

STATE OF NEW HAMPSHIRE

PUBLIC UTILITIES COMMISSION

DG 18-140

In the Matter of:
Liberty Utilities (EnergyNorth Natural Gas) Corp., d/b/a Liberty Utilities
Renewable Natural Gas Supply and Transportation Contract

Direct Testimony

of

Stephen Eckberg
Utility Analyst, Sustainable Energy Division

February 22, 2019

1 **I. Introduction**

2 **Q. Please state your name, business address and position.**

3 A. My name is Stephen R. Eckberg. I am employed by the New Hampshire Public
4 Utilities Commission (PUC) as a Utility Analyst in the Sustainable Energy
5 Division. The PUC maintains its office at 21 South Fruit Street, Suite 10,
6 Concord, NH 03301. I include as Attachment SRE-1 to my testimony a statement
7 of my education and experience.

8 **Q. Have you previously testified before the Commission?**

9 A. Yes. I have testified on behalf of my former employer, the New Hampshire Office
10 of the Consumer Advocate on numerous occasions. I have previously presented
11 live testimony before the Commission as a member of Staff but this is the first
12 pre-filed direct testimony I have filed as a member of Staff. A listing of the
13 dockets in which I have filed testimony is provided in Attachment SRE-1.

14 **Q. Is yours the only testimony being provided by Commission Staff in this**
15 **Docket?**

16 A. No. Testimony is also being provided by Stephen Frink, Director of the Gas and
17 Water Division and Randall Knepper, Director of the Safety Division.

18
19 **I. Summary of Testimony**

20 **Q. Please summarize the purpose of your testimony.**

21 A. The purpose of my testimony is to provide my analysis and comments on the
22 Company's proposal to enter into a supply and transportation contract for

1 renewable natural gas (RNG) from a project developer at a landfill in Bethlehem,
2 NH. The developer, RUDARPA, will install necessary equipment to collect,
3 clean, and compress the RNG, sell it to Liberty as compressed RNG, and transport
4 the compressed RNG via truck to one or more injection points for Liberty to serve
5 one or more groups of its customers.

6 **Q. What aspects of the Company's proposal will you address in your testimony?**

7 A. I will primarily focus on the aspects of the Company's proposal that are related to
8 the "renewable" nature of the processed landfill gas. This will include:

- 9 1. whether the RNG fuel would or could qualify as a renewable fuel under New
10 Hampshire's Electric Renewable Portfolio Standard (RPS) statute RSA 362-F;
- 11 2. whether use of the fuel would qualify the Company or its customers to
12 produce Class I Thermal Renewable Energy Certificates (TRECs);
- 13 3. what a reasonable or appropriate value would be for any such TRECs to
14 include in the Company's financial analysis of its proposal in this docket.

15
16 **II. Detailed Discussion of Issues**

17 **Q. You identified your first issue as whether the RNG fuel would qualify as a**
18 **renewable fuel. Would you please address that in more detail?**

19 A. Senate Bill 577 (SB 577) of the 2018 Legislative Session was signed into law by
20 the Governor on June, 28, 2018, and became effective on July 1, 2018. This bill
21 included language which clarified that methane gas used to produce useful

1 thermal energy is a fuel source eligible for TRECs if the project under
2 consideration meets other applicable statutory and administrative requirements.

3 **Q. What are the other applicable statutory and administrative requirements**
4 **for such projects?**

5 A. The Company's proposal is that the RNG would be injected directly into its
6 distribution system and used by customers as a fuel source. The relevant
7 requirements, therefore, are those that relate to TREC project eligibility and
8 certification under current statute and rules. These include the details of REC
9 Class definitions in RSA 362-F:4 and related Puc 2500 rules, which contain,
10 among other things, the procedures for certification, metering requirements to
11 quantify useful thermal energy output to the end use customer, verification, and
12 reporting by an independent monitor of useful thermal energy output. These
13 current rules have been developed by the Commission under authority granted in
14 RSA 362-F:13, VI-a.

