

**STATE OF VERMONT  
PUBLIC SERVICE BOARD**

Petition of Vermont Gas Systems, Inc., )  
requesting a Certificate of Public Good pursuant )  
to 30 V.S.A. § 248, authorizing the construction )  
of the “**Addison Natural Gas Project**” )  
consisting of approximately 43 miles of new )  
natural gas transmission pipeline in Chittenden )  
and Addison Counties, approximately 5 miles of )  
new distribution mainlines in Addison County, )  
together with three new gate stations in )  
Williston, New Haven, and Middlebury, )  
Vermont )

Docket No. 7970

**2-28-13 SUPPLEMENTAL PREFILED TESTIMONY OF  
JOHN HEINTZ  
ON BEHALF OF  
VERMONT GAS SYSTEMS, INC.**

February 28, 2013

Mr. Heintz is the Project Manager for the Addison Natural Gas Project. His supplemental testimony describes the revised Project design, construction and schedule and provides an estimate of the Project costs. Mr. Heintz also describes construction-related impacts with respect to noise, water supply, waste disposal and transportation.

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## 2/28/13 EXHIBITS

Exhibit Petitioner Supp. JH-2 (2/28/13)	ANGP Project Map
Exhibit Petitioner Supp. JH-3 (2/28/13)	Transmission Mainline Engineering Plans
Exhibit Petitioner Supp. JH-4 (2/28/13)	Site Plan for Colchester Tie-In
Exhibit Petitioner Supp. JH-5 (2/28/13)	Distribution Mainlines Engineering Plans
Exhibit Petitioner Supp. JH-7 (2/28/13)	Site Plan for the Williston Road, Williston Gate Station
Exhibit Petitioner Supp. JH-8 (2/28/13)	Site Plan for the Plank Road, New Haven Gate Station
Exhibit Petitioner Supp. JH-9 (2/28/13)	Site Plan for the Exchange Street, Middlebury Gate Station
Exhibit Petitioner Supp. JH-10 (2/28/13)	Typical Sectionalizing Valve Site
Exhibit Petitioner Supp. JH-11 (2/28/13)	Project Cost Estimate

Exhibit Petitioner Supp. JH-14 (2/28/13)	Impact Minimization/Avoidance, Pipeline Reroutes and Alignment Shifts
Exhibit Petitioner Supp. JH-15 (2/28/13)	Impact Minimization/Avoidance, Through Horizontal Directional Drill (HDD)
Exhibit Petitioner Supp. JH-16 (2/28/13)	Impact Minimization/Avoidance, Through Right-of-Way Narrowing

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1           **1.    Introduction**

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

3    A1.    My name is John Heintz. I am the President of International Engineering and  
4           Development Corporation and have been retained by Clough Harbour & Associates  
5           (“CHA”) to serve as Project Manager of the Vermont Gas Systems, Inc. (“Vermont Gas”  
6           or “VGS” or the “Company”) Addison Natural Gas Project (“Project” or “ANGP”). My  
7           business address is 2812 Shipping Ave, Miami, FL 33133.

8

9    Q2.    What is the purpose of your testimony?

10   A2.    My testimony and exhibits provide a detailed description of the revised Project layout  
11           and engineering design, including the refinements and modifications undertaken since the  
12           December 20, 2012 initial filing in this proceeding, referenced herein as either the

1 “December 20 Proposal” or the “Initial Proposal”. The result of these revisions is  
2 referred to here and in other witnesses’ testimony as the “2/28/13 Alignment.”

3  
4 My testimony also describes the equipment specifications and the pipeline construction  
5 process that will be involved in building the Project. I also provide an updated Project  
6 cost estimate. Finally, for ease of reference, I am also restating and including those  
7 portions of my original testimony that are not changed.

8  
9 **2. Revised Project Description**

10 Q3. Please describe the revised Project.

11 A3. The Project includes the following principal components:

12 (1) Approximately 41.2 miles of new 12-inch transmission pipeline, extending  
13 from a new tie-in to be located at Vermont Gas’s existing 10-inch mainline north  
14 of Severance Road in Colchester (“Colchester Tie-In”), Vermont, to the  
15 intersection of U.S. Route 7 and Exchange Street in Middlebury, Vermont (the  
16 “Transmission Mainline”). The initial Project contained 43 miles of 12-inch  
17 transmission.

18 (2) Approximately 5.1 miles of new six-inch distribution mainlines (“Distribution  
19 Mainlines”) that will extend distribution service to Vergennes (3.73 miles) and  
20 Middlebury (1.35 mile). The initial Project contained 4.8 miles of six-inch  
21 distribution mainlines; and  
22

1 (3) Three new pressure regulation stations (“Stations” or “Gate Stations”), one  
2 located near Route 2 in Williston to reinforce the existing distribution system, one  
3 off Plank Road in New Haven, and the third north of the intersection of U.S.  
4 Route 7 and Exchange Street in Middlebury. The number of gate stations is  
5 unchanged, however this 2/28/13 Alignment reflects modified locations and  
6 configurations in response to community feedback as discussed below.  
7

8 The Transmission Mainline is approximately 41.2 miles in length from the point of  
9 interconnection in Colchester to the terminus at the new Route 7 Gate Station in  
10 Middlebury. As with the initial proposal, the line will pass through the towns of  
11 Colchester, Essex, Williston, St. George, Hinesburg, Monkton, New Haven and  
12 Middlebury.  
13

14 The Distribution Mainline to Vergennes will extend from a new Plank Road Gate Station  
15 in New Haven, running along Plank Road 3.7 miles through the towns of New Haven,  
16 Ferrisburgh and Waltham, to the intersection of Route 7 in Waltham, just east of  
17 Vergennes. The Middlebury Distribution Mainline will extend from the new Route 7  
18 Gate Station in Middlebury to the Middlebury industrial park on Exchange Street.  
19

20 **2.1 Transmission Mainline from Colchester to Middlebury**

21 Q4. Please describe the Transmission Mainline and the proposed alignment changes.

1 A4. A one page map with the revised 2/28/13 Alignment is included as Exhibit Petitioner  
2 Supp. JH-2 (2/28/13). Detailed engineering plan sheets of the 2/28/13 Alignment  
3 Transmission Mainline with design details are included as Exhibit Petitioner Supp. JH-3  
4 (2/28/13). There have been a number of revisions to VGS' proposed transmission  
5 pipeline alignment from the Petition submitted to the Board on December 20, 2012 (the  
6 "Initial Proposal") to the 2/28/13 Alignment. These revisions have been developed in  
7 response to stakeholder comments.

8  
9 In addition to the summary of alignment changes from the Initial Proposal to the 2/28/13  
10 Alignment, the following adjustments occurred throughout the alignment:

- 11 • An approximate one to five foot shift of the pipeline alignment where it parallels  
12 the VELCO corridor due to improved Right-Of-Way information;
- 13 • The three Stations have been moved;
- 14 • and the Mainline Valve locations have shifted along the proposed pipeline relative  
15 to the new Transmission pipeline length and Station locations.

