DG 14-380

Debra Howland, ,Executive Director and Secretary
NH Public Utilities Commission
21 s. Friut St, Suite 10
Concord, NH 03301

Dear Ms. Howland,
I am a NH citizen effected by the NED pipeline project. Thank you for your time.

Individual residents of Fitzwilliam and surrounding towns have worked for over 6 months to assemble a series of FACT SHEETS about this project, because we felt there was too much misinformation and not enough researched and sourced facts to help us understand what is being proposed.

Since this PDF has been distributed to all the towns along the route, and many 100s of people have read it - I think it is necessary for the commissioners to also have a copy - so they know the same set of facts that we all know.

Since I have no way to sending this PDF directly to the commissioners, might I impose on your time to print copies and distribute them to the commissioners before the Tuesday PUC meeting with Liberty Gas?

This group of researchers would very much appreciate knowing that those that are working on this issue at the PUC have a chance to look it over. It also might help inform the decisions that are being made about this project.

Thank you so much, and I look forward to your response.

Coni Porter
CPorter Designs
PO Box 456, 35 Sunset Rd
Fitzwilliam NH 03447
cporterdesigns@earthlink.net
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603.585.9803

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# NED FACT SHEETS

## to inform landowners in southern NH and northern MA about the proposed Kinder Morgan natural gas pipeline

*This information has been compiled by local citizens as a service to our community and is based on information found within the public domain — much of it on federal and state websites (and Kinder Morgan's own website). It, however, is not meant to take the place of personal research or legal advice. Please see the cited sources at the bottom of each page to research further.*

*White Paper release date: 5/29/2015*

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# Ned Pipeline Q&A Information

The Northeast Direct (NED) pipeline would bring hydro-fractured (fracked) natural gas from shale fields in Pennsylvania through NY, MA, and NH, to Dracut, MA, and on to Canada for export. Kinder Morgan/Tennessee Gas Pipeline is a private company proposing to construct this 36-inch, high-pressure pipeline parallel to electrical transmission lines through seventeen New Hampshire communities, including Fitzwilliam. It is estimated that NH would receive only 22 percent of the gas, largely for electrical power generation. NED is a main line, which would not provide gas for home heating in our area, as we have no distribution infrastructure. *The following questions and answers were compiled and researched by local citizens. The information should not substitute for expert research or legal advice.*

### • How would NED impact our air?

Natural gas is primarily methane, a greenhouse gas contributing to climate change. It becomes 86 times more powerful than CO2 over 20 years, and 34 times more powerful over 100 years. People living near compressor stations, leaking pipelines, and blow down valves that routinely vent fracked gas report numerous health problems.

*http://epa.gov/climatechange/ghgemissions/gases/ch4.html*

### • Does the proposed route go over water?

Yes. It would cross 76 wetlands, 66 water bodies, and 42 rivers in NH. Scott Pond and many wetlands in southern New Hampshire towns would be impacted, potentially reducing water quality in our lakes and streams, endangering wildlife habitat and causing an increase in flooding. www.des.nh.gov/organization/divisions/water/wmb/repp

*http://nhpipelineawareness.org/wp-content/uploads/2014/11/RR-10_AlternateRoutes.pdf*

### • What other sensitive areas are involved locally?

The Superfund site in Troy lies within 500 feet of the proposed route. Some 7,692 55-gallon drums, 29,924 gallons of flammable liquid waste, 3,099 cubic yards of sludge and over 26,000 tons of heavily contaminated soil have been removed from this area, but it continues leaching contaminated ground water. Blasting through the granite ledges of Little Monadnock could greatly exacerbate this problem.

*http://www.epa.gov/superfund/accomp/factsheets04/troymills.htm*

### • Are chemicals used to maintain the pipeline right of way?

KM/TGP may use any of the following chemicals to control vegetation: aminopyralid, chlorsulfuron, dicambra, diuron, flumioxazin, glyphosate, imazapyr, metsulfuron-methyl, triclicIopyr, or 2-4 D amine. Landowner's wells and vegetation could be affected.

*http://www.kindermorgan.com/content/docs/KMC_IVMP.pdf*

### • Can our drinking water be contaminated from all the blasting?

Yes. Blasting chemicals can release regulated or unregulated substances in the groundwater, and the shaking loose of particles and chemical precipitates can increase water turbidity. This can damage household equipment and fixtures, make water unpleasant to drink, and increase concentrations of metals and other contaminants in our water.

*http://des.nh.gov/organization/divisions/water/dwgb/dwspp/categories/publications.htm*
*http://des.nh.gov/organization/divisions/water/dwgb/dwspp/categories/publications.htm*

### • How far from the pipeline is it safe to live if there's an explosion?

The incineration zone for this size pipeline is approximately 1000 ft. from the point of rupture, but there are NO minimum distances from structures required by FERC or DOT.

*www.lancasterpipeline.org/s/Fire-hazard-for-gas-pipelines.pdf*
*http://www.pipelineawareness.org/wp-content/uploads/2010/06/Evacuation-Distances-for-Natural-Gas.pdf*

## • How could the pipeline affect property values?

Studies by appraisal firms have found measurable devaluation of residential properties with easements. Also, the average reduction of value to surrounding land from the so-called fear factor has been as high as 15%.

*http://www.forensic-appraisal.com/gas_pipelines_q_a*

## • What activities over two years of construction might impact our economy?

Construction activities include corridor marking, clearing, grading, trenching, stringing, pipe bending and welding, X-Ray, weld coating, coating repair, backfilling, hydrostatic testing, disposal of excess materials, and cleanup. Such activities can create noise, dust, vibrations, disruption, removal of sheds, fences, trees, etc., and result in damage to irrigation systems and wells, crop losses, and other diminution.

*http://www.forensic-appraisal.com/valuation_issues*
*Environmental Report NED Project Resource Report 1 December, 2014*

## • What changes to the landscape might we see that could affect our property values?

Temporary, site-specific work areas are needed at road, wetland, and water body crossings, and may be created for specialized areas such as steep slopes and agricultural land. Additional acres would also be cleared for placement of equipment, pipe, materials, pipe assembly, and temporary field offices. If horizontal drilling is done (such as under Scott Pond,) a minimum workspace footprint of 200 feet by 250 feet would be needed at the entry and exit points.

*Draft NED Project Resource Report 1, December, 2014*

## • Who would pay for a cracked foundation or contaminated well from blasting/drilling?

All insurers asked said they have no underwriting procedures currently in place for properties crossed by pipelines, but such damage is generally not covered on homeowner's insurance. The owner would need before-and-after proof of damages in order to seek payment from Kinder Morgan. Insurance companies may interpret an easement to a pipeline company as a business use of one's property.

