

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Petition of Georgia Mountain Community Wind,)
LLC for a Certificate of Public Good, pursuant)
to 30 V.S.A. § 248, authorizing the construction)
and operation of a 5 wind turbine electric)
generation facility with associated electric)
collection and interconnection facilities on)
Georgia Mountain, in the Towns of Milton and)
Georgia, Vermont, to be known as the “Georgia)
Mountain Community Wind Project”)

Docket No. _____

**PREFILED TESTIMONY OF
PETER CROSS, P.E.**

**ON BEHALF OF
GEORGIA MOUNTAIN COMMUNITY WIND, LLC**

March 26, 2009

Mr. Cross’s testimony describes the Project road construction and drainage, foundation design and construction, proposed staging and laydown areas, and permit applications for stormwater and erosion control.

TABLE OF CONTENTS

1.....Introduction	1
2.....Road Construction	2
3.....Transportation Systems	4
4.....Stormwater Drainage and Erosion Prevention	10
5.....Conclusion.....	11

EXHIBITS

Exhibit Petitioner PC-1	Resumé of Peter Cross
Exhibit Petitioner PC-2	Drawing C-1 Overall Site Plan
Exhibit Petitioner PC-3	Drawing C-2 Main Access Road Plan & Profile
Exhibit Petitioner PC-4	Drawing C-3 Main Access Road Plan & Profile
Exhibit Petitioner PC-5	Drawing C-4 Main Access Road Plan & Profile
Exhibit Petitioner PC-6	Drawing C-5 Main Access Road Plan & Profile
Exhibit Petitioner PC-7	Drawing C-6 Main Access Road Plan & Profile
Exhibit Petitioner PC-8	Drawing C-7 Main Access Road Plan & Profile
Exhibit Petitioner PC-9	Drawing C-8 Access Road 2 Plan & Profile
Exhibit Petitioner PC-10	Drawing C-9 Access Road 2 Plan & Profile
Exhibit Petitioner PC-11	Drawing C-10 Access Road 2 Plan & Profile
Exhibit Petitioner PC-12	Drawing C-11 Access Road 3 Plan & Profile
Exhibit Petitioner PC-13	Drawing C-12 Detention Pond 1
Exhibit Petitioner PC-14	Drawing C-13 Detention Pond 2

Exhibit Petitioner PC-15	Drawing C-14 Detention Pond 3
Exhibit Petitioner PC-16	Drawing C-15 Erosion Control Plan
Exhibit Petitioner PC-17	Drawing C-16 Erosion Control Plan
Exhibit Petitioner PC-18	Drawing C-17 Erosion Control Plan
Exhibit Petitioner PC-19	Drawing C-18 Details

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Petition of Georgia Mountain Community Wind,)
LLC for a Certificate of Public Good, pursuant)
to 30 V.S.A. § 248, authorizing the construction)
and operation of a 5 wind turbine electric)
generation facility with associated electric)
collection and interconnection facilities on)
Georgia Mountain, in the Towns of Milton and)
Georgia, Vermont, to be known as the “Georgia)
Mountain Community Wind Project”)

Docket No. _____

**PREFILED TESTIMONY OF
PETER CROSS, P.E.**

**ON BEHALF OF
GEORGIA MOUNTAIN COMMUNITY WIND, LLC**

1 **1. Introduction**

2 Q1. Please state your name, business address and employment.

3 A1. My name is Peter Cross. I am the owner of Cross Consulting Engineers, PC,
4 located at 103 Fairfax Road, St. Albans, VT.

5

6 Q2. Please describe your educational background and professional experience.

7 A2. My full resumé is provided as Exhibit Petitioners PC-1. I am a graduate of the
8 University of Vermont (Bachelor of Civil Engineering degree) and Cornell
9 University (Master of Engineering degree). I am a registered professional
10 engineer in Vermont, New Hampshire, Maine and New York, and a Registered
11 Land Surveyor in Vermont. I have practiced Civil Engineering in Vermont since

1 1975 and have operated my own consulting firm since 1989. My career has
2 closely followed the evolution of the Act 250 permit process in Vermont and I
3 have been involved in more than 100 Act 250 permit processes.

