June 21, 2016

Pam Monroe, Administrator

Site Evaluation Committee

21 South Fruit Street

Concord, NH 03301

SEC 2016-01 Gas Pipeline Rulemaking

Dear Administrator Monroe,

Thank you and the SEC for your work on this docket, as well as for the excellent Public Hearing on June 17th, and for taking more input from the public up to June 22.

I also want to thank you, again, for incorporating the Rule Amendment requiring a Comprehensive Health Impact Assessment for proposed high pressure natural gas pipeline applications, so critical for helping to protect the public health of NH citizens.

After the Public Hearing, I discovered that the SEC Committee members had not received or read the Comments sent in by the public. Although it makes perfect sense to screen them in order to not overwhelm the Committee with multiples of the same recommendations, there are details which truly matter. And, in this case (SEC 16-01), where you are dealing with a new technology, unlike the conventional gas infrastructure, it is imperative for the Committee to have as much factual information as possible. Since many of us have had over a year of researching the HV/HF technology and have consulted with engineers and experts in the relevant fields, I sincerely hope that the public's input is recognized as worthy and that multiples of the same recommendations will be noted.

As was addressed in comments by Atty. Richard Husband and Atty. Arthur Cunningham, the state DOES have the right to make rules which applicant companies need to follow. So the SEC's decisions are very significant and widely influential for NH's future.

As we mentioned after the hearing, NH also has the unique opportunity to lead the way for NE and other states dealing with creating New Rules for this totally new type of gas infrastructure. High pressure HV/HF (high volume/hydraulic fracturing) gas pipelines present many new challenges and entirely different issues never before experienced with the conventional gas industry of the past. For instance:

- The health and safety issues which accompany the new HV/HF natural gas industry and infrastructure are far more hazardous and problematic. Due to the numerous chemical pollutants used in the process of hydraulic fracturing (fracking) itself, as well as substances such as Radium 226 and 228 which get drawn in from the matrix of the rock at the Marcellus shale plays, there are extremely harmful pollutants which cling to the methane and get released into the atmosphere surrounding the compressor stations and metering stations during intentional blow-downs and fugitive emission events, according to extensive documentation by many toxicologists, chemists, universities and research groups.

- The size of the transmission pipelines for the HV/HF gas are usually much larger than the previously installed distribution pipelines for conventional gas—30-36" wide instead of 10-12". The pipes have to be laid deeper to have sufficient covering soil. Therefore, there are greater risks for water and soil contamination from the amount of drilling and blasting down through NH's radon and arsenic-laden granite (2 types of arsenic) during construction potentially resulting in unsafe drinking water from contaminated aquifers and wells.

- The increasingly well-documented toxic and carcinogenic emissions from natural gas compressor and metering stations create potential health impacts for citizens living, working, farming or going to school within a 3 mile+ radius surrounding a 12,000 HP compressor station (further out for larger ones). These are public health threats requiring impeccable solutions.

- And the safety issues are potential nightmares for our rural towns with volunteer FDs and lack of municipal water systems and sufficient hydrants for protecting homes and forests from a pipeline or compressor station gas fire or explosion. Kinder Morgan instructed our FDs that they are not allowed to assist in quelling pipeline fires, but must wait for the company's experienced crews to come (from miles away) to shut down the valves. Our FDs are only allowed and can only attempt to evacuate and rescue residents and deal with burning houses and resulting forest fires.

  For example, Kinder Morgan's abysmal record of –"180 incidents of leaks, fires, explosions, injuries and fatalities since 2003", and their maintenance record is the subject of derision and scorn from PHMSA, make it imperative to establish Rules that would require explicit and extraordinary mitigation measures for their equipment, construction, operational and maintenance processes.
  It is also significant that the pipelines constructed since 2010 have the same dismal accident record as the oldest pipes still in the ground! So the newer equipment is not the answer to our safety concerns.

For those reasons, among others, I strongly request that the SEC:

1. Adopt the proposed Amended Rule to require a Comprehensive Health Impact Assessment (CHIA) for all applications for high pressure gas pipelines within NH.

2. Heed the warnings of the electrical engineers who have contributed recommendations for a Rule to restrict the siting of high pressure gas pipelines to over 1,000 ft. away from electric transmission lines for the safety of the public, the electric lines, and the integrity of the pipeline.

3. Adopt a new Rule that will require proof of an **applicant's bond to secure their ability to pay and their agreement to pay the total costs for independent public health professionals and appropriate engineers and experts selected by the SEC in collaboration with local municipal officials to provide:**

   a) a CHIA for any high pressure pipeline and its appurtenances proposed for NH
   b) pre-construction, baseline ambient air, water and soil testing for residences, schools, farms, wells, etc. within 1 mile of a pipeline and/or 3 miles from compressor stations and metering stations
   c) construction phase air and water testing for the same areas

d) operational phase testing and monitoring of soil and water quality and quantity
e) operational phase seasonal air monitoring and analysis for selected pollutants from an updated version of NH's Toxic Air Statutes, selected by NH licensed toxicologists and municipal representatives, measuring hourly, daily, monthly and yearly emissions, especially within a 3 mile radius of 12,000 HP compressor stations, further for larger ones
f) a baseline pre-construction health survey for citizens living, working, or attending school within a 3 mile radius of a compressor station
g) 10 years of follow through health assessments for children attending school within a 3 mile radius of a compressor station
h) the repair of any harms or damage caused by construction or pipeline operations, to woodlands, wetlands, lakes, rivers, aquifers, wells, private property, roads, bridges, etc.
i) the decommissioning of the pipeline and its appurtenances with all debris removed and disposed of according to state and federal regulations and rules
j) the legal fees for the sale of property and interim housing as well as total cost for property owned by citizens choosing to sell their entire property, assessed at its pre-pipeline value, if taken by eminent domain for the construction of the pipeline
k) legal expenses for towns harmed by the damage to their tax base from diminished real estate values resulting from the presence of pipelines and/or their appurtenances

Similar to the SEC "considering the cumulative visual impact" of Northern Pass. I also request that the SEC consider the **cumulative health and safety impact** of high pressure gas pipelines.

With the amount of inevitable environmental destruction (woodlands, water resources and eco-systems) and numerous other potentially harmful consequences to communities and NH citizens of siting high pressure natural gas pipelines, the question of **"public interest"** becomes simple. Furthermore, discovering that the supposed "energy crisis" they say the pipelines would help us with is over, or is actually a myth, makes it clear beyond any doubt. As we've learned, the **myth of our "energy crisis"** stemmed from the poor planning and mismanagement of the grid in the winter of 2014 as a result of our "overdependence on natural gas", as the OEP has stated. The following fall, when the rates were set, the belief in an "energy crisis" was what lead to the sky-high electric rates which further compounded the myth**. In reality, wholesale energy costs plummeted 60% by January, 2015. And, in spite of having an even colder winter, there was no "energy crisis" in 2015, even though 2 more major power plants had retired and there wasn't a single new pipeline!**

In fact, ISO-NE's e-news reported that **April 2015 had the lowest energy demand in 12 years! And it had the lowest wholesale energy prices in 16 years!! There was no "energy crisis" to be found!**

We also know that **it's our transmission costs that raise our rates so high….not our energy costs**. Hopefully, ISO-NE or the PUC will respond with solutions to FERC's questions about that.

In any case, the NH OEP 10-Year State Energy Strategy illustrates in Appendix A, Chart #3 that **NH will not need more natural gas up to 2032!** The increasing energy efficiency and renewable energy programs in MA are decreasing their need for energy exports from us. That, plus the RGGI program and NH and federal incentives for renewable energy installations and energy efficiency work in NH, continually add to our supply and balance the loss of retired power plants. The State Strategy also emphasizes the importance of diversifying our fuel supply to reduce overdependence and price volatility.