*Source: Concord Mutual Group Underwriting Dept.*

## • What else could affect property values after the pipeline begins operating?

Noise, lights and exhaust from compressor stations, tree removal on pipeline corridors and access roads, public fear of explosions and the cost of emergency preparedness all factor in.

*http://www.who.int/peh-emf/meetings/archive/en/paper02shwehdi.pdf*

## • Where can I find more information about the pipeline?

Below are some links that have lots of information:

*http://nhpipelineawareness.org/wp-content/uploads/2014/09/Northeast-Direct-White-Paper.pdf*
*Pipeline Safety Trust: http:pstrust.org*
*Pipeline Safety Briefing papers: http://pstrust.org/b-papers*
*The Landowner's Guide to Pipelines: http://pstrust.org/2014log*
*The Local Government Guide to Pipelines: http://pstrust.org/2014lgg*
*FERC – An Interstate Natural Gas Facility on My Property?: http://www.ferc.gov/for-citizens/citizen-guides.asp*
*From the Law Offices of Carolyn Elefant –Knowing and Protecting Your Rights When an Interstate Gas Pipeline Comes to Your Community: http://lawofficesofcarolynelefant.com/wp-content/uploads/2010/06/FINALTAGguide.pdf*
*http://www.clf.org/blog/clean-energy-climate-change/3-things-one-telling-rising-energy-costs/*
*http://www.clf.org/blog/clean-energy-climate-change/governors-infrastructure-plan/*
*http://www.clf.org/blog/clean-energy-climate-change/4-things-natural-gas/*

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# Ned Environmental Impact Facts

## • Are there threatened or endangered species in the area that could be effected?

Yes, today there are 34 wildlife species listed as threatened or endangered in NH. In this part of the state, we have at least 16 endangered plant species and 7 endangered wildlife species in our forest areas including: freshwater clams, Small Whorled Pogonias, Bald Eagles, Northern Harriers, Osprey, Small-footed Bats, Canadian Lynx, and Martens. (See Fact Sheet "The Dwarf Wedgemussel")

*https://extension.unh.edu/resources/files/Resource001060_Rep1242.pdf*
*http://ecos.fws.gov/tess_public/reports/species-listed-by-state-report?state=NH&status=listed*
*http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=33005*

## • Do they use poisons to maintain the pipeline right of way?

Yes, as part of the process of controlling vegetation around their power lines, Kinder Morgan uses non-chemical, biological and chemical techniques. These include: aminopyralid, chlorsulfuron, dicambra, diuron, flumioxazin, glyphosate,imazapyr, metsulfuron-methyl, tricliclopyr, and 2-4 D amine. KM states that the "residual activity" of these chemicals ranges from low (potent for up to 40 days) to high (potent for more than a year). These chemicals are not safe and do not limit themselves to the growth they are intended to curtail or kill. Since much of the pipeline's right-of-way will be on private property, landowner's wells and vegetation can be affected. (See Fact Sheet "Kinder Morgan's Use of Chemicals")

*http://www.kindermorgan.com/content/docs/KMC_IVMP.pdf*

## • Can our drinking water be contaminated from all the blasting?

Yes, blasting of crystalline bedrock can contaminate water resources. There are two primary methods by which the quality of groundwater could be changed by blasting crystalline rock:

1. The release of regulated or unregulated substances in the groundwater, caused by the release or spillage of blasting chemicals.

2. The shaking loose of silt, sand and rock particles, and chemical precipitates that can result in increased turbidity in water derived from a bedrock well. High turbidity can damage household equipment and fixtures, be aesthetically unpleasing to drink, and increase concentrations of various metals and other contaminants.

*http://des.nh.gov/organization/divisions/water/dwgb/dwspp/categories/publications.htm*

## • Does the proposed route go over water?

Yes, it does. The proposed route for the pipeline will cut across 76 documented wetlands, 66 standing bodies of water, and cross 42 major rivers in New Hampshire. Scott Pond, and a significant amount of wetlands in this town will be effected. Wetlands protect water quality in our lakes and streams. Wetlands help to reduce floods by acting like a sponge, slowing runoff from upland areas and releasing water slowly, reducing peak flood flows downstream. Wetlands and adjacent uplands provide essential habitat for wildlife.

*www.des.nh.gov/organization/divisions/water/wmb/repp*
*http://nhpipelineawareness.org/wp-content/uploads/2014/11/RR-10_AlternateRoutes.pdf*

## • Is the proposed route close to the Troy Superfund site?

On our border with Troy, directly adjacent to the proposed pipeline route, the EPA began a massive clean up in 2003 which involved building interceptor trenches and the removal of 7,692 buried 55-gallon drums, 29,924 gallons of flammable liquid waste, 3,099 cubic yards of sludge and over 26,000 tons of heavily contaminated soil. The work was completed in 2005 with a 2ft thick permeable soil cap over the top of the site. This is a very sensitive area that is still currently

leaching contaminated ground water to Rockwood Brook. The proposed pipeline construction comes within 500ft of the Superfund site as it blasts through the granite ledges of Little Monadnock Mt.

*http://www.epa.gov/superfund/accomp/factsheets04/troymills.htm*

## • What is the impact to our air?

Natural gas is primarily methane, a strong greenhouse gas which produces CO2 when burned. When methane is released directly into the atmosphere, it is an even more damaging green house gas because it becomes 86 times more powerful over 20 years, and 34 times more powerful over 100 years. The proposed pipeline will do both, as it releases and burns methane to regulate the high compression in the pipes. The release of these types of gases is causing Climate Change.

*http://epa.gov/climatechange/ghgemissions/gases/ch4.html*

## • Can the pipeline explode near my house?

There are NO minimum distances from structures required by FERC or DOT. Kinder Morgan prefers to stay 25 ft. away from standing structures to allow equipment through. However, the "Incineration Zone" for this size of pipeline is approximately 1000 ft. from point of rupture.

*www.lancasterpipeline.org/s/Fire-hazard-for-gas-pipelines.pdf*
*http://www.pipelineawareness.org/wp-content/uploads/2010/06/Evacuation-Distances-for-Natural-Gas.pdf*

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**Local species that hold Endangered Status in Cheshire County:**

# The Dwarf Wedgemussel

## • Description

The dwarf wedgemussel is a small bivalve, rarely exceeding 45 mm in length. Clean young shells are usually greenish-brown with green rays. As the animal ages, the shell color becomes obscured by diatoms or mineral deposits and appears black or brown.