4

5 Q3. What is the purpose of your testimony?

6 A3. My firm has been retained to handle the civil engineering design and site
7 permitting for the proposed Georgia Mountain Community Wind Project
8 ("GMCW Project" or "Project"). My testimony will describe the Project road
9 construction and drainage, turbine foundation design and construction, proposed
10 staging and laydown areas, and permit applications for stormwater and erosion
11 prevention and sediment control ("EPSC"). An overview of the Project and
12 description of the various Project components is provided in the testimony of John
13 Zimmerman.

14

15 **2. Road Construction**

16 Q4. Please describe the proposed access road and turbine foundation construction
17 plans.

18 A4. Included with my testimony as Exhibit Petitioner PC-2, is an overall Project Site
19 Plan, which includes the location of the various Project components. Access to
20 the wind turbines will be along approximately 2.2 miles of new and upgraded
21 service roads entirely within the Harrison property and connect the wind turbine
22 sites with Westford Road (Milton State Aid Town Highway 2) at the southern end

1 of Ted Road. Ted Road is a private road owned by the Harrison family which
2 services about 6 single family homes. The road base for the entire length will be
3 designed to accommodate heavy and oversize construction loads. The general
4 specifications call for a road of 17 ft. in width up to the wind turbines, and up to
5 35 ft. in width between the wind turbines to accommodate installation crane
6 access. After construction, the 35 ft. width will be reduced to approximately 20
7 ft. by revegetating a portion of the road no longer required by the erection
8 process. The actual width of the road between turbines may be less and will
9 depend on the crane equipment used in the erection process. Access road work
10 will involve upgrading the existing lower lengths of Ted Road and the lower
11 section of an existing 4WD service road to the existing cellular phone
12 communication tower (hereinafter called the 'cell tower road'). Beginning at a
13 point approximately 3000+/- ft. up from the intersection of Ted and Westford
14 Roads, a new road will be constructed heading northwesterly toward the western
15 face of Georgia Mountain. A new 4000+/- ft. road section will be generally
16 aligned along an existing, heavily used, all terrain vehicle trail bed with
17 engineering improvements to meet necessary horizontal and vertical realignment
18 for Project construction and operational maintenance. A new 3100+/- ft. road
19 section will be constructed between the wind turbine sites; its length dependent on
20 the number of wind turbines installed. The access road location has been selected
21 to consider existing topography, maintain minimum practical roadway slopes and
22 to avoid natural resource areas. Plans and profiles depicting the proposed access

1 road are included with my testimony as Exhibits Petitioner PC-3 through PC-12.

2
3 A maintenance/control building will be constructed in the area where the new
4 road leaves the existing cell tower road. The location is shown on the Project Site
5 Plan, Exhibit Petitioner PC-2.

6
7 Georgia Mountain is primarily wooded. Tree and stump clearing will be required
8 for the construction activities, including the access road, laydown and staging
9 areas and power lines. Cleared areas will be minimized, but will generally
10 include a strip of land about 75 feet in width for the access road, ditching and side
11 slopes, and 25 feet in width for the overhead power lines that will transmit the
12 electrical energy from the turbines to North Road. Larger cleared areas will be
13 required for the laydown and staging areas and for the stormwater detention
14 ponds. The clearing limits are shown approximately on the site plan and roadway
15 plans and profiles.

16
17 **3. Transportation Systems**

18 Q5. Please explain how the wind turbine components will be delivered to the Project
19 site.

20 A5. Wind turbine tower sections, rotor blades, and nacelles are large components that
21 require special handling and transport vehicles to move them from manufacturing
22 facilities to the project site. Most of these component shipments are

1 oversize/overweight loads requiring special permits from the Vermont Agency of
2 Transportation. We have explored several potential transportation alternatives for
3 the delivery of the large equipment. We have met with two turbine transportation
4 companies who have the necessary experience to evaluate potential routes to the
5 project site. The obstacles to transportation are highly dependent on the turbines
6 selected for this project. The clearances and weights of the turbine components
7 will determine if it is appropriate to transport the equipment along the Interstate
8 system (Interstate 89) to the project site, or if primary two lane roads such as US
9 Route 7 will be used. Issues include overhead clearances to bridges, load limits,
10 culvert capacities and clearances to overhead power and telephone cables.