Plus, as you know, Distrigas has signed a 10 year contract to supply all the energy NE needs for winter peaks. So with No "energy crisis" to fix, there's no excuse for bringing more fossil fuels into NH,

especially not methane—not a “bridge fuel”, but the worst GHG of all for trapping heat and pumping climate change.

Another compelling fact is that 164 NH towns passed warrant articles in 2007 requesting that their Select Boards and Town Administrators take steps to reduce GHG emissions! In other words, **high pressure natural gas pipelines serve no “public interest” in NH.**

Finally, I also want to acknowledge my full support for the Rules recommended by the Municipal Coalition, the Mason Pipeline Committee, Atty. Richard Husband, the Comments entered previously by the electrical engineer, Chris Mackensen, and the spoken recommendations from George Stolz, civil engineer, and the other speakers at the Public Hearing.

Please forward these recommendations to the members of the SEC along with the attached Rule recommendations along with the attached Power Pt on compressor stations, made by two members of the Municipal Coalition, John Kieley of Temple and Dennis Gauvin of New Ipswich.

Thank you, again, for your help and concern for the wellbeing of NH’s citizens and communities.

Bev Edwards

Chair, Temple Energy Committee

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Proposed SEC Rules for siting high pressure natural gas pipelines in NH:

Purpose:

Regulations, inclusive of setbacks:

A: Provide for the safe and attractive development of the site and guard against such conditions as would involve danger or injury to health, safety, or prosperity by reasons of (1) Inadequate Drainage or conditions conducive to flooding of the property or that of another. (2) Inadequate protection for the quality of groundwater. (3) Undesirable and preventable elements of pollution such as noise, smoke, compressor station emissions, particles, or any other discharge into the environment which might prove or does incur episodes harmful to persons, structures, or adjacent properties. (4) Inadequate provision for fire safety, prevention and control.

B: Provide for the harmonious and aesthetically pleasing development of the impacted municipalities and their environs.

C: Provide for open spaces and green spaces of adequate proportions.

D: Provide for the proper arrangement and coordination of streets within the site in relation to other existing or planned streets or with features of the official map of the municipalities.

Procedures:

Many applicants for gas pipeline projects want to be "good neighbors." To fulfill this explicit request, the following is required. **(Please note: Our licensed professional engineers have implemented and executed every one of the forgoing methods for siting, operating and construction methods**.)

In the foregoing, the applicant shall bear all costs of review including:

1. Notification of abutters.
2. Fees.
3. Costs of special investigations, studies, town's consulting engineers, etc.
4. Expert testimony for experts of the Public, Municipalities and NHSEC requirements

Submission Rules:

A. Existing Data and Information:

1. Location of site including names and addresses of owners of record, the applicant or developer, the engineer or surveyor.
2. List of current names and addresses of abutters.
3. Two (2) mylars and four (4) paper copies of the site plan, the scale of the map (to be no greater than 1"=100'), North arrow and Date. Maximum size of each drawing is 22" x 34".
4. Vicinity sketch showing location of site in relation to the surrounding public street systems.
5. The surveyed boundary lines of the area included in the site(s). Location and width of all existing roads, driveways, and easements shall be shown.

6. copies of any existing or proposed easements, covenants or deed restrictions regardless of eminent domain condemnation.
    a. Include all stone walls (ancient, antique or otherwise) in drawing, maps, mylars, deeds etc.
    b. Include all maple tree locations proposed for cutting operations in the same
    c. Include nearby indigenous peoples' or other historically relevant monuments, districts inclusive of spiritual or religious significance and their distance from any site(s) proposed by applicant
7. Existing grades, drainage systems, structures and topographic contours at intervals not exceeding 5'.
8. Shape, size, height and location of existing structures and wells (springs, aquifers, waters) located on the site and within 200' of any pipeline survey area (to include temporary road access, pipe yards etc., and any areas of operation for applicant), and within 3 miles of any compressor station site meeting or exceeding boiler plate rated 6,000 horsepower.
9. Natural features including watercourses and waterbodies, various types of vegetation and topographic features.
10. Soils data as certified by the County Soil Conservation Service.
11. Vernal pool structures with locations on maps, mylars, etc. inclusive of fern, flora and fauna identified by land-based survey (aerial survey not admissible due to inability for identification of above fauna species).
12. Weather Data for the past 10 years, especially inclusive of most recent 3 years, and previous declarations of NHDES ozone alerts and weather inversion.

B. Proposed Development:

1. Proposed grades, drainage systems, structures, and topographic contours at intervals not exceeding 5'. Include steep terrain and mitigations thereof for apropos pipeline or compressor station development.
2. Shape, size, height, and location of the proposed structures including expansion of existing structures, with typical elevations and floor plans, inclusive of exhaust stacks and ancillary equipment of any kind (now or future). Include proposed streets, driveways, parking spaces, loading areas, sidewalks and their dimensions shall be shown.
3. Design and location of all proposed utilities including but not limited to water supply, waste disposal, septic tanks and leach field systems.
4. Location, type and size of all proposed landscaping, screening, etc.
5. Provisions for control of erosion and sedimentation, both temporary and permanent.
6. Provision for fire safety, prevention and control inclusive of fire breaks; design criteria must include dry seasons in Spring and Autumn especially including dry leaves recently fallen from deciduous trees.
7. Storm water drainage plan showing existing and proposed methods of handling storm water run-off based on a 20 year flood storm frequency.
8. Location of all building setbacks required.

9. Copies of all applicable state approvals and permits.

General Standards and Rules:

The following general standards and rules shall govern the review and implementation.

1. The proposed use, building design and layout shall meet the provisions of ordinance, subdivision regulations, and the intent of any master plan for given encumbered municipalities.
2. The proposed use and design layout will be of such a location and in such size and character that it will be in harmony with the appropriate and orderly development of the surrounding area.
3. The proposed use and design layout will be of such nature that it will make vehicular or pedestrian traffic no more hazardous than is normal for the area involved.
4. The land indicated on the plan shall be of such a character that it can be used for building purposes without danger to public health or welfare.
5. The proposed use shall provide for open spaces and green spaces of adequate proportions.
6. The proposed use shall provide for the adequate or appropriate requirement of protection for groundwater.
7. The landscape shall be preserved in its natural state insofar as is practical by minimizing tree (especially maple trees) and soil removal. Site preparation is to be conducted with minimal disturbance to existing vegetation. Stripped topsoil is to be piled and reused on the site where needed. A minimum of 4" of topsoil is to be placed on the disturbed area. The site shall be adequately landscaped by means of natural undisturbed vegetation or features, or ground cover, shrubs or trees as appropriate.
8. Grading and filling must be conducted to minimize the alteration of surface and subsurface drainage to, toward, or across abutting properties, unless the written consent of the abutting owner is obtained.
9. Exposed storage areas, exposed machinery installations, service areas, truck loading areas and similar accessory uses and structures shall be subject to such setbacks, screen plantings or other screening and buffering methods as shall reasonably be required to prevent these areas from being incompatible with the existing or contemplated environment and surrounding properties.
10. Appropriate buffers or screening as deemed necessary by the NHSEC or local Planning Board(s) shall be maintained, in good faith for good neighbors (as proposed by applicants, typically) or installed to provide privacy and noise reduction to residential areas abutting non-residential sites of development.
11. Water supply and sewage disposal systems must be adequately sized to meet the needs of the proposed use under the regulations of the N.H. Water Supply and Pollution Control Division. It shall be the responsibility of the developer, his or her agent to provide adequate information to prove the area of the lot is adequate to permit the installation and operation of an individual sewerage disposal system. The developer shall provide the necessary percolation tests and submit such tests together with the proposed plan to the State of N.H. Water Supply and Pollution Control Division for its consideration and approval. Such approval must be given before site plan approval can be given.
12. Sufficient off-street parking, loading / unloading, and pedestrian accommodations must be provided so as not to impede on public streets or adjacent properties.

