REDACTED

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

In the matter of

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty

Docket No. DG 21-036

Petition for Approval of a Renewable Natural Gas Supply and Transportation Contract

DIRECT TESTIMONY

OF

Maureen L. Reno

Office of the Consumer Advocate

November 12, 2021

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I. INTRODUCTION

Q. Please state your name, business address, and occupation.

A. My name is Maureen L. Reno. My business address is 21 South Fruit Street, Suite 18, Concord, New Hampshire. I am employed as the Rate and Market Policy Director with the New Hampshire Office of the Consumer Advocate ("OCA").

Q. Please summarize your formal education.

A. I received a Bachelor of Arts degree in Economics from the University of Maine at Orono, Maine in 1996. In 1998, I earned a Master of Arts degree in Economics from the University of New Hampshire in Durham, New Hampshire, where I also completed all course work and examination requirements for the Ph.D. degree in economics, except for my dissertation. My areas of academic concentration included industrial organization and environmental economics.

Q. What is your professional experience?

A I have 20 years of professional experience in the regulated utilities and energy sectors. From 2001 to 2011, I served as a utility analyst with the New Hampshire Public Utilities Commission ("NH PUC" or the "Commission") advising the Commissioners on regulated utilities' cost of capital and return on equity ("ROE"), utility debt financings, and other regulated utility matters. From 2011 to 2012, I served as a Senior Energy Economist with the Union of Concerned Scientists, advising on the intricacies of the regulated utility industry and helping to develop alternative financing programs for renewable energy investments. Since 2012, I have served as an independent consultant to multiple firms, including Exeter Associates, Inc. and TAHOEconomics, LLC on utility cost of capital, ROE, capital structure, rate design, and mergers and acquisitions; Stephenson Strategic Communications, LLC on federal climate and energy policy; and TrueLight

Energy, LLC on competitive supplier rate impacts and energy markets. In September 2021, I joined the OCA as its Rate and Market Policy Director.

Q. Have you previously testified as an expert witness before a public utility commission?

A. Yes. My testimony was presented and accepted in more than 20 rate proceedings in several states--to include: Arizona, Georgia, Missouri, New Hampshire, New Mexico, Oklahoma, and Texas--on a wide range of issues concerning regulated utilities, retail and wholesale energy markets, and renewable energy. (See Appendix A for my curriculum vitae.)

Q. Have you previously provided testimony before this Commission?

A. Yes. Please see attached to this Appendix A for a complete list of proceedings during which I provided testimony as a utility analyst for the New Hampshire Public Utilities Commission.

Q. What is the purpose of your testimony?

A. The purpose of my testimony in this proceeding is to analyze the request of EnergyNorth Natural Corporation d/b/a Liberty ("Liberty" or the "Company") for approval of a Renewable Natural Gas (RNG) Supply and Transportation Agreement (RNG Agreement) with RUDARPA North Country, LLC ("RUDARPA") and to provide my recommendations for the Commission's consideration. Since the OCA statutorily represents the interests of residential ratepayers at large, my focus in this docket is to determine whether the proposed RNG project is in the best interest of residential ratepayers and, in particular, existing residential customers of Liberty. Thus, I conducted an economic analysis of whether the approval of the instant RNG Agreement leads to a cost-effective outcome for Liberty's retail customers (who are predominantly residential customers). I refer to retail customers throughout this testimony as customers who are not receiving gas supply through a special contract or an opt-in tariff arrangement.

Q. Please discuss how your testimony is organized.

A. In Section II, I summarize the Company's petition, focusing on factors that pertain to my analysis. In subsection III.a., I provide my analysis and findings with respect to whether the RNG Agreement between Liberty and RUDARPA is in the best interest of ratepayers. In my analysis, I compare the expected cost of the RNG supplies and the expected avoided supply costs. In subsection III.b., I also examine the contractual terms, in particular, that of Section 2.10, RNG Supply and Transportation Agreement, whereby Liberty has the option to purchase the facility from RUDARPA after Year 4 of the contract period.[1] Finally, in Section IV, I provide my recommendations to the Commission.

II. LIBERTY'S PETITION

Q. Please summarize the purpose of the Company's filing.

A. The Company is seeking Commission approval of an RNG Agreement with RUDARPA. Liberty is also requesting approval (a) to credit the proceeds from the sale of the New Hampshire environmental attributes of the RNG toward the Company's cost of gas ("COG"), excluding the attributes of the RNG sold to those customers which Liberty plans to serve via special contracts, and (b) to cap at five percent the quantity of "unsold" RNG included in the Company's overall COG.

Q. Please define Renewable Natural Gas.

A. Renewable Natural Gas, or RNG, is pipeline-compatible gas derived from biogenic or other renewable sources and is typically produced from capturing emissions from existing waste streams found in landfills, wastewater treatment plants, food waste, and animal manure.[2] These emissions

[1] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-1, Bates 38.

[2] Direct Testimony of William J. Clark and Mark R. Stevens, Bates 7, Lines 11-15.

must then be treated and cleaned to remove non-methane components to meet quality specifications that insure that the gas is interchangeable with conventional natural gas and can be injected into the existing pipeline system.

Q. Please provide a brief description of the financial elements associated with the construction of the RNG production facility and the delivery logistics.

