COMMOMWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts, for Approval of a Firm Transportation Agreement and Related Contracts, pursuant to G.L. c. 164, § 94A.

Direct Testimony of Elizabeth A. Stanton
On Behalf of Conservation Law Foundation

Regarding Consistency of Petition with Company Portfolio Objectives, Adequacy of Alternatives Considered, and Consistency with State Environmental Policies

February 14, 2018
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1. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, title, and employer.
A. My name is Elizabeth A. Stanton, and I am the Director and Senior Economist of the Applied Economics Clinic of the Global Development and Environment Institute at Tufts University, 44 Teele Avenue, Somerville, MA 02144.

Q. Please describe the Applied Economics Clinic.
A. The Applied Economics Clinic is a 501(c)(3) non-profit consulting group housed at Tufts University's Global Development and Environment Institute. Founded in February 2017, the Clinic provides expert testimony, analysis, modeling, policy briefs, and reports for public interest groups on the topics of energy, environment, consumer protection, and equity, while providing on-the-job training to a new generation of technical experts. The Applied Economics Clinic's mission is: (1) To provide low cost and (when we receive foundation grants) pro bono expert services to public interest groups on the topics of energy, environment, consumer protection, and equity; (2) To train the next generation of expert technical witnesses and analysts by providing applied, on-the-job learning experiences to graduate students in related fields; and (3) To work proactively to support and promote diversity in the fields of economics, engineering, math and sciences.

Q. Please summarize your professional and educational experience.
A. I have more than 17 years of professional experience as an environmental economist. I have submitted expert testimony in Massachusetts, Vermont, New Hampshire, Illinois, Minnesota, Indiana, and several federal dockets; and I have authored more than 140 reports, policy studies, white papers, journal articles, and book chapters on topics related to energy, the economy, and the environment.

Before founding the Applied Economics Clinic, I was a Senior Economist at Synapse Energy Economics where I led studies examining environmental
regulation, cost-benefit analyses, and the economics of energy efficiency and renewable energy.

Prior to joining Synapse, I was a Senior Economist with the Stockholm Environment Institute’s (SEI’s) Climate Economics Group, where I was responsible for leading the organization’s work on the Consumption-Based Emissions Inventory (CBEI) model and on water issues and climate change in the western United States. While at SEI, I led domestic and international studies commissioned by the United Nations Development Programme, Friends of the Earth-U.K., and Environmental Defense.

My articles have been published in *Ecological Economics*, *Renewable Resources Journal*, *Environmental Science & Technology*, and other journals. I have also published books, including *Climate Economics: The State of the Art* (Routledge, 2013), which I co-wrote with my colleague at Synapse, Dr. Frank Ackerman. I am also coauthor of *Environment for the People* (Political Economy Research Institute, 2005, with James K. Boyce) and coeditor of *Reclaiming Nature: Worldwide Strategies for Building Natural Assets* (Anthem Press, 2007, with Boyce and Sunita Narain).

I earned my Ph.D. in economics at the University of Massachusetts-Amherst, and have taught economics at Tufts University, the University of Massachusetts-Amherst, and the College of New Rochelle, among others. My curriculum vitae is attached as Exhibit CLF-EAS-2.

**Q. On whose behalf are you testifying in this case?**

**A.** I am testifying on behalf of the Conservation Law Foundation.

**Q. Have you testified previously in this docket?**

**A.** No, I have not.
Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide an independent, third-party review of the Petition filed by Bay State Gas Company d/b/a Columbia Gas of Massachusetts (Columbia or the Company) to assess its consistency with the Company’s portfolio objectives, the adequacy of alternatives considered, and its compliance with the Massachusetts Global Warming Solutions Act (GWSA).

Q. How is your testimony organized?

A. My testimony is organized as follows:

1. Introduction and Qualifications.
2. Consistency with the Portfolio Objectives Established in the Company’s Supply Plan.
3. Comparison to the Range of Alternatives Reasonably Available to the Company and its Customers.

