

From: Richard Husband <rmhusband@gmail.com>
Sent: Friday, October 28, 2016 4:12 PM
To: PUC - Executive.Director
Subject: Re: Comment letter re PUC Docket DG-770

I am sorry but, just to be clear, that last e-mail and filing should be under the group name "NH Pipeline Health Study Group," not my name individually.

Thanks again,

Richard Husband

On 10/28/2016 4:05 PM, Richard Husband wrote:

> Please file the attached as a public comment in PUC Docket DG-770.

>

> Thank you,

>

> Richard Husband

>

NH Pipeline Health Study Group

October 28, 2016

Via e-mail (craig.wright@des.nh.gov)

Craig Wright, Director Air Resources Division
Department of Environmental Services
29 Hazen Drive; P.O. Box 95
Concord, NH 03302-0095

RE: Request for Hearing and Extension of Public Comment Period, and Public Comment Tennessee Gas Pipeline Company, LLC Application for Renewal Permit Concord Expansion Compressor Station #270B1 on Mammoth Road, Pelham, NH Application No. 15-0300

Dear Director Wright:

As this matter ties in with the Concord Steam conversion project and concerns matters of great public interest, the Concord Steam Legislative Task Force, Governor Hassan, involved government agency personnel, various concerned citizens, and the media, are being copied on this letter.

Please reference the notice attached as Exhibit "A," concerning a renewal application permit for the 30,000 horse power stand-by compressor station in Pelham, New Hampshire, and consider this letter:

- (1) a request for a public hearing on the matter pursuant to Env-A 621.06;
- (2) a request for an extension of the comment period to a reasonable time subsequent to the hearing to allow citizens to submit public comments utilizing information obtained at the hearing, and also a submitted public comment relative to this matter; and
- (3) a submitted public comment relative to the matter

Our request for a public hearing is made on the following bases and relevant facts, which raise material issues with respect to the subject application.

As you know, we are a group of New Hampshire residents who are deeply concerned about the well-documented adverse health effects of fracked gas. For most of us, the concern arose when our communities were chosen for the path of the Northeast Energy Direct ("NED") high-pressure gas pipeline project and its related infrastructure, including a planned 41,000 horse power compressor station in New Ipswich, New Hampshire, less than a ½ mile from the Temple Elementary School and bordering residential neighborhoods in towns where several members of our group live. Member Julia Steed Mawson is a Pelham resident.

In the course of educating ourselves about NED and all of its implications, we quickly learned that today's "natural" gas, derived through the hydraulic fracturing process—"fracked" gas as it commonly called—is not clean or healthy, as touted., but contains a cocktail of known carcinogens, identified regulated toxic air pollutants ("RTAPs") under Env-A 1450.01, and other health-impairing contaminants, the releases and emissions of which have been shown by studies

throughout the country to cause respiratory and other health problems, especially around compressor stations. *See, e.g.,* [“California’s Fracking Fluids: the Chemical Recipe,”](#) by Tasha Stoiber, et. al. (EWG; August 2015); [“Gas Compressors and Nose Bleeds: a New Study Connects Health Issues with Rural Gas Compressor Pollution,”](#) by Jessica Owen (Fall 2015)(concerning Minisink, New York study); [“Potential Hazards of Air Pollutant Emissions from Unconventional Oil and Natural Gas Operations on the Respiratory Health of Children and Infants”](#) by Ellen Webb, et. al. (2014; published in *Reviews on Environmental Health*, 2016); [“Porter Ranch Gas Leak Triggers State of Emergency in California,”](#) January 7, 2016 CNN online news article; [“Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania,”](#) by Nadia Steinzor, et. al. (October 2012); [“Madison County, New York Department of Health Comments to the Federal Energy Regulatory Committee,”](#) prepared for Madison County Department of Health by Thimble Creek Research (September 30, 2014), pp. 14-28; [ATSDR/CDC Health Consultation Report \(Jan. 29, 2016\), p. ii](#) (asthmatics, elderly and others at risk from compressor stations); [ATSDR/CDC Health Consultation Report \(Apr. 22, 2016\), pp. ii-iii](#) (concerning short and long term adverse health effects of particulates); [“Human Health Impacts Associated with Chemicals and Pathways of Exposure from the Development of Shale Gas Plays,”](#) by Wilma Subra Subra Company (January 9, 2012).

Indeed, concerned citizens were advised by Dr. Curtis L. Nordgaard, a preeminent Massachusetts pediatrician likewise concerned with the adverse health effects of fracked gas, that remedial health care costs associated with the emissions from the New Ipswich compressor station proposed for NED—only 11,000 horse power larger than the Pelham station—would likely be in the \$2 million per year range. *See Potential emissions from a New Ipswich compressor station, and some associated health effects*, pp. 13-15 of the attached Exhibit “B” (identified in paragraph below).

Because of the health concerns relating to fracked gas emissions, we petitioned Commissioner Burack and the Department of Environmental Services (“DES”) on July 1, 2016 to immediately amend the [Env-A 1400](#) rules to address deficiencies in the regulation of these emissions. A copy of this petition, which flags **22 identified RTAPs** in fracked gas, is attached hereto as Exhibit “B” and incorporated in full herein by reference in further support of this letter, along with a copy of September 4, 2016 correspondence from Dr. Nordgaard identifying **several more likely RTAPs** in New Hampshire fracked gas,¹ which is attached as Exhibit “C.” Although our July 1, 2016 petition was denied, the DES is assessing the propriety of our petition requests on its own. Currently, the DES is attempting to obtain a sample of the fracked gas sold by the applicant to Liberty Utilities for use in New Hampshire, for complete analysis, identification of all of its components, and a determination of how best to address fracked gas and its components under [Env-A 1400](#). The applicant and/or Liberty Utilities, as good corporate citizens, should be more than willing to comply with such a request, particularly as we have amply demonstrated health concerns supporting the [Env-A 1400](#) review and amendments requests, such that the burden is on the applicant (and Liberty Utilities) to prove that our concerns and requests are nonetheless misguided. Such “proof,” of course, requires identification of all of the contents of the fracked gas used in New Hampshire, to distinguish it from the gas and contents discussed in all of the aforementioned fracked gas studies and otherwise establish that its emissions are harmless. The scales must always come down on the side of protecting health.

¹ These RTAPs are cadmium, (radioactive) lead, barium, PCBs (polychlorinated biphenyls) and maybe mercury (depending upon whether it was filtered from the subject gas by mercury guard beds).

In light of the health concerns associated with fracked gas emissions, the current unknown status of the components of the fracked gas used in New Hampshire, and the DES' ongoing consideration of this issue and the propriety of amending [Env-A 1400](#) to more appropriately address fracked gas, we urge the DES to not consider this application until these matters have been addressed first. We need to establish the true health risks that we are dealing with, foremost, and before anything else: citizens should not be used as guinea pigs.

Moreover, after addressing the matters discussed in the preceding paragraph, if the DES is still inclined to go forward with the subject application, we would urge the DES to analyze and consider the full impact of Liberty Utilities' service expansion plans on the operation of the subject compressor station, the frequency and volume of its emissions, and consequent health impact on citizens, as part of the application process.

