

**STATE OF VERMONT  
PUBLIC SERVICE BOARD**

Petition of Vermont Transco, LLC, and )  
Vermont Electric Power Company, Inc. )  
(collectively, "VELCO"), and Green Mountain )  
Power Corporation ("GMP") for a Certificate of )  
Public Good, pursuant to 30 V.S.A. § 248, for )  
the "Gorge Area Reinforcement Project", )  
located in the municipalities of South Burlington )  
and Colchester, Vermont, consisting of the )  
following elements: (1) construction of a new )  
VELCO 115/34.5 kV substation ("VELCO )  
Lime Kiln substation") and a new GMP 34.5 kV )  
substation ("GMP Lime Kiln substation") in the )  
City of South Burlington across the Winooski )  
River from the existing GMP Gorge substation; )  
(2) upgrade of the existing GMP Gorge )  
substation in Colchester; and (3) reconstruct )  
approximately 700 feet of GMP's existing 3307 )  
and 3308 34.5 kV lines between the GMP Lime )  
Kiln and Gorge substations )

Docket No. 7460

**SUPPLEMENTAL PREFILED TESTIMONY OF  
TERRY G. CECCHINI  
ON BEHALF OF  
PETITIONERS**

July 31, 2009

The purpose of Mr. Cecchini's supplemental testimony is to introduce and describe revisions made to the original Green Mountain Power Corporation load forecast submitted in this proceeding, and to describe the historic and current load growth experienced in the Gorge Area Reinforcement ("GAR") Project study area.

## TABLE OF CONTENTS

1.	Introduction.....	1
2.	Definition of the GAR Area.....	2
3.	Updated GAR Area Load Forecast.....	4
4.	Conclusion .....	8

## EXHIBITS

Exhibit Petitioners TGC-Supp-1	GAR Area One-Line Diagram
Exhibit Petitioners TGC-Supp-2	Itron GAR Area Load Forecast
Exhibit Petitioners TGC-Supp-3	Load Forecast Comparison

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1           **1.     Introduction**

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

3     A1.     My name is Terry Cecchini. I am a Senior Engineer at Green Mountain Power  
4            Corporation ("Green Mountain Power" or "GMP") with my office at 163 Acorn  
5            Lane, Colchester, Vermont.

6  
7     Q2.     Did you submit prefiled testimony previously in this proceeding?

8     A2.     Yes. I submitted joint prefiled testimony with Mr. LaForest on July 25, 2008.

1 Q3. What is the purpose of your supplemental testimony?

2 A3. Following our initial filing requesting approval of the Gorge Area Reinforcement  
3 Project (the “Project” or “GAR Project”) on July 25, 2008, the Petitioners and  
4 representatives of the Vermont Department of Public Service (“Department” or  
5 “DPS”) engaged in a series of discussions regarding the GAR Project load  
6 forecast developed by Green Mountain Power. Specifically, the DPS asked us to  
7 review and adjust the forecast as appropriate to account for (1) 2007 and 2008  
8 actual load data, (2) differences in temperature at the times of the annual peaks,  
9 and (3) impacts on projected loads that may result from the recent national  
10 economic downturn. The DPS also requested more clarification on the projected  
11 savings expected from energy efficiency efforts in the GAR Project area and its  
12 impact upon the project need date. My supplemental testimony addresses the load  
13 forecast. The supplemental prefiled testimonies of Mr. Grimason and Mr.  
14 LaForest address energy efficiency and Project need date.

15

16 **2. Definition of the GAR Area**

17 Q4. Please define the GAR Area used by the Petitioners.

18 A4. The GAR Area is shown in the context of the Chittenden area 34.5 kV loop  
19 system in the simplified one-line diagram (Exhibit Petitioners TGC-Supp-1),  
20 which shows the GAR area after the completion of the East Avenue Loop Project  
21 (Docket No.7314) .