16  
17 Below is a list of specific locations with alignment changes, with reference to specific  
18 Exhibit Petitioner Supplement JH-3 (2/28/13) plan sheets. It should be noted that with  
19 the exception of the gate stations described above and those locations where the pipeline  
20 has been moved from road rights-of-way to adjacent to or within the VELCO corridor in  
21 Hinesburg, Monkton and New Haven, most of the adjustments listed below are minor  
22 alignment adjustments generally within the same vicinity:

- 1
- 2 - ANGP-T-C-001 Specification of the dewatering area west of Colchester Tie-In
- 3 - ANGP-T-C-005 - Change in additional temporary work space (ATWS) areas near
- 4 MP 2.2 (Route 2A)
- 5 - ANGP-T-C-018 - Transmission Mainline alignment change at MP 8.6 to avoid
- 6 VELCO infrastructure (500 feet)
- 7 - ANGP-T-C-021 - Transmission Mainline alignment change at Allen
- 8 Brook/Route 2 crossing (MP 10.3) and addition of an ATWS south of Route 2
- 9 (1,100 feet) for Horizontal Directional Drilling (HDD) purposes
- 10 - ANGP-T-C-021& 022 - Williston gate station (MP-10.45) moved to the east 300
- 11 feet along Transmission Mainline
- 12 - ANGP-T-C-023B - Alignment change at I-89 crossing to Hurricane Lane (MP
- 13 11.4) and concurrent pullback area shift (1,400 feet)
- 14 - ANGP-T-C-027 & 028 – Transmission Mainline alignment shift further east of
- 15 VELCO (K-23) ROW (MP 13.5) north of Williston Switching Station (600 feet)
- 16 - ANGP-T-C-028 – Transmission Mainline alignment shift from west to east side
- 17 of VELCO K-43 ROW from MP 13.84 to MP 14.25 (2,200 feet)
- 18 - ANGP-T-C-031 & 032 – Transmission Mainline alignment shift into VELCO K-
- 19 43 ROW at MP 15.6 (1,500 feet)
- 20 - ANGP-T-C-034 & 035 – Transmission Mainline re-alignment along Route 116 to
- 21 Route 2A Crossing (MP 16.9) (1,700 feet)



- 1 - ANGP-T-C-036 – Transmission Mainline alignment shift toward VELCO K-43  
2 ROW (MP 17.35) (700 feet)
- 3 - ANGP-T-C-041 - 049 – Transmission Mainline alignment change from along  
4 Charlotte/Baldwin Rd to VELCO K-43 ROW and parallel VELCO line (MP 19.8  
5 to 24) (22,200 feet)
- 6 - ANGP-T-C-050 - 052 – Transmission Mainline alignment change from VELCO  
7 K-43 ROW to (MP 24 to MP 24.9), crossing Rotax Rd. (4,800 feet)
- 8 - ANGP-T-C-053 – 061A – Transmission Mainline alignment change from along  
9 Monkton Rd to continuing to follow VELCO K-43 ROW, with HDD under  
10 Monkton Swamp and with access from Split Rock Rd, to Old Stage Rd (MP  
11 25.75 to MP 28.9) (16,600 feet)
- 12 - ANGP-T-C-063 - 068 – Transmission Mainline alignment change from along Old  
13 Stage Rd/Parks-Hurlburt Rd/North St (MP 29.65) to west side of VELCO K-43  
14 ROW to Plank Rd (MP 32.4) (14,500 feet)
- 15 - ANGP-T-C-068 - Plank Rd gate station moved from east of North St/Plank Rd  
16 intersection to west side of VELCO K-43 ROW at MP 32.5
- 17 - ANGP-T-C-072 – Transmission Mainline alignment shift from west side of  
18 VELCO K-64 ROW to cross Route 17 (Main St) and parallel New Haven  
19 Substation access (MP 34.6 – MP-35.1)) (2,640 feet)
- 20 - ANGP-T-C-074 – Transmission Mainline alignment change under VELCO K-64  
21 ROW and crossing Town Hill Rd (MP 35.6) (1,050 feet)

- 1           - ANGP-T-C-083A - 085 – Transmission Mainline alignment change from east side  
2           of Route 7 at River Rd intersection to west side with ATWS on north west corner  
3           of Belden Falls Rd/Route 7 intersection (MP 40.3 to 41.2 end of ANGP  
4           transmission mainline) (4,800 feet)
- 5           - ANGP-T-C-085 - Middlebury gate station moved from south of Exchange  
6           St/Route 7 intersection, ~0.5 miles north
- 7           - ANGP-T-C-085 - Change from Transmission to Distribution Mainline from end  
8           of ANGP at Middlebury Gate Station (MP 41.2) along west side of Route 7 to  
9           Exchange St/Route 7 intersection (2,400 feet)

10  
11           At the point of interconnection with the existing VGS transmission system in Colchester,  
12           the Colchester Tie-In will be reconfigured with an approximately 35-foot by 85-foot  
13           fenced-in yard to enclose the valve and an area for utilizing a pipeline in-line cleaning or  
14           inspection tool or “PIG” launcher. This is a slightly larger footprint to better  
15           accommodate the necessary infrastructure. A PIG is a tool used in the industry to clean  
16           the pipe or to inspect the integrity of the pipeline walls for things such as defects or  
17           corrosion. It moves down the pipeline by the force of the natural gas pressure in the  
18           pipeline. The fence will be a galvanized chain-link metal fence approximately 6 feet in  
19           height with three strands of barbed wire extending another foot. The fenced area will  
20           have a pervious crushed stone surface underlain by a geogrid to infiltrate rainwater and  
21           snowmelt. An access road, approximately 1,000 feet long, consisting of 470 feet of  
22           existing paved driveway and 530 feet of new stabilized pervious surface driveway will

1 extend from Severance Road to the Colchester Tie-In. Exhibit Petitioner Supp. JH-4  
2 (2/28/13) is a site plan for the Colchester Tie-In.

3  
4 To optimize the alignment of the Transmission Mainline corridor, Vermont Gas has  
5 attempted to co-locate the pipeline with, or adjacent to, other utility and road  
6 infrastructure where possible, in order to minimize impacts. The northern segment of the  
7 Transmission Mainline, from Colchester to Williston near Interstate 89, will generally be  
8 located within the ROW of VT 289 (also referred to as the Circumferential Highway,  
9 “CCCH” or “CIRC”). This segment of the Project corridor is approximately 11 miles  
10 from the Colchester Tie-In, and extends through portions of the towns of Colchester,  
11 Essex and Williston, to a point east of Interstate 89 in Williston, near the intersection of  
12 Interstate 89 and U.S. Route 2.

13  
14 Near the intersections of Interstate 89 and Route 2 in Williston, the Transmission  
15 Mainline will leave the CIRC corridor. The Transmission Mainline continues south,  
16 within or adjacent to an existing Vermont Electric Power Company, Inc. (“VELCO”)  
17 electric transmission line corridor that extends between Williston and Middlebury,  
18 Vermont. This segment of the Transmission Mainline extends about 30 miles and crosses  
19 through portions of the towns of Williston, St. George, Hinesburg, Monkton, New Haven  
20 and Middlebury. The details for this approximately 30-mile southern segment of the  
21 Transmission Mainline are shown in the Transmission Mainline Alignment Sheets,  
22 Exhibit Petitioner Supp. JH-3 (2/28/13).

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A more detailed summary of the Transmission Mainline 2/28/13 Alignment is as follows:

- The proposed 12-inch transmission pipeline connects to an existing VGS 10-inch transmission pipeline in Colchester, VT. The pipeline exits this location (Colchester Tie-In Site) and runs west for approximately 0.1-miles within the existing VGS ROW to the northerly ROW edge of the un-built CCCH. The pipeline runs parallel to the ROW edge and within the CCCH ROW for approximately 2.1-miles crossing Mill Pond Road (MP-0.49), passing under Indian Brook (MP 0.99), crossing VELCO's K-22 transmission line (MP-1.3), passing under Indian Brook for a second time (MP-1.5), and crossing Route 2A and New England Central Railroad (MP-2.1); avoiding along the way, present and future constructability issues. This segment of the 2/28/13 Alignment is essentially unchanged from the December 20, 2012 proposal.
- The alignment then drops off the un-built CCCH ROW and runs along Route 289, approximately 40-ft off the edge of pavement for 0.9-miles until the pipeline crosses VELCO at MP-3.0. After crossing VELCO, the pipeline works its way back to the edge of Route 289 ROW, where again it parallels the ROW edge for a distance of 3-miles; crossing Indian Brook a third time (MP-3.6), crossing Route 15 (MP-4.1), Essex Way (MP-4.55), Alder Brook (MP-5.05), and Alder Brook again (MP-6.25). The only substantive change in this segment is a location change for a temporary work space.