15 **Q. Would you please identify which parts of the Puc 2500 rules are relevant to**
16 **the Company's proposal and your testimony?**

17 A. First, I'd like to identify the parts of the Company's proposal having to do with
18 Class I Thermal RECs in order to more clearly connect those to the parts of the
19 Puc 2500 rules which apply. The Testimony of Clark and Saltsman at Bates page
20 11 line 20 through Bates page 12, line 1 states "EnergyNorth plans to reduce the
21 COG [cost of gas] for customers by monetizing the associated TRECs. The
22 Company proposes to aggregate and sell the TRECs through the established

1 marketplace and credit 100% of the proceeds back to customers through the
2 COG.”

3 **Q. Does the Company provide an estimated price impact from this sale of**
4 **TRECs on the COG in its proposal?**

5 A. The Company states “If EnergyNorth were to receive the median estimated
6 TREC value of \$0.43 per therm [\$4.32 per Dth¹] and credit that amount back to
7 customers, RNG would become the least-cost option for incremental supply
8 currently available to EnergyNorth's customers on an annual basis. *Since*
9 *November 2011, the EnergyNorth Cost of Gas (COG) has averaged \$0.6237 [per*
10 *therm]. If EnergyNorth were to receive the median TREC estimate of \$0.43 [per*
11 *therm], the delivered price for RNG would be \$0.5560.” [emphasis added]. See*
12 *testimony of Clark and Saltsman at Bates 13, lines 7-12.*

13 **Q. You have added emphasis to a part of the Company's testimony which you**
14 **quoted above. Why is that?**

15 A. The Company's statement here is important because it demonstrates that TRECs
16 must have a certain value before the cost of RNG becomes less than that of other
17 supply options as reflected in the stated average COG² of \$0.6237. As I will

¹ The Company changed this value to \$4.50/Dth in discovery response Staff 1-5. I use the \$4.50 value throughout my testimony. The change is not material for my purposes and does not impact my analysis, comments, or conclusions. See Attachment SRE-3.

² See Testimony of Staff witness Stephen P. Frink in this docket for a discussion of the price relationship between Cost of Gas and actual Gas Supply or commodity cost. Mr. Frink states that Liberty's commodity cost is about 72% of the full Cost of Gas which includes other expenses and amounts in addition to the cost of the actual commodity. See testimony of Frink, page 9.

1 discuss later in my testimony, the future value of TRECs does not provide a
2 sufficiently reliable foundation upon which to build the financial success of this
3 project.

4 **Q. Is it your understanding of the Company's proposal that it would own the**
5 **TRECs created by injecting RNG into its distribution system causing their**
6 **customers to burn the RNG and produce useful thermal energy, then the**
7 **Company will sell the TRECs and return the value to customers?**

8 **A.** My understanding of the proposal is that the Company would own TRECs for
9 only *part* of the RNG volume that the Company will purchase, inject into its
10 distribution system and provide to its customers. The testimony of Clark and
11 Saltsman states at Bates page 10, line 17 through Bates page 11, line 4, that

12 “EnergyNorth secured Letters of Intent (LOIs) from two customers [...]
13 In both LOIs the customers agree to execute special contracts for delivery
14 of RNG whereby they will pay the actual cost of the RNG in their COG
15 portion of the gas bill. All other charges [...] will be at standard tariff
16 rates applicable to each customer’s rate classification along with any
17 adjustments to these charges resulting from subsequent approved rate
18 proceedings. These customers will also own any State of New Hampshire
19 environmental attributes such as Thermal Renewable Energy Certificates
20 (“TRECs”) that may be available to them at the time.”

21 Further, “[...] it is anticipated that these [LOI] customers will use 44% of
22 the annual production of the [RNG] facility.”
23

24 *See* Clark and Saltsman, Bates page 11, lines 8-9. As stated, the Company
25 proposes to retain and monetize the TRECs from roughly 56% of the RNG and
26 the two special contract customers would realize the possible TREC value
27 associated with the use of 44% of the RNG injected directly into Liberty’s
28 distribution system.