Although the Pelham compressor station is currently just used as a stand-by facility which only operates during peak demand and likely less than 1% of the time, we understand that its operation is tied in with service “downstream,” including the Concord area, such that Concord and other “downstream” demands increase its operational time. As the DES is probably aware: although GreenCity Power submitted a proposal for converting the Concord Steam operation to a safe, non-greenhouse gas emission source of energy, *see* attached Exhibit “D,” the state rejected it out of hand and is signing on for conversion to Liberty Utilities' gas.² As the DES may not be aware: Liberty Utilities has aggressive expansion plans targeting other new customers around Concord, and likely other new customers “downstream” of the Pelham compressor station—all of whom would, presumably, add to the system demand and the compressor's operation time. Of course, any increase in the compressor's operation time increases its emissions and health concerns correspondingly. There is no justification for exposing the children and other citizens of Pelham to increasingly noxious emissions just so the state can reap some short-term savings on energy bills—the “justification” for the Concord Steam conversion to gas rather than a healthier, greener alternative. Likewise, Liberty Utilities' other expansion plans must be carefully analyzed in depth to determine if they will increase the operation time of the Pelham compressor station. **While there is currently insufficient information to consider whether a renewal permit should be issued in this matter at all, no permit should be issued (if at all) without a condition restricting further gas expansion and/or the compressor station's operational time to present less than 1% operational norms.**

For the reasons set forth above, we respectfully request and urge that a public hearing be scheduled in this matter and that the comment period be extended for a reasonable period of time (at least two weeks) after the public hearing to allow citizens the opportunity to submit public comments benefitting from the information presented at the hearing.

Thank you for your time and courtesy. Should anyone wish to contact us for any reason, we may be reached via the e-mail address RMHusband@mail.com.

² Honestly—and this is more for those copied on this letter than the DES: what makes the Concord Steam “bidding” process, resulting in an almost immediate State-run cattle drive of Concord Steam customers to Liberty Utilities with only cursory consideration of the alternatives, any different than the other one-party “bidding,” alleged collusion-wracked processes being debated and investigated in Concord right now? *See* [Article 1](#); [Article 2](#); [Article 3](#).

Sincerely,

//s// Richard Husband
Duly Authorized, on Behalf of:

NH Pipeline Health Study Group:

By its Board/Members:

//s// Beverly Edwards
Chairperson

//s// Liz Fletcher
Board Member

//s//Douglas Whitbeck
Board Member

//s//Gwen Whitbeck
Board Member

//s//Susan Durling
Board Member

//s//Julia Steed Mawson
Board Member

//s//Marilyn Learner
Board Member

//s//Richard Husband
Board Member

cc: Members of the Concord Steam Legislative Task Force (via e-mail)
Honorable Governor Margaret Hassan (via e-mail, c/o Kerry.Holmes@nh.gov)
Vicki Quiram, Commissioner, N.H. Department of Administrative Services (via e-mail,
c/o commweb@nh.gov)
Christopher G. Aslin, Esquire, Assistant Attorney General (via e-mail)
John McCutcheon (via e-mail)
Dr. Melinda Treadwell (via e-mail)
The New Hampshire Municipal Pipeline Coalition (via e-mail)
NHPLAN (via e-mail)
Other concerned citizens (via e-mail)
The Union Leader (via e-mail)
Concord Monitor (via e-mail)
Pelham-Windham News (via e-mail)

EXHIBIT "A"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
AIR RESOURCES DIVISION
CONCORD, NEW HAMPSHIRE

NOTICE OF PERMIT REVIEW PUBLIC HEARING AND COMMENT PERIOD

Pursuant to the New Hampshire Code of Administrative Rules, Env-A 621.02, notice is hereby given that the Director of the New Hampshire Department of Environmental Services, Air Resources Division (Director), has received an application for a state permit to operate from, and based on the information received to date, intends to **issue such permit to:**

Tennessee Gas Pipeline Company, LLC
Concord Expansion Compressor Station #270B1
Mammoth Road
Pelham, New Hampshire

For the Following Devices:
One Compressor Turbine and One Emergency Generator

The application and draft permit are on file with the Director, New Hampshire Department of Environmental Services, Air Resources Division, 29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095, (603) 271-1370. Information may be reviewed at the office during working hours from 8 a.m. to 4 p.m., Monday through Friday. Additional information may also be obtained by contacting Patricia North at the above address and phone number. Requests for a public hearing and/or written comments filed with the Director in accordance with Env-A 621.06, and received no later than **Monday, November 14, 2016.** shall be considered by the Director in making a final decision.

Craig A. Wright, Director,
Air Resources Division

EXHIBIT "B"

NH Pipeline Health Study Group

July 1, 2016

Via e-mail (governorhassan@nh.gov)

The Honorable Governor Margaret Wood Hassan
Office of the Governor
State House
107 North Main Street
Concord, NH 03301

Via e-mail (thomas.burack@des.nh.gov)

Thomas Burack, Commissioner
Department of Environmental Services
29 Hazen Drive; P.O. Box 95
Concord, NH 03302-0095

RE: Rules Governing the Control of Air Pollution (Env-A 100-4800) - PETITION

Dear Governor Hassan and Commissioner Burack:

We write as a formal petition to Commissioner Burack, pursuant to [R.S.A. 541-A:4](#) to amend and/or adopt rules under [Env-A 1400](#), the Department of Environmental Services (“DES”) Rules governing Regulated Toxic Air Pollutants (“RTAPs” or, singularly, “RTAP”), in certain respects identified below. We request that some of these changes be adopted as emergency rules, under [541-A:18](#), and otherwise pursuant to Governor Hassan’s health, safety and other emergency powers. Pursuant to said powers, we also request that Governor Hassan order that the rulemaking process of [R.S.A. 541-A:3](#) be commenced as soon as possible, in less than the five month period statutorily provided for the normal commencement of the same,¹ for public hearing(s) and comment, and final approval of the proposed and perhaps additional rule changes under [Env-A 1400](#). Our requests are grounded in (1) the immediate need for rule changes to provide standards that will promote human health protection, *see* [Env-A 1412.04](#) ; and (2) the “imminent peril to the public health or safety” and/or “substantial fiscal harm to the state or its citizens,” *see* [R.S.A. 541-A:18, I](#), presented by the normal timeframe for commencing the rulemaking process.

In essence, we are writing to request your help in expediting a remedial response to a grave concern.

While the Northeast Energy Direct (“NED”) high- pressure natural gas pipeline project application has been withdrawn from the Federal Energy Regulatory Commission (“FERC”), this does not preclude NED V2.0, in some “other” configuration, at any time. Moreover, there are a number of other such pipeline projects in the works for the Northeast, *see* [Northeast gas pipeline projects](#), one or more of which may result in more pipeline infrastructure in New Hampshire, by reconfiguration or extension of the project(s). Pending Public Utilities Commission (“PUC”) [Docket No. DE 16-241](#) could open the door to a rush of new pipeline projects by allowing the electric distribution companies (“ECDs”) to become the customers pipeline project owners crave, and by further incentivizing such projects by passing their construction costs on to electric ratepayers—in fact, the PUC’s decision could bring NED V2.0 virtually as soon as it is handed down, should the PUC force the applicant to re-open bidding.(NED was a bidder before). **Under the expedited FERC certification process, pipeline project approval often takes less than a year ... But the rulemaking process ordinarily has up to five months just to get off the ground.** *See* Footnote 1, *supra*. In addition to the potential for new massive pipeline project infrastructure, projects such as the Pelham/Windham/Concord Lateral

¹ *See* R.S.A. 541-A:4, I (30 days allowed for acting upon the petition, plus 120 more days for commencing rulemaking by requesting a fiscal impact statement).

expansion/connection, the subject of pending PUC [Docket No. DG 15-362](#), continue to incrementally increase gas pipeline infrastructure in our state. All of which raise health and related cost concerns for New Hampshire, the adequacy of protection afforded citizens under current state air quality requirements, and the need to adopt emergency rules and expedite the rulemaking process to provide the health protective rules we need as soon as possible.²

In this regard, the [Env-A 1400](#) rules governing RTAPs are in need of immediate revision. For example, the exemptions under Env-A 1402.01 and Env-A 1402.02 should be immediately amended to confirm their inapplicability to emissions of RTAPs from natural gas derived, in whole or in part, from the hydraulic fracturing (“fracking”) process, whether resulting from combustion, venting, leaking or otherwise. The fracking process results in contaminants, including toxic air pollutants, not contained in the natural gas used in New Hampshire at the time the rules were adopted. **Indeed, twenty-two (22) toxic air pollutants on the Table 1450-1 RTAP List, beginning at page 15 under Env-A 1450.01, are known to be associated with hydraulically fractured (“fracked”) gas**, either as additives or produced by combustion of this gas, 15 being Toxicity Class I RTAPs, the most toxic. See discussion and cited studies and other materials below and RTAP List/Fracked Gas Comparison immediately following the signatories to this letter. Since it contains so many toxic components, including known carcinogens, fracked gas should not be exempted from New Hampshire’s toxic air pollution regulations. See *id.*; see also generally [“California’s Fracking Fluids: the Chemical Recipe,”](#) by Tasha Stoiber, et. al. (EWG; August 2015).