1 The GAR Area is defined by the influence of the substation load on the overload  
2 of the Essex X10 transformer with the Essex X20 transformer out of service. If a  
3 change of load of 1 megawatt at any substation in this area reduces the overload  
4 of the Essex X10 transformer by at least 300 KVA that substation is defined as  
5 being in the GAR Area. The maximum decrease on the overloaded Essex X10  
6 transformer for the 1 megawatt reduction is 500 KVA.

7  
8 The GAR Area is bounded by the following breakers:  
9

<i>Breaker Designation</i>	<i>Location</i>
3323	McNeil
3314	Digital
3334	Sand Road
X10	Essex VELCO
X20	Essex VELCO
X36	East Avenue VELCO <sup>1</sup>

10  
11 The GAR Area includes the loads at the following substations:

<i>Substation</i>	<i>Utility</i>
Essex	GMP
Gorge	GMP
Sand Road	GMP
Ethan Allen	GMP
Malletts Bay	GMP
Airport	GMP
Town Line	GMP
46Y1	GMP
McNeil	BED
Iroquois	GMP
Saxon Hill	GMP

<sup>1</sup> The X36 at East Avenue VELCO is not yet in service but is assumed in service for the GAR Project Need Study.

1           There is presently no distribution load served out of the McNeil substation. The  
2           Burlington Electric Department (“BED”) will be moving the Lake Street  
3           distribution transformer from their Lake Street Substation to McNeil as part of the  
4           East Avenue Loop Project. Once the McNeil Distribution Substation is  
5           operational, BED will be redistributing their load among their three distribution  
6           substations (East Avenue, Queen City, and McNeil) with approximately one third  
7           being served from each substation under non-contingency conditions. The actual  
8           distribution will be determined by BED engineers and will depend on topological  
9           and electrical considerations.

10  
11           **3. Updated GAR Area Load Forecast**

12    Q5.    You stated that your supplemental testimony describes revisions made to GMP’s  
13           GAR Project load forecast. Please first summarize the GMP GAR Area load  
14           forecast as originally submitted in this proceeding.

15    A5.    The original load forecast approach is discussed in Answer 14 of my July 25,  
16           2008 testimony filed jointly with Mr. LaForest. The load forecast for the Green  
17           Mountain Power substations was developed as the regular update for the VELCO  
18           PSLF transmission system model database. Historic load information for the  
19           Vermont summer peak hour from 2001-2006 was retrieved from Supervisory  
20           Control And Data Acquisition (“SCADA”) data or, where unavailable (e.g. for  
21           smaller substations and dedicated feeders, such as Technology Park and  
22           Champlain Water District), was based on thermal demand ammeter data or

1 revenue metering data. In cases where load had been transferred between feeders,  
2 the feeders were modeled as a group and the forecasted load was attributed to the  
3 individual feeders in proportion to the latest readings.

4  
5 The historic substation loads were input into the Excel FORECAST function,  
6 which predicts future values (loads) by developing a best-fit straight line using the  
7 least-squares method of linear regression. The substation bus loads were adjusted  
8 to account for future load transfers. Substation-specific load forecasts were used,  
9 rather than Green Mountain Power's system-wide forecast, because the PSLF  
10 model requires the loads to be modeled at each substation location. The forecast  
11 is included in our July 25, 2008 filing and marked as Exhibit Petitioners  
12 DLL/TGC-4.

13  
14 The load forecast methodology used originally for this case is the same as that  
15 used by Petitioners to support the recently approved East Avenue, Lamoille, and  
16 Taft Corners Projects.

17  
18 Q6. What was the originally forecasted load for the GAR Area for the 2011 need date  
19 identified in the July 25, 2008 filing?

20 A6. The 2011 GAR Area forecasted peak load used for the filing was 111.60 MW.

21 This load was adjusted to 102.0 MW to take into account energy efficiency.

1 Please refer to the supplemental prefiled testimony of David Grimason for an  
2 explanation of the change in Petitioners' energy efficiency forecast.

3  
4 Q7. Based upon the additional load forecast work undertaken by the Petitioners in the  
5 intervening time since the initial filing, what are you now projecting for a summer  
6 peak load in 2011?