A. Liberty's RNG Agreement with RUDARPA requires it to incorporate RNG from the North Country Environmental Services ("NCES") Landfill located in Bethlehem, New Hampshire into its supply portfolio. RUDARPA has executed a contract and ground lease with Casella Wates Systems, the owner of NCES landfill, granting RUDARPA rights to all of the facility's landfill gas, which is currently collected and flared on-site. RUDARPA is solely responsible for all costs associated with the collection, compression, and delivery of the RNG to the Liberty receipt points. RUDARPA is responsible for constructing a RNG processing facility to convert raw landfill gas to pipeline-quality RNG. The produced RNG would be subsequently compressed for delivery to compressed natural gas ("CNG") receipt points that include the following: Broken Bridge Road, Concord, and/or Tilton Road, Tilton; Production Avenue, Keene; and West Lebanon.[3] The RNG Agreement states that RUDARPA is responsible for all costs associated with collection, cleaning, compression, and delivery of the RNG to the receipt points. The Company has agreed to pay a fixed price per dekatherm ("Dth") to RUDARPA for the RNG, subject to adjustment for inflation as measured by the data for water, sewer, and trash collection services within the CPI-U (i.e., the Consumer Price Index, All Urban Consumers) from the U.S. Department of Labor, with an annual

[3] Liberty plans to include a geographically targeted franchise filing along with the special contract filing in order to serve the commercial customer using the West Lebanon delivery point. Direct Testimony of William J. Clark and Mark R. Stevens, Bates 16, n. 3.

cap of two percent.[4] The Company plans to sell about 58 percent of the produced RNG through three special contracts and via its future opt-in tariff.[5] The Company also expects to sell related renewable attributes in the form of thermal renewable energy credits ("TRECs"), which are tied to the energy produced from RNG.[6] The Company then proposes to include any unsold RNG balance in its overall annual sales at the contract price, subject to a five percent cap.[7]

Q. Briefly discuss the pricing terms that Liberty is contractually obligated to honor.

A. As mentioned previously, Liberty has agreed to pay a fixed price per Dth to RUDARPA, subject to a CPI escalator with an annual cap of two percent. In the event Liberty does not purchase the RNG production facility, the price for RNG per Dth will be $10.47 in Year 1 of the contract, $10.70 in Year 2, $11.53 in Year 3, and $12.43 for Years 4 through 17, subject to the CPI adjustment clause mentioned previously.[8] If the Company exercises its purchase option under the

[4] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-1, RNG Supply and Transportation Agreement, Article 5.2, Bates 45.

[5] This estimate of sales to special contract customers is based on the five year average of annual RNG supply provided by the Company. Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-8, Bates 116.

[6]Pursuant to New Hampshire's Renewable Portfolio Standard (RPS), Thermal Renewable Energy Credits (TRECs) are a subset of the Class I REC purchase obligation that the electric distribution utilities must meet or make an alternative compliance payment of $26.35 per MWh for any shortfall. TRECs represent utility-procured "useful thermal energy" which is defined in RSA 362-F:2 as "renewable energy delivered from class I sources that can be metered and that is delivered in New Hampshire to an end user in the form of direct heat, steam, hot water, or other thermal form that is used for heating, cooling, humidity control, process use, or other valid thermal end use energy requirements and for which fuel or electricity would otherwise be consumed." In 2019, the electric distribution utilities were required to procure TRECs equivalent to 1.4 percent of their load, an obligation which has been increasing by 0.2 percentage points annually to 2.2 percent in 2023 and thereafter. Senate Bill 577 of 2018 (Chapter 340 of the 2018 New Hampshire Laws) allows thermal energy generated from renewable methane produced by landfills to be eligible for Class I-Thermal RECs. *See generally* New Hampshire Public Utilities Commission (PUC) Sustainable Energy Division Website; *see also* New Hampshire PUC 2018 Renewable Portfolio Standard 2018 Review (November 2018) available at: http://www.puc.state.nh.us/20181101-RPS-Review-2018-FINAL-REPORT-2018-11-01.pdf

[7] Direct Testimony of William J. Clark and Mark R. Stevens, Bates 22, Lines 4-10.

[8] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-1, RNG Supply and Transportation Agreement, Article 5.1, Bates 44-45.

contract, then Liberty pays $6.11 per Dth after Year 4, but also revised upward according to the same CPI adjustment clause.[9]

Section 2.10 of the RNG Agreement prohibits RUDARPA from selling the facility prior to the completion of Year 4. At such time, Liberty has an option to purchase the facility and a right of first refusal with respect to any other potential sale of the facility. Any purchase of the facility by Liberty would be subject to review by the Commission.

In the event Liberty purchases the RNG Production Facility, then the contract calls for a single fixed price for the duration of the RNG Agreement of $6.11 per Dth, subject to inflation-based adjustments. If Liberty purchases the production facility, the purchase price (at an estimated net book value at the end of Year 4) would be subsumed in Liberty's COG related "rate base," which consequently will increase the price per Dth beyond the per Dth payments provided to RUDARPA. Thus, the delivered cost of RNG under Liberty ownership in Year 4 would be $9.66 per Dth.[10]

By way of comparison, the prices under RUDARPA ownership, according to the Company's estimates, will start at $10.47 per Dth in Year 1 and increase to $12.64 per Dth during Year 4. After Year 4 the COG increases to $12.86 per Dth in Year 5 unless Liberty exercises its option to purchase the facility and as a result would pay $9.66 per Dth.[11]

Q. Please provide the RNG production details, based on both the contract and the Company's stated expectations.

[9] *Id*. at Bates 45.