2. CONSISTENCY WITH THE PORTFOLIO OBJECTIVES ESTABLISHED IN THE COMPANY’S SUPPLY PLAN

Q. Have you reviewed the most recently approved Forecast and Supply Plan (FSP) for Columbia?

A. Yes, I have reviewed DPU 15-143, Columbia’s FSP filed in September 2015 and approved by the Department in September 2016 (FSP 2015).

Q. Are you aware of any update to FSP 2015?

A. Columbia has filed a new FSP, DPU 17-166 (FSP 2017). Columbia’s FSP 2017 has not yet been approved.

Q. Have you reviewed FSP 2017?

A. I have reviewed G tables in Appendix 3 of Columbia’s FSP 2017.

Q. Please describe the portfolio objectives established in Columbia’s FSP 2015.
A. In its FSP 2015, Columbia states that its resource strategies “are in the best interests of its customers and result in a reliable, best-cost, long-range supply and capacity portfolio to meet the Company’s forecasted firm demand.” (p.1).

Q. Have you reviewed Columbia’s Initial Filing in this docket (DPU 17-172)?

A. Yes.

Q. Please describe the portfolio objectives established in Columbia’s 2017 Initial Filing.

A. The testimony of Columbia witness Michael D. Anderson describes Columbia’s portfolio objectives as follows:

> The primary goal of the Company’s resource planning process is to acquire a least-cost portfolio of gas-supply resources, which can reliably deliver necessary supplies to the Company’s distribution system, particularly during times of peak demand including on design day. This least-cost objective is balanced with considerations of reliability, flexibility and diversity. Pursuit of a least-cost portfolio ensures that the Company will be positioned to provide its customers with reliable service at a reasonable cost. (17-172, Ex. CMA-MDA-1, p.51)

Q. Do Columbia’s portfolio objectives depend on increased supply capacity?

A. Columbia’s portfolio objectives do not necessarily depend on increased supply capacity. Columbia’s portfolio objectives depend on the selection of the most cost-effective set of supply and demand resources that together are sufficient to meet natural gas demand. Whether or not this optimal set of resources includes higher supply capacity is a matter to be established through modeling and demonstrated in the Company’s filings to the Department.
Figure 1 presents Columbia’s expected “shortfall” as predicted in its past filings to the Department. The Company’s “shortfall” (or “deficiency”) is the difference between its expected natural gas requirements (or needs) in a given year and its expected gas supply. The shortfalls shown in Figure 1 are for the “design day” and are given as a percentage of the same year’s expected design day gas requirements.

In reviewing Figure 1, Columbia’s past planning has typically balanced requirements with resources. Expected shortfalls for 2018/2019 were 2.1 percent of its total requirements for that year in the Company’s FSP 2015, whereas FSP 2017 assumed that shortfall would be met by contracts with NED, now canceled. The materials provided in 17-172 do not include comparable G-23 tables from which these same data could be drawn relevant to modelling performed for the current petition.
Q. Does Columbia expect its proposed contracts with TGP, PNGTS, and Repsol for new supply to resolve its shortfall?

A. Instead of providing the G tables associated with the Company’s modeling for 17-172, Witness Michael D. Anderson very briefly describes the results of the Company’s modeling in text (p.35). Mr. Anderson asserts that the Company’s proposed contracts with TGP, PNGTS, and Repsol will resolve its shortfall, but does not provide materials sufficient to a third-party review:

The Proposed TGP Contract would eliminate an existing Design Day and Design Seasonal deficiency and projected growth of each through the 2028-29 winter season. (CMA-MDA-1 p.16)

Based on the approved 2015 F&SP, the Company is currently capacity deficient both on a design day and design season in markets served by Tennessee. (CMA-MDA-1 p.35)

Mr. Anderson’s text description of Columbia’s expected shortfall (incremental peaking resources) in the Base Case design day and Base Case normal year winter season is depicted in Figure 2 and Figure 3:
Design day shortfalls reported by Mr. Anderson do not appear to be consistent with either FSP 2015 or FSP 2017. Without the appropriate G tables to review for 17-172 it is impossible to adequately review these unusual findings. Some explanation of the large deviation from previous expectations seems incumbent on the Company.
Normal day winter shortfalls reported by Mr. Anderson conform with 2017/2018 results from FSP 2017, which assumed this year’s supply in the absence of NED contacts. In the ten years that follow, Mr. Anderson reports a forecasted doubling in Columbia’s requirements (p.38). Again, without the appropriate G tables and detailed forecast information for 17-172 it is impossible to adequately review these unusual findings.