1 **Q. Do the Puc 2500 Rules currently provide the opportunity for the Company**
2 **and the two customers who have signed LOIs to be certified to produce**
3 **TRECs as the Company proposes in its filing?**

4 A. No, they do not. The Company's proposal represents a significant departure
5 from the way current rules allow for thermal renewable energy projects to
6 qualify to produce TRECs. Generally, under current rules, the source which
7 produces the useful thermal energy is the entity that is eligible to be certified to
8 produce thermal RECs. In simpler terms, if you burn an eligible renewable fuel
9 such as wood chips, wood pellets, or RNG and produce useful thermal energy to
10 heat your building, you – the user of the renewable fuel would be eligible to
11 apply for certification to produce TRECs. In this case, the Company's proposal
12 is for the Company itself – the *provider of the renewable fuel*, rather than the
13 consumer of that fuel who produces useful thermal energy to qualify for TRECs.
14 Further, the company's proposal also states that the two customers who have
15 signed non-binding LOIs would retain the rights to all renewable properties
16 associated with consumption of the RNG. I presume this to mean that these
17 special contract customers would intend to qualify to produce TRECs which they
18 would sell to offset their higher cost of buying the RNG.

19 **Q. Is there a problem with these special contract customers being eligible to**
20 **produce TRECs and monetize their value?**

21 A. The special contract customers would be burning fuel that is only partly
22 renewable, based on the fact that RNG would be injected into the Company's

1 distribution system where it would mix with other pipeline natural gas supplies
2 also travelling through the system to those, and other, customers. Therefore, the
3 special contract customers are burning fuel that is only partly renewable –
4 assuming the RNG can travel through the distribution system to their physical
5 location. Presumably then, either the special contract would have the customer
6 pay extra for the renewable characteristic of the gas for only a portion of the gas
7 they receive and earn corresponding TRECs for a portion of their gas
8 consumption (the renewable portion in the pipeline mix), or the customer would
9 burn gas that is only partly renewable but would receive TRECs corresponding
10 to all the gas they burn. Each of these scenarios presents unique challenges
11 which current Puc 2500 rules do not address. The rules would, therefore, need to
12 be amended if either TREC scenario were to be realized.

13 **Q. Has the Company proposed any rule changes to address its proposal in this**
14 **docket?**

15 **A.** In response to discovery the Company has provided a draft of proposed rule
16 changes intended to address issues related to TRECs that this filing creates.

17 **Q. Have you reviewed the Company's proposed rule changes? If so, do you**
18 **find that the proposed changes address your concerns?**

19 **A.** I have reviewed the Company's initial proposal as submitted. I find there are
20 several significant challenges with the proposal and I have serious concerns
21 about whether or not it will be possible to amend the administrative rules in such
22 a way that both aspects of the Company's proposal would work.

1 **Q. Could you please clarify what you mean by “both aspects” of the**
2 **Company’s proposal?**

3 A. The first aspect of the proposal I refer to is that the Company could earn TRECs
4 by injecting RNG into its distribution system and claim production of TRECs by
5 virtue of their customers burning the renewable fuel. In the current proposal,
6 that would be TRECs corresponding to 56% of the injected RNG. These TRECs
7 would be sold and their value returned to all customers through the COG. The
8 second aspect is the special contract customers who, the Company suggests,
9 could receive TRECs through an economic transaction rather than by actually
10 burning an all renewable fuel. These TRECs would correspond to 44% of the
11 injected RNG. Both of these aspects of the Company’s proposal are departures
12 from the current rules and therefore there is risk as to whether the proposals will
13 be realized as a result of potential TREC rule changes during that process.

14 **Q. Please describe in more detail your concerns with the Company's proposed**
15 **Puc 2500 rule changes addressing TREC eligibility.**

16 A. The Company’s proposed rule changes address two separate situations, which I
17 have described above. First, two customers who have signed non-binding LOIs
18 would, in effect, claim they are burning 100 percent RNG when, in fact, they
19 may be burning no actual RNG. Current TREC rules require eligible facilities to
20 be able to accurately document how much renewable fuel they are using. For
21 example, the University of New Hampshire’s (UNH) Combined Heat and Power
22 (CHP) plant, which burns a mix of landfill gas, which it receives via a dedicated

1 pipeline from the Rochester landfill, and “regular” pipeline natural gas. The
2 UNH CHP plant meters the two gases so the percentage of eligible renewable
3 landfill gas that is burned can be calculated. Only energy (electricity or heat)
4 that is produced from the renewable fuel is eligible to be counted toward REC
5 production. Liberty’s LOI customers represent a significant departure from
6 current protocol regarding TREC eligibility.