13. Outdoor lighting is restricted to that which is necessary for advertising, safety and security of the development and shall not glare on abutting properties, public highways or streets. Indirect lighting may be used on signs advertising goods or services offered on the premises. Moving, fluttering, blinking, or flashing lights or signs are not permitted, as may also be in alignment with many local regulations.
14. Approval of the N.H. Department of Public Works and Highways or Town Highway Department for any required driveway permits or curb cuts.

Performance Bond

The NHSEC may (or should, or will) require the posting, prior to final approval of any plan, of a bond or escrow agreement in such amount as is approved by The NHSEC or local Planning Board(s) as being reasonably necessary to ensure completion of all improvements required as conditions of approval of such a plan, in such form as may be approved by the NHSEC, Planning Board(s) and Town(s) Counsel(s).

Waiver

Upon a request from an applicant or upon a motion of any regular member, the NHSEC, Board(s), *et al*. may vote to waive, in whole or in part, the requirements of the section titled **Submission Requirements** when the proposed site plan involves either no structural changes or only minor structural expansion, or when, in the majority opinion of the NHSEC, Board(s) *et al*., the literal enforcement of the regulation would create an unnecessary hardship, due to unique characteristics of the site in question, and such waiver would not adversely compromise the purpose or intent of the site plan review regulation.

Construction:

Large Scale Infrastructure Construction, Utility Transmission and Distribution Construction, and Industrial Construction; as performed by trades defined in OSHA Major Group 16 (OSHA Website).

This section applies to the Construction Site, all Lay Down and Staging Areas.

Definition of Terms:

Large Scale: Projects which cause the disturbance of 3 acres (or more) of real property, public or private.

Infrastructure Construction: Construction of technical structures such as; roads, bridges, tunnels, water supplies, sewers, electrical grids, natural gas supply and telecommunications.

Utility Transmission and Distribution Construction: Construction of facilities required to facilitate the transmission and distribution of Natural Gas, Electrical Power, Water and Telecommunications.

Industrial Construction: Construction of Warehouses, Manufacturing Plants, Electrical Generation Facilities, Natural Gas and Petroleum Plant facilities and other Product Production facilities.

Planning and Design

1. No Construction will be allowed within the state by Owners or Contractors with previous willful or unintentional OSHA Violations or Contract Defaults.

2. No Construction will be allowed within the state by Owners or Contractors whose principals, officers or owners have been convicted of a felony in NH or any other state.
3. The Project Design must be performed by a New Hampshire registered and licensed Professional Engineer. Surveys must be performed by a New Hampshire registered or licensed Professional Land Surveyor of New Hampshire.
4. Design Plans must conform to all New Hampshire and Town(s) Building Codes, Ordinances and Permitting.
5. Design and Construction must conform to all Federal, State and Local Regulations with regard to all Environmental regulations, guidelines and best practices, including but not limited to Air, Water, Soil, Light, Noise, Hazardous Material Handling and Disposal.
6. All Project Designs must include a detailed Safety Plan including but not limited to: Standard Operating Procedures (SOPs) for construction segments; traffic maintenance; worker and Public Safety.
7. All Construction Plans are subject to review and approval by the impacted towns Planning Board, Select Boards, Engineers and Road Agents.
8. Five (5) Complete Sets of Design Plans and Project Construction Specifications shall be submitted for approval. This will also include a progress schedule indicating the major items of construction.
9. All applicable permits and an approved set of construction documents must be maintained on site and be available for review by all State, Local Officials and Public or their designated representatives.
10. A Bond will be required to be posted by the contractor prior to the beginning of construction.
11. The Owner and Contractor must carry all necessary Insurance of adequate value and will include the impacted towns as a rider on all Policies at no cost to the towns. The Towns will be held harmless in all matters relating to the proposed project.
12. Construction of the project will not begin until all necessary and applicable permits for the entire project have been obtained for construction.
13. During Construction, an up to date construction progress report shall be prepared by the contractor (weekly) and provided to the Towns' Engineers and/or Select Boards for their use. The progress report will be submitted as a hard copy (5 Copies) to the Town Offices on the Monday following the conclusion of the construction week. This will include an updated progress schedule of the major items of construction.
14. At the completion of the construction, fully updated and completed sets (5 sets) of As-Built Plans and construction specifications (5 Copies) shall be submitted to the Towns Engineers and/or Select Board(s). Submission of the documents shall take place no later than 30 days after project completion. No Certificate of Occupancy (C of O) will be issued or bond released until this requirement is met.
15. A Landscape Design Plan in keeping with the rural characters of the impacted townsequired within the borders of the facility and extending to the Project Limit Lines. Vegetative Screening at the fence line is expected as a minimum.
16. Building exteriors must be of a character that is unobtrusive in a rural setting or setting becoming of the surrounding community Type.

17. Sound Pressure Levels in "rural" locations produced by facility operations shall not exceed 33 dBA (Leq 10 minute) anywhere at any time measured at the facility property line. All exhausts on any equipment shall be equipped with sound suppression equipment to meet this condition.
18. All equipment exhausts shall meet Federal and State EPA requirements with regard to equipment exhaust emissions coupled with recent and current peer-review study as allowed by NHDES.
19. The proposed project shall meet or exceed any Towns' nighttime Dark Sky requirements.

Clearing and Grubbing Phase

1. All necessary tree trimming and cutting must be performed by a certified arborist.
2. Proceeds of all cash crop trees removed by the contractor to be paid to the Towns' timber tax (or Property Owner).
3. All stumps are to be removed offsite, legally disposed of and the holes filled (and compacted) with suitable clean, non-manufactured fill which matches the existing surrounding soil in all respects.
4. All Clearing and Grubbing debris must be removed offsite and legally disposed of.
5. Topsoil shall be stripped prior to excavations stockpiled and stored to prevent losses caused by pile erosion by wind or water, for use in restoration phase.
6. Prior to clearing and grubbing, suitable environmental protection must be in place at the limits of the proposed construction and in the construction zone.

Construction Phase

1. All Construction will at a minimum adhere to NH State, County, Town and Local Construction Standards and existing Construction Specifications.
2. Construction Equipment will be inspected for leaks by the Independent Environmental Engineer prior to moving on site. The Owner/Contractor will have sufficient means on site at all times to control and clean up accidental spills. All substandard construction equipment will immediately be removed from the site and Town(s) limits. This applies to all equipment from Mobilization through Demobilization and for equipment using Town(s) Roads for through passage.
3. Excavation of rock may not be accomplished with explosives. Rock Cutter, Trencher, Saw or Hydraulic Excavator mounted Hammer shall be used for rock excavation.
4. No trench longer than 100 feet may be left open overnight or on weekends and holidays.
5. All open trenches must have safety fence installed adjacent to both sides of the trench for public and worker safety.
6. All OSHA Regulations related to Construction and Jobsite Safety will be strictly adhered to and monitored by an independent Safety Consultant paid for by the contractor. The Independent Safety Consultant will have complete authority to order the cessation of construction as necessary. No construction will take place in the town unless the safety consultant is present on the project within the Towns' borders. Safety stand downs will be conducted following the occurrence of a safety violation, near-miss or accident. The Independent Consultants report to the Towns' designated Engineer or Select Board.