For all of the above and reasons to follow, please act to protect the health of New Hampshire’s citizens by adopting the following recommended amendments in bold to Env-A 1402.01 and Env-A 1402.02, on an emergency basis:

Env-A 1402.01 Statutory Exemptions for Sources and Activities. As specified in RSA 125-I:3, III(a) and (b), the following shall be exempt from regulation under RSA 125-I and these rules:

- (a) Normal agricultural operations;
- (b) The application of pesticides regulated pursuant to RSA 430:28 through RSA 430:48;
- (c) Emissions of RTAPs resulting from mobile sources; and
- (d) Emissions of RTAPs resulting from the combustion of virgin petroleum products at stationary sources. **Virgin petroleum products shall not be considered to include natural gas derived, in whole or in part, from the hydraulic fracturing process, RTAP emissions resulting from which, by combustion, venting, leaking or any other form of release, shall be subject to regulation under RSA 125-I and these rules, with emissions of such natural gas from compressor stations subject to hourly baseline**

² While the DES should obviously disagree should one be raised, there may be an argument that the DES is bound by the existing (deficient) rules should emergency rules not be adopted and/or the rulemaking process not be completed prior to commencement of proceedings for approval of a new pipeline. See *In re Goldman*, 151 N.H. 770 (2005)(Court found application of a newly enacted statute to an already commenced proceeding to be precluded by state constitutional proscription against retrospective laws affecting established substantive rights).

ambient air quality monitoring and data collection and analysis in accordance with best practices and the Precautionary Principle, at no less than four sites within at least a three-mile radius of the stationary source, with such sites to include the location of the stationary source and locations of all public schools within the designated radius, for a period of not less than one year before and after initial operation of the stationary source, and at least every three months thereafter, to ensure compliance with RSA 125-I and these rules and as a condition of the issuance of any permitting thereunder.

REASONS SUPPORTING AMENDMENTS:

- A. Neither R.S.A. 125-I nor the DES Rules governing Regulated Toxic Air Pollutants define "virgin petroleum products," leaving the term impermissibly open to the argument that it includes fracked gas, but likewise subject to rule amendment expressing precluding such interpretation;
- B. Fracked gas emissions and leaks at compressor stations and otherwise cause established adverse health effects not prevented by current standards.³ New Hampshire's air quality rules have long set the standard for health and safety, and we should maintain that standard and embrace not only best practices, but also the Precautionary Principle for monitoring fracked gas emissions at stationary sources, including compressor stations.⁴ Determining baseline ambient air concentrations for pollutants of concern and requiring emissions testing under available statutory authority will provide reasonable assurances of health and environmental protection from these potential emission sources.
- C. The Precautionary Principle is proactive, and the recent Saint-Gobain problems, in particular, underscore the wisdom of being proactive in health-related monitoring;

³ See, e.g., ["Gas Compressors and Nose Bleeds: a New Study Connects Health Issues with Rural Gas Compressor Pollution,"](#) by Jessica Owen (Fall 2015)(concerning Minisink, New York study); ["Potential Hazards of Air Pollutant Emissions from Unconventional Oil and Natural Gas Operations on the Respiratory Health of Children and Infants"](#) by Ellen Webb, et. al. (2014; published in [Reviews on Environmental Health](#), 2016); ["Porter Ranch Gas Leak Triggers State of Emergency in California,"](#) January 7, 2016 CNN online news article; ["Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania,"](#) by Nadia Steinzor, et. al. (October 2012); ["Madison County, New York Department of Health Comments to the Federal Energy Regulatory Committee,"](#) prepared for Madison County Department of Health by Thimble Creek Research (September 30, 2014), pp. 14-28; [ATSDR/CDC Health Consultation Report \(Jan. 29, 2016\), p. ii \(asthmatics, elderly and others at risk from compressor stations\);](#) [ATSDR/CDC Health Consultation Report \(Apr. 22, 2016\), pp. ii-iii \(concerning short and long term adverse health effects of particulates\);](#) ["Human Health Impacts Associated with Chemicals and Pathways of Exposure from the Development of Shale Gas Plays,"](#) by Wilma Subra Subra Company (January 9, 2012). Among her other qualifications and credentials, "Mrs. Subra holds degrees in Microbiology/Chemistry from the University of Southwestern Louisiana. She received the MacArthur Fellowship "Genius" Award from the MacArthur Foundation for helping ordinary citizens understand, cope with and combat environmental issues in their communities and was one of three finalists in the Environmental Category of the 2004 Volvo for Life Award." [Click "Read More" under her biography.](#)

⁴ See this link for information concerning the [Precautionary Principle](#).

- D. Precautionary, proactive, or just plain reasonable: monitoring and related analysis should be conducted on an hourly basis:
“Delfino et al (2002) posited that maxima of hourly data, not 24-hour averages, better captured the risks to asthmatic children, stating ‘It is expected that biological responses may intensify with high peak excursions that overwhelm lung defense mechanisms.’ Additionally, they suggest that ‘[o]ne-hour peaks may be more influenced by local point sources near the monitoring station that are not representative of regional exposures ...’.”
See [“Summary on Compressor Stations and Health Impacts,” by Southwest Pennsylvania Environmental Health Project \(Feb. 24, 2015\), pp. 6-7;](#)⁵
- E. The proposed monitoring requirements are otherwise very reasonable. At least one-year before and after baseline ambient air quality monitoring around stationary sources generating fracked gas emissions, including compressor stations, is probably the bare minimum needed to accurately gauge the impacts of such emissions, as air quality changes throughout the year, and long-term analysis of pre-emission air quality is necessary to evaluate post-emission effects.⁶ Given air and pollution gathering variables, data should be collected and analyzed at no less than four different monitoring sites, with prudence and caution dictating that one be located at every school in an impacted radius. A monitoring radius of at least three miles, but to be determined in accordance with best practices and Precautionary Principle approach, is the safest approach to establishing the radius given that adverse health impacts have already been clearly identified within a three-mile radius of compressor stations,⁷ but may be proven to extend to greater distances with further data and greater knowledge in this area. Likewise, particularly given all of the potential adverse health consequences and the still emerging field of knowledge in the area, at least quarterly, rather than bi-annual or annual monitoring and data collection and analysis, would be in accordance with the Precautionary Principle and best practices;
- F. The proposed monitoring and permitting requirements are in accordance with [R.S.A. 125-I:5, V.](#)

⁵ To be clear: such monitoring and analysis would not require onsite personnel, as current monitoring technology allows for programmed data collection on hourly, daily, monthly, yearly and other bases.