[10] Direct Testimony of William J. Clark and Mark R. Stevens, Bates 14: 9 to Bates 15: Attachment WJC/MRS-4, Bates 99-100.

[11] *Id.*, Bates 99-100.

A. The RNG Agreement requires RUDARPA to deliver a minimum annual supply quantity ("MASQ") to the Company over the term of the contract. For contract years 1 through 5, 6 through 10, and 11 through 17, the MASQs are 490,000 Dths annually, 375,000 Dths annually, and 270,000 Dths annually, respectively.[12] Contractually, the maximum daily amount of RNG delivery to all of the receipt points (Concord, Keene and Lebanon) is 2,400 Dths per day.[13]

As for estimates of landfill gas production levels, Liberty is inconsistent. According to the Company's initial filing, it projects output starting at 538,083 Dth in Year 1 (or 1,474 Dth per day), increasing to 572,977 Dth per year in Year 4 (or 1,570 Dths per day) and then decreasing to 375,000 Dth per year in Year 10 (or 1,027 Dths per day).[14] However, in a subsequent response to an OCA data request, the Company increases its initial expectations of RNG production to about 1,687 Dths per day in 2022.[15]

Q. Please briefly discuss how the Company expects the Thermal Renewable Energy Credits (TRECs) resulting from the RNG to benefit ratepayers.

A. Liberty plans to monetize the TRECs associated with the RNG Dths and thereby reduce the COG charges recovered from customers. The Company proposes to use all TREC proceeds (except those associated with RNG sales to the special contract customers, which would acquire the TRECs) to credit customers based on the RNG deliveries at each of the designated receipt points.

[12] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-1, Bates 43.

[13] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-1, Bates 32-33.

[14] Daily projection derived by dividing Dth Projections by 365 days. Direct Testimony of William J. Clark and Mark Steven, Attachment WJC/MRS-4, Bates 99-100. *See also* Attachment MLR-1 (Company Responses to OCA 1-1.a. and Attachment OCA 1-1.a.).

[15] *See* Attachment MLR-2 (Company Response to OCA 1-4.c.).

Q. Has the Company estimated the per Dth TREC values that it expects to receive?

A. Yes. The Company's witnesses reference a TREC estimate of $4.07 per Dth throughout the 20-year period considered in Attachment WJC/MRS-4, but they do not include the TREC value when comparing the delivered COG of the facility and the potential savings associated with Liberty's ownership of the facility.[16] In response to an OCA discovery request, the Company later provided a slightly higher TREC value of $4.95 per MMbtu. This updated value is based on a series of RNG supply assumptions and a portion of the Alternative Compliance Payment of $25.97 per megawatt-hour ("MWh").[17]

Q. How does the Company plan to sell the RNG supply?

A. Although not binding, Liberty has obtained letters of intent ("LOI") from three large commercial/industrial customers.[18] Liberty expects these customers to sign special contracts for purchase of the RNG supply at the prices listed in the RNG Agreement. Although the LOIs date back to 2018 and 2019, the Company contends that it has maintained regular communications with the three LOI counterparties and is currently in the final stages of executing special contracts with all three.[19] According to Liberty, it anticipates that these LOI customers would purchase 70 percent of the Bethlehem facility's estimated production capacity over the first ten years, with the remaining 30 percent being offered to all Liberty customers through an RNG opt-in tariff.

[16] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-4, Bates 099-100.

[17] *See* Attachment MLR-3 (Company Response to OCA 1-1.b.2. and Attachment OCA 1-1.b.2.). Also note that as of 2021, the Alternative Compliance Payment Rate for Class I Thermal is $26.35 per MWh. https://puc.nh.gov/sustainable energy/Renewable_Portfolio_Standard_Program.htm

[18] Attachment WJC/MRS-5, Attachment WJC/MRS-6, and Attachments WJC/MRS-7. Note that the Company has requested confidential treatment of the identities of the three LOI customers, so I do not refer to them by name here.

[19] *See* Attachment MLR-4 (Company Response to OCA 1-12).

However, a close examination of Attachment WJC/MRS-8 reveals that such a high commitment would apply only during January and February and that the LOI customers would be required to purchase only about half the RNG supply during the summer months.

Q. How does the Company intend to use the remaining RNG?

A. Liberty believes that there is sufficient demand for 100 percent of the remaining RNG supply. According to the Company, a voluntary RNG program could achieve an overall participation rate of 1.7 percent to 4.3 percent of residential customers and 0.7 percent to 1.6 percent of commercial customers.[20] Thus, Liberty plans to offer an opt-in tariff by which participants would pay the full contract price for the RNG. However, until such a tariff is approved and in place, the Company plans to direct the balance of the contracted RNG to locations where it is most economic, with costs to be recovered through the standard COG.

Q. What is the Company's position on how the RNG Agreement would impact the COG for customers of Liberty on the traditional pipeline system?

A. In its original testimony, the Company did not provide a sufficiently detailed analysis of how the accommodation of the RNG Dths will impact the COG for its existing customers. While the Company intends to sell RNG through special contracts and a future opt-in tariff, it proposes to include the balance of the unsold RNG in the Company's overall COG subject to a cap of five percent of the Company's overall annual retail sales.