## • Habitat

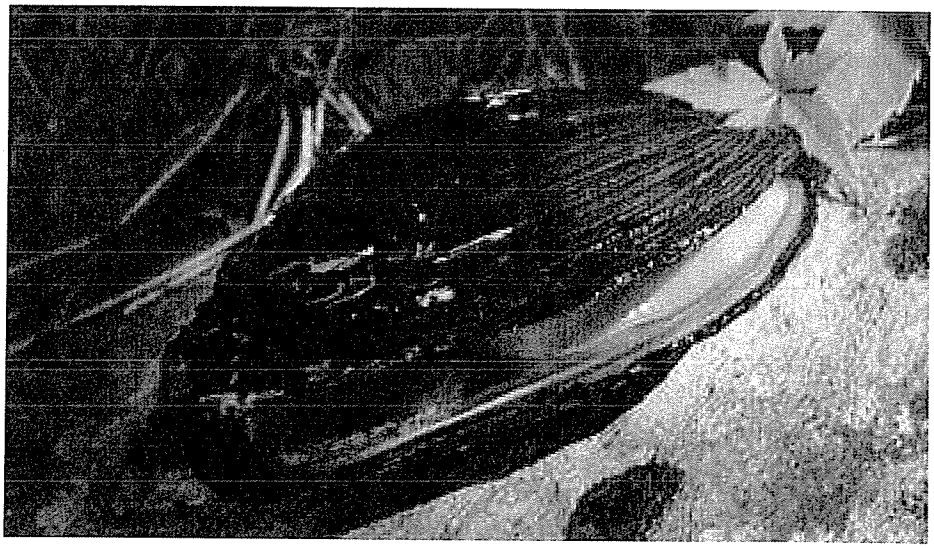
Fresh water, small and shallow streams in New Hampshire Cheshire County. The dwarf wedgemussel inhabits small streams less than five meters wide to large rivers more than 100 meters wide; it is found in a variety of substrate types including clay, sand, gravel and pebble, and sometimes in silt depositional areas near banks; and it usually inhabits hydrologically stable areas, including very shallow water along streambanks and under root mats, but it has also been found at depths of 25 feet in the Connecticut River. Dwarf wedgemussels are often patchily distributed in rivers.

## • Threats

Freshwater mussels have declined dramatically in diversity, abundance, and distribution within the last 200 years and are considered the most imperiled fauna in North America. One of the largest remaining populations has declined dramatically in the Ashuelot River, downstream of a golf course. This population probably has been affected by **fungicides, herbicides, insecticides,** and fertilizers which have been applied to the golf course. Agricultural runoff from adjacent corn fields and pastures also is contributing to this population's decline. Freshwater mussels, including the dwarf wedgemussel, are sensitive to potassium, zinc, copper, cadmium, and other elements associated with industrial pollution.

## • Who to contact

New Hampshire Fish and Game Department: Fish and Wildlife Biologist, WILDLIFE DIVISION - (603) 271-2461



*http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_pieces/WAP_App_A_Invertebrates.pdfA.*

*Note: This information has been compiled by local citizens as a service to our community and is not meant to take the place of personal research or legal advice.*

**Local species that hold Endangered Status in Cheshire County:**

# The Bald Eagle

## • Description

Distinguished by a white head and white tail feathers, bald eagles are powerful, brown birds that may weigh 14 pounds and have a wingspan of 8 feet. Male eagles are smaller, weighing as much as 10 pounds and have a wingspan of 6 feet. Sometimes confused with Golden Eagles, Bald Eagles are mostly dark brown until they are four to five years old and acquire their characteristic coloring.

## • Habitat

Bald Eagles live near rivers, lakes, and marshes where they can find fish, their staple food. Bald Eagles will also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. Bald Eagles require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.

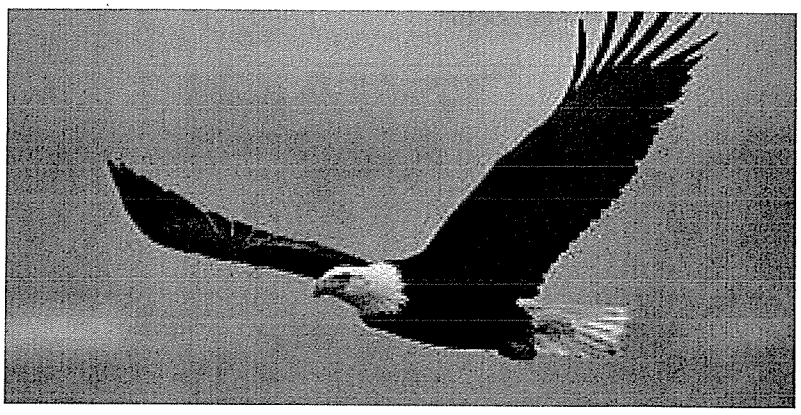
## • Threats

Shortly after World War II, DDT was hailed as a new pesticide to control mosquitoes and other insects. However, DDT and its residues washed into nearby waterways, where aquatic plants and fish absorbed it. Bald eagles, in turn, were poisoned with DDT when they ate the contaminated fish. The chemical interfered with the ability of the birds to produce strong eggshells. As a result, their eggs had shells so thin that they often broke during incubation or otherwise failed to hatch. DDT also affected other species such as peregrine falcons and brown pelicans. In 1967, the Secretary of Interior listed bald eagles south of the 40th parallel under the Endangered Species Preservation Act of 1966. Bald eagles have staged a remarkable population rebound and have recovered to the point that they no longer need the protection of the Endangered Species Act.

Although the Service removed the bald eagle from the list of threatened and endangered species under the Endangered Species Act, the bird will still be protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Both laws prohibit killing, selling or otherwise harming eagles, their nests, or eggs.

## • Who to contact

David Sykes, U.S. Fish and Wildlife Service
Office of Law Enforcement
70 Everett Avenue, Suite 315
Chelsea, MA 02150-2363
Phone: 617-889-6616



*http://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php*

*http://www.fws.gov/midwest/eagle/recovery/biologue.html*

*http://www.fws.gov/newengland/EndangeredSpec-NEListedSpecies.htm*

***Note: This information has been compiled by local citizens as a service to our community and is not meant to take the place of personal research or legal advice.***

**Local species that hold Endangered Status in Cheshire County:**

# The Wood (Bog) Turtle

## • Description

The bog turtle (Glyptemys muhlenbergii) is the smallest turtle found in the United States. Adult length is 3.1 to 4.5 inches. The largest bog turtle ever found measured only 4.5 inches. Bog turtles are easily identified by the patches of orange found along the side of their heads. The head, neck, and limbs are typically dark brown with variable reddish to yellow spots and streaks. A large reddish-orange to yellow blotch is visible behind and above each tympanum, sometimes merging into a continuous band on the neck.

## • Habitat

Bog turtles prefer to live in spring seeps and open, marshy meadows - wetlands are their home. They reach reproductive age between five and eight years and may live 20 to 30 years, often spending their entire lives in the wetlands where they were born. Active during the warmer months, they typically emerge from overwintering during April.

