STATE OF VERMONT
PUBLIC SERVICE BOARD

Petition of Vermont Gas Systems, Inc., for a certificate of public good, pursuant to 30 V.S.A. § 248 , authorizing the construction of the "Addison Natural Gas Project Phase 2 (ARNGP Phase 2)" to extend natural gas transmission facilities in Franklin and Addison Counties, for service to the Ticonderoga mill in New York, and construction of 2 Community Gate Stations for distribution service in the towns of Cornwall and Shoreham, Vermont	)	Docket No. 8180

Prefiled Testimony of Chris Neme

Submitted on Behalf of
Vermont Public Interest Research Group (VPIRG),

June 12, 2014

Summary: Mr. Neme presents the results of his study comparing the costs and benefits of converting from residential oil or propane space hearing to heating with either natural gas or cold climate heat pumps. He evaluates the comparison from both the consumer's perspective and society's. He does not take into consideration the costs to society and/or to individuals of taking private property and public lands to construct and operate a gas transmission pipeline, nor the costs to society or individuals of constructing distribution lines to which individual customers would connect. With these factors excluded, the net benefits of switching to heat pumps are comparable to the benefits of switching to natural gas.

I. INTRODUCTIONS AND QUALIFICATIONS

Q: Please state your name, employer and business address.

A: My name is Chris Neme. I am a co-founder and Principal of Energy Futures Group, a consulting firm that provides specialized expertise on energy efficiency markets, programs and policies. My business address is P.O. Box 587, Hinesburg, VT 05461.

Q: Please describe your educational background.

A: As shown in my curriculum vitae, I received a Master of Public Policy (MPP) degree from the University of Michigan (Ann Arbor) in 1986. That is a two-year, multi-disciplinary degree focused on applied economics, statistics and policy development. I also received a Bachelor's degree in Political Science from the University of Michigan (Ann Arbor) in 1985. My first year of graduate school counted towards both my Masters' and Bachelor's degrees.

Q: Please summarize your business and professional experience.

A: As a Principal in Energy Futures Group, I play major roles in a variety of energy efficiency consulting projects. Recent examples include:

- helping the Michigan Public Service Commission staff to assess the relative merits of alternative approaches to defining savings goals for electric and gas utility efficiency programs (focusing on lifetime rather than just first year savings);
- helping to manage a field study of the performance of cold climate ductless heat pumps in New Hampshire;
- helping develop a Technical Reference Manual of deemed savings assumptions for Ohio and the Mid-Atlantic states;

- serving as an elected stakeholder representative on an Enbridge Gas' annual Audit Committee as well as a province-wide Technical Evaluation Committee for Ontario's gas efficiency programs;
- serving as co-chair of the Research and Evaluation Committee of the Northeast Energy Efficiency Partnership's (NEEP's) regional Evaluation, Measurement and Verification forum; and
- providing guidance to key stakeholders in Germany, the United Kingdom and other European countries on the design of efficiency policies and programs (on behalf of the Regulatory Assistance Project).

Prior to co-founding Energy Futures Group in 2010 I worked for 17 years for the Vermont Energy Investment Corporation (VEIC), the last 10 as Director of its Consulting Division managing a group of 30 professionals with offices in three states. Most of our consulting work involved critically reviewing, developing and/or supporting the implementation of electric, gas, and multi-fuel energy efficiency programs for clients across North America and beyond. As a member of VEIC's Senior Management Team, I also helped launch Efficiency Vermont in 2000 – a then new statewide "efficiency utility" VEIC was selected to operate – and became intimately familiar with a myriad of issues associated with the day-to-day delivery of energy efficiency programs. I also helped shape the New England ISO's rules for inclusion of demand resources in its Forward Capacity Market and led the development of VEIC's first bids of peak savings from efficiency programs into that market.

All told, during my career in energy efficiency I have played major roles in developing energy efficiency potential studies in five states and provinces, served as a technical advisor to utility-stakeholder "collaboratives" in ten states, negotiated or supported development of efficiency program performance incentive mechanisms in six different jurisdictions and reviewed or

developed efficiency programs for clients in more than 20 states and provinces as well as parts of Europe. I have also led courses on efficiency program design, published widely on a range of efficiency topics and served on numerous national and regional efficiency committees, working groups and forums. A copy of my curriculum vitae is attached as **Neme Attachment A**.

Q: Have you previously filed expert witness testimony in Public Service Board proceedings?

A: Yes. In 2003, I testified on VELCO's behalf in the Northwest Reliability Project (NRP) case (Docket 6479). My testimony in that case addressed analysis I had conducted, together with John Plunkett and Phil Mosenthal of Optimal Energy, of the efficiency potential in the area affected by the NRP.

Q: Have you been an expert witness on energy efficiency matters before energy regulators in other provinces or states?

A: Yes, I have filed expert witness testimony on more than 30 other occasions before similar regulatory bodies in nine other states and Canadian provinces.

II. TESTIMONY OVERVIEW

Q: What is the purpose of your testimony?

A: The principal purpose of my testimony is to presents the results of my study comparing the costs and benefits of converting from residential oil or propane space heating to heating with either natural gas or cold climate heat pumps. I evaluated the comparison from both the consumer's perspective and society's. I did not take into consideration the costs to society and/or to individuals of taking private property and public lands to construct and operate a gas

transmission pipeline, nor the costs to society or individuals of constructing distribution lines to which individual customers would connect. My report is attached as **Neme Attachment B.**

Q: Can you summarize the results of your study?

A. The net benefits of switching to cold climate ductless heat pumps are comparable to the net benefits of switching to natural gas – slightly greater under the societal screening and a little lower under the customer economics perspective. .Again, that is without consideration of any transmission and/or distribution system build out costs.

A fuel switch to a cold climate ductless heat pump would also result in greater carbon dioxide emission reductions than a fuel switch to natural gas.

Q: Is the methodology that you used for the study, including all key assumptions, documented in the attached report?

A: Yes.

Q: Does that conclude your testimony?

A: Yes.