7 Second, the Company’s proposal to earn and monetize the TREC value
8 corresponding to the roughly 56% of RNG that will be delivered in a diluted mix
9 with regular pipeline natural gas to non-LOI customers raises some challenges.

10 If the RNG is injected at the Concord Broken Bridge site, then it is reasonable to
11 ask what subset of the Company’s customers should be considered as possible
12 consumers of the RNG mix? For example, should it be only customers who are
13 “downstream” of the injection point or should it be all customers on Liberty’s
14 distribution lines – even those who would likely never burn even a single RNG
15 methane molecule due to the distribution system configuration and operation?

16 In addition, current statute and rules state that a facility must have begun
17 operation after January 1, 2013 pursuant to RSA 362-F:4, I(b), (g) and (l) to be
18 eligible to produce TRECs. Thus, as the Company proposes in its draft rule
19 changes, it would need to identify new customers who first took service after that
20 date (not new customers at a pre-existing service location) and customers with
21 new equipment placed in service after that date.

1 Finally, the Company proposal would require tracking volumes of RNG injected
2 into the system during a defined period of time (e.g. one month) and
3 simultaneously tracking the corresponding total gas delivery during that time
4 period in order to calculate the percentage of gas burned to produce useful
5 thermal energy that is renewable. These latter two tasks could present significant
6 administrative burdens. In the case of the tracking gas amounts and calculating
7 percentages, these represent ongoing tasks that would need to be performed
8 regularly and with great accuracy so as to correctly calculate the TRECs
9 produced.

10 **Q. Do the issues you've identified regarding TREC eligibility mean that the**
11 **Company's proposal will not work?**

12 A. No. However, these issues represent significant hurdles in the Company's
13 proposal that revised Puc 2500 rules must address in order to facilitate the TREC
14 production and corresponding realization of value. It is not clear at this time
15 whether all of these issues can be successfully resolved. There is the possibility,
16 therefore, that the Company's proposal, which includes an estimated value for
17 TRECs in determining the financial viability of the project, is premature.

18 **Q. You stated earlier that the third issue you planned to address concerns the**
19 **reasonable value for TRECs that the Company should include in its**
20 **financial analysis. Would you please address that issue now?**

21 A. The Company provided a value of \$4.50 per Dekatherm (Dth) in response to
22 discovery. This value is equivalent to \$15.35 per MWh. I include, as

1 Attachment SRE-2, a table which provides a conversion between REC values
2 expressed in these two units of measure. The per MWh price is the more usual,
3 or standard, way to express REC prices. Further, this is how RECs are priced in
4 the market when they are bought and sold. In the case of TRECs in New
5 Hampshire, the useful thermal energy that is produced is measured in BTUs
6 which can be converted to kWh and then to MWh.

7 **Q. Where in the Company's filing is this value shown?**

8 A. In response to discovery, the Company provided a spreadsheet³ that shows its
9 TREC estimates and how the Company offsets the "Delivered COG," which is
10 the RNG delivered price from RUDARPA for the fuel it proposes to inject into
11 its distribution system. I include this as Attachment SRE-3 to my testimony.
12 The last three columns on the right show "Delivered COG," "TREC Estimate,"
13 and "COG w/TREC." As can be seen by the values shown in the "TREC
14 Estimate" column, the Company has used the value of \$4.50 per Dth (\$15.35 per
15 MWH) for all years in its analysis. I will comment on this later.

16 **Q. Can the price of a TREC vary?**

17 A. Yes, it certainly can. Practically speaking, there is a "ceiling price" on TRECs
18 and on other REC classes as well. This is called the Alternative Compliance
19 Price (ACP) and is the maximum that an electric supplier with an RPS obligation
20 would pay per MWH of energy delivered to its end-use customers. ACP rates

³ Liberty's original response Attachment was provided as CONFIDENTIAL but all material claimed as confidential has been redacted in the version provided here.