## • Threats

Bog turtles are extremely sensitive to the effects of global warming. The turtle's survival is closely tied to its delicate habitat. Erratic weather patterns resulting from global warming will disrupt the fragile balance key to the turtle's survival. By altering hydrological cycles, global warming will either dry out or flood the turtle's habitat.

In addition to bog turtles needing a very specific habitat, much of the remaining habitat in the Northeast has been fragmented apart by roads and development. As the changing climate alters the availability of the turtle's current habitat, they will have very limited ability to migrate to places that could be more suitable.

## • Who to contact

David Sykes, U.S. Fish and Wildlife Service
Office of Law Enforcement
70 Everett Avenue, Suite 315
Chelsea, MA 02150-2363
Phone: 617-889-6616

*http://www.endangered.org/animal/bog-turtle/*

*/www.fish.state.pa.us/education/catalog/ab/bogturtle/bogturtl.htm*

***Note: This information has been compiled by local citizens as a service to our community and is not meant to take the place of personal research or legal advice.***

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**Local species that hold Endangered Status in Cheshire County:**

# The Northern Long Eared Bat

## • Description

The northern long-eared bat is a medium-sized bat with a body length of 3 to 3.7 inches but a wingspan of 9 to 10 inches. Their fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears.

## • Habitat

Northern long-eared bats spend winter hibernating in caves and mines. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. This bat has also been found rarely roosting in structures, like barns and sheds. Like most bats, northern long-eared bats emerge at dusk to feed.

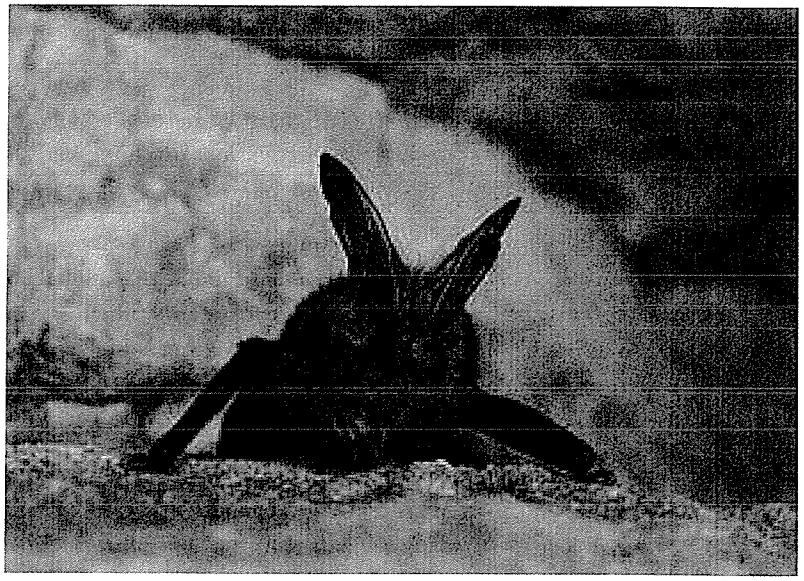
## • Threats

Highway construction, commercial development, surface mining, and wind facility construction permanently remove habitat and are activities prevalent in many areas of this bat's range. Forest management benefits northern long-eared bats by keeping areas forested rather than converted to other uses.

White-nose syndrome is a disease that was first noticed in 2006, and has spread rapidly from the Northeast to the Midwest and Southeast; an area that includes the core of the northern long-eared bat's range where it was most common before this disease. Numbers of northern long-eared bats have declined by up to 99 percent in the Northeast.

## • Who to contact

David Sykes, U.S. Fish and Wildlife Service
Office of Law Enforcement
70 Everett Avenue, Suite 315
Chelsea, MA 02150-2363
Phone: 617-889-6616



*http://www.fws.gov/midwest/endangered/mammals/nleb/nlebFactSheet.html*

*Note: This information has been compiled by local citizens as a service to our community and is not meant to take the place of personal research or legal advice.*

# Kinder Morgan's Use of Chemicals

## • Why are chemicals needed?

As part of the process of controlling vegetation around their power lines, Kinder Morgan uses non-chemical, biological and chemical techniques. Control is maintained around pump stations, maintenance locations, terminals, valve stations, office buildings, access roads and electric substations within facilities.

The reasons provided for controlling the vegetation include the fact that vegetation can be a fuel source for fires, it can restrict access to equipment used for maintenance and repairs, safety inspections and emergency responses. It can also serve as seed sources for growing vegetation adjacent to a facility, and it can increase the risk of slipping and tripping. There are thresholds for specific sites which determine how much vegetation is allowed in a certain area ranging from 0% for all areas under piping to 10% for undeveloped areas, access road and perimeter fencing.

## • What exactly are these chemicals?

Kinder Morgan employs many types of herbicides to control vegetation including aminopyralid, chlorsulfuron, dicambra, diuron, flumioxazin, glyphosate,imazapyr, metsulfuron-methyl, triclicIopyr, and 2-4 D amine. All are used to control invasive plants and weeds. They state that the "residual activity" of these chemicals ranges from low to high. Low generally refers to residual soil activity of up to 40 days, moderate for up to one year, and high for residual activity over one year. They have set guidelines as to where each type of herbicide can be used. Of these herbicides, Kinder Morgan indicates that glyphosate and 2,4-D are non-residual. *(Kinder Morgan Canada: Integrated Vegetation Management Plan, 2011-2016)*

The use of pesticides and herbicides on a continuing and ongoing basis for controlling growth around pipelines and equipment used by Kinder Morgan do not limit themselves to the growth they are intended to curtail or kill. Since much of the pipeline's right-of-way will be on private property, runoff can move to ground wells and vegetation.

**Aminopyralid** is used for the control of noxious weeds and invasive plant species including woody plants, and annual and perennial broadleaf weeds. It is effective only on actively growing weeds. This chemical is of concern to vegetable growers as it can enter the food chain via manure to result in deformed plants or poor to non-existent yields. it is in the same family as clopyralid and picloram. These chemicals can move with rainfall, irrigation and dew and remain active in soil contaminated by leeching and runoff.

*Washington State University Extension: Herbicide Contamination of Organic Matter (http://whatcom.wsu.edu/ag/aminopyralid), Virginia Coop Extension: "Pyridine Herbicide Carryover: Causes and Precautions" (http://pubs.ext.vt.edu/VTTP/VTTP-6/VTTP-6_pdf.pdf)*

**Chlorsulfuron** is used to control the hard to manage annual and perennial broadleaf vegetation by both foliar and root uptake. This chemical is a highly acute toxin and known as a probable carcinogenic, a known groundwater pollutant due to its leachability and its long persistence in the soil, and a known reproductive or developmental toxicant. It is toxic to some aquatic plants and can affect some non-target plant and food production resulting in diseases and reproduction effects.

