

VGS Response to Issues Identified by PUC at IRP Public Hearing

1. The IRP should be updated to reflect the most up-to-date information such as incorporation of the approved renewable natural gas (RNG) program. The IRP should also be revised if there is incorrect information presented.

VGS RESPONSE:

While for the reasons' explained below, Vermont Gas does not believe the IRP needs to be updated, it has provided additional information regarding the RNG program in the IRP addendum filed under separate cover.

Vermont Gas filed the IRP on July 14th, 2017 with up to date information available at the time. For example, the Company used the most recent competitive position data as provided by the Energy Information Administration ("EIA"), updated Energy Efficiency Utility ("EEU") projections, revised peak day projections utilizing data obtained from the most recent winter, as well as recent customer usage patterns.

The Company believes that the IRP does not need to be updated since it currently reflects (a) base, high, and low-case demand scenarios that are based on a wide range of assumptions and fuel price forecasts; (b) resource options that reflect methods to meet the projected requirements of each demand scenario; (c) a conclusion that no substantial change in the Company's resources is required until the Company's next IRP filing; and (d) a regulatory requirement that the IRP is to be updated and filed with the Commission in three years.

In addition, significant changes in the Company's supply and/or transmission resources require additional regulatory processes, which provide for an additional opportunity to review the underlying assumptions at that time.

With regards to the incorporation of the approved renewable natural gas program ("RNG"), the Public Utility Commission approved the program with an Order entered on September 6, 2017, after the IRP was filed. Because the docket was still pending and the program was not formally approved, Vermont Gas did not incorporate the RNG program into the IRP quantitatively. While RNG is expected to play an increasing role in our customers' energy usage, it is a voluntary program, accordingly, it is not expected to materially impact overall supply portfolio costs, growth levels within the existing VGS footprint, expansion outside the current footprint or overall retail rates to customers that choose not to participate in the program. Therefore the IRP does not need to be updated to reflect the RNG program beyond the information provided in the addendum.

At the public information session prior to the public hearing, Vermont Gas' presentation included an outdated slide, which reflected the competitive fuel position of natural gas for each of the scenarios. That graph was not used in the analysis of the IRP and was prepared before the Company updated its competitive position to reflect recent changes in the energy market. While the slide was not included in the IRP itself a corrected slide is nonetheless provided in the IRP addendum.

2. VGS should address expansion into Rutland County consistently throughout the IRP document.

VGS RESPONSE:

We appreciate that there are slight differences in the description of potential expansion into Rutland County; nevertheless, the key themes are consistent throughout the IRP. Expansion to Rutland is not being pursued at this time and would only occur if all of the following were in place, (a) a strong price advantage over competing fuels; (b) a state energy plan that supports such an expansion; (c) support of the communities impacted by the expansion; (d) strong regulatory and policymaker support; and (e) a means to fund expansion without undue rate pressure on existing customers. In the IRP, the discussion around expansion into Rutland County only pertained to the “High Case” scenario where the Company’s competitive position was quite significant. It is simply a “what if” planning scenario should all of the items stated above were to exist. Therefore, Vermont Gas does not believe any modification to the IRP is required to clarify its intent.

3. The IRP should include the impact of cold-climate heat pumps to be installed as estimated by the electric utilities and/or energy-efficiency programs on the Company’s financial forecasts including a scenario in which there is negative load growth.

VGS RESPONSE:

The market adoption of cold-climate heat pumps in Northwest Vermont is not well defined at this time; thus, the impact of cold-climate heat pumps on the IRP is also not well defined. As described in the Company’s response to issue 1, the IRP reflects base, high, and low-case demand scenarios that are based on a range of assumptions and fuel price forecasts that would likely reflect the impact of certain changes in the market adoption of cold-climate heat pumps.

The IRP discusses additional markets that may impact the Company’s potential future growth, which included cold climate heat pumps. As mentioned in the IRP, heat pumps are becoming more prevalent in Vermont, with customers using heat pumps for the cooling benefit. At the time of the filing, July 14, 2017, it was not cost effective to convert to a heat pump from natural gas. This may change when the technology continues to advance, allowing customers who choose a cold climate heat pump to no longer have a backup heat source on the peak days. The long-term impact on the market forecast is unknown at this time. For purposes of this IRP, the impact of heat pumps can be reasonably assumed to be captured in the alternative cases. By the time VGS files its next IRP, three years from now, the impact of cold climate heat pumps on VGS market may be clearer and appropriate to more explicitly model the impact, including the potential for a negative growth scenario. Importantly, VGS is not facing any significant supply or expansion decisions between now and the timing of the next IRP.