1 are set by statute and adjusted annually using the Consumer Price Index. ACP
2 rates are published on the Commission's website.⁴ The 2018 compliance year
3 ACP for TRECs is \$25.69. The adjusted value for the 2019 compliance year is
4 \$25.97. This can be considered the ceiling price for TRECs. When there are not
5 enough RECs in the marketplace to supply the RPS requirement, compliance
6 entities would pay no more than this amount per MWh of electricity delivered in
7 lieu of purchasing RECs in the market.

8 **Q. How does the TREC value the Company used in its filing compare to the**
9 **current price of a TREC?**

10 A. That's not a question that is easily answered. The price of RECs in the market is
11 not transparent. The REC market is not comparable to the stock market where
12 buy and sell prices are published for any observer to see. In fact, REC prices –
13 the price paid for a particular batch of RECs from a supplier by a utility or
14 competitive supplier – are generally considered confidential information.
15 We can get some indicative market information from publicly available
16 information that tells us what percent of the annual RPS requirement for TRECs
17 was met by RECs available in the market and what percent was met by paying
18 the ACP value for the remainder of the compliance requirement. Generally
19 speaking, the more RECs that are available in the market, the lower the price will
20 be in comparison to the ACP.

⁴ ACP rates http://puc.nh.gov/Sustainable%20Energy/Renewable_Portfolio_Standard_Program.htm

1 In 2017 roughly 10,530,000 MWh of electricity was sold by distribution utilities
2 (default energy service) and competitive electric suppliers – energy which was
3 subject to RPS compliance requirements. In 2017, the RPS Class I Thermal
4 requirement which was one percent (1%) or 105,300 TRECs. Thirty percent
5 (30%) of that TREC requirement was met by the purchase and retirement of
6 TRECs. The remaining seventy percent (70%) of the requirement was met by
7 entities paying the ACP rate for each corresponding MWh of requirement. Given
8 this somewhat low fraction of RPS compliance by available TRECs, we can
9 presume that the average price per REC was relatively high or close to the ACP
10 rate. As the supply of TRECs increases relative to the RPS requirement, we can
11 expect the price to come down in comparison with the ACP rate.

12 **Q. Is the value of \$15.35 per MWh for TRECs that the Company used a**
13 **reasonable value?**

14 **A.** I believe that this value may be reasonable in the very short term – perhaps only
15 for the first two years covered by the Company’s financial model (see
16 Attachment SRE-3). The price of TRECs is likely to change over time as the
17 market continues to develop with other renewable energy thermal projects
18 coming online in addition to the supply of TRECs that the Company wishes to
19 produce as a result of its filing in this docket. When a comparatively larger
20 fraction of the annual TREC requirement can be met through the purchase of
21 TRECs rather than through the payment of the ACP rate the price of TRECs will
22 likely decline.

1 **Q. When would you expect the Company's value for TRECs would no longer**
2 **be reasonable?**

3 A. While I can only conjecture at this point, there are some factors that strongly
4 suggest that the use of the Company's value of \$15.35 per MWh overstates the
5 TREC value for anything beyond the near term. Given the values I provided
6 above regarding the supply of TRECs (in 2017 only 30% of the TRECs needed
7 for RPS compliance were available) I agree that the Company's value is not
8 unreasonable in the near term. However, the Company's own proposal in this
9 docket states that the quantities of RNG to be provided via the minimum annual
10 supply quantity (MASQ) guarantee in the contract with RUDARPA is 490,000
11 Dth in years 1 through 5, 375,000 Dth in years 6 through 10 and 270,000 Dth in
12 years 11 through 17. If, as I understand the Company's proposal, all of this RNG
13 would be eligible to produce TRECs either by its special contract (LOI)
14 customers or by the Company itself, I estimate that the RNG could produce
15 100,527 RECs annually in years 1-5; 76,912 RECs in years 6-10; and 55,377
16 RECs in years 11-17. Clearly, this RNG project represents a significant increase
17 in the supply of New Hampshire TRECs and is likely to have a corresponding
18 downward impact on the market price of TRECs.