1           • Over the next 0.65-miles the alignment makes a cross country approach for a  
2 horizontal directional drill crossing under the Winooski River (MP-6.85) and Route  
3 117 (MP-6.76), coming up on the south side of the river adjacent to Vermont Central  
4 Railroad (MP-7.0). The pipeline crosses under Vermont Central Railroad, and runs  
5 alongside the same for 0.1-miles and crosses another section of the un-built CCCH,  
6 crosses the Burlington Transfer Station site and Chittenden Solid Waste and picks up  
7 Redmond Road (MP-7.56), the location of VGS' first Mainline Valve. This segment  
8 is essentially unchanged from the Initial Proposal.

9  
10           • The alignment runs south along the eastern edge of the Redmond Road ROW for  
11 1.44-miles, then along the northern edge of Mountain View Road ROW for 0.1-miles  
12 before crossing Mountain View Road and re-entering the CCCH highway, where the  
13 Transmission Mainline follows the westerly edge of the un-built CCCH highway for  
14 1-mile, makes an approach for and crosses Allen Brook (MP-10.3), Route 2  
15 (Williston Rd), avoiding conflicts with sensitive environmental areas, and the  
16 possible future extension of the CCCH. On the south side of Williston Road, VGS  
17 proposes constructing the first of three Gate Stations (MP-10.45). The change of note  
18 in this segment is the shift of the Williston Station approximately 300 feet to the east.

19  
20           • Upon leaving the Williston Station the pipeline re-enters the un-built CCCH  
21 ROW at its western edge and continues southerly to Interstate 89 and then west along  
22 I89 to MP-11.3 the location of the I89 crossing, thus avoiding potential conflicts with

1 the existing VELCO Sub Station infrastructure on the south side of I89 and the  
2 stakeholders along Hurricane Lane. The distance between the Gate Station and the  
3 I89 crossing location is approximately 0.85-miles. Any changes from the December  
4 20, 2012 proposal in this area are minor.

5  
6 • After crossing I89, the pipeline runs along the southerly edge of Hurricane Lane,  
7 for 0.2-miles, crosses to the west side of the VELCO ROW, avoiding existing utility  
8 infrastructure before generally running along and parallel to VELCO to the St.  
9 George/Williston town line (MP-14.7). In this section, the pipeline crosses VELCO  
10 at MP-12.35, St. George Road at MP-12.42, VELCO at MP-12.52, VELCO at MP-  
11 13, across Sucker Brook at MP-13.8, then south to VGS' second mainline valve  
12 location north of Lincoln Rd (MP-14.3), across Lincoln Rd (MP-14.31) and on to the  
13 St George/Williston town line. Any changes from the December 20, 2012 proposal in  
14 this area are minor.

15  
16 • After crossing the St. George/Williston town line the transmission pipeline leaves  
17 the VELCO ROW to avoid stakeholder and constructability issues. This segment is  
18 essentially unchanged from the Initial Proposal.

19  
20 • At MP-15.2 the alignment crosses the VELCO ROW to its western side, the  
21 alignment continues southerly generally parallel to the VELCO ROW western side  
22 (MP 15.3 to 16.2). This segment is essentially unchanged from the Initial Proposal

1           except for approximately 1,500 feet of pipeline that has been shifted into the VELCO  
2           ROW.

3           • The alignment then crosses the VELCO ROW (MP-16.2) and continues southerly  
4           0.8 miles (MP 16.2 to 17.0) until crossing Route 2A (MP-16.8), Route 116 (MP-  
5           16.92), and VELCO again at MP-17.0. Any changes from the December 20, 2012  
6           proposal in this area are minor.

7  
8           • The alignment then continues southerly just west of VELCO to address  
9           landowner concerns and aligns with and parallels the VELCO ROW just inside the  
10          Hinesburg town line (MP-17.4 to MP-18.1), then moves west to avoid a tributary to  
11          the Laplatte River, crosses Shelburne Falls Road (MP-18.94) and joins back up with  
12          the western side of the VELCO ROW (MP-19.2), crosses under the Laplatte River  
13          MP-19.5 to VGS third mainline valve located at MP-19.81, just north of Charlotte  
14          Road in Hinesburg. Any changes from the December 20, 2012 proposal in this area  
15          are minor.

16  
17          • The pipeline crosses Charlotte Road, continues southerly parallel to and 270 Ft.  
18          offset from the western VELCO ROW avoiding a meandering stream and wetlands  
19          for 0.9-miles (MP 19.9 to 20.8) where it re-enters the VELCO ROW. The 2/28/13  
20          Proposal has been relocated off of Baldwin Road to a location that parallels the  
21          VELCO ROW.

22

1           • The pipeline continues 10 Ft. inside the western edge of VELCO crossing  
2 Baldwin Road (MP-21.1) and Drinkwater Road (MP-22.34) and Lewis Creek (MP-  
3 22.86) for 4.1-miles (MP 19.9 to 24.0). The 2/28/13 Proposal has been relocated off  
4 of Baldwin Road to a location within the VELCO ROW.

5  
6           • The alignment leaves VELCO in the vicinity of Rotax Road in Monkton (i.e. the  
7 “Rotax Road Reroute”) and continues southerly 0.9 miles (MP 24.0 to 24.9). The  
8 Initial Proposal was along public road ROW. The Rotax Road Reroute was selected  
9 due to constructability and landowner concerns.

10  
11           • The alignment meets the VELCO ROW and continues southerly 0.9 miles (MP  
12 24.9 to 25.8) parallel to and along the westerly side. The 2/28/13 Proposal has been  
13 relocated off of public road ROWs to a location adjacent to the VELCO ROW.

14  
15           • The alignment enters and continues 10-ft inside the VELCO ROW for 1.5 miles  
16 (MP 25.8 to 27.3), crossing Stillson Road (MP-26.1), and Hollow Road (MP-25.4).  
17 VGS’ fourth mainline valve is proposed just south of Hollow Road in Monkton (MP-  
18 26.48). The 2/28/13 Proposal has been relocated off of the public road ROW to a  
19 location within the VELCO ROW.

20  
21           • The pipeline then continues west under Monkton Swamp using HDD, MP-27.3 –  
22 MP-27.65 and then back to and 10-ft inside the VELCO ROW at MP-28. The



1           2/28/13 Proposal has been relocated off of the public road ROW to a location within  
2           or parallel to the VELCO ROW.

3  
4           • The pipeline continues inside VELCO's ROW until Old Stage Road, where it  
5           then runs within the Old Stage Road ROW (MP-28.9 to MP-29.63) to avoid a  
6           meandering stream and wetland. At MP 29.63, the Transmission Mainline crosses  
7           from Old Stage Road through approximately 330 feet of open field to the western  
8           edge of the VELCO ROW and continues southerly 10 ft within and parallel to  
9           VELCO until MP-31.6, crossing Parks –Hurlburt Road (MP-30.1) and the Monkton,  
10          New Haven town line (MP-31.1). The 2/28/13 Proposal has been primarily relocated  
11          off of the public road ROW to a location within the VELCO ROW.