4. VGS should utilize a 4 or 5 year average for heating degree days instead of a 10-year average in order to account for climate change and increasing temperatures.

VGS RESPONSE:

The use of 10-year normal degree days is consistent with the methodology approved by the Commission in the most recent rate case and 10-year normal degree days are used for energy efficiency screening. It is appropriate that the degree day methodology used in the IRP is consistent with the degree day approach used in other regulatory matters. Before a change is made in the degree day approach, it would be important to understand the impact on rate setting, efficiency, or other matters where degree days are a critical input.

Further, Vermont Gas believes that use of the 10 year normal degree days provides a reasonable balance to account for climate change as well as to smooth out anomaly winters that are significantly warmer or colder than the 10 year normal. The 5-year average degree days would not materially change the load forecast as the 5 year average is only 0.5% different than the 10 year average used in the IRP. Finally, while some natural gas companies continue to use 20 and 30 year averages for load forecasting, Vermont Gas believes that it would be cold-biased and not representative of the future temperatures. The Company is not aware of any gas utilities that currently use 4-year or 5-year averages.

5. The IRP should include an explanation of rate increases as a result of VGS building the Addison Natural Gas Project and the legal challenges associated with that project.

VGS RESPONSE:

Vermont Gas' primary planning objective for the IRP is to provide safe and reliable energy products and services to Vermont families and businesses at competitive and affordable prices. However, the Company disagrees that rate impacts from the Addison Natural Gas Project ("ANGP" or "Addison Project") should be a component of the IRP. The Addison project is constructed, in service, and its capital costs, subject to the cost cap, are currently reflected in rates. The IRP is not a rate planning tool. The Commission, the Department, and other parties will have full opportunity to review the impact of the Addison Project, as well as the impact of all other investments, in future rate proceedings. That said, please refer to Section 6.0 Financial Impacts for a discussion of the methodology, assumptions and results of the financial impacts of the IRP. Please note that the financial analysis does not reflect the level of detail necessary to support any rate changes. Furthermore, the financial analysis does not reflect the potential ways that rate increases could be mitigated.

The big picture of an IRP is not necessarily to discuss what has happened in the past, but rather to take that information and consider it when planning for the future. There are many underlying factors that go into calculating customers' rates, not just an inclusion of a capital project such as the ANGP", including but not limited to, unforeseen capital projects or expenses not be reflected in the IRP; changes in state regulations or taxes; or changes in the energy market that was not reflected in the data used by the Company to forecast natural gas' competitive price advantage. Due to all of

the uncertainties around rate calculations and an ever-changing energy market, the Company did not include rate changes that could represent a different picture in the next 20 year timeframe.

6. Societal costs of the VGS forecasts, including environmental and economic costs, associated with climate change should be factored into the IRP when determining “least cost.”

VGS RESPONSE:

Vermont Gas is focused on playing an active role in Vermont’s clean energy future. It is our belief that converting customers from oil or propane to natural gas provides a societal benefit by helping each customer to reduce their carbon footprint. This is further enhanced for customers that participate in our Energy Efficiency programs. The availability of RNG to Vermont Gas customers will provide additional societal benefits. Vermont Gas did not monetize these societal benefits in the IRP, but has included projected carbon reductions by Vermont Gas customers in the addendum to the IRP.

Societal costs, along with environmental and economic costs, are presently included in evaluation of energy efficiency measures to meet the Company’s demand requirements. To the extent that such resources cost less than supply side resources (such as pipeline capacity), then the Company would pursue energy efficiency resources to meet the Company’s demand requirements rather than supply side resources.

7. The IRP should address the environmental impacts of methane emissions associated with natural gas production and whether there are federal laws that may be enacted that would limit methane emissions. Carbon is addressed in the IRP; however, it is only one of the greenhouse gases.