Q. **Does this increased supply have other impacts on Columbia’s portfolio objectives?**

A. Recall that Columbia’s portfolio objectives depend on selection of the most cost-effective set of supply and demand resources that together are sufficient to meet natural gas demand. Columbia’s proposed contracts with TGP, PNGTS, and Repsol for new supply appear to resolve its shortfall by increasing the resources needed to meet natural gas demand. In addition, the Company contends that its proposed contracts with TGP, PNGTS, and Repsol for new supply will reduce costs,
rendering the set of supply and demand resources that includes these contracts the most cost-effective choice:

> The Proposed Contracts are the lowest cost, most effective, reliable and efficient alternatives to meet existing and projected incremental design day and seasonal requirements to serve the Company’s Springfield and Lawrence divisions off the Tennessee system. (17-172, Petition, p.4)

> The proposed contracts represent the only opportunity for the Company to utilize existing pipeline infrastructure and footprints to satisfy customer requirements in the Company’s Springfield and Lawrence divisions off the Tennessee system. The proposed contracts will replace the city-gate deliveries that the Company originally intended to replace through firm supply deliveries utilizing capacity under the NED project. To replicate the supply reliability and price stability of the NED project, the proposed contracts provide additional capacity upstream of Tennessee for access to reliable, competitively priced natural gas supplies at the Dawn Hub and the Canaport LNG terminal with a primary delivery to Tennessee at the Dracut receipt point. The proposed precedent agreements will provide access to less expensive, less volatile gas supplies than are currently available to the Company’s resource portfolio. (17-172, DPU 1-16)

Q. Are Columbia’s proposed contracts with TGP, PNGTS, and Repsol for new supply necessary to meet the Company’s forecast of customer needs in future years?

A. The materials filed by the Company in 17-172 do not provide information sufficient to determine whether or not Columbia’s proposed contracts with TGP, PNGTS, and Repsol for new supply are necessary to meet the Company’s forecast of customer needs in future years.
Q. Does Columbia demonstrate that its proposed contracts with TGP, PNGTS, and Repsol for new supply result in the least-cost supply and demand resource mix?

A. No. Columbia does not provide sufficient evidence to demonstrate that its proposed contracts with TGP, PNGTS, and Repsol for new supply result in the least-cost supply and demand resource mix.

Q. What additional evidence would Columbia need to present to demonstrate that its proposed contracts with TGP, PNGTS, and Repsol for new supply result in the least-cost supply and demand resource mix?

A. Columbia uses the SENDOUT model to identify the least-cost portfolio of supply and demand resources for its customers:

> Sophisticated cost analysis is performed utilizing SENDOUT®, which evaluates the cost impact of changes to CMA’s portfolio by simulating the daily dispatch of available resources under specified conditions over a defined period of time. SENDOUT® also possesses the capability to size a least-cost incremental resource or package of resources based on the total cost impact upon the existing portfolio, including fixed costs. CMA conducts cost analyses based upon the base, high and low customer requirements forecasts, as well as under design conditions.

> (Columbia FSP 2015, p.24)

Put simply, SENDOUT allows Columbia to input (1) its expected future demand for natural gas and (2) its potential supply resources, and from these inputs determine a least-cost supply portfolio for its customers. Essentially, SENDOUT performs a “cost effectiveness” analysis, answering the question: Given a set amount of natural gas requirement what is the least expensive way to provide reliable supply?

Gas requirements are treated as fixed, as a given. And the expected prices of natural gas supply resources (including transportation and storage) are examined in various
combinations to find the cheapest combination of gas supply resources that will meet customers demand.