*ALSASE Inhibitors: sulfonylureas (http://agron-www.agron.iastate/edu/~weeds/Ag317/manage/herbicide/su/html), Federal Register – The Daily Journal of the US Government – Chlorsulfuron; Community Right-to-Know Toxic Chemical Release Reporting (www.federaregister.gov/articles/2013/12/09/2013)*

**Dicabmra** is used to treat actively growing broadleaf vegetation and brush. It kills broadleaf weeds before and after they sprout. It is toxic to conifer species and is mobile in most soils. Significant leaching is possible. It dissipates slowly in hardwood forests and wetlands, and it is slightly toxic to birds, fish and aquatic vertebrates. Dicambra is highly soluble in water and may contaminate groundwater as it is highly mobile. Desirable broadleaf plants such as fruit trees and to-

matoes may be harmed during their growth and development stages. Research indicates that it is can be a DNA damaging agent and could be potentially dangerous to humans.

*Extonet – Extension Toxicology Network Dicambra Pesticide Info Profile- (pmep.cce.crnell.edu/profiles/extonet/carbaryl-dicroto), Technical Fact Sheet – National Pesticide Information Center Chemical Watch Fact Sheet: A Beyond Pesticides /NCAMP Fact Sheet – Dicambra (http://www.npic.orst.edu/factsheets/dicamba_tech.pdf), Washington State DOT – Dicambra Roadside Vegetation Management Herbicide Fact Sheet (http://www.wsdot.wa.gov/NR/rdonlyres/C9917703-1FA8-41D0-BFA7-B5EC86BBC0D9/0/dicamba.pdf)*

**Diuron** is used to control many annual and perennial grasses and herbaceous vegetation that inhibits photosynthesis. It is a pre-emergent herbicide and can be released into water from runoff. If released into soil, it can remain in the upper 5-10 cm of the soil with a half-life of about 330 days. It emits noxious fumes during fire conditions, and fire fighters must use self-contained breathing equipment and prevent the runoff of the fire water. It is slightly toxic to birds and mammals.

*Spectrum Chemical Fact Sheet (www.speclab.com/compound/c330541.htm), Extonet Extension Toxicology network Pesticide Information Profile Diuron 1996 (http::/extonet.orst.edu/pips/diuron.htm), Material Safety Data Sheet Agrilance LLC (www.dcms.net/LDat/mp510015.pdf)*

**Flumioxazin** is used as a pre-emergent to control selected grasses and broadleaf weeds on bare ground. This chemical is slightly toxic to fish and moderately highly toxic to aquatic invertebrates. Data indicates that it may be an endocrine disrupter in mammals. This compound has the potential to contaminate surface water by dissolution in runoff water. It is considered to be moderately to slightly toxic to freshwater fish, and it may cause long term adverse effects in the aquatic environment.

*Flumioxazin Factsheet Wisconsin Department of Natural Resources (http://dnr.wi.gov/lakes/plants/factsheets/FlumioxazinFactsheet.pdf), Flumioxazin: Environmental Fate and Ecological risk Assessment: US EPA – Pesticides: Flumioxazin- EPA (http://www.epa.gov/opp00001/chem_search/cleared_reviews/csr_PC-129034_14-Aug-03_a.pdf), California Department of pesticide Regulation Published Report 2003-6 Flumioxazin Tracking ID No.191861N (www.cdprca.gov/docs/registration/ais/publdreports/5802.pdf), Flumioxazin Herbicide Technical Brochure – Valent (www.engageapro.com/uploads/brochures/flumi_brochure_english%20Apr%2030.09.pdf), CLH Report Proposal for Harmonised Classification and Labeling – Based on Regulation (EC) No.1272/2008 CCCP Regulation (http://echa.europa.eu/documents/10162/13626/clh_report_flumioxazin_dh012867-43_en.pdf), Safety Data Sheet According to Regulation (EC)No. 1907/2006 of 18 December 2006 (REACH) www.interfarm.co.uk/DownloadFile.ashx?Field=85)*

**Glyphosate** (used in Roundup) is only effective on growing plants. This chemical can disrupt the functions of enzymes in animals. In the US, it has been suggested that it can reduce winter hardiness of trees and resistance to fungal diseases. It can remain active and may be released from the soil and absorbed by plants. It has caused the destruction of habitats and food sources for some birds and amphibians and reduced populations. This was found to be toxic to a range of bacteria, fungus and yeast. Scientists have linked exposure to Roundup to ADHD, Alzheimers disease, anencephaly, autism, birth defects in humans and animals, cancers, celiac disease, gluten intolerance, kidney disease, colitis, depression, pregnancy problems, obesity, reproductive problems and respiratory illnesses.

*Glyphosate- Pesticide Action Network UK – Glyphosate Fact Sheet (http://www.pan-uk.org/pestnews/Actives/glyphosa.htm), roundup-found-in-animals-with-birth-defects.html), EPA – Pesticide website (http://www.epa.gov/oppsrrd1/reregistration/REDs/factsheets/0178fact.pdf), National Pesticide information Center Glyphosate General Fact Sheet: (http://npic.orst.edu/factsheets/glyphogen.html)*

**Imazapyr** controls broadleaf vegetation, annual and perennial grass species and woody vegetation by preventing seed germination. It is highly mobile and can travel with soil to enter ground and surface water. It is highly persistent in the environment, very water soluble and does not absorb well in most soils. It does not distinguish the plants it kills, so rare and endangered plants are at risk. The EPA has stated that "jeopardy" will occur to terrestrial and aquatic plant species from the use of Arsenal which is made with this chemical.

*Oregon State University – Agricultural Chemical Research & Extension – Pesticide Fact Sheet: Forestry Use – Imazapyr (http://www.oregon.gov/odf/privateforests/docs/imazapyr.pdf), Imazapyr Fact Sheet (http://environmentalcommons.org/cetos/criticalhabitat/imazapyr.pdf), From the expert declaration of Dr. Susan Kegley on behalf of Californians for Alternatives to Toxics for the Humboldt County Superior Court: (http://www.alternatives2toxics.org/pdfs/kegley_summary_declaration.pdf*

**Metsulfuron-Methyl** is used for the control of noxious weeds and invasive plants. It can exist in the soil for more than fourteen months and migrate. It is extremely potent and effective on native plants and the aquatic environment, and it can cause death to trees. It is highly mobile and can travel through soil with water and enter groundwater.