12  
13          • The proposed alignment then continues outside and parallel to the VELCO ROW  
14          3.2 miles (MP 31.6 to 34.8) crossing Little Otter Creek (MP-32.3), Plank Road (MP-  
15          32.5), Quarry Road (MP-33.5), Route 17 (MP-34.9), and into the VELCO New  
16          Haven Substation property (MP-34.9 – MP-35.51). VGS' proposed fifth mainline  
17          valve is located at MP-32.39. The alignment then continues 0.6 miles (MP 35.1 to  
18          35.7) briefly leaving VELCO to avoid structures and crossing Town Hill Road (MP-  
19          35.64) and VELCO to the eastern edge of VELCO. The most significant adjustment  
20          from the Initial Proposal is the shift of the New Haven Station location approximately  
21          a quarter mile west.

1           • The proposed alignment continues outside and parallel to the eastern edge of  
2 VELCO to MP-36.4 wherein the pipeline crosses VELCO and runs parallel to and  
3 outside the VELCO ROW to River Road (MP-39.54), crossing Hunt Road (MP-38.1)  
4 where Mainline Valve 6 will be installed and then crossing the New Haven River  
5 (MP-39.35). Any changes from the December 20, 2012 proposal in this area are  
6 minor.

7  
8           • The pipeline continues westerly inside and outside the northerly ROW of River  
9 Road crossing to the westerly edge of Route 7, where it continues south 10 ft. outside  
10 and parallel to the road ROW terminating at the Proposed Middlebury Station (MP  
11 41.23). The 2/28/13 Proposal changes the pipeline and the Station from the east side  
12 of Route 7 to the west.

13  
14 Q5. Please describe the design specifications for the Transmission Mainline.

15 A5. The engineering design was guided by applicable federal and state standards including  
16 the following, which have not changed from the Initial Proposal:

- 17           • U.S. Department of Transportation, Office of Pipeline Safety, Code of Federal  
18 Regulations Title 49, Part 192 – Transportation of Natural and Other Gas by  
19 Pipeline: Minimum Safety Standards (“Code”);  
20           • American Society of Mechanical Engineers (“ASME”) B31.8 – Gas Transmission  
21 and Distribution Piping Systems;

- 1           • Vermont Public Service Board General Order #43, Rules and Regulations
- 2           Prescribing Standards for Gas Utilities;
- 3           • American Petroleum Institute (“API”) 5L, Specification for Line Pipe, 2009;
- 4           • API Specification 6D, Specification for Pipeline Valves, 2008;
- 5           • American Society for Testing and Materials (“ASTM”) A53/A53M-07, Standard
- 6           Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and
- 7           Seamless;
- 8           • ASTM D2513-99, Standard Specification for Thermoplastic Gas Pressure Pipe,
- 9           Tubing and Fittings;
- 10          • MSS-Standard Practice SP-44-2006 Standard Practice, Steel Pipeline Flanges;
- 11          and
- 12          • Vermont Public Service Board Rule 6.100.

13

14          The Transmission Mainline will be designed and constructed to a Maximum Allowable

15          Operating Pressure (“MAOP”) of 1,440 pounds per square inch (“psi”). The pipeline will

16          be constructed of carbon-steel pipe (12.75-inch outside diameter), with a wall thickness

17          of 0.283 inches in Class II (rural)<sup>1</sup> areas and 0.312 inches for the remainder of the route.

18          The pipe material will have a specified minimum yield strength of 65,000 psi. For Class

19          III areas, a design factor of 0.5 was used in the design pressure calculation, and for Class

20          I and II areas a design factor of 0.6 was used, both of which are more stringent than

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<sup>1</sup>Class location is the term used in the Code (49 C.F.R. Part 192) to classify the population density in the vicinity of the pipeline. The design of a pipeline may vary depending on the class location of the pipeline. Please refer to Mr. Teixeira’s testimony for further explanation of this class location system.

1 required by the Code. This will allow the design pressure to stay the same even if there is  
2 a future change in the class location of the pipeline. The pipe will be manufactured in  
3 accordance with the API 5L, Specification for Line Pipe.

4  
5 The pipe will have an external, corrosion-control coating; the coating will vary dependent  
6 upon soil conditions but in general it will consist of 15 mils thickness of fusion bond  
7 epoxy or Pritec. Segments of pipe to be installed by horizontal directional drill (“HDD”)  
8 will have an additional 40 mils thickness of abrasion resistant coating over the external  
9 control coating. Cathodic protection will be provided by an impressed current rectifier  
10 system. The pipe will be hydrostatically-tested at a pressure of 1.5 times MAOP, at  
11 2,160 psi for a minimum of eight hours before being placed in service. The test will  
12 assure there are no leaks and validate the MAOP of 1,440 psi. I discuss this testing  
13 below.

14  
15 The pipeline will be entirely welded in accordance with API recommended practice  
16 standard 1104 – Welding of Pipelines and Related Facilities. All welds will be  
17 nondestructively tested in accordance with API 1104 by x-ray techniques. The test  
18 records will be kept for the life of the facility.

19  
20 Q6. What is the width of the Transmission Mainline corridor?

21 A6. Generally, the Transmission Mainline corridor will occupy a 50-foot wide permanent  
22 ROW, together with a 25-five foot temporary easement area that will be used to complete

1 construction. This too is unchanged from the Initial Proposal. Vanasse Hangen Brustlin,  
2 Inc. (“VHB”) has studied up to a 300-foot wide area for purposes of conducting its  
3 environmental resource impact analysis for this Section 248 application.  
4

5 In areas where construction will parallel a public road ROW, VGS will utilize a 20-foot  
6 ROW on private land adjacent to the road ROW where possible. If obtaining a ROW on  
7 private land is not possible, the pipeline will be located in the public ROW and the  
8 construction crews will utilize the road as work space. The entire ROW on the side of the  
9 road where the pipeline will be located will be cleared of vegetation in order to allow for  
10 construction. After completion of construction, the disturbed ROW area will be graded  
11 back to its previous contours and restored consistent with the Erosion Prevention and  
12 Sediment Control Plan (provided as an attachment to Exhibit Petitioner Supp. JAN-9  
13 2/28/13).  
14

15 Q7. Earlier you mentioned a number of reroutes and revisions that occurred to accommodate  
16 sensitive environmental and cultural resources along the route first identified in the  
17 Preliminary Alignment for the Transmission Mainline. Please summarize those  
18 revisions.

19 A7. Designing the Project is a complex, interdisciplinary and iterative process that has taken  
20 months to develop. Once the CIRC and VELCO corridors were identified as the  
21 Preliminary Alignment for the Transmission Mainline (the process for which is more  
22 fully discussed in Mr. Howe’s prefiled testimony), VGS hired CHA and environmental,

1 archaeological and aesthetic consultants to undertake detailed assessments of the  
2 Preliminary Alignment. Based upon that input, we continued to refine the Project design  
3 in dozens of locations to avoid or minimize impacts. With this 2/28/13 Proposal we have  
4 continued to minimize impacts as well as address community concerns. We have  
5 modified over 21 miles or about 51% of the Preliminary Alignment in order to avoid or  
6 mitigate these sensitive resource areas, as follows:

- 7 • 16 miles (pipeline reroutes and alignment shifts)
- 8 • 7.6 miles (narrowing of ROW)
- 9 • 3.6 miles (HDD)

10 Please refer to Exhibits Petitioner Supp. JH-14 (2/28/13) (Impact  
11 Minimization/Avoidance, Pipeline Reroutes and Alignment Shifts), JH-15 (2/28/13)  
12 (Impact Minimization/Avoidance, Through Horizontal Directional Drill) and JH-16  
13 (2/28/13) (Impact Minimization/Avoidance, Through Right-of-Way Narrowing).