11 Based on preliminary discussions with the two transportation companies, GMCW
12 believes that the most practical route to transport the oversized equipment is along
13 US Route 7 from I-89 exit 18 in Georgia. If the equipment cannot be transported
14 on the Interstate system, then US Route 7 will be used, either from the north or
15 the south, depending on where the equipment is coming from.

16
17 If the equipment is coming from the North, it will likely be transported along US
18 7 across Lake Arrowhead in Milton and turn easterly on Westford Road in Milton
19 Village. If the equipment is coming from the South, it will likely be transported
20 along US 7 through Milton Village and turn easterly on Westford Road and
21 through to Ted Road. The turn onto Ted Road will require geometric
22 improvements to negotiate the oversized equipment.

1
2 The only alternate route to Ted Road is along Westford Road from the east. This
3 area is too far removed from good transportation facilities to be practical. Sharp
4 corners easterly of Ted Road appear to preclude that option. Rail transport of
5 oversized equipment may be a possibility, but would be considered as a last
6 resort. Rail is available in Milton, but the equipment would still have to be off
7 loaded, loaded on suitable tractor trailers, and transported the final few miles
8 along Westford Road to Ted Road.

9
10 Once the final turbine selection has been made, it will be possible to completely
11 evaluate the best transportation route. This will include meetings with VTrans, a
12 review of load limits on bridges and culverts and a review of overhead clearance
13 issues. A specific transportation plan, including a scheduling for shipment of
14 oversize loads and coordination of this activity with Milton officials and the
15 Vermont Agency of Transportation, will be prepared in coordination with the
16 wind turbine supplier chosen for this Project.

17
18 Q6. What do you expect to see in terms of increased traffic due to Project construction
19 and operation?

20 A6. During the construction period, increased traffic will occur due to the workers at
21 the project and the traffic generated by construction vehicles such as dump trucks,
22 concrete trucks and ordinary passenger vehicles. This is a relatively small project

1 compared to other wind generation projects and the trip generation numbers will
2 be spread out over the construction period. The access road construction is the
3 most time consuming portion of the construction activities. This construction
4 could take two to three months to complete. Once that work is completed, the trip
5 generation numbers will decline, as the turbine equipment is delivered and
6 erected. GMCW plans to minimize dump truck trips by using portable crushing
7 equipment located on the site to crush bedrock that is removed as part of the road
8 construction. At least two temporary crushing areas will be located along the
9 access road. Bedrock will be blasted, loaded onto trucks and moved to the
10 crushing site within the Harrison property. The portable crusher will crush the
11 rock into smaller usable aggregate. The aggregate will be loaded onto trucks and
12 moved into the access road construction and used for road base. This will avoid
13 the need for a large numbers of dump trucks on the Town and State highway
14 systems to truck in aggregate from local quarries. It is expected that minimal
15 aggregate product will need to be imported from off site. The design of the access
16 road profile has been planned to provide sufficient cut rock material for use in the
17 entire road base, including laydown areas.

18
19 The number of trips generated by the project has been estimated. The
20 construction period is expected to take approximately 18 weeks. The road
21 construction could take about 10 weeks. The total number of vehicle trips
22 estimated for the construction is 2120 round trips. This could vary from zero trips

1 per day to 26-30 round trips per day. On site crushing of rock for roadway
2 subbase will keep many trucks off the highway system and minimize the
3 increased traffic on Ted Road and Westford Road. It is not expected that the
4 estimated traffic increase will cause any unreasonable delay or congestion. Some
5 delays may occur during transportation of the oversized equipment, but these
6 delays are expected to be short term. The oversized equipment could include 10
7 or more tractor trailers per turbine. It is expected that this traffic will occur over a
8 relatively short time period, since the turbine erection is expected to occur
9 sequentially to minimize crane costs. A temporary laydown area may be provided
10 off site to store large pieces of equipment until it is needed at the construction site.
11 The Harrison's own land on VT Route 104 A, about 5 miles from the project, that
12 may be suitable for that purpose.