*ATP Environmental: Metsulfuron-Methyl What the Hell is It? (http://www.atpenvironmental.com.au/metsulfuron-methyl-what-the-hell-is-it/), EXTENSION SERVICE: Oregon State University, Agricultural Chemical Research & Extension FactSheet- Forestry Use MetsulfuronMethyl(http://www.oregon.gov/odf/privateforests/docs/metsulfuron-methyl.pdf, Metsulfuron-Methyl- Human Health & Ecological Risk Assessment Final Report, Prepared for the USDA Forestry Service (http://www.fs.fed.us/foresthealth/pesticide/pdfs/120904_Metsulfuron.pdf0*

**Triclopyr** is used to control established perennial vegetation and brush and selectively to control encroaching trees. It is moderately to highly toxic to freshwater plants and fish and some marine vertebrates and invertebrates. Spray drifts can cause destruction of non-target plants, microorganisms, fungi, mosses and algae. Some of its compounds (EDTA, triethylamine and kerosene) have been proven to cause birth defects in test animals as well as reactions to eyes, skin, respiratory, nervous and gastrointestinal systems of humans and animals. It can move through soil and has the potential to pollute groundwater.

*Californians for Alternatives to Toxics: Toxological Profile for Triclopyr (http://www.alternatives2toxics.org/tox_profile-triclopyr.htm)National Pesticide Information – General Fact Sheet on Triclopyr (http://npic.orst.edu/factsheets/triclogen.pdf), Tricloypr: Weed Control Methods Handbook for the Nature Conservancy M. Tu, C. Hurd, R. Robison & J.M. Randall (http://www.invasive.org/gist/products/handbook/20.triclopyr.pdf)*

**2,4-D Amine** is an herbicide that interferes with grown in invasive plant species. It is an element of Agent Orange that was used during the Vietnam War. Studies have shown that it can cause lymphatic cancer in exposed humans, and it has had negative effects on the human endocrine and immune systems. It can be a central nervous system depressant causing stiffness of joints at certain formulations. It is slightly toxic to wildfowl and some formulations are highly toxic to fish and honeybees.

*2,4-D Technical Fact Sheet. National Pesticide Information Center (http://npic.orst.edu/factsheets/2,4-DTech.pdf), Beyond Pesticides: 2,4-D (http://www.beyondpesticides.org/infoservices/pesticidefactsheets/toxic/2,4-D.php), TOXIPEDIA: 2,4-D (http://www.toxipedia.org/display/toxipedia/2,4-D)*

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# Troy Mills Superfund Site Facts

## • What is the history of this polluted site?

The Troy Mills Superfund Site is two-acres in size and is located about 1.5 miles south of the Center of Troy. A railroad bed running from Fitzwilliam to Troy is located along side. Troy Mills was an acrylic fabric manufacturing facility and left over 7,000 drums of waste liquid plasticizers bis(ethylhexyl) phthalate and varsol (petroleum based solvent), pigments, surplus mixes, tank residuals of vinal resins, paint resins, and top coating products. EPA clean up began in 2003 and involved building interceptor trenches and removal of 7,692 buried 55 gallon drums, 29,924 gallons of flammable liquid waste, 3,099 cubic yards of sludge and over 26,000 tons of heavily contaminated soil. The work was completed in 2005 with a 2ft thick permeable soil cap over the top of the site.

## • What Remedial Action has taken place?

Long term remedial action involves semi-annual environmental monitoring of groundwater, surface water, sediment quality, and leachate, in and around the site, including within Rockwood Brook and nearby wetlands. Contaminants of concern in groundwater are alkylbenzenes, chlorinated solvents, phthalates and toluene. These long term remedial actions are being conducted by NHDES via a cooperative agreement with EPA. The first Five-Year-Review conducted in 2010 concluded that the site continued to be protective of human health and environment but required further evaluation and further hydrogeologic investigation of groundwater flow systems, flow direction, and contaminant migration in bedrock. (Rockwood Brook Wetlands Study area and Rockwood Brook).

## • Do these chemicals pose a risk to me?

The alkylbenzenes,... are liquids with relatively low boiling points and are used primarily as solvents or as starting materials in the synthesis of other chemicals and drugs. They are also integral components of gasoline, distillate fuels and other petroleum products. These substituted aromatics are economically important in the chemical, petroleum, pharmaceutical, polymer, paint and dye industries. Alkylbenzenes... therefore might pose significant and potential health risks to man and the environment. Some types of phthalates have affected the reproductive system of laboratory animals. Toluene is added to gasoline, used to produce benzene, and used as a solvent. The central nervous system (CNS) is the primary target organ for toluene toxicity in both humans and animals for acute (short-term) and chronic (long-term) exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to elevated airborne levels of toluene; symptoms include fatigue, sleepiness, headaches, and nausea... Human studies have reported developmental effects, such as CNS dysfunction, attention deficits, and minor craniofacial and limb anomalies, in the children of pregnant women exposed to high levels of toluene or mixed solvents by inhalation.

## • Has there been development plans for this area?

At one point the town of Troy considered building a wastewater infiltration system on the property, but abandoned the plans because "*This evaluation would also need to consider the possibility that the installation of underground piping or utility trenches could create preferential pathways for groundwater flow that could adversely influence the cleanup or monitoring activities.*"

## • Whose is responsible for monitoring this area now?

The site responsibility is Federal and an easement deed map shows that about 500ft remain between the PSNH corridor and restrictive covenants that any excavating would violate.

*http://www.epa.gov/superfund/accomp/factsheets04/troymills.htm, http://www.cdc.gov/biomonitoring/phthalates_factsheet.html, http://www.ncbi.nlm.nih.gov/pubmed/3291202 http://www.ncbi.nlm.nih.gov/pubmed/3291202, http://www.epa.gov/airtoxics/hlthef/toluene.html*

***Note: This information has been compiled by local citizens as a service to our community and is not meant to take the place of personal research or legal advice.***

# Pipelines & Property Valuations

The Northeast Direct (NED) pipeline would bring hydro-fractured (fracked) natural gas from shale fields in Pennsylvania through NY, MA, and NH, to Dracut, MA, and on to Canada for export. Kinder Morgan/Tennessee Gas Pipeline is a private company proposing to construct this 36-inch, high-pressure pipeline parallel to electrical transmission lines through seventeen New Hampshire communities, including Fitzwilliam. It is estimated that NH would receive only 22 percent of the gas, largely for electrical power generation. NED is a main line, which would not provide gas for home heating in our area, as we have no distribution infrastructure. *The following information was compiled and researched by local citizens. The information is meant to provide general background and should not substitute for expert research or legal advice.*

## What is an Easement?

Easement: The effect of pipeline easement is measured by the market. 'Just compensation' takes place at the time the easement is negotiated and isn't re-purchased with each succeeding landowner unless there is an annual royalty payment that goes with the land. The landowner pays the real estate taxes and not the pipeline, since any loss in value should be reflected in the overall land value. In valuation of the easement land, the appraiser must determine the remaining value in the land to the property owner. In one opinion, if you purchased property with the easement already on it, you should be able to sell it for the price you paid, but not for more. "There is no upside to having a pipeline easement on a property." Easements range from 50% of the easement land value, to 30+ % of the whole property value.