Two obstacles exist that may prevent this type of cost-effectiveness modeling from achieving Columbia’s portfolio objective (selection of the most cost-effective set of supply and demand resources that together are sufficient to meet natural gas demand):

(1) **Missing resources:** Many potential resources are not included in modeling and are therefore not available for the model to choose as it assembles its least-cost portfolio. For Columbia, potential resources that are left out of modeling appear to include additional energy efficiency measures (beyond current and planned measures that reduce annual gas usage), efficiency measures targeted at peak day usage, incentives to adopt electric and/or renewable space and water heating, additional LNG and natural gas storage, thermal storage, and load management (demand response). More demand-side measures may exist with benefit-cost ratios higher than 1.00 (or even measures with negative benefit-cost ratios that, when combined with the rest of Columbia’s efficiency portfolio, result in an average benefit-cost ratio that is lower than 2.22 but greater than 1.00); these measures are not including in the SENDOUT modeling of the least-cost supply portfolio.

(2) **Uneven playing field:** While energy efficiency from current and planned programs are included in the Company’s expected gas requirements, these critical demand-side resources are not treated the same as supply-side resources. Like supply-side resources, energy efficiency measures have a net cost or benefit associated with them that should be considered in a cost-effectiveness analysis of a least-cost resource portfolio for Columbia’s customers. Columbia’s benefit-cost ratio for the last three-year gas efficiency planning period (2016-
2018) was expected to be 2.22.\(^1\) That is, the benefit of the Company’s gas efficiency savings was $2.22 for every $1 of cost (or, stated another way, every therm of energy efficiency savings makes the Company’s supply and demand portfolio less expensive). It seems unlikely that any of the supply-side resources included by Columbia in its modeling have negative costs (that is, offer benefits) for every therm. The Company’s SENDOUT model is not considering the lowest cost resource among its alternatives.

3. COMPARISON TO THE RANGE OF ALTERNATIVES REASONABLY AVAILABLE TO THE COMPANY AND ITS CUSTOMERS

Q. Could Columbia’s portfolio objectives be served using other resources?

A. Columbia’s portfolio objectives depend on selection of the most cost-effective set of supply and demand resources that together are sufficient to meet natural gas demand. Taken in its component parts:

- **Most cost-effective set of supply and demand resources:** Columbia’s selected set of resources includes both supply and demand resources. Together, these resources—both supply and demand—determine the overall cost of the portfolio. Least cost resource portfolios include the lowest cost resources regardless of whether these resources are on the supply or demand side. Could Columbia’s portfolio objective of providing the most cost-effective set of resources be achieved using resources other than their proposed new supply contracts? The answer depends on cost information not provided in the Company’s 17-172 filing.

- **Sufficient resources to meet natural gas demand:** It is not clear from the information provided in 17-172 whether or not Columbia’s proposed contracts

\(^1\) DPU 15-160, Initial Filing, Exhibit CMA-4, p. 13 of 30.
with TGP, PNGTS, and Repsol for new supply are necessary to meet the Company’s forecast of customer needs in future years. Could Columbia’s portfolio objective of providing sufficient resources to meet natural gas demand be achieved using resources other than their proposed new supply contracts? Columbia’s 17-172 filing does not provide sufficient information to demonstrate whether or not it could meet this objective by other means. Alternate resources could certainly help it meet this objective.

Q. Could Columbia’s portfolio objective of providing sufficient resources to meet natural gas demand be achieved using resources other than their proposed new supply contracts?

A. Yes, at least in part. Columbia’s 17-172 filing does not provide sufficient information to demonstrate whether or not it could meet its portfolio objectives using only alternate resources.

Q. What alternatives to additional pipeline contracts are described by Columbia in its 2015 FSP?

A. Columbia’s FSP 2015 includes both supply and demand-side alternatives to new pipeline contracts. LNG delivery, storage, and withdrawal are important supply-side alternatives while energy efficiency measures are an important demand-side alternative.