7. Environmental protections and controls in accordance with NHDOT specifications will be employed during the construction of the project. Environmental compliance will be monitored by an independent Environmental Consultant paid for by the contractor. The Environmental Consultant will have complete authority to stop work on the project if the required protections and controls are not regularly maintained as per NHDOT standards or are missing. Work will not be allowed to continue until the protections and controls are fully restored. No construction will take place in the Town unless the environmental consultant is present on the project within the town borders. The Independent Consultant reports to the Town's designated Engineer and/or Select Board.
8. All construction roadways must be completely removed from the project within the town borders at the completion of the installation phase and prior to restoration. Restoration of the areas disturbed by the construction roadways will be restored to the Town's Engineer, Road Agent and/or Select Board's satisfaction.
9. No construction is permitted on Holidays, weekends and/or nights within the towns' borders. No overnight road closures or detours are permitted. No Overnight deliveries are permitted.
10. **Dewatering** is not allowed except by permit. Discharge of dewatering systems will be accomplished through filtered settling basins as designed by the project environmental engineer (NH registered/licensed P.E.) in accordance with Federal, State, Local requirements and standards.
11. **Jacking or Boring for installation of conduits, pipelines,** etc. must cross roadways perpendicularly and must be designed fully by a NH registered/licensed Professional Engineer.
12. **Directional Boring (Drilling); Road crossings** shall be perpendicular to the roadway line of travel. The depth of crossing for roads shall be 12 feet below wearing course finished grade. The drill path surface grade during this operation shall be constantly monitored for evidence of fracking (drilling mud appearing at the road surface or other surfaces along the drill route). **In the event of fracking, the bore will stop and the fracked material immediately cleaned up and** removed offsite to a lined landfill**. Drill fluids exclusive of the bore and receiving pits shall be collected in Adler type Frac Tanks, the fluids recycled and reused or disposed of in a lined landfill. Water used for this operation shall be potable drinking quality water. If Fracking occurs the Directional Bore (Drill) will be abandoned and sealed.**
13. **Directional Boring (Drilling) under water crossings and wetlands shall be at a depth of 25 feet below grade for wetlands and water crossing beds. The Drill path shall be constantly monitored for the evidence of Fracking. Any unexplained loss of Drilling Fluid or evidence of fracking either on the wetland or water body surface will be cause for the operation to immediately stop and the** fracked fluid to be cleaned up and removed offsite to a lined landfill. **The Bore (Drill) will be abandoned and sealed. Drill fluids exclusive of the bore and receiving pits shall be collected in Adler type Frac Tanks, the fluids recycled and reused or disposed of in a lined landfill.** Water used for this operation shall be potable drinking quality water.
14. **During Concrete Construction**, Redi Mix delivery truck washout will not be allowed on ground surfaces that will permit slurry runoff to adjacent ground surfaces. Washouts, after hardening, will be removed from site and the town limits and legally disposed of. It will not be used as backfill or road base material.

15. Care will be used when coating concrete forms that no form release agent (form oil) shall be spilled or dripped on any ground surface. This also applies to post poured concrete cures and coatings.
16. Excavated or milled road material will not be used as backfill or road base material. It will be removed from the site and town limits and legally disposed of.
17. Oil shall not be mixed with fill materials to create a subbase for roadways, temporary or permanent.
18. Imported Backfill will match the existing surrounding soil in all respects. Site Soil samples will be obtained prior to construction and soils lab tested for gradation, pH and all other qualities. Imported Soil for backfill will meet these test requirements. The Owner/Contractor will gather the samples under the supervision of the independent Engineering Consultant. The Lab results will be furnished to the Independent Engineer directly by the lab. The Engineer will furnish copies of the lab results to the Owner/Contractor for his use in locating a borrow source. Samples taken at the borrow pit will be under the direct supervision of the independent Engineer and provided to the Soils Lab for testing. Test Reports for the borrow sample(s) will be provided by the lab to the independent Engineer who will share them with the Owner/Contractor. The approved borrow source will then be marked at the source, identifying it as material for the project. Borrow fill brought on site will be accompanied by a scale or volume ticket provided by the source. Copies of these tickets will be contained in the AS-Built documents furnished to the town. This Borrow fill will contain no chemicals, Bituminous Concrete, Portland Cement Concrete, Hazardous Materials or other contamination and will not be a manufactured soil material.
19. Temporary Pavement will be Hot Mix Binder Course Asphalt only. All Trenches across road-ends will be backfilled and compacted to 95% proctor and Temp Paved at the end of each work day. Jetting will not be permitted for compaction. Temp Asphalt will be compacted with a 5 Ton Roller (minimum).
20. All Roadways within the towns used by the Owner/Contractor for delivery of Labor, Equipment and materials to the site will be video graphed by the Owner/Contractor in conjunction with the Town(s) Road Agent / Engineer prior to the start of construction. Both parties shall retain a copy of the video. Damage to the wearing course, road base or other appurtenances to the roadway during the period of construction shall be repaired by the Owner/Contractor to the satisfaction of the Town(s) Road Agent / Engineer. Repair of the roadway shall be in kind. Any Bridges that the Owner / Contractor deems part of the routing needed for delivery of labor, equipment and materials to the project shall be inspected by a NH registered structural engineer prior to any passage for soundness. The structural engineer will be designated by the Town Select Board in conjunction with the Town Road Agent / Engineer and paid for by the Owner / Contractor. Should any bridge be deemed insufficient, that route will not be used for delivery. The impacted towns are under no obligation to and will not repair any bridge deemed insufficient for the Owner / Contractors purpose. The structural engineer will report directly to the Town Board of Selectmen (hereafter BOS).
21. Trenches across Town Roads shall be restored in kind with the binder and wearing courses each receiving an eighteen (18) inch cutback from the trench and previous course layer upon

completion of the trench restoration, an additional one (1) inch thick wearing course shall be applied to the entire roadway from nearest intersection to nearest intersection. All public and private drives shall be adjusted to meet this new wearing course, providing a smooth transition from the existing drives. Public and private drives shall be milled or notched to provide the transition. This paving shall be performed to the satisfaction of the Town(s) Road Agent / Engineer.

22. Traffic Control Devices employed on and around Town Roads shall conform to the FWHA Manual of Uniform Traffic Control Devices (MUTCD) and shall be maintained in a clean and undamaged condition during the construction of the project.
23. **All Sanitary and product piping shall be hydrostatically tested prior to intended use. Testing pressures will follow industry standards. Water for testing may not be drawn from the town aquifers. In addition, test water shall be collected in Frac type tanks, removed from the town and legally disposed of outside of the town borders.**
24. Buy American; Federal Acquisition Regulations or equivalent: The Owner / Contractor shall make a good faith effort to purchase construction materials, components and equipment manufactured in the United States.
25. The Owner / Contractor shall make a good faith effort to employ local labor and craftspeople, where possible, in the construction of the project.

Restoration Phase

1 At the conclusion of the construction phase, the roadways within the Towns' borders used for construction or delivery of labor, equipment and materials shall again be video-graphed by the Owner/Contractor in conjunction with the Towns' Road Agent / Engineer. Any and all damage to the roads shall be assessed by the Towns' Road Agents / Engineers. Roads damaged by the Owners /Contractors use for construction or delivery of labor, equipment and materials to the project will be repaired by the Owner/Contractor to the complete satisfaction of the Town Road Agents / Engineers. Roads will be repaired / replaced in kind. All roads damaged and repaired will receive a new one inch (1") compacted thickness wearing course of Bituminous Asphalt. The Asphalt wearing course shall meet the specifications of the NHDOT for high friction wearing course asphalt paving. The wearing course installation shall extend over the entire route of passage usage by the Owner/Contractor. Paving limits will be assigned and marked by the Town Road Agents / Engineers in conjunction with the Owner / Contractor. Any traffic markings will be replaced as necessary and will conform to NHDOT specifications with regard to permanent reflective pavement markings. Non- plowable markers shall also be replaced as necessary and will also conform to NHDOT Specifications. Appurtenances shall also be evaluated and repaired / restored as necessary.