VGS RESPONSE:

Vermont Gas does not believe that explicitly modeling methane emissions associated with natural gas production would alter its IRP. First, the IRP was prepared under 3 different price scenarios. While the impact of any hypothetical federal regulations of methane on the price of natural gas is of course unknown, preparing the IRP under three different pricing forecasts provides a robust analysis under various scenarios. Second, unlike electric companies that must make choices between different fuel types for generation purposes, valuing methane for natural gas will not change the source fuel VGS purchases for its customers.¹ Third, for purposes of energy efficiency screening, VGS used the Commission-approved environmental externality adjustments for natural gas. Finally, included within the IRP is the discussion of system investments the Company will be making within the 20 year timeframe. The investments include risk-based assessments of its transmission and distribution system pursuant to federally mandated integrity management programs. These will

¹ RNG of course has a different methane footprint than “traditional” natural gas. However, since VGS’ RNG program is based on a voluntary program, it is not necessary to model RNG as a separate fuel source. If the voluntary nature of the program changes by the time of the next IRP, then it may be appropriate to value methane in comparing RNG to traditional supply.

help the transmission and distribution system remain as “tight” as possible. The Company accomplishes this by having continual leak detection initiatives and review of its gate stations and operating conditions.

8. Cost analyses presented in the IRP and any supporting information should be based on the most recently available actual and estimated costs.

VGS RESPONSE:

Please refer to the Company’s prior responses, particularly to issues 1 and 5.

9. The IRP should incorporate any natural gas usage estimates that have been developed by the Department of Public Service.

VGS RESPONSE:

The Company has consulted with the Department of Public Service, and confirmed that they are unaware of any natural gas usage estimates that they have developed that this question may be referring to.

10. As an energy efficiency utility, VGS should be promoting cold-climate heat pumps, not natural gas furnaces, when more cost-effective.

VGS RESPONSE:

The Company agrees with this statement and is reflective of the Company’s current practice.

It should be noted that as part of its role as an energy efficiency utility, VGS screened cold climate heat pumps to determine if it was cost effective for VGS to offer incentives to its customers. Based on then-current avoided costs and projected savings, converting from natural gas to cold climate heat pumps did not pass the societal cost-effectiveness screening. VGS will revisit this as avoided costs and cold climate heat pump savings evolve.

11. Fracked gas should not be considered to be a clean-energy resource.

VGS RESPONSE:

The Company believes this to be a State energy policy discussion and that the Comprehensive Energy Plan (CEP) is the appropriate venue for this type of discussion.

12. The IRP should address VGS's safety strategies to prevent and contain accidents such as explosions or leaks.

VGS RESPONSE:

Please refer to Section 5.0 of the IRP which discusses ways that the Company helps ensure safe and reliable delivery of natural gas, including, but not limited to, the meter replacement program, gate station upgrades, and federally mandated transmission and distribution system integrity management program, which aims to ensure safe and reliable natural gas to customers as well as the prevention of pipeline-related accidents. Vermont Gas continually monitors its transmission and distribution systems by doing leak surveys, as well as performing annual meter surveys.

13. The five "other system investments" identified on page 5-12 should be described in more detail.

VGS RESPONSE:

The five bullets listed under "other system investments" on page 5-12 are not investments, but rather activities the Company regularly undertakes. Vermont Gas regrets that the heading of the section led to confusion.

14. If VGS is considering looping its system in Addison County to accommodate future growth, it should take into account how landowners have already been affected by the installation of the pipeline in Addison County such as decreased property values and disruptions during construction.

VGS RESPONSE:

Vermont Gas agrees that when planning for future projects it should take into account the experiences from past projects. The IRP does not contemplate any looping of the system in Addison County and has no plans to do so at this time.

15. The Commission should consider holding a second public hearing if there are substantial updates or revisions made to the IRP.

VGS RESPONSE:

There is no substantial update or revision being proposed at this time. Should there be, the Company will abide by the schedule set by the Commission.

16. The public should have access to the analyses and working papers that VGS used to develop its IRP.

VGS RESPONSE:

The Company believes that the information contained in the IRP filing provides data and analysis sufficient to develop an understanding of: (a) the key drivers of demand; (b) demand-side and supply-side resource options available to the Company; (c) the financial impacts of the IRP; and (d) implementation steps for the IRP. Except for information that may be considered competitively sensitive, the Company will post all supporting information on its website.