Q. What alternatives to additional pipeline contracts are described by Columbia in this docket (DPU 17-172)?

A. Similarly, in its 17-172 filing, Columbia appears to include both LNG delivery, storage, and withdrawal and energy efficiency among its resources. With regards to the viability of additional resources other than its contracts with TGP, PNGTS, and Repsol for new supply, the Petition asserts:

> Although there are conceptual alternatives to the Proposed Contracts, none of these conceptual alternatives are viable. The conceptual
alternatives include: (1) other interstate pipeline resources; (2) increased reliance on LNG, propane-air or compressed natural gas, otherwise referred to as on-system peaking resources; and (3) increased reliance on city gate purchases at Dracut and/or Haverhill or seasonal supply from Engie Gas & LNG LLC (“Engie”). As discussed in more detail in Exhibit CMA/MDA-1, the Company determined that none of these alternatives are viable. (17-172, Petition, p.7-8)

Q. Are LNG delivery, storage, and withdrawal important to Columbia’s ability to meet its portfolio objective of providing sufficient resources to meet natural gas demand?

A. Yes. Columbia’s design day LNG supply accounts for 26 to 35 percent of total requirements, depending on the year (Columbia FSP 2015, Table G-23).

Q. What other alternative resources are available to Columbia to meet its portfolio goals?

A. Possible alternative resources available to Columbia include additional energy efficiency measures that reduce annual gas usage, efficiency measures targeted at peak day usage, incentives to adopt electric and/or renewable space and water heating, additional LNG and natural gas storage, thermal storage, and load management (demand response).

Q. What steps have other natural gas distribution companies taken to secure non-pipeline alternative resources?

A. In December 2017 New York’s Con Edison issued a request for proposals (RFP) for “Non-Pipeline Solutions to Provide Peak Period Natural Gas System Relief”.

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Con Edison has identified a need for Non-Pipeline Solutions throughout its natural gas service territory to address a nine percent shortfall in Peak Day pipeline capacity by November 2023, which is equivalent to more than 100,000 Dt on a Peak Day. The traditional solution would be the acquisition of incremental interstate pipeline capacity to address this requirement. The goal of this RFP is to identify a portfolio of opportunities that will reduce customer loads and provide new supply sources without the construction of a new pipeline, or at a minimum will be able to reduce the Company’s reliance on Delivered Services. The primary capacity constraint is for daily deliveries of natural gas into Con Edison’s service territory from upstream pipelines; the Company’s internal distribution capacity is adequate to meet fluctuations in customer Demand throughout the day. As a result, NPS projects must be able to provide Relief for a minimum of 24 consecutive hours on the coldest days of the year to be useful to Con Edison, and are more valuable if deployable for multi-day consecutive periods of cold weather. (Exhibit CLF-EAS-3 p.7).

Since as early as 2012 (see Berkshire Gas FSP 2012 and FSP 2014), Berkshire Gas has operated a load management program with the goal of reducing the need for supply resources on peak:

[T]he Company has entered into agreements with several large customers (with alternate fuel capabilities) that provide significant load management flexibility in that the Company may curtail service for a designated period of time in order to promote the efficient use of its distribution system (also referred to as “demand-side management”). The Company has been a leader in terms of its load management initiatives. (Berkshire Gas FSP 2016, p.15).
Q. Did Columbia issue an RFP for non-pipeline alternatives in an attempt to identify and secure least-cost alternative resources?
A. To my knowledge, no.

Q. Does Columbia operate a load management program with the goal of reducing the need for supply resources on peak?
A. No.