## How is the value of the land determined?

"Severance" damages are the diminution in fair market value of the remaining land that occurs because of a taking. The Fair market value is the amount which can be realized on a sale by an owner willing, but not compelled, to sell to a purchaser. Valuation is accomplished by comparison to the 'highest and best use' of the property, which is a measure of the best use of the property that will render the highest return on the current open market. Comparison is on current zoning, potential zoning changes, land use plans, community growth factors, soil type, limiting factors of wetlands, feasibility of change of use. Comparison is to property sales of similar highest and best use properties. Methods of valuation are

"Before and After" — Value the property without the pipeline (before), then value the property with the pipeline or Utility Corridor (after). If easement is placed after the property is purchased, use comparable sales as proof of the value.

"Across the Fence" — This is used when the pipeline/corridor is in place. Value the land next to (across the fence from) the property with the pipeline/corridor. Thus the valuation is in comparison to another property in the same market with respect to situation, usability, improvements, potential land use, zoning and other characteristics.

## What factors affect property values when a pipeline is present?

**Size of pipeline:** Transmission pipelines carry natural gas across long distances and occasionally across interstate boundaries, usually to and from compressors or to a distribution center or storage facility. Transmission lines are large steel pipes (36" to 42" in diameter) that carry unodorized gas at a pressure of approximately 200 to 1,200 psi, and sometimes even higher. (*http://www.forensic-appraisal.com/gas_pipelines_q_a)*

**Size of Easement:** Also, easements are not often specifically limited to current use and therefore may not have specified the type of product, the amount of pressure, size of pipe, number of pipes, all of which can be changed in the future with no compensation to the landowner.

**How Easement is situated on the property:** Does it cut the property in half, is it located at the edge, does it render a remaining portion useless, etc?

**Size of the property**

**Current and potential use of the property**

**Restrictions that lead to loss of use:** Any digging by the landowner must be monitored by the pipeline company.

**Inconvenience**

**Views:** i.e. unsightly paths through wooded areas. Surface improvements near the ROW may be forbidden, such as trees, sheds, dwellings, or anything other than low lying bushes, grass, crops

**Future potential stigma and fear factor:** The fear factor can *negatively affect surrounding land values.* Three studies completed by gas line companies found this to have little to no effect on property values, however studies by appraisal firms found there is measurable devaluation of residential properties with easements. The average reduction of values due to fear factor has been as high as 15% in some areas. The admissibility of public fear of 'perceived' safety hazards has been handled in three ways by the courts.

1. The majority view is to allow fear factor testimony without proof that such fear is reasonable. This eliminates the need for courts to analyze competing scientific views. Impact of fear on property values requires proof of a prevalent perception of danger and that the perception affects property values.

2. Some courts admit fear factor testimony only if fear is reasonable.

3. The minority of courts excludes evidence of fear in the marketplace as too speculative.

## What can cause Fear Factor?

Fear factor can be influenced by a variety of factors, including factual safety risks.

1. US DOT Pipeline Safety rules require reporting of accidents only if there is a loss of life, severe injury, or $50,000 of property damage. Safety violations and leaks are self reported, and there is evidence of leaks going unreported.

2. The Office of Pipeline Safety is supported by user fees assessed on transmission lines paid by the pipeline companies.

3. There is virtually no testing of pipeline operators.

4. There is no independent source keeping watch, investigating or inspecting pipelines. Less than 300 inspectors cover more than 2 million miles of US pipeline.

5. Odorant is not added to transmission pipelines due to its weight and cost, so leaks are harder to identify. Natural gas is a simple asphyxiate.

6. Monitoring by pipeline companies includes fly-overs and inspection from the air, looking for evidence in ground cover, discoloration of vegetation, encroachment of improvements.

7. Explosion of a 36" diameter natural gas transmission line under high pressure could cause radiant heat to ignite secondary fires within a 1,000 foot radius (testimony of Benjamin J. Pooler, II an expert in gas safety). Refer to Carlsbad, NM explosion; Alberta, Canada explosion 12/2003

8. Outside forces and construction account for 50% of all gas pipeline accidents (OPS 1994-1997)

9. Terrorist potential

Gas companies withhold information on the presence, pressure, size, depth, odor, and substance transported in pipelines citing Homeland Security measures, which proves they are a potential security threat.

10. Impact of Literature and Media on the fear factor: The impact may come from electronic media, television, cable, radio, newspapers, and research libraries. Survey of realtors in rural areas is another source. Most reporting focuses on explosions, injury, death, safety and perception of danger. Only industry literature paints a positive picture of the pipeline.

*Sources used in the gathering of the information above, are listed on Fact Sheeet: Impact of Pipeline Construction & Operation*

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# Impact of Pipeline Construction & Operation on Property Values

## What factors affect property values during construction?

Activities that occur during construction include corridor marking, clearing, grading, trenching, stringing, pipe bending and welding, XRay, weld coating, coating repair, backfilling, hydrostatic testing, and cleanup. This can cause damage to irrigation systems and wells; damage due to crop loss (get an Agricultural Impact Statement), and soil compaction

**Compaction of soil:** this can stunt future plant growth in perpetuity, depending on the depth of the compaction. Heavy equipment and machinery, especially during times of moist soil conditions can cause damage and/or deep rutting. Even one pass of heavy equipment on soil surface can cause 70-90% of the resulting impact. An axel load of 10 tons may compact the soil to 30 inches. Testing and mitigation should be performed in severely compacted areas.

**Clearing and grading:** This includes the removal of brush, trees, rocks, stumps. Rock removal may include blasting, the resulting impacts of which include

- The scattering of rock and debris
- Vibrations, especially with regard to structures and underground utilities
- Vibrations with regard to public and private wells and septic systems
- Disposal of excess rock and materials that are unsuitable for backfilling

**Noise, dust, ground disturbance, tree removal, shrub/landscape removal**

**Removal of structures:** buildings such as fences, sheds, and trailers

**Disruption:** The General Project Description for the NED project specifies the need for 400-450 personnel and 9 months to one year to complete each spread of the pipeline. The plan specifies the need for 60-75 personnel and 9 months to one year to complete each compressor station (station locations TBD) and 25 personnel for 6 months for each meter station (locations TBD). Disruption can occur in traffic, housing, etc.

## What factors affect property value during operation?

**Disruption from Compressor Stations:** Compressor stations house gas fueled turbine-driven compressors and electric-driven compressors. Noise and exhaust from these stations provide a negative impact. The heights of the stacks that will disperse turbine exhaust emissions are to be determined. The need for on-site septic and water wells at the compressor stations is to be determined.

**Disruption from Maintenance:** Vegetation maintenance is specified every three years, with a 10 foot corridor over the pipeline to be maintained annually. Additional vegetation management is required seasonally. (See separate Fact Sheet: Kinder Morgan's Use of Chemicals). Supplies and equipment must be maintained for emergency repairs and maintenance is required on access roads.