The Company describes the rate impact of including less than five percent of unsold RNG in the 2020-2021 COG at the Year 1 contract price of $1.047 per therm as *de minimis*, because it would lead to a COG rate increase of less than one penny per therm.[21]

[20] Direct Testimony of William J. Clark and Mark R. Stevens, Bates 21, Lines 4-14.

[21] Direct Testimony of William J. Clark and Mark R. Stevens, Bates 22, Lines 4-14.

Q. Does the Company believe that the approval of the RNG Agreement is in the public interest?

A. Yes. In reaching that conclusion, the Company touts a series of benefits that include: supporting the state's energy goal of adopting an all-resource energy strategy; helping to ensure a secure, reliable and resilient energy system because RNG can be stored and used on demand; generating local energy supply that supports the local economy; implementing strict minimum quality specifications; and helping to protect the environment. The Company also avers that the proposal insulates customers and the Company from risks arising from the construction, ownership, and operation of the proposed RNG facility.[22]

Q. Why did the Company withdraw its previous proposal for approval of a contract with RUDARPA and replace it with a new version of the contract?

A. The Company withdrew its prior filing in Docket No. DG 18-140 in light of specific concerns expressed by both the OCA and the Staff of the Commission (which, as of July 1, 2021, was transferred to the newly created Department of Energy).

Since the Company withdrew its filing in the previous case, the Company renegotiated the RNG Agreement to replace a "must purchase" requirement with an option to purchase after Year 4 that would require Commission approval in a separate proceeding. The new RNG Agreement includes minimum quality requirements for RNG, obligates the Company to purchase only conforming RNG, and obligates RUDARPA to remove from the designated receipt points any RNG that is non-confirming.

[22] Direct Testimony of William J. Clark and Mark R. Stevens, Bates 24, Line 16 to Bates 25, Line 24.

The Company's proposal also includes the aforementioned cap on RNG volumes included in the COG of five percent as compared to Liberty's annual volumes, being recovered through base COG rates.

Q. What has changed since the Company withdrew its prior filing?

A. There has been a series of developments that bolster arguments in favor of the Company's proposed business relationship with RUDARPA. First, in addition to the two LOI customers included in Liberty's prior filing, the Company is finalizing a special contract with a third LOI customer. Second, RUDARPA has closed on its financing for the RNG facility construction costs. Third, RUDARPA had also received its final air permit from the New Hampshire Department of Environmental Services and all other required permits to begin construction, which may commence this spring.

III. CRITIGUE OF LIBERTY'S PETITION

Q. Briefly describe how this section is organized.

A. Since my focus is on financial matters, I do not have a position on the engineering and technical aspects of the Company's petition. My objective is to provide to the Commission a better understanding of the economic impact on the Company's residential ratepayers if the Commission were to approve the petition. I rely on both (1) a detailed look at the impact on the traditional pipeline customers, and (2) the implications of Liberty opting to purchase the production facility after Year 4 of the RNG Agreement. In Subsection III.a., I focus on the rate impact on traditional pipeline customers. In Subsection III.b., I provide my position on the Production Facility Purchase clause of the RNG Agreement and other risks posed by the Company's proposal.

III.a Impact on Liberty's Existing Retail Customers

Q. Do you agree with the Company's contentions that the impact of the RNG procurement on customers' COG will be *de minimis* even without TRECs?

A. No. The Company relies on a contention that any impacts on non-RNG customers would be minimal, and thus the Commission should disregard these impacts. But I disagree and contend that the Commission's focus should be on the opportunity cost of RNG supply. It's easy to write off bad utility decisions as having little impact when they affect a relatively small portion of the revenue stream recovered from customers, but there is no "de minimis" exception to the requirement that rates be just and reasonable. Thus, the focus of this financial analysis should not rest solely on the *de minimis* criteria but should also incorporate an examination of the opportunity cost of procuring the quantity of supply. My focus is instead on comparing: (1) the supply cost associated with the RNG Dths (adjusted for expected TREC value); and (2) the supply cost associated with the most expensive Dths those RNG supplies will replace on a daily basis. If the difference between the former and the latter is positive, the proposed RNG procurement is not cost-effective and thus is not in the best interests of the Company's ratepayers. The issue of whether the impact on the COG is *de minimis* should not inform the reasonability of the RNG Agreement at all.

Q. How did the Company assess the impact on its retail customers of the RNG Agreement?

A. In its analysis to determine whether the RNG Agreement is reasonable for its retail customers, the Company compares the RNG supply cost during Year 1 of $10.47 per Dth with the average commodity costs in Liberty's 2020-2021 Peak Winter Filing of $3.2 per Dth to estimate the difference between the peak winter COG and the peak COG with the RNG supply. After

assuming sales to two LOI customers, the Company uses winter sales forecast to estimate a cost impact of $0.007 per therm or $0.07 per Dth.[23]

Q. Is it realistic to assume that the LOI customers will purchase the RNG supply committed to in the LOIs?

A. No. The Company's analysis assumes that it will sell a majority of the RNG supply to LOI customers which is an unrealistic assumption considering that the Company has not provided a binding purchase agreement or contract from any of the LOI customers. Therefore, after assuming no sales to LOI customers, an impact of RNG supply on the COG for retail customers would be $0.024 per therm or $0.24 per Dth.[24]

Q. Did you conduct any analysis comparing the RNG supply cost focused soley on the expected supply cost associated with the highest cost displaced Dths?