14  
15 One significant re-route from the Preliminary Alignment is located on the southern side  
16 of the Winooski River in the area parallel to Redmond Road in Williston. There, the  
17 2/28/13 Alignment, like the Initial Proposal, will extend west of the CIRC to connect to  
18 Redmond Road near the Chittenden Solid Waste Facilities, and continue south and  
19 southeast along Redmond Road at a point where Mountain View Road in Williston meets  
20 up with the CIRC corridor. This re-route, the so-called “Redmond Road Re-Route” is  
21 approximately 1.9 miles in length. This change to the Preliminary Alignment along the  
22 CIRC was undertaken by VGS following input from regulators and stakeholders in order

1 to avoid and minimize potential impacts to forested wetlands and wetland habitat, as  
2 discussed in more detail in the testimony and exhibits of Jeffrey Nelson of VHB. These  
3 areas are depicted on the Transmission Mainline Alignment Plans, Exhibit Petitioner  
4 Supp. JH-3 (2/28/13). Mr. Nelson also addresses this re-route in his testimony and  
5 exhibits.

6  
7 The approximately 7.4 miles of the pipeline ROW that was narrowed from 75 feet to 50  
8 feet, results in an approximate 7.4-acre reduction in wetland impacts. The reduction of  
9 ROW width will result in additional costs to the Project which are currently estimated at  
10 approximately \$1.2 million. These additional costs are also included in the Project Cost  
11 Estimate, Exhibit Petitioner Supp. JH-11 (2/28/13).

12  
13 Q8. What other measures will be taken to minimize impacts?

14 A8. Because of the nature of a long, linear pipeline expansion project such as this, complete  
15 avoidance of all environmental and cultural resource areas is not possible, but a number  
16 of precautions will be taken to minimize impacts. In wetlands and agricultural areas,  
17 where trenches are used, soil horizons will be removed in order and stockpiled so that  
18 horizons can be restored as closely as possible to pre-construction conditions. In some  
19 cases, we will employ coffer dams for stream crossings and we will use matting for all  
20 work in wetland areas. Silt fences and other erosion control techniques will be used, as  
21 well as matting, construction limit barriers, etc. Mr. Nelson's testimony describes the

1 techniques that will be employed to minimize environmental impacts to sensitive areas  
2 during Project construction.

3  
4 As I have also noted, where appropriate, we will horizontally directional drill under  
5 certain streams, rivers, wetlands, and other resources. These areas include:

6 Indian Brook, MP 0.9;

7 Indian Brook, MP 1.3;

8 Indian Brook, MP 3.6;

9 Winooski River, MP 6.7;

10 Allen Brook, MP 10.3;

11 LaPlatte River, MP 19.6;

12 Resources near Drinkwater Road, MP 22.1;

13 Lewis Creek, MP 22.6;

14 Monkton Swamp, MP 27.2:

15 VT AD-1560&1561-Locus 1 and 2 (Arch Sites), South of Monkton Road, MP  
16 28.2:

17 VT AD-1562 (Arch Site), South of Monkton Road, MP 28.6:

18 VT AD 446 (Arch site), North of Quarry Road, MP 33.2;

19 VT AD 793(Arch site), Locus 2 and 3, MP 33.7;

20 VT AD 806 (Arch Site) South of Town Hill Road, MP 35.8;

21 VT AD 808 (Arch Site), MP 36;

22 New Haven River, MP 39.35.



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The use of HDD in these areas has eliminated over 6.7 acres of wetland impact, nearly 60,000 square feet of stream impact, impact to four rare, threatened and endangered species habitat and nine archaeological sites. The additional cost associated with the installation of HDDs in these areas is approximately \$5.4 million and is reflected in the Project Cost Estimate, see Exhibit Petitioner Supp. JH-11 (2/28/13).

These areas are identified in Exhibit Petitioner Supp. JH-15 (2/28/13).

**2.2 Distribution Mainlines to Vergennes and Middlebury**

Q9. Please describe the Distribution Mainlines.

A9. There are two Distribution Mainlines. The site plans are included as Exhibit Petitioner Supp. JH-5 (2/28/13). The first is a 3.7-mile segment of 6-inch polyethylene (“PE”) pipe that will begin at the new Plank Road Gate Station in New Haven, that runs through the Towns of New Haven, Ferrisburgh, and Waltham, to the intersection of Route 7 in Waltham, just east of Vergennes (the “Vergennes Distribution Mainline”). Network construction will begin at this point extending into the City of Vergennes. As a result of the change in the location of Plank Road Station, the Vergennes Distribution Mainline is slightly shorter than the Initial Proposal.

The second Distribution Mainline is also 6-inch PE pipe which will run approximately 1.35 miles along Route 7 and Exchange Street in Middlebury, between the new

1 Middlebury Station and into the Middlebury industrial park. As a result of the change in  
2 the location of Middlebury Station, the Middlebury Distribution Mainline is slightly  
3 longer than the Initial Proposal.

4  
5 Both Distribution Mainlines will be located within the public ROWs of Plank Road and  
6 Route 7/Exchange Street. The Project plans for the Distribution Mainlines are included  
7 as Exhibit Petitioner Supp. JH-5 (2/28/13).

8  
9 **2.3 Gate Stations and Valves**

10 Q10. Please describe each of the three Gate Stations.

11 A10. A gate station is a necessary component of a gas distribution system. The purpose of a  
12 gate station is to reduce the higher pressure in the transmission pipeline to the lower  
13 pressure used in the distribution network. A photograph of a VGS gate station was  
14 provided as Exhibit Petitioner JH-6.1.

15  
16 The first Gate Station will be located near Route 2 in Williston to reinforce the existing  
17 distribution system. A site plan for the Williston Gate Station is included as Exhibit  
18 Petitioner Supp. JH-7 (2/28/13). It will include an approximately 55-foot by 85-foot  
19 fenced-in yard with a small parking area, an approximately 12-foot wide by 32-foot long  
20 precast concrete meter and regulator building, a-foot wide by 8-foot long SCADA<sup>2</sup>  
21 building and an approximately 8-foot wide by 12-foot long concrete pad on which the

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<sup>2</sup>The acronym SCADA stands for "supervisory control and data acquisition."

1 pipeline heater will be mounted. Each enclosure building will be approximately 9 feet  
2 high from ground level to the roof peak. The enclosure buildings will house three major  
3 components of the Gate Station: (1) SCADA and telecommunications equipment, (2) the  
4 pressure regulation equipment, and (3) the meter. A Dry-Line heater system will be  
5 installed outside on the concrete pad. A Dry-Line heater works by producing steam  
6 within a vacuum, and heating the gas passing through pipes within the heater shell with  
7 low temperature steam.

8  
9 Plantings will be installed to provide screening for the facility, as shown on the visual  
10 report provided by Michael Buscher, Exhibit Petitioner Supp. MJB-2.1 (2/28/13).