⁶ “[O]ver the course of a year emissions will vary, often greatly. As phases of construction and operation change so will emissions content and concentrations.” [“Summary on Compressor Stations and Health Impacts,” by Southwest Pennsylvania Environmental Health Project \(Feb. 24, 2015\), p.1.](#) *See also* [“Madison County, New York Department of Health Comments to the Federal Energy Regulatory Committee,” prepared for Madison County Department of Health by Thimble Creek Research \(September 30, 2014\), p. 10](#) (showing variations in ambient air measurements of five VOCs near a compressor station over just a three day period).

⁷ *See* [“Southwest Pennsylvania Environmental Health Project”](#). *See also* [“Human Health Impacts Associated with Chemicals and Pathways of Exposure from the Development of Shale Gas Plays,” by Wilma Subra Subra Company \(January 9, 2012\)](#) (identifying numerous health issues within two miles of compressor stations).

Env-A 1402.02 Additional Exemptions for Sources and Activities. Pursuant to RSA 125-I:3, III(c), the owner or operator of a device or process that meets the criteria of Env-A 1401.02 also shall be exempt from the requirements of this chapter for a particular RTAP if the emissions of such pollutant are from, or result from, any of the following sources or activities:

- (a) The combustion of one or more of the following fuels:
 - (1) Coal;
 - (2) Natural gas, **but not such gas derived, in whole or in part, from the hydraulic fracturing process, RTAP emissions resulting from which, by combustion, venting, leaking or otherwise, shall be subject to the requirements of this chapter ...**

REASONS SUPPORTING AMENDMENTS:

- A. The fracking process results in contaminants, including specific regulated toxic air pollutants, not contained in the natural gas used in New Hampshire at the time the rules were adopted;
- B. Fracked gas emissions and leaks at compressor stations and otherwise cause established adverse health impacts not prevented by current standards.⁸

Additionally, the following toxic air pollutants should be immediately added, or at least reconsidered for addition to, the [RTAP List](#) under Table 1450-1, beginning at page 15 under Env-A 1450.01, for the reasons stated:

- 1. Radon. Although not on the RTAP List, radon is otherwise the subject of health protective legislation in New Hampshire. *See, e.g.*, R.S.A. 125:9, X; R.S.A. 310-A:189-a and R.S.A. 477:4-a. It carries with it radioactive and otherwise toxic ingredients:
“The gas which flows through the pipeline likely carries gaseous radon with it, and as radon decays within the pipeline, the solid daughter elements, polonium and lead, accumulate along the interior of the pipes. There is a concern that the gas transiting, and being compressed and regulated, will have radioactivity levels which will put at risk not only the workers at these stations and along the pipeline, but potentially also to the residents. Radon, a gas, has a short half-life (3.8 days) but its progeny are lead and polonium, and these are toxic and have relatively long half-lives of 22.6 years and 138 days respectively. There is no data that we can turn to in order to assess the risk of radioactive exposures in our community.”⁹

⁸ See sources cited in Footnote 3, *supra*.

⁹ From [“Summary on Compressor Stations and Health Impacts,” by Southwest Pennsylvania Environmental Health Project \(Feb. 24, 2015\), p.6](#) (footnotes omitted).

See also [“Radon in Natural Gas from Marcellus Shale,” by Marvin Resnikoff, Ph.D. \(Jan. 10, 2012\), p. 13 \(“The potential environmental and public health impact of radon in natural gas from the Marcellus Shale formation is enormous.”\)](#). While there may not be data to assess such risks, the Precautionary Principle weighs in favor of adding radon to the RTAP List. Again, we have seen the effects of not adhering to this principle with the Saint-Gobain issues we are facing today: it is better to prevent in the first place than attempt to retrofit safeguards and mitigate after the fact.¹⁰ As it is not currently on the RATP List, it should be added immediately, accordingly.

2. The following Volatile Organic Compounds (“VOCs”) found in fracked (shale) gas should also be reconsidered for inclusion and/or toxicity revision as RTAPs, given the magnitude of potential emissions from these sources and the associated adverse health impacts discussed in [“Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania,” by Nadia Steinzor, et. al. \(October 2012\):](#)¹¹

Table 7. VOCs in ambient air, sorted by highest percent detection; concentrations are in micrograms per cubic meter, µg/m³ (n = total number of canister samples that were analyzed for a particular chemical; NA = VOC not included in the analysis)

Volatile Organic Compound (VOC)	n	Number of samples detecting VOC	Percent of n detecting VOC	Min.	Max.	Mean*	Chemical reporting limits for the three labs used		
							Columbia	Con-Test	Pace**
2-Butanone	17	16	94	0.95	2.9	1.52	0.85 - 1.3	NA	NA
Acetone	17	15	88	8.0	19	11.85	6.5 - 10	NA	NA
Chloromethane	34	27	79	1.0	1.66	1.21	0.59 - 0.90	0.1	1.39 - 1.53
1,1,2-Trichloro-1,2,2-trifluoroethane	34	26	76	0.54	0.73	0.64	0.22 - 0.34	0.38	5.13 - 5.67
Carbon tetrachloride	34	26	76	0.46	0.76	0.62	0.091 -	0.31	4.21 - 4.65
Trichlorofluoromethane	34	26	76	0.6	1.8	1.48	0.81 - 1.2	0.28	3.32 - 3.66
Toluene	34	22	65	0.68	7.9	1.83	0.53 - 0.82	0.19	2.52 - 2.79
Dichlorodifluoromethane	17	9	53	1.9	2.8	2.41	NA	0.25	3.32 - 3.66
n-Hexane	8	3	38	3.03	7.04	5.23	NA	NA	2.37 - 2.61
Benzene	34	11	32	0.31	1.5	0.85	0.46 - 0.67	0.16	2.14 - 2.36
Methylene Chloride	34	10	29	1.9	32.62	7.93	0.49 - 0.76	1.7	2.33 - 2.57
Total Hydrocarbons (gas) ***	8	2	25	49.8	146	97.9	NA	NA	46.9 - 52.2
Tetrachloroethylene	34	8	24	0.12	10.85	1.68	0.10 - 0.16	0.34	4.54 - 5.02
1,2,4-Trimethylbenzene	17	4	24	0.38	0.61	0.48	NA	0.25	3.30 - 3.64
Ethylbenzene	34	6	18	0.27	1.5	0.54	1.4 - 1.9	0.22	2.91 - 3.21
Trichloroethylene	34	6	18	0.17	5.37	2.71	0.08 - 0.12	0.27	3.60 - 3.98
Xylene (m&p)	34	5	15	0.92	5.2	1.98	2.5 - 3.8	0.43	2.82 - 3.12
Xylene (o)	34	5	15	0.39	1.9	0.76	1.2 - 1.9	0.22	2.91 - 3.21
1,2-Dichloroethane	34	1	3	0.64	0.64	0.64	0.59 - 0.90	0.2	2.71 - 2.99

* Mean of samples detecting chemical.²¹

** Pace reporting limits were in ppbv. We converted to µg/m³.²²

*** Total hydrocarbons reported as parts per billion volume (ppbv).

¹⁰ See generally, and specifically page 3 Table 1, at ["Potential Hazards of Air Pollutant Emissions from Unconventional Oil and Natural Gas Operations on the Respiratory Health of Children and Infants" by Ellen Webb, et. al. \(2014; published in Reviews on Environmental Health, 2016\)](#) .

¹¹ See generally, and particularly p. 21 (containing Table 7).