A. Yes. For a proper record on the cost-effectiveness of RNG supplies, it is important that RNG supply costs be compared with the supply costs associated with the most expensive displaced Dths.

Q. Please first discuss how that analysis is organized.

A. To compare the expected supply cost with the highest cost displaced Dths, I incorporate a hybrid estimate derived from a historical look at how RNG supplies under the contractual pricing term would have fared over the period beginning November 2017 to October 2022, *and* how those supplies would fare in the future based on natural gas futures associated with the Dracut pricing point for 2022 to 2026. The analysis is largely informed by the Company's COG filings submitted to the Commission and its response to OCA data request 2-21. For ease of exposition, I first

[23] Attachment MLR-5 (Company Response to OCA 1-9.a and Attachment OCA 1-9.a).
[24] Attachment MLR-6 (Company Response to OCA 1-10.b and Attachment OCA 1-10.b).

discuss my historical approach. Then, I present the "Dracut futures" oriented approach. In both of these scenarios, I apply the assumption that Liberty can monetize TREC for the supply of RNG supply to be conservative. Then, I conduct a second set of scenarios excluding the value of TRECs.

Q. Please discuss the historical look at how the contractual RNG supplies would have fared over the November 2017 to October 2022 period.

A. Since the Company expects little volatility in the daily production level, I estimate the daily production for each and every day in a year by dividing the annual production amount provided by the Company in Attachment WJC/MRS-4 by the number of days in the year. Using data provided by the Company in its COG filings, I estimate the highest opportunity costs for RNG supply. Specifically, I use the monthly net commodity cost for Dracut Supply – Swing, which includes the NYMEX price and a basis differential for market prices, over a five year period from November 2017 to October 2022.[25] Thus, using these historical market price futures data, the annual supply costs associated with the most expensive displaced Dths are shown in Table 1.

Table 1. Opportunity Cost for RNG Supply & Benefits (w/ TRECs)

Years	Opportunity Cost	RNG Supply Cost	Cost / (Benefit)
Nov 2017 - Oct 2018	$ 3,574,972	$ 2,970,218	$ (604,754)
Nov 2018 - Oct 2019	$ 4,785,687	$ 3,402,801	$ (1,382,887)
Nov 2019 - Oct 2020	$ 3,386,338	$ 3,606,328	$ 219,990
Nov 2020 - Oct 2021	$ 3,122,370	$ 4,406,944	$ 1,284,574
Nov 2021 - Oct 2022	$ 7,068,369	$ 2,328,186	$ (4,740,183)
Average	**$ 4,387,451**	**$ 3,342,895**	**$ (1,044,652)**

These opportunity costs represent an extreme case that assumes that the Company would otherwise purchase natural gas supplies from one of its most expensive supply sources. Thus, during periods

[25] *See* Liberty's COG filings, Schedule 6 in Docket DG 17-135, DG 18-137, DG 19.145, DG 20-141, and DG 21-130.

of expected supply shortages, such is the case for the winter heating season for 2021/2022, the annual costs would be much higher than during other years.

Assuming that the RNG costs in the first five years to be $10.47, $10.88, $11.73, $12.64, and $9.66 per Dth and the realized TREC value is $4.95 per Dth (consistent with what essentially the Company projected RNG and TREC values), the RNG supply costs for 2017/2018, 2018/2019, 2019/2020, 2020/2021, and 2021/2022 would be $2.97 million, $3.40 million, $3.60 million, $4.40 million, and $2.33 million, respectively (*See* also Schedule MLR-1a), without an adjustment for macroeconomic inflation over the fourth year.[26] Therefore, the annual benefit associated with the RNG procurement for Year 1 is over half a million dollars. The five year average of comparing RNG supply costs to the opportunity costs shows a benefit to rate payers of approximately $1 million. Based on this "historic" look, with generous accounting for TRECs, the RNG procurement would be cost-effective.

As a rough estimate, over five years, Liberty's retail customers would be better off by approximately a half million dollars.[27] The additional benefits associated with using RNG Dths, after accounting for healthy TREC credits, would be over 24 percent lower than the cost associated with the most expensive Dths over the five year period.

Q. Do you have any concerns regarding the analysis and its results?

A. Yes. A cornerstone of the analysis I just described and the resulting benefits thereof is the assumption that the RNG produced at the facility would earn TRECs. However, there is great

[26] Given that the RNG per-Dth pricing is estimated in 2021, one could reasonably assume that the RNG per Dth rate should be adjusted downwards 2 percent per annum for earlier years, relative to 2021, to properly derive the downside for the retail customers.

