February 29, 2016

Michael J. Barrett 24 Twillingate Road Temple, New Hampshire 03084 michaelbarrettnh@ymail.com

VIA E-MAIL (rulemaking@Sec,nh.gov)

Pamela G. Monroe, Administrator N.H. Site Evaluation Committee 21 South Fruit Street, Suite 10 Concord, NH 03301

Re: Rules Related to Certificates of Site and Facility, Site 300

Dear Administrator Monroe:

This letter provides my comments in response to the Site Evaluation Committee's ("SEC") "Request for Advance Public Comment on Subject Matter of Possible Rulemaking."

I appreciate the opportunity as a citizen to share my sincere and significant set of concerns and I respectfully ask that the rulemaking process with respect to the SEC's Site 300 rules regarding high pressure gas pipelines consider several concerns. More specifically, my concerns relate to the adoption of rules regarding appropriate setbacks because a comprehensive health assessment, which may affect setback specifications to limit the impact on citizens' health impacts has not yet been performed. Without an assessment, the adoption of rules that may adversely affect the health of my family and fellow citizens in and around the general area of compressor stations and pipelines. Setbacks are of vital importance to me and many other citizens of New Hampshire. I remain deeply concerned and request the rulemaking process establish setbacks that are based upon scientific data and existing evidence. I do not believe the establishment of fixed setbacks without a health assessment is prudent. With respect to an application and the related site selection process of the proposed high-pressure gas pipeline and its associated compressor stations, please consider the local health impacts to citizens when considering the best interest of all of the citizens of New Hampshire. As a citizen, I am relying on established and a mature set of New Hampshire's laws and statutes, and on the SEC's judgments and careful consideration to adopt rules that do not restrict or bound the intentions of several codified RSA's. RSA 162-H:10-b, for example, states, in part, "when establishing any criteria, standard, or rule for a high pressure gas pipeline or when specifying the type of information that a high pressure gas pipeline applicant shall provide to the committee for its decision-making, the committee shall rely upon the best available evidence". This statute further applies the decision-making process rules to many definitive requirements including, in part, (b) health and safety impacts, including but not limited to, proximity to high pressure gas pipelines that could be mitigated by appropriate setbacks from any high pressure gas pipeline. I urge you to ensure any rulemaking regarding setbacks be based upon the best available evidence, including in large part, a comprehensive health assessment. Please do not use a prescribed and general setback rule that is not just and is not based upon all of the available evidence.

The SEC is extremely important to me because, regrettably, the federal pipeline and compressor station location process does not mandate a health assessment be performed. I have reviewed the proposed pipeline application within the FERC docket and the limited health-related information supplied by the applicant. It does not contain a health assessment. In accordance with New Hampshire statutes, the applicant's request does not provide the best practical measures to avoid, minimize, or mitigate adverse effects as required by RSA 162-H:10-b. I urge the inclusion of a Site 300 requirement for a comprehensive health impact assessment with all applications pertaining to high pressure gas pipelines and associated compressor stations as defined in RSA 162-H:2, VII and Site 102.19.

I have reviewed the reported adverse health impacts to citizens residing near compressor stations in other States. I am greatly concerned the health impact assessments were performed after compressor station construction and not prior to construction. I believe these reports will be provided to the SEC at the appropriate time in the SEC process. These reports were complied and published by skilled personnel at several institutions and constitutes "the best available evidence." This information within the reports does not enable compliance with RSA 125 C, for example, entitled Public Health, Air Pollution Control. RSA 125 clearly proposes to achieve and maintain a reasonable degree of purity of the air resources of the state so as "to promote the public health, welfare, and safety, prevent injury or detriment to human, plant, and animal life". I urge the SEC to require a comprehensive health assessment during your rulemaking to satisfy this and other RSAs, especially when the proposed pipeline compressor station location may create a "major potential for harm" and a "substantial likelihood of causing unhealthful air

quality", based upon the best available evidence. I also respectfully request that your rulemaking authority includes procedures for air testing and monitoring and recordkeeping, as authorized by RSA 125-C:6, XI as part of a comprehensive, health impact assessment. I further respectfully request this assessment to provide and include the best available control technology as provided in RSA 125-C:10-b, IV and VI.