19 **Q. Are there other factors or projects that should be considered when looking**
20 **at future TREC values?**

21 A. There is another large biomass thermal project that has been in the news recently
22 that could also have a significant impact on the TREC market if it comes online

1 as planned in 2025. Specifically, the Union Leader recently reported that
2 Dartmouth College is planning to change its current steam heat plant to a
3 biomass forced hot water system.⁵ As reported, the project would displace the
4 burning of about 3.5 million gallons of #6 fuel oil. If this energy were provided,
5 instead, by biomass (e.g. wood chips) the system might produce approximately
6 100,000 TRECs annually.

7 **Q. What would be the cumulative impact of Liberty's RNG project and this**
8 **Dartmouth College project?**

9 A. It is difficult to predict what the actual price impact on the TREC market would
10 be. I have, however, produced a chart, included as Attachment SRE-4, which
11 shows elements of the TREC market supply, including: total estimated energy
12 sales subject to RPS obligations; the annual RPS obligation for TRECs; TRECs
13 produced from current installed biomass thermal systems – a number which will
14 increase annually as market actors continue to expand the installed project base;
15 TRECs anticipated to enter the market if the Liberty RNG project proceeds;
16 TRECs anticipated in the market from the Dartmouth College project; and the
17 RPS obligation balance (total TREC obligation less RECs in the market). The
18 chart shows that as early as 2020 there may be more TRECs in the market than
19 required. This situation would certainly create a strong downward impact on the
20 price of RECs and would, I believe, mean that Liberty's value of \$15.35 per

⁵ https://www.unionleader.com/news/environment/dartmouth-working-on-site-for-million-power-plant/article_234b73fd-e57b-5472-a2d8-ffef198e8c56.html

1 TREC is too high. In other RPS compliance classes where the market supply
2 matches the RPS requirement we see market forecasts of REC prices that are
3 roughly 25% of ACP in classes.⁶ If a similar situation occurs in the TREC
4 market when it reaches a point of full supply the TREC price may likewise fall
5 to, or below, 25% of the ACP value. This would suggest a value of \$6.50 per
6 MWh is possible under such market conditions. To be clear, Attachment SRE-4
7 shows that this point of full supply in the TREC could occur as soon as 2020
8 under the Company proposal.

9 **Q. What is your conclusion based on these market conditions?**

10 A. I conclude that the Company's use of the value of \$15.35/MWh or \$4.50/Dth
11 over the full 20 years of their financial model presented in Attachment SRE-3 is
12 too high. Given that it is reasonably likely that a "full supply" market situation
13 could occur for TRECs as early as 2020 as shown in Attachment SRE-4, the
14 Company should reduce the value it uses for TRECs in its financial model after
15 2020 (Year 2 in Attachment SRE-3) to not more than \$6.40/MWh or
16 equivalently, \$1.88/Dth (\$0.188/therm).

17 **Q. If the Company were to reduce the TREC value it uses in its model what**
18 **impact would that have?**

⁶ See "2018 Review of New Hampshire Renewable Portfolio Standard: Alternative Scenario Analysis" by Sustainable Energy Advantage available at http://puc.nh.gov/2018-NH-RPS-Scenario-Analysis-Report_Final.pdf

1 A. If after the second year of operation, the “TREC Estimate” value were reduced
2 from \$4.50 per Dth to \$1.88 per Dth then beginning in year three of the model,
3 the “COG w/TREC” value in the right most column of Attachment SRE-3 would
4 change from \$5.42 to \$8.04/Dth or \$0.80/therm. Recall that the Company’s
5 testimony states that “*Since November, 2011 the EnergyNorth Cost of Gas*
6 *(COG) has averaged \$0.6237...*”

7 **Q. What do you conclude about the Company’s proposal as filed?**

8 A. I conclude that the Company’s RNG proposal contains numerous types of risk
9 regarding the eligibility of both the Company and the special contract customers
10 to qualify for TRECs based on how the RNG is proposed for use. Further, I
11 conclude that the Company’s value for TRECs used in its financial analysis is
12 too high and should be revised downward as discussed above. Finally, the
13 testimony of Stephen Frink will make use of the TREC value I suggest above in
14 his revised version of the Company’s financial model and will provide an overall
15 recommendation to the Commission on the Company’s proposal.

16 **Q. Does that conclude your testimony?**

17 A. Yes.