2 <u>At the conclusion of the construction phase, the bridges along the route(s) will again be inspected by the structural engineer. This inspection will be paid by the Owner / Contractor.</u> The Structural Engineer will report directly to the Town BOS. Any and all damage discovered during this inspection will be repaired by the Owner / Contractor at no cost to the town and to the satisfaction of the NH registered structural engineer, the Town Road Agent / Engineer and the Town BOS.

3 Should the Project Owner / Contractor require ongoing yearly usage of the Town roadways to continue operation / production of his or her endeavor, the roadways / bridges will be assessed

yearly for damage due to the Owner's / Contractor's operations. **All assessed damages will be repaired at the Owner's / Contractor's expense.** The yearly inspection of the roadways, bridges and appurtenances will take place in the springtime of the year to allow a construction season for the damage to be corrected. Damage assessment will be performed by the Town Road Agents. All repairs will be made to the satisfaction of the Town Road Agent. Prior to granting a permit to construct, The Project Owner / Contractor will agree to this provision in contract with the Towns. Failure to do so will result in the project becoming non-permitable and non-constructible within Town borders. This provision will remain in effect for the life of the operational use / production. It will continue for one year beyond the date for which use / production ceases. Repair / Restoration performed during this period will be considered Final Repair / Restoration. A Bond will be in place to ensure this provision is completed yearly.

4 The Owner / Contractor, at the completion of his or her use of the facility will, prior to quitting the site, decommission and remove all structures and infrastructure related to the project in a manner consistent with demolition practices as outlined by Federal and State Environmental Protection Regulations. Should the Owner / Contractor during the life of the use / production sell or transfer ownership of the facility / property to another party, all Heavy Construction General Conditions herein described shall transfer to the new owner / contractor and shall be binding upon the new owner / contractor. Under no circumstances is demolition debris to remain within the towns' borders. In the event the proposed new owner / contractor will not or cannot agree to these provisions, no transfer of property / facility shall be permitted and the facility / property will be decommissioned. A Bond in the amount necessary for the Jurisdiction to contract for the removal of the facility, should the Owner / Contractor abandon the site, will be provided by the Owner / Contractor and will be held by the Authority having Jurisdiction.

5 Restoration of grass areas shall be by weed free seed of a type native to the town and region. Seed, mulch, fertilization and watering shall be consistent with NHDOT specifications. Maintenance of the grass area will be continuous to ensure restored growth.

6 Trees planted during this phase will be native species only and be of a four (4) inch minimum caliper. Trees shall be maintained and watered consistent with NHDOT specifications.

7 Non Organic pesticides and herbicides (pesticides or herbicides with organic-chemistry bases or constituents) will not be used during any phase of construction or post construction maintenance.

8 Drainage runoff from the site to adjacent properties and /or public thoroughfares is not permitted.

New Hampshire

Not The Next Minisink!

Although not a KM/TGP project
the story and results here
will be the same!

This story did happen
It continues to happen
and will happen here
unless
we do things differently!

Minisink, NY

- **Small, rural town west of Brewster NY**
- **Compressor station (CS) added to existing Millennium pipeline in 2013…12,260 horse power**
- **Town fought to site CS outside of town on pipeline owned land…far from homes**
- **FERC voted 3-2 to site in town rather than the existing alternative. Dissenters cited air quality would suffer**
- **Town took to court and lost**

Minisink, NY

- **In the fall of 2014 SWPA-EHP initiated a community health and air pollution project in Minisink, New York. SWPA-EHP was fortunate to have a community willing to participate in this first effort at monitoring impacts from a natural gas compressor station. The residents' cooperation in the air monitoring effort and in the health assessment process was a key factor in the project's success**

Minisink, NY

- **Soon after CS operation commences residents report nosebleeds, headaches, asthma, rashes etc.**
- **SWPA-EHP conducts health and air quality study**
- **Volatile Organic Compounds, as expected, are captured in the air canisters**
- **Higher than expected Particulate Matter is present**

Minisink, NY

- **Elevated amounts of Particulate Matter PM 2.5 are found, 17-20 micro grams per cubic meter (mg/cm)**
- **3 TIMES the national average of 6.3 mg/cm**
- **Well above the EPA limit of 12 mg/cm**
- **Multiple episodes of peaks into the hundreds, as high as 426, were also recorded by Speck monitors**
- **One home had a 24-hour average of 64**

Minisink, NY

- June 2015 **Harvard study shows health risks with PM 2.5 levels above 6** include reduced lung function, heart disorders and increased BP

- **Each 1 microgram per cubic meter increases the mortality rate by 1% for people over 65**

- Dec 2014 **Harvard study shows high PM 2.5 levels in the 3rd trimester of pregnancy DOUBLE the risk of newborn autism**

Minisink, NY

- ***No** pre-construction air quality or health assessments were done which nullified request to close Compressor Station*

- **Emissions now total 61,000 tons annually, before blowdowns**

- **Examples of chemicals found in canisters:**

  Volatile Organic Compounds, Methane, Acetone, Ethylbenzene, Dichlorodifluoromethane, Ethanol, Ethylbenzene, Propene, Toluene, Trichlorofluromethane, Trichlorotrifluoroethane

Minisink, NY

- **Radium 226 and 228 are found in large quantities in Marcellus Shale gas**
- **Radium scale builds up in pipeline and CS which must be periodically removed and properly disposed of not dispersed into the environment**
- **Radium is known cause of bone and lung cancer**

Minisink, NY

- **Dr. Wilma Subra's presentation on:**

  "Potential Environmental and Human Health Impacts Associated with the Minisink Compressor Station" summarizes the dangers posed to the communities of New Ipswich, Temple and Greenville if a station over 3 times as large is built

- (The link can be found in bold print on links pg.)

New Hampshire

- **KM newsletter states that hazardous air pollutants have been removed prior to transfer into TGP pipeline system**
- **What is removed is sulfur…not other toxins, VOC's etc., and benzene is actually increased**
- **KM's brochure for Emergency Responders states, Pipeline Incident Response Tactics - Conduct vapor monitoring for H2S, LEL and Benzene, Refer to guidebook 130 Benzene**

Dr. Wilma Subra

- **Speaking on the chemicals released from Compressors**
- **This is not the presentation mentioned on previous slide**
- **https://youtu.be/R403JjaxnTs?t=20**

Minisink, NY

- **Currently, 7 miles from Minisink, in Wawayanda, NY, a gas fired power plant to produce electricity is under construction by Competitive Power Ventures. Citizens of the area have filed suit to stop construction**

- **To compensate for emissions exceeding local limits, CPV bought emission reduction credits (ERCs) from other companies not using their permitted amounts. Those companies are in Philadelphia, 375 miles away.**

- **CPV ERCs include credits for 75 tons of volatile organic compounds (VOC's), which the World Health Organization deems unsafe and carcinogenic in any amount. So CPV's total VOC emissions annually are actually 140 tons, more than twice the local limit. On an average day, the plant would emit a volume of VOCs that could fill a large barn.**

Dr. David O. Carpenter

- **Director of the Institute for Health and Environment at the University of Albany**
- **He is speaking in Nassau NY which has a proposed compressor station similar to New Ipswich**
- https://youtu.be/RPyXaAwHM_8?list=PL8i7qTPiGAF5VSxuf5kSavHGNxbs-JT6D

New Hampshire

- **Now slated to have one CS in New Ipswich with KM already saying they plan to add more CS's along the route…possibly one every 17 miles**
- **Like Minisink the New Ipswich CS would be close to dozens of homes, the Temple Elementary School, numerous wells and the Greenville reservoir**
- **Air pollution would easily reach the centers of Temple, New Ipswich and Greenville…and beyond**
- **How long before WE get a gas fired power plant?**

New Hampshire

- **At 41,000 HP, the New Ipswich CS would be over three times that in Minisink; at 80,000 HP it would be over six times its size**
- **Amount of toxins released and area of dispersion is proportional to size of CS**
- **Expected total emissions (not VOC's) 200,000-400,000 tons annually**
- **Area of dispersion very dependent on height of stack and wind conditions**

What an 80,000 HP Compressor Station looks like Haven, Kansas

https://vimeo.com/139932144

Earth Works

- **A non-profit dedicated to protecting residents from the effects of energy production and transportation**
- **Have worked with SWPA-EHP and Wilma Subra to study Marcellus Shale wells and transportation**
- **Findings include:**
  - **Actual pollutants from Compressor Stations exceed modeling estimates prior to construction**
  - **90% of individuals within a 2-3 mile radius of Compressor Stations experience health impacts**

Are Blowdown Emissions considered in permit applications?