4. COMPLIANCE WITH THE GLOBAL WARMING SOLUTIONS ACT

Q. Are you familiar with the Commonwealth’s Global Warming Solutions Act, and if so, do you have an understanding of its technical requirements?
A. Yes, I am familiar with the Massachusetts Global Warming Solutions Act, and I do have an understanding of its technical requirements. The Global Warming Solutions Act, or “GWSA,” is a law passed in 2008 that requires the Commonwealth to reduce its statewide greenhouse gas emissions across all sectors and emissions sources to a level in 2020 that is no greater than 25 percent of 1990 emissions levels (or approximately 70.8 million metric tons of CO₂ equivalent (“MMCO₂e”)), and a level in 2050 that is no greater than 80 percent of the state’s 1990 emissions level (or approximately 18.9 MMTCO₂e).³

Q. In your understanding, what is required technically for a program, project, or approval to be considered consistent with the GWSA?
A. While the quantitative details will differ from case to case, assessing consistency with the GWSA as a technical matter requires at a minimum an understanding of the net volume of greenhouse gas emissions that can be reasonably expected to occur as a result of the program, project, or approval as well as the level of

statewide greenhouse gas emissions allowed by the GWSA at the time those emissions are expected to occur. It should also include evidence of emission reductions that assist the Commonwealth with achieving its GWSA goals, as distinct from simply not actively harming the Commonwealth’s achievement of GWSA goals.

Q. In your opinion, does the record in this matter contain adequate evidence to enable someone to assess the greenhouse gas emissions impact of the contracts with TGP, PNGTS, and Repsol for new supply?

A. No.

Q. Please explain.

A. In its Petition, the Company asks for permission to acquire 96,400 dekatherm ("Dth") per day of new gas capacity in the proposed TGP contract and to acquire another 14,300 Dth/day of new gas capacity in the proposed PNGTS contract. All of that capacity, according to the Company, is designed to serve retail customers by enabling the Company to sell them gas for end-use combustion (predominantly for space heating).

According to the U.S. Environmental Protection Agency, “the average heat content of natural gas is 0.1 MMBtu per therm”; “the average carbon coefficient of natural gas is 14.46 kg carbon per mmbtu”; and the “fraction of that carbon oxidized to CO2 during combustion is 100 percent.” Accordingly, the combustion of a

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4 See Ex. CMA/MDA-1 (Testimony of Michael D. Anderson) at 18.

5 Id. at 21.

6 See, e.g., id. at 5 (“These contractual arrangements represent a unique opportunity . . . to bring [] firm supply to the Company’s city gates, provide access to reliable, competitively priced natural gas supplies . . . and serve customers with reliable, least-cost natural gas.”), 10 (same); accord Bay State Gas Co., D.P.U. 15-143, Ex. CMA-1 (2015 Long-Range Forecast and Supply Plan 2015/2016 – 2019/2020), section III (forecasting 5-year end-use customer demand for gas).

Dekatherm of gas will result in the release to atmosphere of approximately 0.053
metric tons of CO₂.⁸

As a result, the approval of the Petition would authorize the release into the
atmosphere of approximately 5,869 metric tons per day of CO₂, or up to 2.1
MMTCO₂e annually for the next twenty years life of these contracts,⁹ until about
the year 2038.

Over that same 20-year period, the GWSA requires dramatic annual reductions in
the Commonwealth’s greenhouse gas emissions, including those from the
combustion of gas for end-uses like those served by the Company. Over the life of
the proposed supply contracts, statewide greenhouse gas emissions – which include
those that will result from the proposed contracts¹⁰ – must decline approximately 2
percent per year to about 36.2 MMTCO₂e (approximately 62 percent below 1990
levels in 2040).¹¹

By 2040, then, the proposed agreements would alone authorize and enable the
release of greenhouse gases of a volume that will have a significant and direct
impact on the ability of the state to meet its GWSA-required emissions levels, as
these contracts would be a source of emissions equivalent to approximately 6
percent of the total permitted in the Commonwealth as a whole by the GWSA in
that timeframe for the entire state economy. Indeed, contrary to the Company’s
suggestion here that these contracts are necessary to serve a sustained high volume

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⁸ 0.1 MMBtu/1 therm × 14.46 kg C/MMBtu × 44 kg CO₂/12 kg C × 1 metric ton/1,000 kg = 0.0053 metric
tons CO₂/therm

⁹ Ex. CMA/MDA-1 at 6-7 (seeking approval of a “20-year transportation contract with Tennessee” and “20-
year firm transportation agreement with PNGTS”).