7 A7. The GAR Area forecasted load in 2011 resulting from the additional load forecast  
8 work is 112.68 MW. This load was adjusted to 111.3 MW to take into account  
9 energy efficiency. Please refer to the supplemental prefiled testimony of David  
10 Grimason for an explanation of the change in Petitioners' energy efficiency  
11 forecast. Please refer to the supplemental prefiled testimony of Dean LaForest for  
12 an explanation of the change in Petitioners' estimation of the BED load at the  
13 McNeil substation.

14  
15 Q8. Please describe the additional load forecast work performed since the original  
16 filing in this matter.

17 A8. The individual substation forecast provided in the original filing was updated by  
18 including actual loads for 2007 and 2008 for the GMP GAR Area loads.

19  
20 An additional forecast specific to the GMP GAR Area was developed by  
21 summing 34.5 kV system boundary breakers and enclosed generation (see the  
22 one-line diagram attached as Exhibit Petitioners TGC-Supp-1) for each hour from

1 2002 to 2008. The monthly peaks for the period were established and the Saxon  
2 Hill load was subtracted from the peaks for 2002 – 2004, since that load was  
3 completely removed from the 34.5 kV system starting in 2005. These historical  
4 monthly peaks together with other information were used by Itron, Inc. to prepare  
5 a weather normalized -- economically adjusted forecast for the GMP GAR Area.  
6 The Itron forecast was updated in April, 2009 to reflect the most current economic  
7 data and its impact upon the GMP GAR Area load. The update is included as  
8 Exhibit Petitioners TGC-Supp-2.

9  
10 The Itron forecast was then adjusted by removing the load that is projected to be  
11 transferred to the 115 kV system by the Tafts Project (Docket 7453) in 2009. The  
12 load remaining, after the transfer, was allocated to the substation buses in the  
13 proportions established by the individual substation forecasts that were updated  
14 with 2007 – 2008 actual loads. See the load forecast comparison attached as  
15 Exhibit Petitioners TGC-Supp-3. The load flow simulation model and energy  
16 efficiency data was then used to determine the date of need for the Gorge  
17 Substation upgrade and for the Lime Kiln Substation additions separately.

18  
19 Q9. What weather normalization approach is used in the GAR Area load forecast?

20 A9. The forecast is a 90/10 load forecast.

21 Weather normalized forecasts have two basic types:

- 22 • the 50/50 forecast for which there is a 50% probability that the actual load will be  
23 higher than predicted; and

- 1       • the 90/10 forecast for which there is a 10% probability that the actual load will be  
2 higher than predicted.

3  
4       The 90/10 forecast tends to be about 5% higher than the 50/50 forecast so the

5 choice of forecast methodology can have an impact on a project's date of need.

6       VELCO uses the 90/10 forecast for transmission (115 kV and above) planning.

7       Contingencies on the 34.5 kV networked system that violate planning criteria are

8 of two basic types:

- 9       • Contingencies that do not result in loss of load but subject the load to low voltage  
10 (e.g. loss of the Essex to Gorge 3307 - 3308 lines in GAR) or result in overloaded  
11 equipment (e.g. loss of the Essex VELCO X-20 transformer in GAR). These  
12 contingencies rely on undervoltage protection, load shedding, or system  
13 sectionalizing to protect the network from potential voltage collapse. (Type A)

- 14       • Contingencies that result in loss of load that cannot be restored until the damaged  
15 system component is repaired. This type of contingency is not a threat to network  
16 integrity. (Type B)

17  
18       The Petitioners choose to determine the date of need for projects that mitigate loss

19 of load (Type B) contingencies using a 50/50 forecast and to determine the date of

20 need for projects that mitigate (Type A) non-loss of load contingencies using a

21 90/10 forecast. Since both GAR project contingencies are Type A, the Petitioners

22 are using the 90/10 forecast.

23  
24       **4.     Conclusion**

25     Q10. Does this conclude your testimony at this time?

26     A10. Yes, it does.