- Blowdowns of raw gas should be counted in “modelling” a CS
- https://youtu.be/yXLD3e7EoI8?list=PL8i7qTPiGAF5VSxuf5kSavHGNxbs-JT6D

- Venting in Union County FL
- https://youtu.be/6a_uV6c-Nu0?list=PL8i7qTPiGAF5VSxuf5kSavHGNxbs-JT6D

Dr. David Brown

- **To attain permits, pipeline companies use analysts who manipulate projected emissions levels to make them acceptable by Environmental Protection Agency standards, Brown says. Those standards are also weakened by industry lawsuits when the EPA tries to tighten them. "They delude themselves about emissions safety," says Brown.**

- **By segmenting and averaging emissions over long periods and shortening technology operation periods, emissions levels can be calculated that fall below a level designated "major source." A project designated "major source" necessitates an Environmental Impact Assessment that requires hazards to be more thoroughly investigated.**

Dr. Wilma Subra

The rules and regulations have minor and major emitters. The companies always make sure they are just below the concentration that would make them major because when you're major you have to comply with a whole lot more modeling. They all want to be minor sources.

FERC, EPA & DES Will Protect Us?

- **FERC system is broken and is under fire to change. Fact is, the existing rules will be what FERC enforces**
- **The EPA has been weakened in recent years due to budget cuts. In addition when they introduce more stringent regulations, big industry lobbies, sues and ultimately negotiates a lowering of the intended requirements**
- **DES – remains to be seen – if like other states, if FERC approves, so will they.**

Dr. Wilma Subra

- **Wetlands, endangered species, bird migrations etc., even schools, don't matter**

- **The only way you're going to stop this is through your Congressional Delegation**

What Our Governor and Congressional Delegation Must Do For Us

- Stop the project if there is no proven NET benefit to NH
- Insist on electric compressors
- Demand air, water, soil and health testing before, during and after construction at KM expense by independent 3rd party
- Demand that the Compressor Station be designated a “Minor or Major Source” via independent 3rd party modeling

Reference Material

Dr. Wilma Subra

- **Has just completed a seven year term as Vice-Chair of the Environmental Protection Agency National Advisory Council for Environmental Policy and Technology (NACEPT)**
- **A five year term on the National Advisory Committee of the U. S. Representative to the Commission for Environmental Cooperation**
- **A six year term on the EPA National Environmental Justice Advisory Council (NEJAC) where she served as a member of the Cumulative Risk and Impacts Working Group of the NEJAC Council, and chaired the NEJAC**
- **Dr. 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 finalist in the Environmental Category of the 2004 Volvo for Life Award.**

Dr. David Brown

- **Dr. David Brown is the Public Health Toxicologist and Director of Public Health Toxicology for Environment and Human Health, Inc.**
- **He is the past Chief of Environmental Epidemiology and Occupational Health in Connecticut and was previously Associate Professor of Toxicology at Northeastern College of Pharmacy and Allied Health.**
- **He also served as Deputy Director of the Public Health Practice Group of Agency for Toxic Substances and Disease Registry (ATSDR) at the National Centers for Disease Control and Prevention in Atlanta, Georgia**
- **Dr. Brown graduated from Cornell University in Biochemistry, received his MS from the University of California In Environmental Health, and his ScD from Harvard School of Public Health in Toxicology**

Links For Presentation Data

(Right click & select "open hyperlink")

http://www.minisinkmatters.org/?p=147#comment-44

http://www.stopmcs.org/?page_id=383

http://www.utne.com/environment/gas-compressors-and-nose-bleeds-zm0z15fzsau.aspx

http://www.stopmcs.org/?p=1072

http://www.environmentalhealthproject.org/wp-content/uploads/2015/06/Summary-of-Minisink-Results.Public.pdf

https://www.youtube.com/watch?v=RYdrSe-USxg

http://www.environmentalhealthproject.org/wp-content/uploads/2012/03/Compressor-station-emissions-and-health-impacts-02.24.2015.pdf

Links For Presentation Data

(Right click & select "open hyperlink")

http://www.hsph.harvard.edu/news/press-releases/air-pollution-below-epa-standards-linked-with-higher-death-rates/

http://www.hsph.harvard.edu/news/press-releases/fine-particulate-air-pollution-linked-with-increased-autism-risk/

http://www.utne.com/environment/gas-compressors-and-nose-bleeds-zm0z15fzsau.aspx

http://www.catskillcitizens.org/learnmore/subraminisink.pdf

http://www.stopmcs.org/?p=1185

http://www.minisinkmatters.org/?p=242

http://des.nh.gov/organization/commissioner/pip/factsheets/ard/documents/ard-ehp-22.pdf

Links For Presentation Data

(Right click & select "open hyperlink")

http://caselaw.findlaw.com/us-dc-circuit/1675630.html

http://www.minisinkmatters.org/?p=263

http://www.utne.com/environment/effects-of-air-pollution-zm0z15fzsau.aspx?PageId=3#ArticleContent

http://www.kindermorgan.com/content/docs/er_brochure.pdf

http://www3.epa.gov/air/ej/conference2007/Wilma_Subra_Bio.pdf

Please feel free to edit this presentation, changing names to the towns affected in your area!

What is missing from this presentation

- ***This Power Point Presentation should be accompanied by a MS Word Doc - Not the Next Minisink! This document is a 3 page narrative version of the Minisink story with links to supporting data embedded as the story progresses.***

- Other medical related links of interest…..
- John Hopkins Study Pregnancy complications http://marcellus.com/news/id/130030/new-study-links-active-gas-wells-to-pregnancy-complications-preterm-birth/
- Physicians for Social Responsibility latest study http://concernedhealthny.org/wp-content/uploads/2012/11/PSR-CHPNY-Compendium-3.0.pdf