[27] This estimate is predicated on the assumption that the break-up between special contract customers and retail customers will be the same every day. As discussed later, this provides a very conservative look at the burden faced by Liberty's retail customers.

uncertainty whether the RNG facility would qualify to produce TRECs or that Liberty would be allowed to monetize the TRECs associated with RNG supply sold to retail customers. The Legislature amended RSA 362-F:4, I(e) in 2018 to specify that the combustion of "methane gas" is eligible for TRECs "if the methane gas energy output is in the form of useful thermal energy."[28] Thus, the LOI customers connected to a utility's distribution system would take credit for the thermal energy and associated TREC produced by the RNG they purchased, after receiving certification by the Department. Unresolved, however, is whether Liberty can retain the TRECs produced by opt-in and retail customers and monetize them as envisioned by the Company's request. Definitive resolution of this issue would require an amendment to the Commission's Puc 2500 rules. These rules, which govern how the Commission oversees the state's Renewable Portfolio Standard, do not currently provide guidance about how, when, and where TRECs are produced. Given this uncertainty, I must consider the financial ramifications of no TREC revenues on the financial viability of this project and the effect on Liberty's retail customers.

Q. What are the financial implications if Liberty cannot earn TREC revenues from the RNG produced at this facility?

A. Table 2 shows the same opportunity costs as in Table 1. However, once I allow the value of TRECs to decrease from $4.95 per Dth to $0 per Dth, the RNG supply cost increases from $5.52 per Dth to $10.47 per Dth in Year 1, thus driving up the RNG supply costs.

[28] 2018 N.H. Laws, Ch. 340:4.

Table 2. Opportunity Cost for RNG Supply & Benefits (w/o TRECs)

Years	Opportunity Cost	RNG Supply Cost	Cost / (Benefit)
Nov 2017 - Oct 2018	$ 3,574,972	$ 5,633,729	$ 2,058,757
Nov 2018 - Oct 2019	$ 4,785,687	$ 6,242,340	$ 1,456,653
Nov 2019 - Oct 2020	$ 3,386,338	$ 6,240,817	$ 2,854,479
Nov 2020 - Oct 2021	$ 3,122,370	$ 7,243,180	$ 4,120,810
Nov 2021 - Oct 2022	$ 7,068,369	$ 4,774,570	$ (2,293,799)
Average	**$ 4,387,451**	**$ 6,026,927**	**$ 1,639,380**

Assuming that the RNG costs in the first five years to be $10.47, $10.88, $11.73, $12.64, and $9.66 per Dth and no TREC revenues, the RNG supply costs for 2017/2018, 2018/2019, 2019/2020, 2020/2021, and 2021/2022 would be $5.63 million, $6.24 million, $6.24 million, $7.24 million, and $4.77 million, respectively (*See* also Schedule MLR-1b). As a result, the benefits discussed in the previous exercise become financial burdens to all customers (LOI, Opt-in, and retail customers).

Q. Do you have any further comments on the estimates discussed above?

A. Yes. The Company's limited analysis of the impacts of the RNG supply are a major shortcoming of its proposal, and the more robust analysis I have just provided shows that—when utilizing conservative inputs meant to provide the project with the benefit of the doubt—that the RNG agreement is a cost-effective supply strategy for Liberty's ratepayers, but *only* if assumed values of TRECs are included.

Q. Please explain why the inputs to your analyses above are conservative.

A. First, it is worth noting that the Company assumes that 30 percent of the incremental cost would be borne by Liberty's RNG opt-in customers, which is predicated on the Company's assertion that 70 percent of the RNG will be purchased by LOI customers.[29] This in turn relies on

[29] Direct Testimony of William J. Clark and Mark R.Stevens, Bates 20-21.

an assumption that the percentages of sales attributed to the three customer groups (special contract customers, opt-in customers, and all other retail customers) is constant. These percentages, in reality, are far from constant because, based on the combined profiles of the special contract customers, their needs for natural gas vary significantly by season, month, and day. Thus, the percentages vary significantly from day to day. Therefore, my analysis is based on the combined profiles of the special contract customers that vary significantly by season and by month. Indeed, Attachment WJC/MES-8 shows that while in January the RNG consumption mix of Dths is expected to be 73 percent for the special contract customers and 27 percent for the retail customers, in June that mix will be 49 percent and 51 percent for the special contract customers and Liberty's retail customers, respectively.[30] Since during the high cost winter period more of the RNG will be used by the special contract customers and less of the "baseload" RNG will be part of retail customers' portfolio, the disadvantage for retail customers relying on RNG supply would be greater than what is being estimated above.

Second, the assumed value for TRECs is too generous. Liberty does not currently have the ability to sell TRECs. While the Company suggests a rule promulgation would allow them to do so on behalf of its retail customers, it's highly uncertain that such a rule change will be in place in time per the Company's projected timeline. Additionally, even if the rules are changed relatively quickly to enable Liberty's sale of TRECs on behalf of its retail customers, the TREC-eligible RNG production, at least in the early years, will affect the supply of TRECs in the TREC market enough to reduce TREC prices below the levels assumed by Liberty in its analysis. If the TRECs

[30] Direct Testimony of William J. Clark and Mark R. Stevens, Attachment WJC/MRS-8, Bates 84.

prices drop significantly, the downside for Liberty's retail customers will be significantly more than has been estimated.

Q. Please discuss the basic elements of the forward-looking approach that relies on Dracut's monthly futures to project future spot prices as a proxy for per Dth cost of the most expensive Dths being replaced by the RNG Dths.