I am providing these comments after personally discussing my health-related concerns with the Federal Energy Regulatory Commission ("FERC") staff member overseeing the environmental impact assessment of the proposed pipeline and compressor stations. During a public meeting in New Ipswich, I asked Mr. Eric Tomasi if FERC would order the pipeline compressor station to be turned off upon the receipt of objective evidence of toxic gas exposure to the school children in the Temple Elementary School, and to citizens living locally. Respectfully, I learned that FERC approves the compressor stations and it does not oversee the emissions, postapproval. In this meeting, I was encouraged to address my health concerns with the appropriate personnel within the State of New Hampshire. I politely learned from Mr. Tomasi that he oversees the environmental impacts which do not specifically include human health assessments. With the highest level of urgency, I ask the SEC to include a comprehensive health impact assessment be performed.

Thankfully, Governor Hassan's position was made known recently. She requested FERC to consider requiring a health impact assessment as part of the review of the Northeast Energy Direct (NED) Project. Governor Hassan also wrote that it "goes without saying that the health of our children and families is critically important and we have long fought to create a healthier environment for all of our citizens." The SEC is not bound to await the FERC's response to her letter, and may and should decide to impose a health assessment at the earliest possible time. Although the Governor is not aware that FERC has encouraged me to have the health impact concerns addressed at the state-level. In fact, the ENERGY POLICY ACT OF 2005 mentions the opportunity "to coordinate the processing of federal and state authorizations required under federal law for natural gas projects". This ACT does not limit the SEC authority and New Hampshire's right to require and perform a health assessment. I am urging the SEC to complete a comprehensive health assessment on behalf of many citizens.

I also urge the SEC to allow for testimony and review regarding relevant medical research and public health studies from health experts. The Town of Temple asked one expert, Dr. Curtis Nordgaard, MD, MSc, to share his initial assessment of the health risks associated with the compressor station proposed to be located near Temple's Elementary School. A copy of his

presentation is attached. He noted the pipeline compressor station is asking permission to release more than 100 tons of toxic air emissions each year. The explained the latest medical evidence predicts increased hospitalizations, heart failures, heart disease, lung disease, and new childhood asthma to be expected. Of particular concern to many local residents is the prediction of new childhood asthma conditions since the proposed compressor station is located very close to Temple's elementary school. Dr. Nordgaard referenced the latest medical research including 5 papers published between 2012 and 2015. It is my understanding that FERC does not currently rely upon many recent published research papers.

Dr. Nordgaard shared the reports of the health impacts of citizens living near contemporary compressor plants in New York and Pennsylvania. He reported many citizens are suffering with several respiratory and skin conditions as well as headaches. I am very concerned about the ability of young elementary students to learn when exposed to toxic air and an increased set of medical conditions. In addition to adversely affecting the local elementary school students, Dr. Nordgaard noted the "significant impact area" as reported by the compressor station (pipeline) applicant to be over 10 square kilometers, which is about 4 square miles. Over ten thousand citizens are reportedly within this "significant impact area" and are at risk of exposure to emissions, and emission spikes that disperse widely, and then evolve and combine with other emissions that are subsequently absorbed into water and soil surfaces.

Dr. Nordgaard shared the results of various models that predict toxic concentrations and reported these emissions may increase childhood asthma by 7% as well as increase deaths from cardiovascular and respiratory disease by over 1%. He also reported upon the affects of formaldehyde within 790 meters of the proposed compressor station location, which includes the Tempel Elementary School. These affects include the air exceeding carcinogenetic levels by a factor of 762! He also indicated the air will exceed toxic air-level standards by a factor ranging from 1.25 to 6. He concluded his health assessment indicating a variety of harmful, toxic, and carcinogenic air pollutants are released by compressor stations, and even very low levels of pollutants are harmful. Many of these pollution levels are below (the outdated) federal standards. The preliminary health-based analyses suggest compressor station emissions will impact local human health significantly.

I appreciate the comments of other, including that of Mr. Richard M. Husband. Mr. Husband provided a detailed set of standards for which a comprehensive health assessment may be performed. I concur with Mr. Husband's comments and shall not duplicate them within this comment.

Respectfully submitted,

Michael Barrett

Michael J. Barrett

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A compressor station in New Hampshire? Analysis of health risks

> Curtis Nordgaard, MD MSc Pediatrician DotHouse Health

Questions for today:

What do compressor stations emit? Are the emissions harmful?

Do people living near compressor stations experience negative health effects?

Could emissions from a compressor station in New Ipswich be harmful?