11  
12 The design criteria for the Williston Gate Station are described as follows:

- 13 • Design maximum station inlet pressure (current): 605 psig
- 14 • Design maximum station inlet pressure (future): 1440 psig
- 15 • Design minimum station inlet pressure, at regulators: 250 psig
- 16 • Design normal station inlet pressure, at regulators: 400 psig
- 17 • Design maximum station outlet pressure: 100 psig
- 18 • Design flow volume, summer: 350 Mcfh
- 19 • Design flow volume, peak: 1,000 Mcfh
- 20 • Design minimum flow volume: 50 Mcfh
- 21 • Pipeline size into station: 6-inch
- 22 • Station piping wall thickness: Schedule 80 or XH Seamless

1	• Station piping grade:	Gr. B or X-42
2	• Safety device:	Monitor and Relief
3	• Relief set pressure at 110% of MOP:	110 psig
4	• Inlet gas temperature:	32°F
5	• Outlet gas temperature:	40°F
6	• Heater:	CWT Dry-Line Heater
7	• Filter:	PECO 30F
8	• Meter:	6-inch Turbine
9	• Odorizer:	N/A
10	• Station outlet control methodology:	3-inch Grove 900TE
11		Monitor/Regulator

12

13 The changes to the Williston Station from the Initial Proposal are primarily related to a  
14 slight change in the equipment configuration. The footprint of the Williston Station is  
15 unchanged.

16

17 A second Gate Station will be located on Plank Road in New Haven to initially provide  
18 natural gas service to Vergennes. A site plan for the Plank Road Gate Station is included  
19 as Exhibit Petitioner Supp. JH-8 (2/28/13). It will include an approximately 85-foot by  
20 55-foot fenced-in yard with a small parking area, an approximately 12-foot wide by 32-  
21 foot long precast concrete meter and regulator building, an 8-foot wide by 8-foot long  
22 SCADA building and an approximately 8-foot wide by 12-foot long concrete pad on

1 which the pipeline heater will be located. Each enclosure building will be approximately  
2 9 feet high from ground level to the roof peak. The enclosure buildings will house three  
3 major components of the Gate Station: (1) SCADA and telecommunications equipment,  
4 (2) the pressure regulation equipment, and (3) the meter. A Dry-Line heater system will  
5 be installed outside on the concrete pad. Plantings will be installed to provide screening  
6 for the facility, as shown on the visual report provided by Michael Buscher, Exhibit  
7 Petitioner Supp. MJB-2.1 (2/28/13).

8  
9 The design criteria for the Plank Road Gate Station are as follows:

- 10 • Design maximum station inlet pressure (current): 605 psig
- 11 • Design maximum station inlet pressure (future): 1440 psig
- 12 • Design minimum station inlet pressure, at regulators: 250 psig
- 13 • Design normal station inlet pressure, at regulators: 400 psig
- 14 • Design maximum station outlet pressure: 125 psig
- 15 • Design flow volume, summer: 250 Mcfh
- 16 • Design flow volume, peak: 400 Mcfh
- 17 • Design minimum flow volume: 25 Mcfh
- 18 • Pipeline size into station: 4-inch
- 19 • Station piping wall thickness: Schedule 80 or XH Seamless
- 20 • Station piping grade: Gr. B or X-42
- 21 • Safety device: Monitor and Relief
- 22 • Relief set pressure at 110% of MOP: 137 psig

- 1           • Inlet gas temperature:                               32°F
- 2           • Outlet gas temperature:                               40°F
- 3           • Heater:   CWT Dry-Line Heater
- 4           • Filter:   PECO
- 5           • Meter:   6-inch Turbine
- 6           • Odorizer:    N/A
- 7           • Station outlet control methodology: 2” Grove 900TE Monitor/Regulator

8

9           The changes to the Plank Road Station from the Initial Proposal are primarily related to a  
10           slight increase in the footprint to accommodate changes in the equipment configuration.

11

12           The third Gate Station, the Middlebury Gate, will be located on the westside of Route 7  
13           behind Paquette Enterprises Self Storage Facility in Middlebury. A site plan for the  
14           Middlebury Gate Station is provided as Exhibit Petitioner Supp. JH-9 (2/28/13). It will  
15           include an approximately 55-foot by 85-foot fenced-in yard with a small parking area, an  
16           approximately 12-foot wide by 32-foot long precast concrete meter and regulator  
17           building, an 8-foot wide by 8-foot long SCADA building and an approximately 8-foot  
18           wide by 12-foot long concrete pad on which the pipeline heater will be located. Each  
19           enclosure building will be approximately 9 feet high from ground level to the roof peak.  
20           The enclosure buildings will house three major components of the Station: (1) SCADA  
21           and telecommunications equipment, (2) the pressure regulation equipment, and (3) the  
22           meter. A Dry-Line heater system will be installed outside on the concrete pad. Plantings

1 will be installed to provide screening for the facility, as shown on the visual report  
2 provided by Michael Buscher, Exhibit Petitioner Supp. MJB-2.1 (2/28/13).

3  
4 The design criteria for the Middlebury Gate Station are described as follows:

- 5 • Design maximum station inlet pressure (current): 605 psig
- 6 • Design maximum station inlet pressure (future): 1440 psig
- 7 • Design minimum station inlet pressure, at regulators: 250 psig
- 8 • Design normal station inlet pressure, at regulators: 400 psig
- 9 • Design maximum station outlet pressure: 125 psig
- 10 • Design flow volume, summer: 350 Mcfh
- 11 • Design flow volume, peak: 500 Mcfh
- 12 • Design minimum flow volume: 75 Mcfh
- 13 • Pipeline size into station: 4-inch
- 14 • Station piping wall thickness: Schedule 80 or XH Seamless
- 15 • Station piping grade: Gr. B or X-42
- 16 • Safety device: Monitor and Relief
- 17 • Relief set pressure at 110% of MOP: 137 psig
- 18 • Inlet gas temperature: 32°F
- 19 • Outlet gas temperature: 40°F
- 20 • Heater: CWT Dry-Line Heater
- 21 • Filter: PECO 30F
- 22 • Meter: 6-inch Turbine





1 A12. They are unchanged from the Initial Proposal. The access will consist of a 15-foot wide  
2 stabilized pervious surface underlain by geogrid. The parking area will be large enough  
3 for two vehicles and will consist of the same surface material as the access drive.  
4

5 Q13. Please describe the Gate Station external lighting plans.

6 A13. It is unchanged from the Initial Proposal. Only limited night-time lighting will be needed  
7 at each Gate Station, at the entrance and at the building. The lights will be 100-watt  
8 floodlights or luminaries, angled downwards.  
9

10 Q14. Please describe the valves and valve locations.

11 A14. Other than the specific valve locations described below, the valve plans are unchanged.  
12 Eight sectionalizing valves will be installed along the pipeline length to allow for  
13 isolation of pipeline segments in the event that they need maintenance or in the case of an  
14 incident. Valve spacing is dictated by the Code and is based on the class location of the  
15 pipeline. The valve placement along the Transmission Mainline will exceed the  
16 requirements of 49 C.F.R. Section 192.179 (Transmission Line Valves).  
17

18 A photograph of a VGS Mainline Valve (“MLV” or “Sectionalizing Valve”) was  
19 included as Exhibit Petitioner JH-6.2. A typical MLV site is shown in Exhibit Petitioner  
20 Supp. JH-10 (2/28/13). Valve locations along the Transmission Mainline are identified in  
21 Exhibit Petitioner JH-3 at the following mile points:

22 MLV 0 at the Colchester Tie-In, MP 0.0;

1 MLV 1 at Redmond Road, Williston, MP 7.56;

2 MLV 2 at Lincoln Road, Williston, MP 14.3;

3 MLV 3 at Charlotte Road, Hinesburg, MP 19.81;

4 MLV 4 at Hollow Road, Monkton, MP 26.48;

5 MLV 5 at Plank Road, New Haven, MP 32.4;

6 MLV 6 at Hunt Road, New Haven, MP 38.11; and

7 MLV 7 at Middlebury Gate Station, MP 41.24.

8  
9 **3. Project Construction**

10 Q15. Please describe the pipeline construction process.

11 A15. The process involves a series of sequential steps, as graphically illustrated on Exhibit JH-  
12 13, previously provided. The pipeline construction process, which is essentially  
13 unchanged from the December 20 Proposal, will generally proceed in the following  
14 sequence:

15 1. The construction is expected to be sequenced from north to south although  
16 there will be multiple construction sections called “spreads.”