13
14 A specific transportation plan, including a scheduling for shipment of oversize
15 loads and coordination of this activity with Milton officials and the Vermont
16 Agency of Transportation, will be prepared in coordination with the wind turbine
17 supplier chosen for this Project. During delivery of large Project equipment on
18 public roadways, GMCW will employ the services of sheriffs or other trained
19 traffic control personnel to manage traffic flow as necessary. Petitioners will also
20 obtain all required highway crossing permits and permits for overweight or
21 oversized vehicles. We will also incorporate provisions for emergency vehicle
22 passage in this final transportation plan.

1

2 Q7. Will delivery of Project equipment require the alteration or upgrades to any public
3 roads or other public facilities to accommodate the oversized or overweight
4 loads?

5 A7. This will be determined once the final turbine selection is made and the
6 transportation route is finalized. If any improvements are needed, they will be
7 completed after receipt of all necessary permits and at the expense of the Project.

8

9 Q8. Please describe the construction activities, vehicles and equipment and the access
10 they will utilize during the Project construction period.

11 A8. Construction materials obtained locally, such as road and foundation materials,
12 will be transported over state highways and Milton town roads to the Project in
13 accordance with state and local regulations. Concrete will be furnished by
14 Harrison Concrete Construction and Harrison Redi Mix, the companies owned by
15 the Project sponsor. Their facilities are located in Georgia, Vermont, about 6
16 miles from the Project site. As stated above, minimal aggregate will need to be
17 imported for the Project. Aggregate will be crushed on site using material
18 removed for the road construction.

19 All access to the site is expected to use Westford Road and Ted Road. North
20 Road may be used to transport concrete from Harrison Redi Mix, and for use in
21 construction of the power line from the Turbines to North Road.

22

1 Q9. What are the expected hours of construction operations?

2 A9. Expected hours of construction are from 7:00 AM to 5:00 PM Monday through
3 Saturday. Construction is not expected to occur on Sundays or Federal and State
4 Holidays.

5

6 **4. Stormwater Drainage and Erosion Prevention**

7 Q10. Has GMCW prepared an erosion prevention and sediment control (EPSC) plan
8 for the Project?

9 A10. Yes, Dereck Woolridge, a civil engineer with Cross Consulting Engineers, has
10 developed an EPSC plan for the Project. The EPSC plan has been prepared in
11 consultation with Kevin Burke of the Agency of Natural Resources (“ANR”), and
12 is expected to be submitted to the ANR for approval in March 2009. A copy of
13 the EPSC plan is included with my testimony as Exhibits Petitioner PC-16, PC-
14 17, PC-18 and PC-19. The EPSC plan will include the use of silt fence, check
15 dams, sediment basins, and diversion swales.

16

17 Q11. Has GMCW applied for a federal and state stormwater permits?

18 A11. The drainage plans for the stormwater permits are included with my testimony as
19 Exhibits Petitioner PC-13, PC-14 and PC-15. The permits are expected to be
20 submitted to the ANR for approval in March 2009.

21

1 Q12. In your opinion, if the project roads and foundations for the turbines are
2 constructed in accordance with the drainage and EPSC plans referenced, will the
3 Project cause unreasonable soil erosion or a reduction in the capacity of the land
4 to hold water so that a dangerous or unhealthy condition may result?

5 A12. No.

6

7 Q13. When do you expect to obtain final stormwater and EPSC plan approvals?

8 A13. We expect to receive final approval from the Agency of Natural Resources in July
9 or August of 2009.

10

11 **5. Conclusion**

12 Q14. Does this conclude your testimony?

13 A14. Yes.