Isn't "natural" (AKA "fracked") gas a clean "bridge" fuel?

6700 HP



18,800 HP



18,800 HP



5500 HP engine



Toxic air emissions: >100 tons/yr

Market Path CS 4 - New Ipswich, NH Compressor Station Emissions (ton/yr)

| | Titan 130 #1 | Titan 130 #2 | Emergency Generator | Gas-Fired Heater | Storage Tank | Blowdown | Liquid Fugitives | Gas Fugitives | STATION TOTAL |
|------------------------------------------|-----------------|-----------------|------------------------|---------------------|-----------------|----------|---------------------|-----------------------------------------|------------------|
| NO _X | 24.33 | 24.33 | 0.48 | 0.48 | 2 | | a sann | (B) | 49.62 |
| CO | 18.82 | 18.82 | 0.96 | 1.11 | × | ÷ | - | 81 | 39.72 |
| VOC | 2.88 | 2.88 | 0.24 | 0.62 | 0.10 | 0.75 | 0.83 | 0.24 | 8.53 |
| PM, PM ₁₀ , PM _{2.5} | 4.51 | 4.51 | 0.008 | 0.20 | - | - | | | 9.23 |
| SO ₂ | 2.32 | 2.32 | 0.0005 | 0.012 | a a | - | 2 | 9 | 4.66 |
| Total HAPs | 0.43 | 0.43 | 0.059 | 0.037 | 0.01 | 0.011 | × (4 | 0.003 | 0.98 |
| Formaldehyde (individual HAP) | 0.30 | 0.30 | 0.043 | 0.0015 | ġ. | | 2 - 2 | 121 | 0.64 |

Tennessee Gas Pipeline Co. (Nov 2015). Application for a Non-Major Comprehensive Plan Approval. Resource Report 9, New Ipswich Compressor Station Temporary Permit Application: Appendix B, pg 1.

Health outcomes associated with pollutants

Nitrogen dioxide: Increased respiratory hospitalizations (2%) ¹, heart failure (1.7%) ²

<u>Carbon monoxide</u>: Increased premature birth rates (4%) ³, low birth weight (7%) ³

Sulfur dioxide: Low birth weight (3%) 3, heart failure (2.4%) 2

Particulate matter: Increased fatality from heart and lung disease (5.3%) ⁴, new childhood asthma diagnoses (10-12%) ⁵

1. Huang G, et al. (2015). *Spat Spatiotemporal Epidemiol,* v14-15, 63-74. 2. Shah AS, et al. (2013). *Lancet,* v382,1039-48.

- 3. Stieb DM, et al. (2012). *Environ Res,* v117, 100-11.
- 4. Samoli E, et al. (2014). *Environ Int*, v67, 54-61.
- 5. Wendt JK, et al. (2014). Environ Res, v131, 50-8.

Symptoms reported near fracked gas sites

| | <500 ft | 500-1500 ft | >1500 ft |
|---------------------|---------|-------------|----------|
| Throat irritation | 74% | 63% | 27% |
| Sinus problems | 70% | 53% | 37% |
| Severe headaches | 60% | 60% | 30% |

Steinzor N, Subra W, Sumi L. Investigating Links between Shale Gas Development and Health Impacts through a Community Survey Project in Pennsylvania. New Solutions 2013; 23(1): 55-84.

Symptoms near Minisink NY compressor

Health surveys of 35 residents within ~1 mile of new compressor station (12,000 hp)

Symptoms:

Respiratory & nosebleeds: 22 of 35 Headaches: 12 of 35 Rash: 10 of 35

Southwest Pennsylvania Environmental Health Project (2015). Summary of Minisink monitoring results. http://www.environmentalhealthproject.org/resources/presentations/

Questions for today:

What do compressor stations emit? Are the emissions harmful?

Do people living near compressor stations experience negative health effects?

Could emissions from a compressor station in New Ipswich be harmful?

Isn't "natural" (AKA "fracked") gas a clean "bridge" fuel?