A. The forward-looking approach relies on the Company's response to OCA's data request 2-21. The Company provided monthly Forward NYMEX prices and Dracut bases for January 2022 to December 2026. I use the total of the NYMEX price and the Dracut basis as a proxy for the monthly per Dth cost of the most expensive Dths replaced by the RNG Dths. This approach is similar to my opportunity cost approach using historical data from Liberty's COG filings submitted to the Commission over the last five years. As under the previous approach, the RNG price is assumed to start at $10.47 per Dth, and the TREC value is assumed to be $4.95 per Dth beginning in 2022. This starting RNG price is the price Liberty will pay per Dth in the first year of the contract with RUDRAPA even if Liberty were to exercise its purchase option after Year 4.

Q. Please discuss how the contractual RNG supplies are expected to fare in 2022-2026 based on the forward-looking approach.

A. Based on the assumptions that (1) the highest-cost Dths that the RNG Dths will displace will be priced daily at the relevant monthly forwards' price for Dracut, (2) that Liberty will purchase the facility after Year 4, (3) that the RNG rate and the TREC value will equal (at Year 1) $10.47 per Dth and $4.95 per Dth, respectively, and (4) assuming a starting daily RNG production level of 1,474 Dths, the opportunity cost of the displaced Dths is approximately $4.37 million in

Year 1, as shown in Table 3. (*See also* Schedule MLR-2a).[31] To purchase the same daily quantity as RNG supply would cost about $2.97 million (adjusted for assumed TREC values), at a benefit of about $1.4 million to customers.

Table 3. Opportunity Cost for RNG Supply & Benefits (w/ TRECs) (using NYMEX Futures)

Years	Opportunity Cost	RNG Supply Cost	Cost / (Benefit)
2022	$ 4,366,364	$ 2,970,218	$ (1,396,146)
2023	$ 3,402,928	$ 3,402,801	$ (127)
2024	$ 2,779,523	$ 3,606,328	$ 826,805
2025	$ 2,624,687	$ 4,406,944	$ 1,782,257
2026	$ 2,173,595	$ 2,328,186	$ 154,591
Average	**$ 3,069,419**	**$ 3,342,895**	**$ 273,476**

Q. How do your results change if you assume that Liberty does not have the access to TRECs?

A. Table 4 shows the financial impacts if the facility is not eligible to produce TRECs and Liberty does not have the additional revenues. Without the additional revenues from TRECs, the facility is not cost-effective.

Table 4. Opportunity Cost for RNG Supply & Benefits (w/o TRECs) (using NYMEX Futures)

Years	Opportunity Cost	RNG Supply Cost	Cost / (Benefit)
2022	$ 4,366,364	$ 5,633,729	$ 1,267,365
2023	$ 3,402,928	$ 6,242,340	$ 2,839,412
2024	$ 2,779,523	$ 6,240,817	$ 3,461,294
2025	$ 2,624,687	$ 7,243,180	$ 4,618,493
2026	$ 2,173,595	$ 4,774,570	$ 2,600,975
Average	**$ 3,069,419**	**$ 6,026,927**	**$ 2,957,508**

[31] With the exception of TREC values, the inputs listed for Year 1 vary in additional years and are data points provided by the Company in WJC/MRS-4, Bates 99.

Q. Are there issues with your approach that you would like to highlight? If yes, please discuss those issues.

A. Yes. First, both the historical data and the forward-looking approaches rely on the Dracut pricing point to gauge expected pricing for the highest-cost Dths being replaced by the RNG supply and is predicated on the expectation that highest-cost Dths are dictated by the monthly demand/supply situation at the Dracut pricing point. However, the Company does not always rely on the Dracut pricing point for its highest cost Dths.

Second, since both the historical data and the forward-looking approaches use data on Gas Forwards and Futures that are sold monthly (not daily), the approach cannot have the same "daily" granularity that would typically be used, unless I develop a Monte Carlo simulation to capture daily variations based on historical experience with weather.[32] However, the Company failed to provide such granular data in its filing and in responses to discovery requests. In the absence of any modeling of expected weather pattern across days in a month (especially winter months), the analytical findings that follow are less precise. When the OCA asked for this daily data via discovery request OCA 1-3, Liberty did not provide sufficient data.[33] Nevertheless, it is helpful to rely on these approaches as it provides a glimpse into future market expectations, as being borne by the Forwards and Futures market, and its implications for the viability of the RNG purchases.

Q. Based on the "historical" and the "forward-looking" approaches, please summarize your finding on the comparison between the RNG supply cost and the opportunity cost of Dths of the RNG supply.

[32] In Docket DG 17-198, the Company relied on Monte Carlo simulation to model the pricing volatility over winter months using monthly Forwards and Futures data as well as an historical weather data.
[33] *See* Attachment MLR-11 (Company response to OCA 1-3).

A. The two analyses indicate that the RNG Agreement before the Commission for approval is only cost-effective for Liberty's customers under a fairly optimistic scenario with respect to expectations about TRECs. Thus, given the limitations of these analyses, I believe that these methods provide an upwardly biased estimate of the cost associated with the displaced Dths. When I remove the TREC revenues, then the facility is no longer cost-effective in most years. Only during years in which the Dracut point prices are astronomically high is there still a benefit to customers associated with acquiring RNG supply.

III.b. Liberty's Purchase of the RNG Production Facility and Other Concerns

Q. Please summarize your understanding of what the Company has agreed to with respect to the option to purchase of the RNG production facility from RUDARPA.