¹⁰ See, e.g., Dept. of Envtl. Protection, Statewide Greenhouse Gas Emissions Level: 1990 Baseline and 2020
Business As Usual Projection Update (July 2016), Appx. C (“Massachusetts Annual Greenhouse Gas (GHG)
all emissions resulting from the combustion of gas for building services as well as emissions resulting from
gas transportation and distribution leaks).

¹¹ Based on a straight-line decline from the GWSA’s 25 percent emissions reduction required by 2020 to the
80 percent reduction required by 2050.
of gas consumption by its customers through 2038, the Commonwealth already anticipates that in the same timeframe compliance with the GWSA will require the use of less gas as the Commonwealth “electrifi[es] the buildings sector’s heating and cooling loads” and develops non-fossil “renewable thermal market.”

Q. Does the Petition, or any other document in the record, contain an analysis of either the greenhouse gas emissions that will result from the proposed agreements or their impact on the ability of the Commonwealth to meet its GWSA-required emissions reductions over the life of the contracts?

A. No, I have seen no such analysis in the record as of the date of this testimony. The Petition itself contains no mention whatsoever of either the greenhouse gas emissions that can be reasonably assumed will result from the approval of the proposed contracts or of the impact of such emissions on the state’s ability to meet its GWSA-required emissions reduction. Similarly, there is no mention of either in Columbia’s approved FSP 2015 which the Petition references and relies on.

Q. Have you seen any mention of greenhouse gas emissions or the GWSA by the Company in the record?

A. Only one, in the Company’s February 5, 2018 response to request for information DPU-1-16. However, that response alone does not contain sufficient information or analysis upon which the Department can conclude that approval of the proposed contracts is consistent with the GWSA.

Q. What does that response say?

A. The only information provided in that response that is relevant to an assessment of greenhouse gas emissions in the context of the GWSA appears in the second

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12 See, e.g., 2015 CECP at 1-10, 50-54 (meeting the GWSA’s emissions limits between 2030 and 2050 will require “electrification of the buildings sector’s heating and cooling loads” and the development of non-fossil “renewable thermal market”).

13 Ex. DPU-1-16.
paragraph of its second page where the Company argues that because 81,400
Dth/day of the 110,700 Dth/day that the proposed TGP contract and the proposed
PNGTS contract will be “utilized in place of” already approved gas capacity, there
will be “no increase in greenhouse gas emissions” resulting from the proposed
contracts.

Even if it is true that that about 74 percent of the gas from these agreements will
replace previously approved gas supply, this fact alone cannot support a conclusion
that the proposed 20-year supply agreements will not have a significant impact on
the ability of the Commonwealth to meet its GWSA-required emissions levels.

The 26 percent of gas consumption that the proposed contracts would newly
authorize represents a substantial volume of new emissions, some 0.6 MMTCO\textsubscript{2}e
per year, which will have a meaningful impact on the Commonwealth’s statewide
greenhouse emissions levels particularly near the end of the proposed contracts. In
2038, that volume alone will represent just over 1.5 percent of the state’s entire
allowed emissions under the GWSA.

Q. Does the citation to previous approval of pipeline capacity in Ex. DPU-1-16
refer to a prior proceeding before the Department with record evidence that
could support a conclusion that some portion of the proposed 20-year supply
agreements will not have a significant impact on the ability of the
Commonwealth to meet its GWSA-required emissions levels?

A. No. The Department’s prior approval of contracts for 114,300 Dth/day of capacity
which the Company suggests the TGP Proposed Contract will “replace”\textsuperscript{14} did not
contain record evidence that could be analyzed to test the impact of the 114,300

\textsuperscript{14} See Pet., ¶ 12 (“The TGP Proposed Contract will replace the capacity approved by the Department in
(“D.P.U. 15-39 Final Order”) at 5 (“Pursuant to the transportation agreement, Tennessee will deliver up to
114,300 dekatherms per day (“Dth/day”) of interstate pipeline capacity from Wright, New York, to the
Company’s distribution system[.]”).