Nitrogen dioxide







Toxic air emissions: >100 tons/yr

Market Path CS 4 - New Ipswich, NH Compressor Station Emissions (ton/yr)

| | Titan 130 #1 | Titan 130 #2 | Emergency Generator | Gas-Fired Heater | Storage Tank | Blowdown | Liquid Fugitives | Gas Fugitives | STATION TOTAL |
|------------------------------------------|-------------------|-----------------|------------------------|---------------------|-----------------|------------------|---------------------|-----------------------|------------------|
| NO _X | 24.33 | 24.33 | 0.48 | 0.48 | | 5 | an a | a line a line a li | 49.62 |
| CO | 18.82 | 18.82 | 0.96 | 1.11 | × | ÷ | - | 1.1 | 39.72 |
| VOC | 2.88 | 2.88 | 0.24 | 0.62 | 0.10 | 0.75 | 0.83 | 0.24 | 8.53 |
| PM, PM ₁₀ , PM _{2.5} | <mark>4.51</mark> | 4.51 | 0.008 | 0.20 | - | - | | | 9.23 |
| SO ₂ | 2.32 | 2.32 | 0.0005 | 0.012 | a a | 2 | 2 | 9 | 4.66 |
| Total HAPs | 0.43 | 0.43 | 0.059 | 0.037 | 0.01 | 0.011 | 12 | 0.003 | 0.98 |
| Formaldehyde (individual HAP) | 0.30 | 0.30 | 0.043 | 0.0015 | Ċ. | а. 1 <u>5</u> | 2 | 2 | 0.64 |

Tennessee Gas Pipeline Co. Application for a Non-Major Comprehensive Plan Approval. Resource Report 9, New Ipswich Compressor Station Temporary Permit Application: Appendix B, pg 1. November 2015.

Modeling: Predicting concentrations

| Table 3-1 | Air Quality | Impacts - N | Aarket Path M Maximum | id Station 4 Co | mpressor Sta Modeled | tion | 1 | |
|-----------------|---------------------|----------------|------------------------------------------------------|---------------------------------------------|------------------------------------------------------|----------------------------------|----------------------------|------------------|
| Pollutant | Averaging Period | SIL (µg/m³) | Conc. for SIL Analysis ¹ (µg/m³) | Significant Impact Area (SIA) (km) | Design Conc. for NAAQS ² (µg/m³) | Ambient Background (µg/m³) | Total Impact (µg/m³) | NAAQS (µg/m³) |
| NO 3 | 1-hour | 7.5 | 13. <mark>4</mark> 1 | 10.33 | 11.57 | 37. <mark>0</mark> 0 | 48.6 | 188 |
| NO ₂ | Annual | 1 | 0.19 | NA | 0.19 | 6.00 | 6.2 | <mark>100</mark> |
| | | | | | | | | 1 |

Tennessee Gas Pipeline Co. (Nov 2015). Supplemental dispersion modeling report. Temporary permit application, Northeast Energy Direct project, Market Path mid 4 compressor station, New Ipswich, NH. Resource Report 9.

What's within 10km?

13,981 Total population3,466 Children



Source: 2010 Census

Modeling: Predicting concentrations

Health effects for 13.4 ug/m3 increase in NO₂:

New diagnoses of childhood asthma: Increase 7%¹

Clinic visits for asthma (all ages): Increase 4.4%²

ER visits for asthma: Increase by 3.8%³

Hospitalization increased: Asthma (2.2%), COPD (6.7%), stroke (3.7%), heart failure (6.7%)²

Death from cardiovascular (1.1%) and respiratory (1.4%) diseases ⁴

1. Wendt JK, et al. (2014). Environ Res, v131, 50-8.

2. To T et al. (2015). BMJ Open, v5, e009075.

3. Strickland MJ et al. (2010). Am J Respir Crit Care Med, v182, 307-316.

4. Mills IC et al. (2015). BMJ Open, v5, e006946.

From fracked gas to Formaldehyde



For more information: http://www.emittechnologies.com/emissions-emissions-101.php

From fracked gas to Formaldehyde



FORMALDEHYDE IRRITANT & POTENTIAL CANCER HAZARD AUTHORIZED PERSONNEL ONLY

Carcinogen:0.08 mcg/m³Toxicity:10-49 mcg/m³

-Toxicologic review of benzene. (2002). EPA
-Benzene Quickview, Integrated Risk Information System, EPA.
-US Agency for Toxic Substances and Disease Registry http://www.atsdr.cdc.gov/

Formaldehyde: Compressor station vs fracked gas power plant

Market Path CS 4 - New Ipswich, NH Compressor Station Emissions (ton/yr)

| | #1 | #2 | Generator | Heater | Tank | Blowdown | Fugitives | Gas Fugitives | TOTAL |
|--------------|------|------|-----------|--------|------|----------|-----------|------------------|-------|
| Formaldehyde | 0.20 | 0.50 | 0.042 | 0.0015 | 3 | 1 | 2 | | 0.64 |