A. Section 2.10 of the RNG Agreement states that after the completion of Contract Year 4, the Purchaser (the Company) shall have the right and option to purchase the facility from RUDARPA. Also, the Company would also have a right of first refusal with respect to any sale of the facility. If the Company were to exercise this purchase option, it would be subject to approval by the Commission under a separate proceeding.

Q. Do you believe that the option to purchase is reasonable?

A. No. Although I believe that the option to purchase clause included in the amended RNG Agreement is an improvement over the original agreement, because it does not require Liberty to purchase the facility, there still exists significant risk that will ultimately be borne by retail customers if Liberty completes the purchase.

First, there is significant risk regarding whether Liberty can access TREC revenues. Given the current Puc 2500 Rules, there exists the threshold question of whether Liberty can monetize

TRECs on behalf of its end users. Also, if Liberty can sell the TREC, there are significant uncertainties with respect to how TREC values would trend in the future.

Second, there is a degree of uncertainty regarding future RNG production levels from the Bethlehem landfill, as well as any quality considerations that emerge from the initial accommodation of RNG Dths into the Company's distribution system regardless of the amended conditions that RNG supplies must meet specific quality standards.

Third, even under fairly optimistic expectations about TREC values, my analysis shows that the RNG Agreement would be detrimental to Liberty's retail customers regardless of the protections proposed in this second petition. To determine the cost-effectiveness of the RNG Agreement properly, at the minimum, data from the initial years need to be analyzed and should include quality and safety attributes going forward.

Fourth, not trivially, one threshold question is why a gas distribution utility should be allowed to increase its rate base through a purchase of a RNG production facility, particularly when there are other entities that are better able to manage the risks involved with such production facilities, given their expertise.

In short, given the information provided by the Company in its petition and through discovery, the Company has not made a persuasive case for purchase of the production facility. Even though such a purchase would reduce the unit price to $9.66 per Dth in Year 4, it is not sufficient to make the purchase cost-effective given the uncertainty regarding TRECs, the high contract prices, and the uncertainty regarding sales to LOI and opt-in tariff customers. The results of my analysis suggests that not only is the purchase not cost-effective even under fairly optimistic scenarios, it is also fraught with significant uncertainties which may unnecessarily burden future ratepayers with stranded costs. Even if the Commission were to look past the economic impacts

and uncertainties and approve a more limited contract for supply from this facility, I urge the Commission to find that approval of the RNG Agreement is not in the public interest unless the Company holds customers not using the RNG harmless with respect to the incremental costs of RNG as well as costs associated with purchasing the facility.

Q. Do you have any other concerns regarding the Company's proposal?

A. Yes. There exists a number of uncertainties that may leave retail customers with high RNG supply costs. First, the Company has failed to provide any binding purchase agreements with its three LOI customers – only updated correspondence with LOI customers.[34] Also, Liberty has no opt-in tariff customers at this time since it has not submitted a proposal to the Commission, never mind received Commission approval for such a program. Therefore, it is likely that retail customers will have to pay for 100 percent of the costs associated with the RNG Agreement. As mentioned earlier, after assuming no sales to LOI customers, an impact of RNG supply on the COG for retail customers would be $0.024 per therm or $0.24 per Dth. This is a 240 percent increase from the Company's estimate of cost impact of $0.007 per therm or $0.07 per Dth.

Second, retail customers would also have to pay for the cost of decompression equipment at specified delivery points. Specifically, the Company states that it will construct, own, operate, and maintain certain required infrastructure at Liberty-owned receipt points. Those LOI customers requiring independent decompression equipment and line extensions will be charged for Liberty's ownership and operation of the infrastructure in accordance with Liberty's Service and Main Extension Policy. If Liberty fails to enter into binding purchase agreements with LOI customers and enroll other customers in an opt-in tariff, retail customers will have to pay these costs. The

[34] See Attachment MLR-7, (Company Response to Energy 3-11 Supplemental).

Company estimates this infrastructure to cost in the range of $750,000 to $850,000 per decompression facility, and that it may need up to three decompression facilities.[35]

IV. CONCLUDING REMARKS AND RECOMMENDATIONS

Q. Before providing your recommendation, please summarize the findings from your analyses above.

A. Even after applying the most conservative assumptions, such as Liberty seeking the most expensive alternative supply, it being able to monetize TRECs, and the facility meeting production forecasts, this RNG Agreement would not be cost-effective during most years. The only years during which this RNG agreement would be cost-effective would be when wholesale gas prices are astronomically high. Regardless of these findings, the RNG Agreement will introduce risks that may be borne entirely by retail customers. Specifically, the Company has not provided binding purchase agreements from its supposed LOI customers or established an opt-in tariff program, which would leave retail customers to pay for expensive RNG supply and decompression facilities.

Q. Given your findings discussed above, what is your recommendation?

A. I recommend that the Commission reject the RNG Agreement between Liberty and RUDARPA. If the Commission approves the RNG Agreement, I urge the Commission not to allow Liberty to expand its rate base through the purchase of the RNG facility. At the very least, the Commission should make clear at this juncture that it will require Liberty to hold harmless its retail customers not opting to use RNG for any and all costs associated with the RNG contract, most certainly including any purchase of the proposed RNG facility.

[35] *See* Attachment MLR-8 (Company Response DOE 1-2).

Q. Does this conclude your testimony?

A. It does.