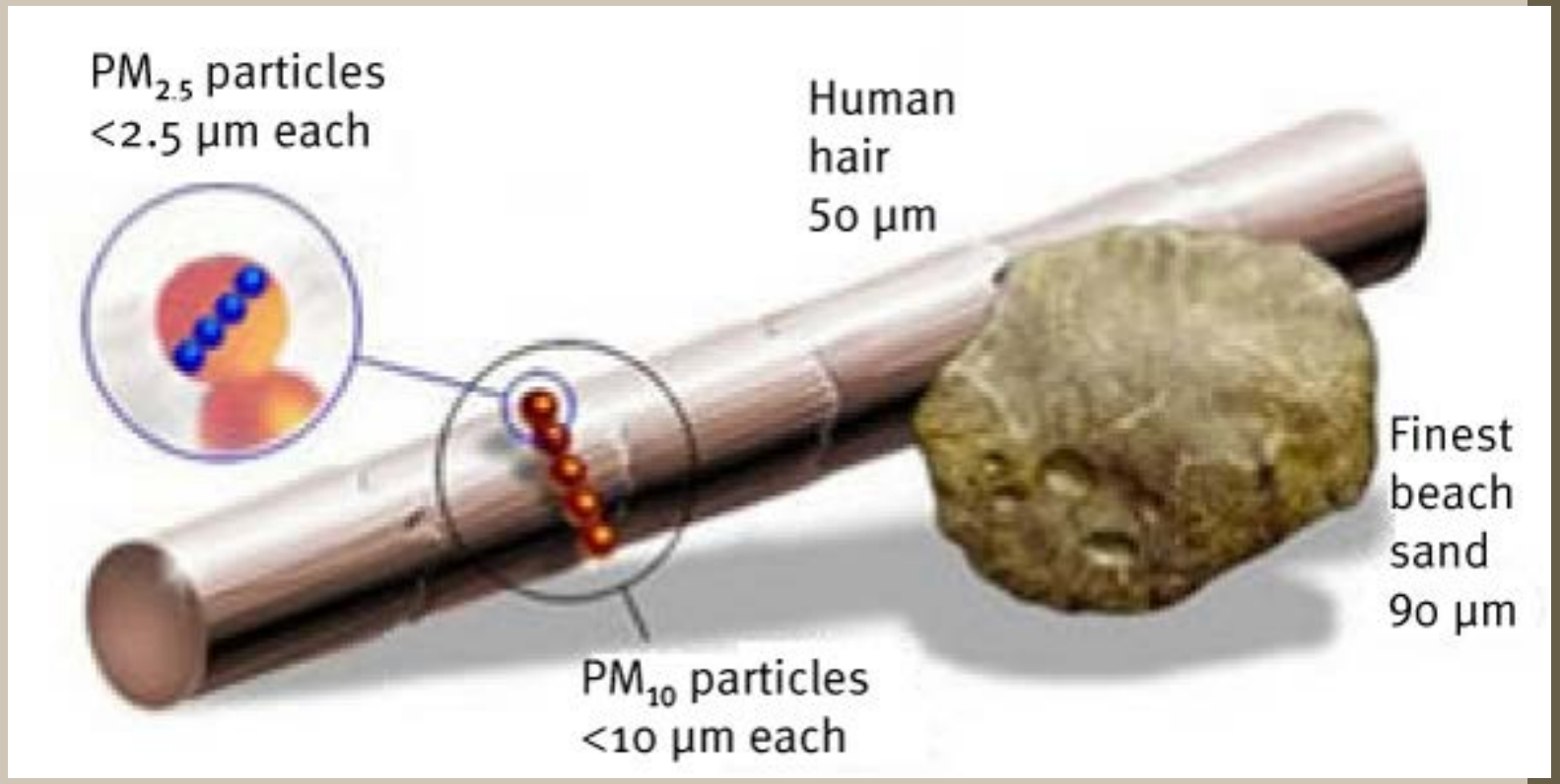
What is missing from this presentation

- Health Professionals open letter to FERC https://docs.google.com/document/d/1aTx7Xf1ISU8S4zUf-ofTifz5b-_C7ZF3F2O8r6cJqBQ/edit
- Doctors urge Cuomo to put brakes on http://www.timesunion.com/business/article/Governor-asked-to-put-brakes-on-natural-gas-6571163.php#
- 100+ studies on health & safety re. fracking just released http://ecowatch.com/2015/10/14/health-risks-fracking/
- UTNE - the real cost of fracking http://www.utne.com/environment/cost-of-fracking-zm0z14fzsau.aspx
- CS & Toxic Gases http://nopipelies.org/compressor-stations/

Next Steps

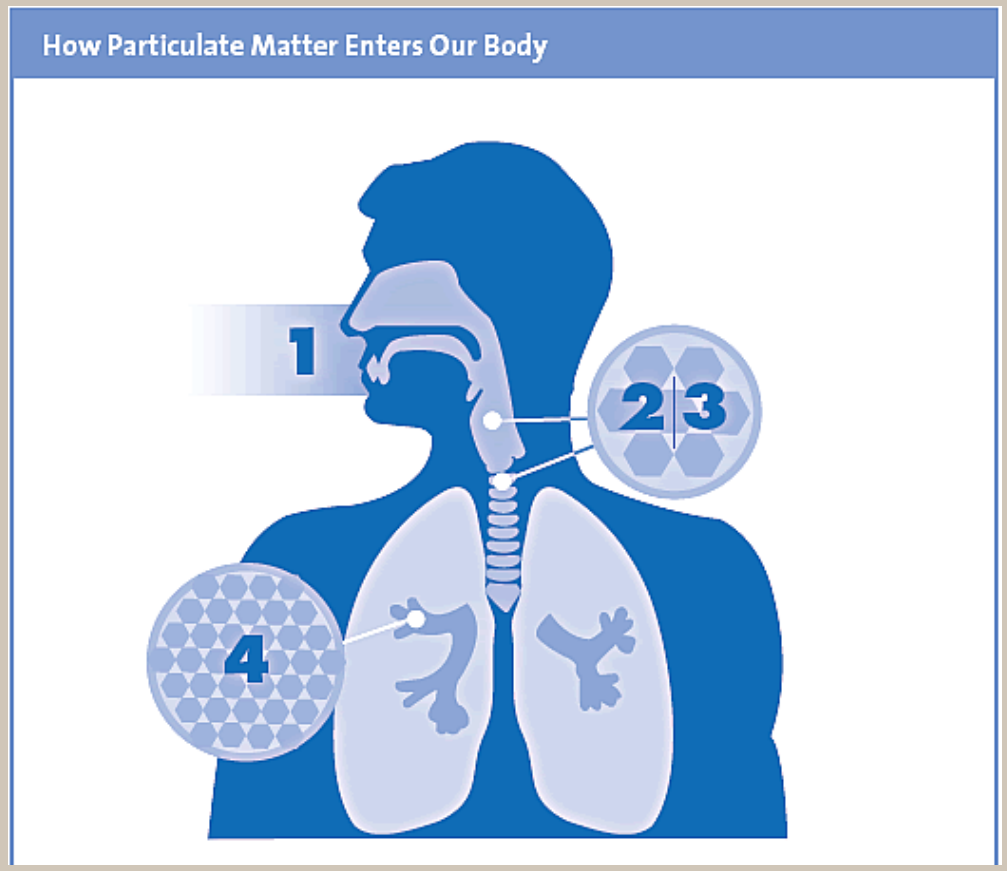
- **Get NH Medical Society to oppose this project…like NYMS**
- **Meet with Congressional Delegation to make this presentation….if you do nothing here's what going to happen to thousands of NH residents…the time to act is now**
- **Hold large informational meetings to inform public**
- **Get this presentation and video out on social media**

Particulate matter



Organic compounds, metals

Particulate matter



2100 premature deaths in one summer*, eastern US cities

Stroke, heart disease, diabetes, stillbirth, low birth weight

* X Hou et al (2015). *Environmental Research*, v137, 475-484

Particulate matter

EPA standards:[1]