Table 6.1-2

Potential Emissions of Non-Criteria Pollutants

| Non-Criteria Pollutant | Hazardous Air Pollutant Yes/No | Total Facility Potential Emissions Ib/yr | RIDEM APCR No. 22 Minimum Quantity lb/yr | RIDEM APCR No. 22 Applicability Determination Yes/No | Total Potential HAP Emissions ton/yr | Major HAP Source Threshold |
|------------------------|-----------------------------------------|------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------|-------------------------------------|
| Formaldehyde | Yes | 1,450 | 9 | Yes | 0.72 | 10 |

Tennessee Gas Pipeline Co., cited previously. Invenergy Thermal Development Co. (Oct 2015). Clear River Energy Center, Rhode Island Facility Siting Board Application, pg 33, Table 6.1-2.

Formaldehyde: Compressor station vs fracked gas power plant

New Ipswich compressor station: **1280 Ib/yr, at 83 ft stack height*** 1000MW Fracked gas power plant: **1450 Ib/yr, at 200 ft stack height**

* 0.64 tons/yr X 2000 lbs/ton = 1280 lbs/yr

Tennessee Gas Pipeline Co., cited previously. Invenergy Thermal Development Co. (Oct 2015). Clear River Energy Center, Rhode Island Facility Siting Board Application, pg 33, Table 6.1-2.

Measured compressor formaldehyde emissions

| State/ID County | | Nearest infrastructure | Chemical | Concentration (µg/m ³) |
|-------------------------|-------------|------------------------------------|--------------|---------------------------------------|
| PA-4083-003 | Susquehanna | 420 m from compressor | Formaldehyde | 83 |
| PA-4083-004 | Susquehanna | 370 m from compressor | Formaldehyde | 7.6 |
| PA-4136 | Washington | 270 m from PIG launch ^a | Benzene | 5.7 |
| PA-4259-002 | Susquehanna | 790 m from compressor | Formaldehyde | 61 |
| PA-4259-003 | Susquehanna | 420 m from compressor | Formaldehyde | 59 |
| PA-4259-004 | Susquehanna | 230 m from compressor | Formaldehyde | 32 |
| PA-4259-005 Susquehanna | | 460 m from compressor | Formaldehyde | 34 |

C = chronic; A = acute; I = intermediate.

*Launching station for pipeline deaning or inspection tool.

Macey et al. (2014) Environmental Health, v13, 82

What's within 790m of the proposed site?

Distance: 0.49 miles , 0.79 kilometers (km) , 2604 feet , 794 meters



Measured Formaldehyde: 61 mcg/m³

Carcinogen:0.08 mcg/m³Toxicity:10-49 mcg/m³

762X Carcinogen threshold 1.25-6X Toxicity threshold

But we're safe otherwise, right?

| Pollutant | Averaging Period | SIL (µg/m³) | Maximum Conc. for SIL Analysis ¹ (μg/m³) | Significant Impact Area (SIA) (km) | Modeled Design Conc. for NAAQS ² (µg/m ³) | Ambient Background (µg/m³) | Total Impact (μg/m³) | NAAQS (µg/m³) |
|------------------|-----------------------|----------------|-----------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------|----------------------------------|----------------------------|-------------------|
| NO 3 | 1-hour | 7.5 | 13. <mark>4</mark> 1 | 10.33 | 11.57 | 37.00 | 48.6 | <mark>188</mark> |
| NO ₂ | Annual | 1 | 0.19 | NA | 0.19 | 6.00 | 6.2 | <mark>100</mark> |
| 00 | 1-hour | 2000 | 2.92 | NA | 2.84 | 804.60 | 807.4 | 40,000 |
| CO | 8- <mark>h</mark> our | 500 | 1.24 | NA | 1.08 | 689.70 | 690.8 | 10,000 |
| PM ₁₀ | 24-hour | 5 | 0.57 | NA - | 0.40 | 18.30 | 18.7 | 150 |
| DM | 24-hour | 1.2 | 0.42 | NA | 0.27 | 27.40 | 27.7 | 35 |
| PIVI2.5 | Annual | 0.3 | 0.05 | NA | 0.05 | 8.80 | 8.9 | 12 |
| 60 | 1-hour | 7.8 | <mark>1.75</mark> | NA | 1.63 | 13.10 | 14.7 | <mark>1</mark> 96 |
| 502 | 3-hour | 25 | 1.46 | NA | 1.08 | 15.00 | 16.1 | 1,300 |

¹ Maximum modeled concentration is the highest modeled concentration (high first high).