It appears from our comparison of the above Table 7 with the RTAP List, that the following from the above should be added to the RTAP List: 2-Butanone, Chloromethane, Trichlorofluoromethane, Dichlorodifluoromethane, Total Hydrocarbons (gas), Tetrachloroethylene, Ethylbenzene, 1, 2-Dichloroethane, and possibly Xylene (m&p).¹² However, it would be best if a professional from the Department of Environmental Services checked to confirm. To be noted: as shown in the RTAP List/Fracked Gas Comparison to follow, the Table 7 chemicals on the RTAP List are all Toxicity Class I or Toxicity Class II RTAPs, further suggesting that the VOCs identified on Table 7 but not on the current RTAP List should be added to the latter.

3. Particulate matter. Particulate matter, especially PM2.5, and particularly in conjunction with VOCs, present other health risks compelling their inclusion on the RTAP List. From [“Madison County, New York Department of Health Comments to the Federal Energy Regulatory Committee,” prepared for Madison County Department of Health by Thimble Creek Research \(September 30, 2014\), pp. 19-20:](#)

“In addition to the VOC exposure presented above, PM2.5 also poses a significant health concern and interacts with the airborne VOCs increasing their impact. In fact, at a compressor station PM2.5 may pose the greatest threat to the health of nearby residents ...

The size of particles determines the depth of inhalation into the lung; the smaller the particles are, the more readily they reach the deep lung. Particulate matter (PM10, PM2.5 and ultrafine PM), in conjunction with other emissions, are at the core of concern over potential effects of [fracked gas development sites]. High particulate concentrations are of grave concern because they absorb airborne chemicals in their midst. The more water soluble the chemical, the more likely it is to be absorbed onto a particle. Larger sized particles are trapped in the nose and moist upper respiratory tract thereby blocking or minimizing their absorption into the blood stream. The smaller PM2.5 however, is more readily brought into the deep lung with airborne chemicals and from there into the blood stream. As the particulates reach the deep lung alveoli the chemicals on their surface are released at higher concentrations than they would in the absence of particles. The combination of particles and chemicals serves, in effect, to increase in the dose of the chemical. The consequences are much greater than additivity would indicate; and the physiological response is intensified. Once in the body, the actions between particles and chemicals are synergistic, enhancing or altering the effects of chemicals in sometimes known and often unknown ways.

Reported clinical actions resulting from PM2.5 inhalation affect both the respiratory and cardiovascular systems. Inhalation of PM2.5 can cause decreased lung function, aggravate asthma symptoms, cause nonfatal heart attacks and high blood pressure. Research reviewing health effects from highway traffic, which, like [unconventional natural gas development], has especially high particulates, concludes, “[s]hort-term exposure to fine particulate pollution exacerbates existing pulmonary and cardiovascular disease and long-term repeated exposures increases the risk of cardiovascular disease and death.” PM2.5, it has been suggested, “appears to be a risk factor for cardiovascular disease via mechanisms that likely include pulmonary and systemic inflammation, accelerated atherosclerosis and

¹² As noted on the RTAP List/Fracked Gas Comparison following the signatories to this letter, Xylene (m) and Xylene (p) isomers are listed separately on the RTAP List, as RTAP CAS No. 108 – 38 – 3, Toxicity Class I, and RTAP CAS No. 106 – 42 – 3, Toxicity Class I, respectively, but it is not clear to the undersigned if Xylene (m&p) is a distinct chemical which should be added to the RTAP List based on its identification as a VOC in Table 7.

altered cardiac autonomic function. Uptake of particles or particle constituents in the blood can affect the autonomic control of the heart and circulatory system.

Ultrafine particles (<0.1) get less attention in the literature than PM2.5 but is found to have high toxic potency. These particles readily deposit in the airways and centriacinar region of the lung. Research suggests increases in ultrafine particles pose additional risk to asthmatic patients ...

There is an abundance of research on the health effects of short term PM2.5 exposure ... health effects can occur within 6 hours of elevated PM2.5 exposures, the strongest effects occurring between 3 and 6 hours. Such an acute effect of PM2.5 may contribute to acute increase in the risk of cardiac disease, or trigger the onset of acute cardiac events, such as arrhythmia and sudden cardiac death ...

In addition to short term exposures and associated effects, there is evidence of health impacts from long-term exposures. An [health impact assessment] reviewing data from a number of European cities found that nearly 17,000 premature deaths from all causes, including cardiopulmonary deaths and lung-cancer deaths, could be prevented annually if long-term exposure to PM2.5 levels were reduced ...”

From the [EPA website](#) (emphasis added):

“‘Particulate matter,’ also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.

The size of particles is directly linked to their potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. **Once inhaled, these particles can affect the heart and lungs and cause serious health effects.** EPA groups particle pollution into two categories:

- ‘Inhalable coarse particles,’ such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter.
- ‘Fine particles,’ such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller ...”

From [ATSDR/CDC Health Consultation Report \(Jan. 29, 2016\), p. ii](#):

“Particulate Matter (PM2.5) - The World Health Organization notes that when annual mean concentrations are in the range of 11-15 µg/m³, health effects can be expected (WHO 2006 ...”

See also [“PA expands particulate monitoring as federal study finds high level in one location,” May 5, 2016 online article](#); and [ATSDR/CDC Health Consultation Report \(Apr. 22, 2016\), pp. ii-iii](#) (short term exposures “to maximum levels of PM2.5 may be harmful to unusually sensitive populations, such as those with respiratory or heart disease” and chronic exposures in “concentration of 15 to 16 µg/m³ may be harmful to the general population and sensitive subpopulations, including the elderly, children, and those with respiratory or heart disease.”).

In addition to final amendment of the above rules and RTAP List inclusions, the rulemaking process for Env-A 1400 should be commenced as soon as possible to ascertain, through public hearing(s) and comments, such other amendments, including RTAP List additions, as should be made to ensure their applicability to any high-pressure gas pipeline projects and infrastructure. We would greatly appreciate your assistance in this regard.

In further support of this petition and the requests made herein, we also submit the analysis of Dr. Curtis L Nordgaard, *Potential emissions from a New Ipswich compressor station, and some associated health effects*, concerning the New Ipswich, New Hampshire compressor station proposed under the NED project, which follows the RTAP List/Fracked Gas Comparison at the end of this letter. In addition to other relevant information provided in this analysis, Dr. Nordgaard estimates that just that compressor station would have caused over two million (\$2,000,000.00) dollars in annual health care costs. Such costs plainly constitute “substantial fiscal harm to the state or its citizens” alone justifying emergency adoption under [R.S.A. 541-A:18, I](#).

We look forward to your response at your earliest convenience. Please direct the same, or any questions, concerns or other communications, to our Chairperson and contact point person, Beverly Edwards, at nadesha@msn.com.

Thank you for your time and courtesy in this matter.

Sincerely,

//s// Richard Husband
Duly Authorized, on behalf of:

NH Pipeline Health Study Group:

By its Board/Members:

//s// Beverly Edwards
Chairperson

//s// Liz Fletcher
Board Member

//s//Douglas Whitbeck
Board Member

//s//Gwen Whitbeck
Board Member

//s//Sue Durling
Board Member

//s//Julia Steed Mawson
Board Member

//s//Marilyn Learner
Board Member

//s//Richard Husband
Board Member

RTAP LIST/FRACKED GAS COMPARISON

22 toxic air pollutants on [RTAP List](#) (beginning at page 15) are associated with fracked gas, either as additives or produced by combustion of this gas (VOCs).

15 of these are Toxicity Class I (most toxic); 6 are Toxicity Class II, 1 is Toxicity Class III.

