetics, historic sites or rare and irreplaceable natural areas. This finding is supported by findings 43 - 44, below.

43. The proposed Project will be visible as two new farm buildings which will be consistent in design with the other farm buildings. There are no historic sites or archeologically sensitive areas that will be disturbed by the proposed project. Rowell pf. at 2.

44. There will be minor aesthetic impacts associated with the upgrade of the CVPS distribution line from single-phase to three-phase construction, and changes to the manner in which the line crosses a Class 2 wetland. None of the impacts will be significant. Upton pf. at 1-3.

**Necessary Wildlife Habitat and Endangered Species**

[10 V.S.A. § 6086(a)(8)(A)]

45. The proposed Project will not have any undue adverse effect on wildlife habitat or have any impact on threatened or endangered species, including any bird species. Rowell pf. at 6.

**Development Affecting Public Investments**

[10 V.S.A. § 6086(a)(9)(K)]

46. The proposed Project is adjacent to Morey Road in Sheldon. The proposed Project will not unnecessarily or unreasonably endanger the public or quasi-public investment in Morey Road, or materially jeopardize or interfere with the function, efficiency, or safety of, the public's use or enjoyment of or access to Morey Road. Rowell pf. at 6.

**Least-Cost Integrated Resource Plan**

[30 V.S.A. § 248(b)(6)]

47. Green Mountain Dairy Farm does not distribute or transmit electricity for use by the public. Therefore, it is not obligated to prepare and submit for approval an integrated resource plan. *See*, Docket 7082, Order of April 26, 2006, at 54.

**Compliance With Electric Energy Plan**

[30 V.S.A. § 248(b)(7)]

48. The proposed Project is consistent with the Vermont Twenty-Year Electric Plan, in accordance with 30 V.S.A. § 202(f). Exh. Board 1.

**Outstanding Resource Waters**

[30 V.S.A. § 248(b)(8)]

49. There are no watercourses in the vicinity of the proposed Project that have been designated as Outstanding Resource Waters. Rowell pf. at 6.

**Existing or Planned Transmission Facilities**

[30 V.S.A. § 248(b)(10)]

50. With the development of an appropriate Interconnection Agreement, the proposed Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. *Id.*

#### IV. CONCLUSION

Based upon all the above evidence, the site preparation for and installation of a farm-based methane-fueled electrical generating facility at the Green Mountain Dairy Farm in Sheldon, Vermont:

- (a) 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, and the recommendations of the municipal legislative bodies;
- (b) is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost-effective manner through energy conservation programs and measures and energy efficiency and land management measures;
- (c) will not adversely affect system stability and reliability;
- (d) will result in an economic benefit to the state and its residents;
- (e) will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and 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);
- (f) is consistent with the principles of least-cost integrated resource planning;
- (g) is in compliance with the electric energy plan approved by the DPS under § 202 of Title 30 V.S.A.;
- (h) does not involve a facility affecting or located on any segment of the waters of the State that has been designated as outstanding resource waters by the Water Resources Board; and
- (i) can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers.

Therefore, I recommend that the Board grant the petition and issue a CPG to Green Mountain Dairy Farm, subject to the conditions contained in the Stipulation.

All parties to this proceeding have waived their rights under 3 V.S.A. § 811 to file written comments or present oral argument with respect to this proposal for decision, provided that this proposal for decision is consistent in all material respects with the Stipulation. Accordingly, this proposal for decision has not been served on the parties.

Dated at Montpelier, Vermont, this 31<sup>st</sup> day of October, 2006.

s/Gregg Faber  
Gregg Faber  
Hearing Officer

**V. ORDER**

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

1. The findings, conclusions, and recommendations of the Hearing Officer are adopted.
2. The Stipulation among Green Mountain Dairy Farm, LLC ("Green Mountain Dairy Farm"), Central Vermont Public Service Corporation ("CVPS"), the Vermont Department of Public Service ("Department"), and the Vermont Agency of Natural Resources ("ANR") dated September 18, 2006, is approved in its entirety. Green Mountain Dairy Farm shall comply with all provisions of the Stipulation.
3. The construction by Green Mountain Dairy Farm of a farm-based methane-fueled electrical generating facility, in accordance with the evidence, plans and approvals submitted in the proceeding will promote the general good of the State of Vermont consistent with 30 V.S.A. § 248, and a certificate of public good shall be issued to allow such construction.
4. Green Mountain Dairy Farm shall not operate the Project until an Interconnection Agreement with CVPS has been finalized and filed with the Board that is consistent with the System Impact Study and that includes the completed Technical Requirements and Operating Protocols appendices. Thereafter, Green Mountain Dairy Farm shall abide by all of the Technical Requirements and Operating Protocols contained in the Interconnection Agreement.
5. Green Mountain Dairy Farm shall implement all of the recommendations of the System Impact Study at its own expense, specifically the 16,402 feet of single phase to three phase distribution system upgrade assumed in the System Impact Study, as well as the 1,305 feet of new three phase distribution system construction assumed in the System Impact Study.
6. Green Mountain Dairy Farm shall complete a Facilities Study and shall, at its own expense, install all equipment specified by the Facilities Study (which, among other things, could include, two new reclosers, anti-islanding equipment, and communications for remote tripping).
7. CVPS ratepayers shall be held harmless from any expense associated with the development, construction, or operation of the proposed project except such construction expenditures that are not required to ensure the safe and reliable operation of the proposed

project, but that are necessary to ensure the three-phase distribution system upgrade is consistent with CVPS' least-cost planning strategy of capturing future reliability benefits for incremental costs, as contemplated in CVPS's 2003 Integrated Resource Plan.

8. Green Mountain Dairy Farm shall operate the Project in compliance with the ANR air pollution control permit. Draft permit AOP-06-030 for the construction and operation of the facility was issued on August 11, 2006.

9. Green Mountain Dairy Farm shall not utilize manure from other farms as fuel for the generation system, absent approval from the Public Service Board.

Dated at Montpelier, Vermont, this 6<sup>th</sup> day November, 2006.

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

OFFICE OF THE CLERK

FILED: November 6, 2006

ATTEST: s/Susan M. Hudson  
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.*