² Design concentrations for NAAQS are based on standards listed in Table 9.2-1 of RR9.

³ USEPA default NO_X to NO₂ conversion rates of 0.8 (1-hour NO₂) and 0.75 (annual NO₂) applied to modeled NO₂concentrations.

Tennessee Gas Pipeline Co., cited previously.

PM comparison: Weymouth MA & New Ipswich NH

| | Weymouth | New Ipswich |
|---------------------|-----------------------|------------------------|
| | | |
| Turbines | Solar Taurus 60 | Solar Titan 130 x2 |
| | | |
| Station HP | 7,700 hp | 42,000 hp |
| | | |
| Hourly PM emissions | 0.48 lb/hr | 2.22 lb/hr |
| | | |
| Annual PM emissions | 2.02 tons/yr | 9.23 tons/yr |
| Modeled peak | | |
| concentration | 3.2 ug/m ³ | 0.42 ug/m ³ |

Spectra Energy Partners (Oct 2015). Atlantic Bridge Project, Resource Report 9. Tennessee Gas Pipeline Co. Cited previously

Particulate matter near NY compressor station

Table 1. Baseline hourly average PM2.5 levels recorded by Speck monitors for entire monitoring period (Oct 19 – Dec 17 2014). Values in ug/m3.

| DISTANCE (km) | 0.5 | 0.5 | 0.8 | 1.5 | 1.0 |
|-----------------|-------|------|------|------|-------|
| from compressor | | | | | |
| SPECK ID | А | В | С | D | Е |
| Average | 14.6 | 8.7 | 11 | 4 | 20 |
| Range of | 10-30 | 1-21 | 5-25 | 1-20 | 15-25 |
| baseline | | | | | |

Southwest Pennsylvania Environmental Health Project (2015). Summary of Minisink monitoring results. http://www.environmentalhealthproject.org/resources/presentations/

Air pollution filing requirements: What's included

RESOURCE REPORT 9 – AIR AND NOISE QUALITY SUMMARY OF COMMISSION FILING INFORMATION

Describe existing air quality in the vicinity of the Project. - Section 9.1.1

Quantify existing and proposed emissions of compressor equipment, plus construction emissions...Summarize anticipated air quality impacts for the Project.

- Section 9.1.2

...For proposed new, additional, or modified compressor units include the horsepower, type and energy source. - Section 9.1.2

Tennessee Gas Pipeline Co. (Nov 2015). Resource Report 9.

Air pollution filing requirements: What's missing

RESOURCE REPORT 9 – AIR AND NOISE QUALITY SUMMARY OF COMMISSION FILING INFORMATION

Describe size and demographics of population in vicinity of proposed compressor station

- Section ?????

Estimate health effects of air pollution on local populations - Section ?????

Describe actions to mitigate, remediate, or compensate for resultant health effects of project emissions - Section ?????

Nitrogen dioxide: NAAQS standards vs health effects

| Table 5-1 All Quality impacts - Market Fath Mid Station 4 Complessor Stat | Table 3-1 | Air Quality Impacts - Market Path Mid Station 4 Com | pressor Stati | on |
|---------------------------------------------------------------------------|-----------|-----------------------------------------------------|---------------|----|
|---------------------------------------------------------------------------|-----------|-----------------------------------------------------|---------------|----|

| Pollutant | Averaging Period | SIL (µg/m³) | Maximum Conc. for SIL Analysis ¹ (μg/m³) | Significant Impact Area (SIA) (km) | Modeled Design Conc. for NAAQS ² (μg/m ³) | Ambient Background (µg/m³) | Total Impact (μg/m³) | NAAQS (µg/m³) |
|-------------------|---------------------|----------------|-----------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------|----------------------------------|----------------------------|------------------|
| NO 3 | 1-hour | 7.5 | 13. <mark>4</mark> 1 | 10.33 | 11.57 | 37.00 | 48.6 | 188 |
| NO ₂ ° | Annual | 1 | 0.19 | NA | 0.19 | 6.00 | 6.2 | 100 |
| | | | | | | 1 | | |

New diagnoses of childhood asthma: Increase 7% Clinic visits for asthma (all ages): Increase 4.4% ER visits for asthma: Increase by 3.8% Hospitalization increased: Asthma (2.2%), COPD (6.7%), stroke (3.7%), heart failure (6.7%) Death from cardiovascular (1.1%) and respiratory (1.4%) diseases

Questions for today:

What do compressor stations emit? Are the emissions harmful?