Annual limit 12 mcg/m^3

24hr limit 35 mcg/m^3

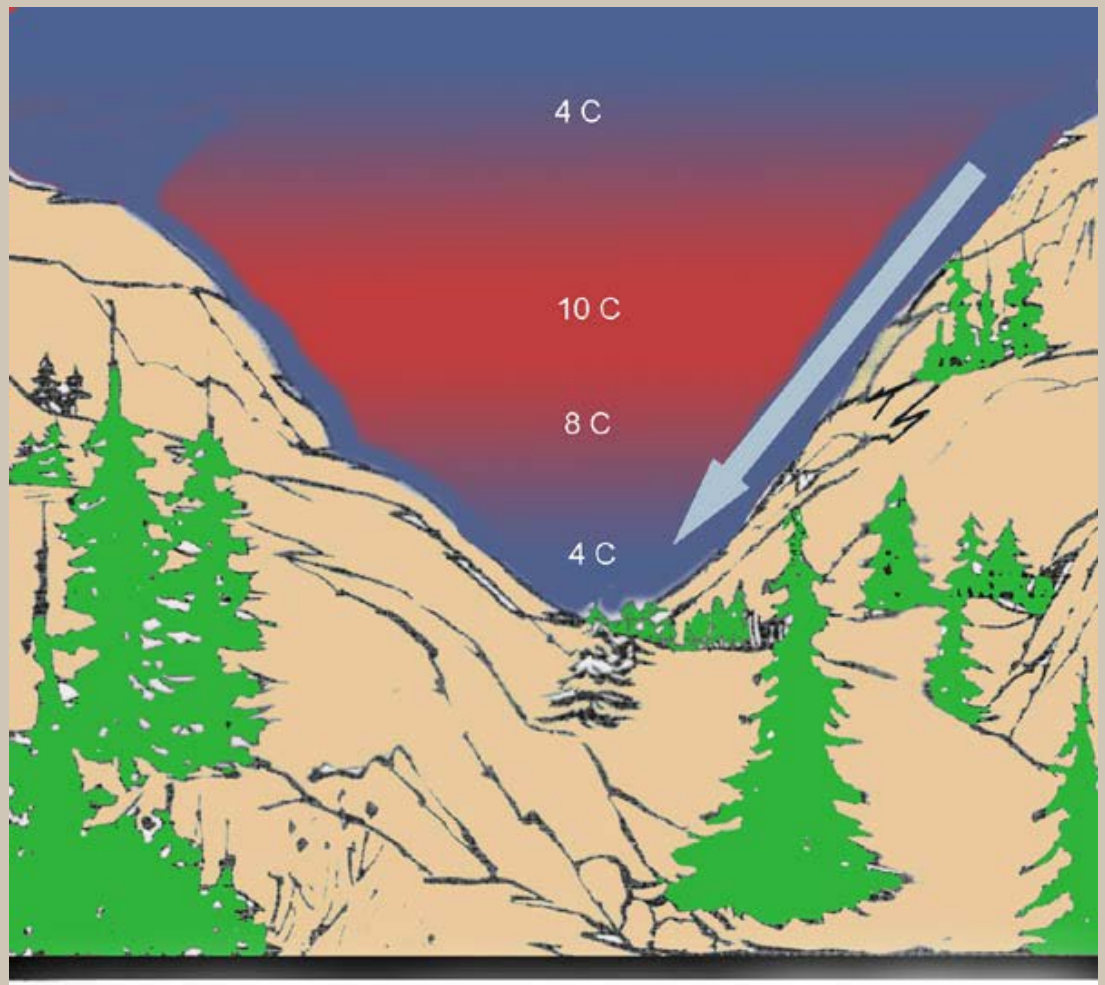
Increase of 10 mcg/m^3 for one day:

Cardiopulmonary mortality up to 5.3% higher [2]

Asthma diagnoses up 10%-12% [3]

1) http://www3.epa.gov/ttn/naaqs/criteria.html
2) Samoli et al (2014). *Environment International*, v67, 54-61
3) JK Wendt et al (2014). *Environmental Research*, v131, 50-58

Inversions



Zone of warm nighttime temperatures above a valley temperature inversion. (From Schroeder and Buck. 1970)

Inversions

Inversions

Inversions

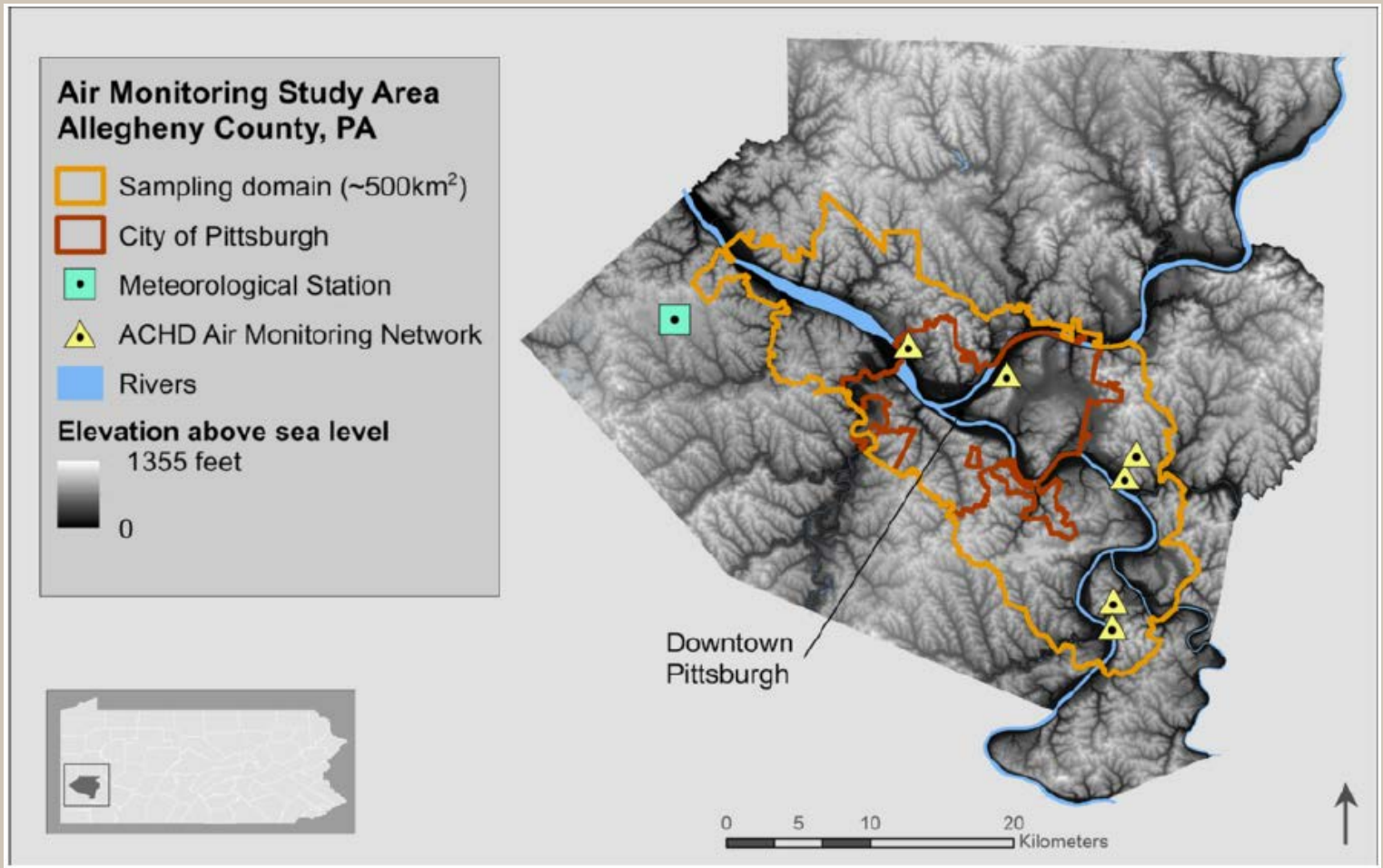


Figure 1 Air monitoring study domain.

Schmool et al (2014). *Environmental Health*, v13, 28-44.

Inversions

Summer:

- No relationship between PM and elevation
- Higher NO_2 levels at lower elevations

Winter:

- Higher PM and NO_2 levels at lower elevations

Schmool et al (2014). *Environmental Health*, v13, 28-44.