17 2. The route is first cleared and temporary work areas are prepared.

18 3. Perimeter erosion control measures, such as silt fences, are installed along  
19 sensitive resource areas such as stream edges and wetlands to control  
20 sediment.

21 4. For the Transmission Mainline, a four to five-foot wide trench will be  
22 excavated to a depth of approximately five-feet, and soil from the trench will

1 be stockpiled adjacent to the trench within the construction corridor. There  
2 will be different construction configurations for each of the different types of  
3 area to be crossed, including wetlands, agricultural areas and within the public  
4 highway ROW. These configurations are shown in Exhibit Petitioner Supp.  
5 JH-3 (2/28/13). Smaller trenches of approximately four-feet by five-feet will  
6 be used for the Distribution Mainlines.

7 5. Pipe lengths will be welded together, inspected, laid in the trench and warning  
8 tape will be laid over the line, and then the trench will be backfilled. The pipe  
9 will be covered by at least 36 inches of soil. The pipeline will have four-feet  
10 of cover in agricultural areas, within the VELCO ROW and residential areas,  
11 and generally five-feet of cover at road crossings and seven of feet cover at  
12 open cut streams.

13 6. The landscape will be restored as close as possible to pre-construction  
14 conditions in accordance with applicable permit requirements.

15 As Project Manager, it will be my responsibility to oversee that the Project is constructed  
16 in accordance with all applicable Code and permit requirements.

17  
18 Q16. Is water required for Project construction or operation?

19 A16. The Project will not require the use of water for on-going operations. The three Gate  
20 Stations are unmanned and therefore do not have sink or toilet facilities. However, as  
21 part of construction, the Project will require approximately 1.4 million gallons of water to  
22 hydrostatically pressure test the Transmission Mainline. The pipe will be hydrostatically

1 tested at a pressure of at least 2160 psi for a minimum of eight hours before being placed  
2 in service. The test will prove there are no leaks and will validate the MAOP of 1440 psi.  
3 For the hydrostatic test, water will be taken from a Town of Colchester municipal water  
4 hydrant near the Colchester Tie-In. VGS has contacted the Champlain Water District  
5 which supplies Colchester Fire District #3, where we propose to obtain the water for our  
6 test. The Champlain Water District has stated that it will be able to provide the water  
7 volume required. When the test is complete, the water will be discharged to a nearby  
8 potential upland area at the tap as indicated on the Erosion Prevention and Sediment  
9 Control Plans included with Mr. Nelson's prefiled testimony as Exhibit Petitioner Supp.  
10 JAN-9 (2/28/13). These plans are being submitted as part as the Construction  
11 Stormwater Discharge Permit to the Vermont Department of Environmental  
12 Conservation, as discussed in more detail in Mr. Nelson's Supplemental testimony.

13  
14 The two sections of Distribution Mainlines will be tested independently with air at a  
15 pressure of 190 psi for a period of eight hours.

16  
17 In addition, water, sourced from a local water hauler, will be used to control dust during  
18 construction.

19  
20 Q17. Has VGS identified the construction access points and laydown areas?

21 A17. Yes. We have identified locations where access to the Transmission Mainline corridor  
22 will be used as well as temporary work areas for equipment and materials staging areas.

1           These locations are identified in Exhibit Petitioner Supp. JH-3 (2/28/13)and were studied  
2           by our environmental and cultural resource experts and are noted in the VHB natural  
3           resources mapping, provided as an appendix to Exhibit Petitioner Supp. JAN-2 (2/28/13).

4  
5   Q18.   How will VGS manage construction waste?

6   A18.   Unchanged from the Initial Project, the generation of construction debris from the Project  
7           will be minimal. Construction debris will be disposed of at an approved landfill. While  
8           not generally considered construction waste, VGS will handle woody debris as follows:  
9           trees under 6 inches in diameter, slash and brush will be chipped—not burned—and  
10          spread along the ROW in upland areas. Trees greater than 6 inches in diameter will be  
11          cut into logs, stacked in upland areas and offered to landowners along the ROW for  
12          landowner use.

13  
14   Q19.   Will blasting be required for pipeline installation?

15   A19.   Yes, we anticipate that blasting will be required for approximately 35% of the proposed  
16          route. The 2/28/13 Proposal requires similar levels of blasting to the Initial Proposal,  
17          accordingly there is no change to the blasting protocols described below. Areas requiring  
18          blasting will be further defined during the final design process. VGS will use a blasting  
19          contractor licensed in the State of Vermont. It should be noted that blasting for projects  
20          of this nature will have limited impacts. Any blasting that is required for the Project  
21          would be conducted by state-licensed professionals in accordance with applicable  
22          blasting codes and local blasting requirements. All blasting would be conducted during

1 daylight hours and would not begin until appropriate local authorities and the occupants  
2 of nearby buildings, including residences and places of business, have been notified. In  
3 general, blasting would involve installation of small drill holes, and the use of low energy  
4 charges. Potential fracture impacts would be avoided through the use of open-face  
5 blasting techniques, which would direct the energy of the blast upward to the surface  
6 instead of downward. Delayed charges would be ignited in sequence to facilitate the  
7 upward movement of rock along the rock face. VGS will also conduct pre-blast  
8 inspections of nearby facilities and structures; install blasting mats to control the  
9 scattering of loose rock; use warning signals, flags and barricades to limit access to the  
10 blast area; and conduct post-blast surveys as necessary to assess damage.

11 Notwithstanding the limited impact of the blasting, VGS will adhere to a rigorous  
12 blasting plan, highlights of which are described below.

#### 13 14 Pre-Blast Surveys/Notifications

15 Pre-blast surveys and Water Quality/Flow Testing will be offered to all property owners  
16 that are within a 600-foot radius from the blast site. Appropriate notices will be given  
17 and appointments arranged for those owners who desire a survey. Pre-blast surveys will  
18 be conducted by a qualified firm approved by VGS. Results of those surveys will be  
19 documented through video or still photographs and appropriate narration or written  
20 reports.

#### 21 22 Blast Monitoring

1 All blasts will be monitored by a representative of a qualified firm approved by VGS who  
2 has been properly trained in the setup and use of seismic monitoring equipment. At least  
3 one seismograph will be in use at all times. Placement of monitoring equipment will be  
4 at the nearest structure to the blast site. Results of blast monitoring will typically be  
5 available before the next blast. Results can be reviewed and modifications can be made  
6 to the blast design for the next blast if necessary.

7  
8 Sequence of Blasting

9 All blasting operations will be strictly coordinated with VGS's on-site representative and  
10 local Fire Departments. Emphasis will be on the safe and efficient removal of the rock  
11 existing on this project without impact to surrounding structures.

12  
13 Blasting Procedures

- 14 1. Blasting operations shall commence after 7:00 AM and cease before 7:00 PM,  
15 Monday through Saturday.
- 16 2. Blasting cannot be conducted at times different from those announced in the  
17 blasting schedule except in emergency situations, such as electrical storms or  
18 public safety required unscheduled detonation.
- 19 3. Warning and all-clear signals of different character that are audible within a range  
20 of one-quarter mile from the point of the blast shall be given. All persons within  
21 the permit area shall be notified of the meaning of the signals through appropriate  
22 instructions and signs posted.