Do people living near compressor stations experience negative health effects?

Could emissions from a compressor station in New Ipswich be harmful?

Isn't "natural" (AKA "fracked") gas a clean "bridge" fuel?

FRACKED-GAS INFRASTRUCTURE IN BURRILLVILLE RI

K High voltage power lines

Spectra compressor station (that's being doubled in size)

Part 1 of 2

Spectra pipeline

Proposed 1000 megawatt power plant

"Clean" fracked gas power plants?

Table 6.1-1

Facility Potential Emissions of Criteria Pollutants¹

| Potential Emissions | Units | Total | Major Source Threshold | Major Source? | Attainment Status | Offsets/Allowances Required | | | |
|------------------------|--------|-----------|------------------------------|------------------|------------------------|--------------------------------|--|--|--|
| NOx | ton/yr | 285.15 | 50 | Yes | Ozone Nonattainment | 342 | | | |
| CO | ton/yr | 220.03 | 100 | Yes | Attainment | NA | | | |
| VOC | ton/yr | 77.54 | 50 | Yes | Ozone Nonattainment | 93 | | | |
| CO ₂ | ton/yr | 3,626,113 | 100,000 | Yes | No NAAQS | 3,579,867 | | | |
| SO ₂ | ton/yr | 50.84 | 100 | No | Attainment | NA | | | |
| PM/PM10/PM2.5 | ton/yr | 197 | 100 | Yes | Attainment | NA | | | |

¹Based on preliminary project equipment specifications and emissions estimates provided by GE. Equipment vendor selection, equipment specifications, and emission rates are subject to change as the project design advances.

Invenergy Thermal Development Co. (Oct 2015). Clear River Energy Center, Rhode Island Facility Siting Board Application.

A bridge...to nowhere



American Academy of Pediatrics: Policy recommendations

For pediatricians:

Advocate for local, national, and international policies that reduce greenhouse gas emissions...Educate elected officials on the risks climate change poses to child health; speak at public hearings; and provide expert testimony. <u>Help educate the public through...community engagement</u>.

For government:

Promote energy efficiency and renewable energy production at the federal, state, and local levels while <u>decreasing incentives for</u> <u>continued production and consumption of carbon-intensive fuels such as coal, oil, and gas</u>.

AAP Council on Environmental Health (2015). Pediatrics, v136, n5.

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Could emissions from a compressor station in New Ipswich be harmful?

Isn't "natural" (AKA "fracked") gas a clean "bridge" fuel?

Some conclusions

A variety of harmful, toxic, and carcinogenic air pollutants are released by compressor stations

Very low levels of pollutants are harmful, even below federal standards

Preliminary health-based analyses suggest compressor station emissions will impact human health

Individual and community health are not directly addressed during the pipeline approval process

What to do? Renew, protest, divest, contest



Kinder Morgan Inc. NYSE: KMI

Set Alerts

Add

Set

OVERVIEW PROFILE NEWS CHARTS FINANCIALS HISTORICAL QUOTES ANALYST ESTIMATES OF

| (After Hours | | Com | ooro: Ir | dovo | | | | | | | | | |
|------------------------------------------------------------------------------|----------------------------------------------------------|-----|----------|-------|-----|-----|------|------|-----|-----|-----|-----|----------|
| \$16.54 | 4↓ | Com | Jare. II | IUEXE | .5 | | | | | | | | |
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| Previous close Change | \$ 16.66 -0.35 -2.06% | | | | | | | | S | m | M | Jan | 30 |
| Day low \$16.03 | Day high \$17.08 | | | | | | | | | | | | 20 |
| Open: 16.48 | | 15 | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | 10 |
| 52 week low 52 week high \$15.06 \$44.71 1d · 5d · 3m · 6m · 1y · 3y · 5y | | | | | | | | | | | | | |





Thank you...

Temple Ad Hoc Pipeline Committee New Ipswich Pipeline Resistance NH Municipal Pipeline Coalition Many others.....