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Dth/day on the Commonwealth’s ability to meet its GWSA-required emissions levels. I reviewed the Final Order in D.P.U. 15-39 and the record evidence to which it refers in its GWSA-related findings. In the Final Order in D.P.U. 15-39, the Department cites to no quantitative evidence regarding the emissions levels expected as a result of the end-use combustion of that gas, and includes no assessment (and points to no evidence containing any assessment) regarding the levels of greenhouse gas emissions required by the GWSA, or the proposed contract’s impact on those levels, at any time during the life of the contracts at issue in D.P.U. 15-39.

Q. Did the Department’s Final Order in 15-39 use or describe a reasonable standard for a proposed contract for new gas supply to meet the emissions requirements of the GWSA?

A. No. In the Final Order in 15-39 the Department states only that “the record evidence indicates that the additional capacity will be used, in large part, to serve new customers converting from oil heating to natural gas, and therefore the Department expects that the acquisition of the proposed capacity will further reduce greenhouse gas emissions and contribute towards GWSA goals.”\(^{15}\) The record exhibits from the Company, to which the Department cites in support of that statement, do not provide quantification of the emissions impact.\(^{16}\)

Q. What would be a reasonable minimum standard for a proposed contract for new gas supply to meet the emissions requirements of the GWSA?

A. As I indicated previously, assessing consistency with the GWSA requires evidence of emissions reductions that assist the Commonwealth with achieving its GWSA

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\(^{15}\) D.P.U. 15-39 Final Order at 41.

\(^{16}\) See Order, D.P.U. 15-39 at 41 (citing D.P.U. 15-39 Tr. 1, at 19-20, Tr. 1A, at 150-151). The Department also cites CLF’s direct testimony, which contains emissions calculations. See id. (citing Exhibit CLF-1 at 41). However, that page of the direct testimony of CLF’s expert witness in D.P.U. 15-39 only mentions a portion of the pipeline capacity which might be used to convert oil-fired space heat to gas-fired space heat and the resulting emissions changes between 2019 and 2029.
goals (as distinct from simply not actively harming the Commonwealth’s achievement of GWSA goals) as well as evidence of emission impacts that are both quantitative and specific. Here, that would require, at minimum, quantitative estimates of the expected number of conversions from a different space heating fuel to natural gas caused by the proposed contract capacity (of the resulting change in expected greenhouse gas emissions) and of the pace and scope of reductions in greenhouse gas emissions required in the same timeframe by the GWSA.

Q. In addition to expected greenhouse gas emissions from combusting gas, are there any additional sources of greenhouse gas emissions that are reasonably foreseeable from a proposed contract for new gas supply?

A. Yes. Analysis should be presented of the known and reasonably estimable greenhouse gas emissions that can and should be assumed will occur from the transport and distribution of the gas associated with a proposed contract (based on current technology and scientific assessments of existing Commonwealth leak rates). The Department has determined that 0.6 to 1.1 percent of total gas received into the Commonwealth’s gas distribution system is lost to the atmosphere as direct methane emissions due to leakage throughout the system. Assuming in the absence here of evidence to the contrary regarding the Company’s own leak rates, the Department must assume that at least 0.85 percent (the mid-point of the 0.6 to 1.1 percent range) of 110,700 Dth/day that the proposed TGP contract and the proposed PNGTS contract would authorize would similarly be released into the atmosphere again (with substantial potential impact to the state’s ability to comply with GWSA-required emissions limits over the life of these contracts). Such reasonably expected leakage would increase expected greenhouse gas emissions resulting from these contracts by as much as 0.5 MMTCO₂e, each year, or about 1.3

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17 See, e.g., ICF, Lost and Unaccounted For Gas (Dec. 23, 2014) (prepared for the Department) at i.
percent of the Commonwealth’s total permitted greenhouse gas emissions in 2040). 18

Q. Does this conclude your testimony?

A. Yes, it does.