- 1           4. Access to the blasting area shall be regulated to protect the public from the effects  
2           of blasting. Access to the blasting area shall be controlled to prevent  
3           unauthorized entry before each blast and until the perimeter's authorized  
4           representative has determined that no unusual circumstances exist after the blast.  
5           Access to and travel in or through the area can then safely resume.
- 6           5. Areas in which charged holes are awaiting firing shall be guarded, barricaded and  
7           posted, or flagged against unauthorized entry.
- 8           6. Blasting mats shall be used to cover blasts and prevent fly rock.

9

10       Blast Security

11       Each blast will be preceded by a security check of the affected area. Communications  
12       will be made with job site supervisors and local officials as required to ensure the safest  
13       possible operation. All personnel in the vicinity closest to the blast area will be warned.

14

15       No blast will be fired until the area has been secured and determined safe. The blast site  
16       will be examined by the blaster prior to the all-clear signal to determine that it is safe to  
17       resume work.

18

19       Blast Vibration

20       Blast vibration will be monitored at the blast site, typically at the structure(s) closest to  
21       the blast site. Vibration limits will closely follow industry limits and the State and Local  
22       Regulations. Blast designs will be modified as required to stay within the guidelines.



1           Blasting operations will be modified accordingly when approaching buildings and  
2           utilities.

3  
4           **4.     Right of Way Acquisition**

5    Q20.   Will the Project require ROW acquisition?

6    A20.   Yes. VGS will purchase easements from landowners along the Transmission Mainline  
7           where public ROWs are not being used. Landowner parcels along the Final Alignment  
8           are shown on Exhibit Petitioner Supp. JH-3 (2/28/13). VGS has contacted all landowners  
9           along the pipeline route and is currently in discussions to obtain easements. As a result  
10          of moving the alignment off of public roads in some locations at the request of the  
11          communities, the 2/28/13 Alignment will require VGS to obtain easements associated  
12          with approximately 200 land parcels. This is an increase of approximately 40 parcels  
13          from the Initial Proposal. VGS is targeting to have all easements in place by the end of  
14          2013.

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16          **5.     Noise Impacts**

17    Q21.   Will the Project generate noise?

18    A21.   During construction, the Project will generate general construction noise associated with  
19          construction vehicles and equipment. Construction activities will normally occur  
20          between 7 a.m. and 7 p.m. and will only last during the construction period. Once  
21          constructed, because they are buried, the Project pipelines will not generate any  
22          additional noise.

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The sectionalizing valves are not pressure-reduction valves containing any mechanized components, and therefore will not result in additional noise.

VGS has selected a heater system for the Gate Stations that emits very little noise. VGS has calculated that after construction of the Project and during the peak hour of operation, the noise level at each Gate Station will be approximately 50 dBA when measured at the fence line. The closest occupied structure (a bookstore in Middlebury) to any of our proposed Gate Stations is approximately 150 feet. While this is closer than the nearest occupied structure in the Initial Proposal, the Gate Station was relocated at the request of the community, and at this distance, the noise is projected to drop well below the 45 dBA nighttime and 55 dBA daytime noise levels required in other Board proceedings.

**6. Transportation Impacts**

Q22. What impacts will the Project construction have on traffic and transportation facilities?

A22. We plan to conduct horizontal directional drilling (“HDD”) or boring under a number of street crossing and railway crossings, namely:

- Mill Pond Road, Colchester; Uncased bore
- Colchester Rd. (Route 2A), Essex; Uncased bore
- New England Central RR, Essex; Cased bore
- Upper Main St. (Route 15), Essex; Uncased bore
- Essex Way, Essex; Uncased bore

1 River Rd. (Route 117), Essex; HDD with Winooski River  
2 New England Central RR, Essex; Cased bore  
3 Redmond Road at CSWD, Williston; Uncased bore  
4 Mountain View Rd. , Williston; Uncased bore  
5 Williston Rd. (Route 2), Williston; HDD with Allen Brook  
6 Interstate Highway 89, Williston; HDD  
7 Hurricane Lane, Williston; Uncased bore  
8 St. George Rd. (Route 2A), Williston; Uncased bore  
9 St. George Rd (Route 2A), St. George; Uncased Bore  
10 Vermont Route 116, St. George; Uncased bore  
11 Shelburne Falls Road, Hinesburg; Uncased bore  
12 Charlotte Road, Hinesburg; Uncased bore  
13 Hollow Road, Monkton; Uncased bore  
14 Monkton Road, Monkton; Uncased bore  
15 Plank Road, New Haven; Uncased bore  
16 North Road, New Haven; Uncased bore  
17 Plank Road, New Haven; Uncased bore  
18 Quarry Road, New Haven; Uncased bore  
19 Main St. (Route 17), New Haven; Uncased bore  
20 Town Hill Road, New Haven; Uncased bore  
21 Hunt Road, New Haven; Uncased bore  
22 River Road, New Haven; Uncased bore

1 Vermont Route 7, New Haven; Uncased Bore

2 Beldon Road, New Haven; Uncased Bore

3 HDD or boring involves the installation of pits at either side of the area to be crossed and  
4 drilling or auguring the pipe beneath that area, creating no disturbance at the surface.

5 This technique, although more expensive, allows us to avoid direct impacts to these areas.

6 These locations reflect the route alignment changes previously described.

7  
8 In areas where we will install the pipe with traditional open-cut methods across  
9 roadways, we will employ standard traffic control measures to maintain at least one lane  
10 of traffic during installation. Additionally, there are areas where we will be installing  
11 pipe within the road ROW or shoulder. In these areas we will employ traffic control  
12 measures and maintain one lane of traffic during construction. Road surfaces will be  
13 protected and restored to original or better condition if impacted by construction.

14  
15 During construction in these areas, VGS will utilize traffic control methods that comply  
16 with Vermont Agency of Transportation (“VTrans”) standards, including employment of  
17 appropriate signage and the services of sheriffs or other traffic control personnel to  
18 manage traffic flow. VGS will obtain highway permits from VTrans and local  
19 municipalities for work in state and local roadways.

20  
21 The Winooski River is considered a navigable water under Section 10 of the Rivers and  
22 Harbors Act of 1899, and is subject to the permit jurisdiction of the Army Corps of

1 Engineers (“ACOE”). As explained in Mr. Nelson’s testimony, VGS has applied for a  
2 Section 10 permit for this crossing. From a practical standpoint, this will have no impact  
3 on river transportation and navigation, as we plan to HDD the crossing, and thus will not  
4 impact surface waters.

5  
6 **7. Cost Estimate**

7 Q23. Please provide the estimated cost of the Project.

8 A23. The Project is estimated to cost \$86,612,944, which includes the proposed Transmission  
9 Mainline and Distribution Mainlines; it does not include the distribution networks in  
10 Middlebury and Vergennes. This reflects an increase of \$2.8 million, primarily  
11 associated with additional HDD to mitigate environmental impacts as discussed in MR.  
12 Nelson’s supplemental testimony. A breakdown of the cost estimate is set forth in  
13 Exhibit Petitioner Supp. JH-11 (2/28/13). The cost estimate was prepared using quotes  
14 from equipment vendors, discussions with contractors familiar with the work and  
15 historical costs from similar projects.

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17 **8. Schedule**

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19 Q24. What is the schedule for the Project?

20 A24. The current schedule is to construct the Project in 2014. This will bring gas service to  
21 anchor customers in the Middlebury industrial park by late 2014. The distribution  
22 networks in Middlebury and Vergennes would be constructed in 2015, with residential  
23 and commercial customers receiving gas service by the 2015/16 winter.

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2           **9.    Conclusion**

3    Q25.   Does this conclude your testimony at this time?

4    A25.   Yes, it does.