10 RTAPs - 5 Toxicity Class I, 4 Toxicity Class II, 1 Toxicity Class III - are on EPA list of frequent additives to fracked gas

Sources: [RTAP List](#) (beginning at page 15) and Table 9, at p. 36, of [“Analysis of Hydraulic Fracturing Fluid Data from the FracFocus Chemical Disclosure Registry 1.0.” by the EPA \(March 2015\)](#); *see also EPA website*

Methanol: RTAP CAS No. 67 – 56 – 1, Toxicity Class II

Ethanol: RTAP CAS No. 64 – 17 – 5, Toxicity Class II

Propargyl alcohol : RTAP CAS No. 107 – 19 – 7, Toxicity Class I

Glutaraldehyde: RTAP CAS No. 111 – 30 – 8, Toxicity Class I

Ethylene glycol (aerosol): RTAP CAS No. 107 – 21 – 1, Toxicity Class II

2-Butoxyethanol: RTAP CAS No. 111 – 76 – 2, Toxicity Class I

Napthalene: RTAP CAS No. 91 – 20 – 3, Toxicity Class I

1,2,4-Trimethylbenzene: RTAP CAS No. 95 – 63 – 6, Toxicity Class II

Dimethylformamide: RTAP CAS No. 68 – 12 – 2, Toxicity Class I

Polyethylene glycol: RTAP CAS No. 25322 – 68 – 3, Toxicity Class III

11 more RTAPs - 9 Toxicity Class I, 2 Toxicity Class II – are identified Table 7 VOCs from fracked gas

Sources: [RTAP List](#) (beginning at page 15) and Table 7, at p. 21, of [“Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania,” by Nadia Steinzor, et. al. \(October 2012\)](#)

Acetone: RTAP CAS No. 67 – 64 – 1, Toxicity Class I

1,1,2-Trichloro-1,2,2-Ttrifluoroethane: RTAP CAS No. 76–13–1 , Toxicity Class II

Carbon tetrachloride: RTAP CAS No. 56 – 23 – 5, Toxicity Class I

Toluene: RTAP CAS No. 108 – 88 – 3, Toxicity Class I

n-Hexane: RTAP CAS No. 110 – 54 – 3, Toxicity Class II

Benzene: RTAP CAS 71 – 43 – 2, Toxicity I

Methylene chloride (dichloromethane): RTAP CAS No. 75 – 09 – 2, Toxicity Class I

Trichloroethylene: RTAP CAS No. 79 – 01 – 6, Toxicity Class I

Xylene m-isomers: RTAP CAS No. 108 – 38 – 3, Toxicity Class I

Xylene p-isomers: RTAP CAS No. 106 – 42 – 3, Toxicity Class I

Xylene o-isomers: RTAP CAS No. 95 – 47 – 6, Toxicity Class I

A 22nd RTAP, the VOC Formaldehyde - Toxicity Class I – is also found in fracked gas

Sources: pp. 18-19 at [“Madison County, New York Department of Health Comments to the Federal Energy Regulatory Committee,” prepared for Madison County Department of Health by Thimble Creek Research \(September 30, 2014\)](#); pp. 26-27 and Appendix B, pp. 2-6 and Table 12 at p. 10, of [ATSDR/CDC Health Consultation Report \(Jan. 29, 2016\)\(asthmatics, elderly and others at risk from compressor stations\)](#); p. 5 and Appendix 1 at p. 19 of [“California’s Fracking Fluids: the Chemical Recipe,” by Tasha Stoiber, et. al. \(EWG; August 2015\)](#)

NOTE: Formaldehyde does not appear in the Table 7 VOC list because sampling for that study was done with Summa canisters. Badges are generally used for formaldehyde monitoring. Formaldehyde is a carcinogen. [Union Leader, December 18, 2015 online article by Meghan Pierce](#)

Compiled by Liz Fletcher for NH Pipeline Health Study Group, May 2016

*Potential emissions from a New Ipswich compressor station,
and some associated health effects*

Prepared by Curtis L Nordgaard, MD MSc

Pediatrician at DotHouse Health, Boston MA

For those air pollutants classified as toxic, what releases do Kinder Morgan predict for the New Ipswich compressor station ¹?

Per year:

Nitrogen dioxide:	50 tons
Carbon monoxide:	40 tons
Sulfur dioxide:	5 tons
Particulate matter:	9 tons
Volatile organic compounds:	8.5 tons
Formaldehyde:	1.3 tons

What health outcomes have been associated with the pollutants that would be released by the New Ipswich compressor station?

A limited review of public health studies shows:

Nitrogen dioxide: Increased respiratory hospitalizations (2%) ², heart failure (1.7%) ³

Carbon monoxide: Increased premature birth rates (4%) ⁴, low birth weight (7%) ⁴

Sulfur dioxide: Increased low birth weight (3%) ⁴, heart failure (2.4%) ³

Particulate matter: Increased fatality from heart and lung disease (5.3%) ⁵, new childhood asthma diagnoses (10-12%) ⁶

What are some actually measured levels of toxic or cancer-causing pollutants near compressor stations?

Formaldehyde: Levels can exceed acute toxicity thresholds by 25% and cancer risk thresholds by more than 700-fold, up to 800 meters from compressor stations ⁷

Particulate matter: Levels of particulate matter near compressor stations may be more than double what is measured at regional monitoring stations ^{8,9}

How might pollution concentrations change near a compressor station in New Ipswich, according to Kinder Morgan ¹?

Nitrogen dioxide levels would increase by up to 13.4 micrograms per cubic meter for distances up to 10.3 km from the proposed compressor station.

What's near the proposed compressor station site?

Temple Elementary School is very close, only about 800 meters from the proposed site.

Five towns are within the 10 km area of concern mentioned above.

Based on published health studies, what effects should we expect for children at Temple Elementary School and surrounding towns?

Formaldehyde: Levels could exceed acute toxicity and cancer-causing thresholds for children at the school based on published observations ⁷.

Nitrogen dioxide: If concentrations increase as predicted (13.4mcg/m³), public health studies suggest we should expect at least a 7% increase in new childhood asthma diagnoses ⁶ and a 2% increase in hospitalizations for asthma attacks ¹⁰ in a 10 km radius. People with chronic obstructive pulmonary disease, stroke, and heart disease would also be affected, as well as increased overall fatalities from these conditions ¹⁰.

What are the potential health care costs associated with the proposed emissions, based upon scientific estimates ¹¹ ?

Nitrogen dioxide: \$16,000 per ton x 50 tons = \$800,000 per year

Sulfur dioxide: \$28,000 per ton x 5 tons = \$140,000 per year

Particulate matter: \$130,000 per ton x 9 = \$1,170,000 per year

Estimate of total health care costs: \$2.11 million per year, for three pollutants only

References cited:

1. Tennessee Gas Pipeline Company, L.L.C. Northeast Energy Direct Project Environmental Report, Resource Report 9 (Air and Noise Quality). Downloaded 11/23/15.
2. Huang G, et al. An integrated Bayesian model for estimating the long-term health effects of air pollution by fusing modelled and measured pollution data: A case study of nitrogen dioxide concentrations in Scotland. *Spat Spatiotemporal Epidemiol.* 2015 Jul-Oct;14-15:63-74.
3. Shah AS, et al. Global association of air pollution and heart failure: a systematic review and meta-analysis. *Lancet.* 2013 Sep 21;382(9897):1039-48.