17. The Commission should consider whether the IRP in this proceeding meets the requirements that were set out in the previous IRP and the Order approving the IRP.

VGS RESPONSE:

The Company believes that when they submitted the IRP on July 14, 2017 the requirements of the IRP were satisfied, as well as, the requirements outlined in the Order approving the previous IRP. Please refer to the table below for the requirement and the location of where the Company addressed the item within the IRP.

Item	Requirement	Location
2.a	Detailed consideration and analysis of the estimated cost of all reasonably available resource options, including, but not limited to, energy efficiency, propane air, liquefied natural gas, and compressed natural gas facilities	Sections 3, 4, 5 and 6
2.b	Detailed consideration and analysis of the estimated cost of all reasonable pipeline system configurations and interconnection alternatives	Sections 3 and 5
2.c	Continued coordination of the delivery of energy efficiency planning and implementation services with other Energy Efficiency Utilities in the state. Coordination should include consideration of VGS expansion and in-fill plans.	Section 4
2.d	Analysis of the implications for cost of service from both ratepayer and societal perspective.	Section 6 and 7
3.a	Consideration of the value of stress testing key assumptions included in price forecasts, including identification and modeling of correlations between price inputs and the load forecast, if any. The analysis should identify the parameters that have the most effect with regard to the competitive position scenarios that underpin the various aspects of the IRP. If no assumptions are stress tested, the IRP will include detailed discussion explaining the reasoning and methodology supporting this decision.	Section 2
3.b	Consideration of the value of stress testing key assumptions and variables other than price that affect VGS's decision making process, including a description of the expected magnitude of effect of each variable's effect on VGS planning methodology. If no assumptions are stress tested, the IRP will include detailed discussion explaining the reasoning and methodology supporting this decision. Variables to consider stress testing include (but are not limited to): <ul style="list-style-type: none"> i. changes in VGS Main Extension policy, ii. energy efficiency acquisition rate, and iii. cost of capital. 	Section 2
3.c	Consideration of the price and/or impact of emissions and other externalities and environmental costs for use in decision making, in order to assess portfolios on the basis of least cost, including environmental and economic costs. This includes the price impacts of emissions (and/or other externalities) that are not already internalized into the price forecast used by VGS in development of the IRP.	Sections 3, 4 and 5
3.d	Following the development of an energy efficiency potential study (to be completed via a coordinated effort of the Department and VGS that is, to the extent possible and practicable, also coordinated with EEU's DRPP), consideration of the results of the study, the parameters of 30 V.S.A. §209(d) and (e), and any Board directives that may be provided in	Section 4

Item	Requirement	Location
	Docket7676 in proposing future budgets to acquire all reasonably available cost-effective energy efficiency potential. This energy efficiency potential study will explicitly analyze the opportunity for energy and capacity savings relative to gas system expansion and infill connection of new customers.	
3.e	Utilizing the energy efficiency study described in d. above, consideration of energy efficiency as an option for peak shaving or deferral of transmission and/or distribution system infrastructure investments or other costs.	Section 4
3.f	Consideration of the cost-effective potential, and analysis of the current and expected demand for natural gas vehicles and resultant effects on supply, energy efficiency potential, and transmission and distribution systems	Section 2
3.g	Consideration of accelerating the proposed timeline of 2025 for service to the Rutland area, including a detailed analysis of resources or actions available to VGS to advance this service timeline,	Section 2
3.h	Consideration of expansion into areas of the state that are not considered in the Revised IRP, including non-contiguous communities, and the competitive position scenarios that VGS expects would drive expansion into these areas.	Section 2
3.i	The outcome of any negotiations between the Department and VGS regarding VGS's hedging practices, which negotiations are contemplated in the Board's order in Dockets 7803 and 7843 approving VGS's successor alternative regulation plan.	Section 3
3.j	A description of how and when they evaluate individual transmission and distribution facilities with the goal of identifying superior engineering and economic configurations, including methods and tools utilized to evaluate infrastructure equipment purchases	Section 5