4. Stieb DM, et al. Ambient air pollution, birth weight and preterm birth: a systematic review and meta-analysis. *Environ Res.* 2012 Aug;117:100-11.
5. Samoli E, et al. Which specific causes of death are associated with short term exposure to fine and coarse particles in Southern Europe? Results from the MED-PARTICLES project. *Environ Int.* 2014 Jun;67:54-61.
6. Wendt JK, et al. Association of short-term increases in ambient air pollution and timing of initial asthma diagnosis among Medicaid-enrolled children in a metropolitan area. *Environ Res.* 2014 May;131:50-8.
7. Macey GP, et al. Air concentrations of volatile compounds near oil and gas production: a community-based exploratory study. *Environ Health.* 2014 Oct 30;13:82.
8. Nordgaard, CL. Unpublished data, Oct 2015.
9. Southwest Pennsylvania Environmental Health Project, [“Summary of Minisink Monitoring Results”](#).
10. To T et al. Health risk of air pollution on people living with major chronic diseases: a Canadian population-based study. *BMJ Open.* 2015 Sep 2;5(9):e009075.
11. Buonocore JJ, et al. Using the Community Multiscale Air Quality (CMAQ) model to estimate public health impacts of PM_{2.5} from individual power plants. *Environ Int.* 2014 Jul;68:200-8.

EXHIBIT “C”

Federal Energy Regulatory Commission
888 First Street NE
Washington, D.C. 20426
Sept 4, 2016

Re: Spectra Energy, Atlantic Bridge Project Environmental Assessment
Docket No. CP16-9-000

To Secretary Bose:

I am writing to comment on the Atlantic Bridge Environmental Assessment (EA). The formal comment period has ended. However, in response to requests for an extension of the public comment period, the Commission has indicated that it will continue accepting and reviewing public comments. I am therefore submitting my observations that the Atlantic Bridge EA failed to disclose and address the presence of toxic contaminants in gas delivered by the Algonquin Pipeline and therefore did not adequately assess risks to the environment and human health.

1. Several lines of evidence indicate that gas delivered by the Algonquin Pipeline contains mercury

A. Companies that analyze natural gas samples in support of pipeline operations indicate that trace metals including mercury are present in natural gas, which they are able to test for¹:

“...trace metal content in natural gas streams and LNG can reach parts per million (ppm) levels...”¹

Although it seemed unlikely to be honored, I did request a de-identified sample analysis from one such company. The request was of course denied on the grounds that the data were proprietary.

B. Mercury is one of several toxic substances produced by the operation of Metering & Regulating stations as identified in this Resource Conservation and Recovery Act (RCRA) report for a M&R station in New Bedford, MA:²

EPA Waste Codes for Facility [?]		(Facility #1 : ALGONQUIN GAS TRANSMISSION, LL, EPA waste code: all)
EPA Waste Code		(2007)
D001: Ignitable waste		
D005: Barium		
D007: Chromium		
D008: Lead		
D009: Mercury		
D018: Benzene		
Reporting Year: 2007		
Facility #1 : ALGONQUIN GAS TRANSMISSION, LL		
Basic Facility Info [?]		
Handler ID	MAR000009993	
Facility Name	ALGONQUIN GAS TRANSMISSION, LLC -M&R 17	
Street Number	1183	
Address Line 1	SHAWMUT	
City	NEW BEDFORD	
State	MA	
Zip Code	02741	
County	PLYMOUTH	
113th Congressional District	MA09: Massachusetts 9	
First NAICS Code	42471: Petroleum Bulk Stations and Terminals	
Current Owner	ALGONQUIN GAS TRANSMISSION, LLC	
Site Land Type	Private	

1 <http://www.intertek.com/petroleum/natural-gas-trace-metals/>

2 <http://www.rtknet.org/db/brs/brs.php?>

reptype=f&epa_id=MAR000009993&reporting_year=2007&database=brs&detail=3&datatype=T

C. The Applicant has clearly stated that mercury can be present in their gas, which necessitates the incorporation of a “mercury guard bed” as part of the proposed LNG facility in Acushnet, MA:

“Mercury may be present in very small quantities in the feed gas and will be removed via a mercury guard bed during the pretreatment process. Mercury is considered an environmentally hazardous material.”³

To the best of my knowledge, compressor stations and metering & regulating stations do not contain mercury guard beds even though they release gas directly into the environment.

Based upon these lines of evidence, I conclude that mercury is present as a toxic contaminant in the gas being delivered to Massachusetts.

2. Gas transmitted by the Algonquin Pipeline likely contains volatile radioactive lead

As discussed in Section 2.7.5 of the Atlantic Bridge EA, gas in the Algonquin pipeline does contain radon. Radon decays into radioactive lead and other progeny as acknowledged in the EA. The EA indicates that the pipeline is cleaned regularly and any hazardous materials properly disposed of.

The RCRA report (section 1B above) indicates that the pipeline liquids produced at this M&R station do include lead. It does not seem likely that lead is used in pipeline maintenance and operation processes. Rather, the more likely source of lead at the New Bedford M&R station is from the gas itself as acknowledged by the EA. Lead is an EPA criterion air pollutant and can exist in the volatile state (like radon). Therefore, it seems likely that while some radioactive lead is precipitating within the pipeline, some is being transported along the pipeline in the volatile state and is released into the environment.

3. Pipeline liquids removed from the Algonquin pipeline contain barium, cadmium, and PCBs

As noted in the RCRA report presented above, liquids removed from the Algonquin pipeline include cadmium and barium. Cadmium is toxic and carcinogenic. Barium can be toxic in certain forms, and originates from the Marcellus Shale⁴. Like radon and radium, it is naturally occurring in the Marcellus Shale along with methane and is a component of fracked gas.

Pipeline liquids recovered from the New Bedford M&R also contain PCBs at an unknown concentration, but greater than 50 ppm²:

Generated Waste Basics ?

Page Number	1
Waste Description	WASTE PIPELINE LIQUIDS WITH GREATER THAN 50 PPMS PCBS
Form of Waste Category	Organic Liquids
Form of Waste (Regularized)	Other organic liquid (specify in comments) - Organic Liquids

These are likely present as a component of the pipeline itself, which was built prior to the institution of bans and restrictions on the production and use of PCBs.

³ Algonquin Gas Transmission, LLC. Access Northeast Project. Draft Resource Report 11, sec. 11.4.1.9.

⁴ http://energy.wilkes.edu/PDFFiles/Library/The_Science_of_Marcellus_Shale_Wastewater.pdf

4. The Atlantic Bridge EA omitted any assessment of mercury, lead, cadmium, PCBs, and barium releases into the environment, and potential human exposures

A. As detailed in Resource Report 9 for the Atlantic Bridge Project, the Weymouth compressor station would include storage tanks for pipeline liquids. Like other above-ground storage tanks, these would release hazardous air pollutants. In particular, flashing during the tank operation process can release significant quantities of hazardous air pollutants. The Resource Report includes calculations estimating the quantity of hazardous air pollutants that could be released by flashing (up to 325.5 pounds per hour⁵). However, there is no reference to cadmium, PCBs, lead, or mercury released during the operation of these tanks (including during flashing). Since some if not all of these toxic and/or carcinogenic materials can exist as a gas, they would likely be released during the operation of storage tanks at the Weymouth compressor station.

B. Lead, mercury, and cadmium (like radon) are not altered by combustion. Therefore any quantity of these toxic pollutants existing in the gas phase will be entrained into the compressor engine and released in the exhaust stream. They will also be released during venting (e.g., blowdowns) and fugitive emissions. None of these sources of heavy metal pollution (in exhaust, venting, or fugitive emissions) were addressed in the EA.

The half life of radioactive lead is on the order of 21 years. Heavy metals and PCBs are persistent environmental pollutants. Therefore, even a low rate of emission can lead to significant accumulation of these pollutants in the local environment over time.

C. Lead is an EPA criterion pollutant. Given the analysis presented here, it would seem necessary to evaluate the presence and quantity of volatile lead emissions from the pipeline. This should take the form of a quantitative analysis of releases, rather than the qualitative dismissal used to address other important topics in the EA.

D. Without being properly evaluated by an EIS, the toxic and/or carcinogenic pollutants identified here pose an unquantified and unknown degree of risk to the environment and human health.

5. Summary and conclusions

In this comment I have provided evidence that certain toxic and/or carcinogenic pollutants are present in the gas and/or liquid state in the Algonquin Pipeline. These pollutants would likely be released by facilities proposed under the the Atlantic Bridge project as air pollutants that persist and accumulate in the environment. However, their release was not evaluated during the EA process. Therefore, I make the following recommendations in accordance with instructions in the EA and under NEPA:

A. *These and many other important comments warrant the preparation of an EIS.* It was unwarranted for the Commission to require only an EA. The existing EA refers to a project which has been substantially modified and has many unanswered but important criticisms. It is still possible at this time to require that the Applicant prepare an EIS that incorporates the criticisms raised in this docket, based upon the current formulation of the Weymouth compressor station proposal.

⁵ Algonquin Gas Transmission, LLC. Atlantic Bridge Project. Resource Report 9, Weymouth Compressor Station Table E-1A, Flash analysis.

B. *The Commission should choose the “No-Action” alternative.* As detailed in previous comments including comments by Senators Markey and Warren, the EA was prepared by a consultant with a close relationship to the Applicant. The Commission should therefore have a lower threshold to disagree due to this bias; namely, the Commission should more broadly consider the need to choose the the “No-Action” alternative.

The EA discussion of the “No-Action” option⁶ omits the many concerns outlined in this and previous comments. It also does not include recent developments such as this year's Massachusetts Supreme Judicial Court ruling that the state Department of Environmental Protection is failing to meet its mandated Global Warming Solutions Act targets⁷, which I will not outline in detail here. In brief, the Atlantic Bridge and other fossil fuel infrastructure cannot be built and expanded in the state if we are to meet the Global Warming Solutions Act targets as mandated by the state legislature and confirmed by the Supreme Judicial Court. That is true whether the fossil fuel infrastructure entails the emission of carbon dioxide or the much more potent greenhouse gas, methane.

When considering the risks, costs and burdens of the Atlantic Bridge project, it is expedient for the Commission to choose the “No-Action” option as provided by section 7 of the Natural Gas Act.

Signed,

Curtis L Nordgaard MD MSc
Pediatrician
Dorchester, MA

CC:
Erin Flaherty
Town of Weymouth
Massachusetts Department of Environmental Protection, Southeast Region
Massachusetts Attorney General
EPA New England-Region 1 Office of Environmental Review

⁶ Federal Energy Commission and Natural Resources Group. Atlantic Bridge Environmental Assessment, Section 3.1. May 2016.

⁷ <https://www.bostonglobe.com/metro/2016/05/18/sjc-rules-that-state-failed-issue-proper-regulations-cut-emissions/N6rAAeeGAr4LrjqF8K71JJ/story.html>

EXHIBIT "D"

Subject: Re: More Concord Steam Information

From: Bev Edwards <nadesha@msn.com>

Date: 10/19/2016 4:35 PM

To: "Gary.Daniels@leg.state.nh.us" <Gary.Daniels@leg.state.nh.us>, "Jeb.Bradley@leg.state.nh.us" <Jeb.Bradley@leg.state.nh.us>, "Dick.Hinch@leg.state.nh.us" <Dick.Hinch@leg.state.nh.us>, "dickhinch@gmail.com" <dickhinch@gmail.com>, "Lynne.Ober@leg.state.nh.us" <Lynne.Ober@leg.state.nh.us>, "Lynne.Ober@comcast.net" <Lynne.Ober@comcast.net>, "Gene.Chandler@leg.state.nh.us" <Gene.Chandler@leg.state.nh.us>, "Steve.Shurtleff@leg.state.nh.us" <Steve.Shurtleff@leg.state.nh.us>, "SteveShurtleff@aol.com" <SteveShurtleff@aol.com>, Renata <renata.baker@leg.state.nh.us>, Kyle <Kyle.Baker@leg.state.nh.us>, Lou <l.dallesandro@comcast.net>

CC: State Senate Dan Feltes <danfeltes@gmail.com>

Dear Honorable Members of the Concord Steam Legislative Task Force,

Thank you for your attention to the email I sent you yesterday. I sincerely appreciate your mentioning statements from it at the Task Force meeting. I had intended to be there, but was held up for the afternoon.

Below is an email I am forwarding to you in the interest of further clarification. It comes from Aaron Walters, one of the managing partners of Green City Power, in response to several questions from me regarding the steam pipes and GCP's execution of a bid with the state.

Bev Edwards

Bev Edwards

603-878-3227

nadesha@msn.com

From: Aaron Walters <awalters@greencity-power.com>

Sent: Wednesday, October 19, 2016 10:47 PM

Clarifications:

1. GreenCity Power's proposal was to acquire the **STEAM DISTRIBUTION SYSTEM AND THE STEAM GENERATION PLANT**. So GreenCity Power would have acquired and maintained the steam pipes (ie: approx 8 miles of underground pipes) as well as the generation plant.
2. GreenCity Power **submitted a Formal Proposal to the State** (dated February 4, 2016)
3. GreenCity Power made multiple attempts to follow-up with the State re: our Proposal to invest \$20M+ into the entire steam plant and distribution system, contingent **ONLY** on finding a Mutually-Acceptable path forward with the State. The State refused to meet with GreenCity Power.

Proof is in the Numbers:

- A. In winter of 2015-2016 the users (State, City & Downtown Business District) were paying **approx \$45/Mlbs** for Steam.
- B. **Under GreenCity's Proposal:**
 - a. State Buildings would have paid: **\$34/Mlbs (a 25% reduction** in Steam Price)
 - b. City & Downtown Businesses would have paid: **\$40/Mlbs (a 12% reduction** in Steam price)
- C. **Impact of State's Decision to Convert to Gas, using current low gas prices:**
 - a. State's Cost of Steam using gas: **\$52/Mlbs (a 53% PREMIUM** to GreenCity's offer and 15% premium to what they paid last year!)
 - b. City [Government]'s Cost of Steam using gas: **\$115/Mlbs (a 287% PREMIUM** to GreenCity's Offer)
 - c. Downtown Businesses cost of steam using gas: **\$68/Mlbs (a 70% PREMIUM** to GreenCity's Offer).

(RECALL: **The cost of heating has 4 basic components:** (1) fuel cost, (2) operations & maintenance costs, (3) boiler efficiency, (4) **capital cost**. **The State has repeatedly made the error of comparing just the cost of Fuel (gas cost of \$0.95/therm) to the total delivered cost of heat/steam.**)

The KEY POINTS are:

- (a) In February 2016, GreenCity Power made an offer that would have benefited ALL customers of Concord Steam (including All State Buildings, All downtown buildings, All City buildings)
- (b) The State refused to meet or discuss GreenCity's Proposal
- (c) Since the State had NO INTEREST in discussing GreenCity Power's proposal, and Concord Steam was driven out of business, all users were forced to find an alternative source of heating. It is for this reason that the issues about abandoning the steam pipes has come up. This was all avoidable!

The net results are:

- (i) Higher heating costs for all former Concord Steam Customers
- (ii) Substantial capital investment required by the City/State/Downtown Businesses
- (iii) Higher CO2 and GHG emissions by converting to a fossil fuel
- (iv) added strain on New Hampshire's Timber/Forestry industry.

Best regards,

Aaron Walters, CFA
Managing Partner
GreenCity Power
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100 N. Riverside Plaza
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Chicago, IL 60606
www.greencity-power.com