## What is the impact of co-location in a Utility Corridor

A utility corridor is a path of land that starts with one utility, such as an electric transmission line easement, and then has other utilities, such as gas transmission pipelines, water and sewer pipelines, cable lines, etc. running within or alongside the existing easements. The possibility that an existing easement may later develop into a utility corridor (placing high voltage electric lines along a pipeline, or vice versa) affects future buyers and can create market resistance. Mixing a gas transmission pipeline in a utility corridor with a high voltage transmission line carries safety risks and can impact abutting property values.

**Stray Voltage:** Steel pipelines are and can be carriers of stray current that can have negative health effects on animals and potentially humans when induced AC current is not adequately grounded. It can cause metal loss on the pipe wall,

and leaks (Smart, Osstendorp, and Wood, 1999). There is a greater potential of this when a gas pipeline is co-located in a utility corridor near high-voltage electric lines (Agricultural Impact Statement, Guardian Pipeline, March, 2001).

**AC Mitigation (Alternating Current):** An AC mitigation system is a system to reduce stray current, prevent possible shock to personnel, and to prevent interference with cathodic protection systems. It is anticipated that the design will include zinc ribbon, grounding mats, and other equipment, most of which will be buried. Cathodic protection and EMI (Electromagnetic Field Interference) evaluation are required.

- Electrostatic or capacitive interference occurs in the vicinity of a power line when pipe is laid on a foundation that is insulated from the ground. This occurs during construction.
- Resistive/ ohmic interference occurs when lightning strikes a transmission structure or when there is a phase-ground fault. Voltage can get onto the pipeline through coating defects.
- Electromagnetic/inductive interference occurs when there is extended and close parallel routing with 3-phase high voltage AC lines. Contributing factors include rising operating currents in the lines, increased quality of pipeline coatings, length of line close to or parallel to HVAC lines.

**Topographical Factors:** Electric lines are often built in mountainous terrain, across ravines and rivers. Rocky soils, faults, landslide areas, canyons, rivers are avoided for pipelines, which require a graded right of way. More excavation and specialized construction is needed for pipelines in these areas, increasing noise and disruption. For instance, pipes must be protected from sharp rock.

**Other hazards from high voltage electric lines:** Other hazards induced by high voltage lines include fire, explosion, and radio interference. The degree of system reliability is more adverse when influenced by power lines, and system effects are not reversible. Power lines can induce currents in metallic objects adjacent to the line, and can contribute to corrosion of buried pipelines. "Fault currents" can flow to the ground (i.e. through lightning strikes) and move along the pipeline causing equipment damage and possible rupture.

**Costs of a utility corridor:** The mitigation measures necessary to prevent construction and maintenance damage to existing utilities add cost. Special costs are incurred for less than ideal routes in a joint corridor (i.e. solid rock trenching). Bundling of utilities allows for damage to one utility during construction and maintenance of the other, greater impacts from sabotage, and greater impacts from natural disasters.

## Are there additional temporary and/or permanent land requirements?

A 36" pipeline requires approximately 100 feet of construction ROW, but 50 feet of operational ROW. In addition to this, there are several other land requirements that are to be determined.

**Mainline Valves:** The Class designation assigned to property determines the distance between mainline valves. Classes are determined by the number of buildings with human occupancy and/or defined outside areas such as playgrounds or outdoor theaters within 220 to 100 yards of the pipeline. Basically the more populated the area, the closer the spacing is between mainline valves. Each section between valves must have blow down valves to allow rapid discharge of gas into the atmosphere without hazard, i.e. directed away from electrical conductors associated with any overhead electric lines. Each valve will have a 25'x25' fenced, graveled area within the ROW, accessible by permanent access roads. Once these valve locations have been identified, land for access roads must be acquired and roads built where no public access currently exists.

**Compressor Stations:** Compressor stations with PIG launcher and receiver barrels must be located at, minimally, the beginning and ending of each lateral line, with permanent access roads. Again, once these stations have been identified, land for access roads must be acquired and roads built where no public access currently exists. Per Compressor Station, approximately 10-20 acres are needed for construction, and approximately 10 acres are needed for operation.

**Cathodic Protection System:** Pipeline coatings used in the US and in Europe have exacerbated the problem of AC interference on pipelines. This requires cathodic protection and EMI (Electromagnetic Field Interference) evaluation. There may be a need for rectifiers and anode beds outside the permanent ROW as discovered in design. AC (alternating current) mitigation systems will be built inside the ROW.

**Topography:** Temporary work areas typically are required at road, railroad, wetland, and waterbody crossing locations,

and for areas requiring specialized construction techniques, including steep slopes and agricultural land. The configurations and sizes of these (ATWS) areas will be based on site-specific conditions. Additional temporary acres may be needed during construction based on the topography of the land. Where the pipeline is encumbered by steep slopes, the method of cut and fill may require more construction space for maneuverability and storage.

**Pipe Yards and Contractor Yards:** To be determined are additional acres that will be needed for equipment, pipe, materials, for pipe assembly, and for temporary field offices.

*Sources:*

GNARUS Pipelines and Property Values Study – no correlation to property values
*http://www.gnarusllc.com/wp-content/uploads/2012/04/Gnarus-Pipelines-Property-Values.pdf*

Forensic Appraisal Group LTD Q&A
*http://www.forensic-appraisal.com/gas_pipelines_q_a*

General Valuation Info
*http://www.forensic-appraisal.com/gas-pipelines*

Forensic Appraisal Group Valuation Issues
*http://www.forensic-appraisal.com/valuation_issues*

Co-location of gas and electric in a utility corridor
*http://www.muni.org/Departments/OCPD/Planning/Publications/Utility%20Corridor%20Plan/UCPChap3.pdf*

Environmental impacts of an electric transmission line
*http://psc.wi.gov/thelibrary/publications/electric/electric10.pdf*

Property Valuation Methods, legal info
*http://www.faegrebd.com/webfiles/Energy%20Corridors%20White%20Paper.pdf*

AC impact and science in co-location of gas and electric lines
*http://www.who.int/peh-emf/meetings/archive/en/paper02shwehdi.pdf*

Environmental Report NED Project Resource Report 1
*Fracdallas.org*

### Northeast Energy Direct Pipeline:

# The Economic Impacts

### Frequently Asked Questions

The Northeast Direct (NED) pipeline would bring hydro-fractured (fracked) natural gas from shale fields in Pennsylvania through NY, MA, and NH, to Dracut, MA, and on to Canada for export. Kinder Morgan/Tennessee Gas Pipeline is a private company proposing to construct this 36-inch, high-pressure pipeline parallel to electrical transmission lines through seventeen New Hampshire communities, including Fitzwilliam. It is estimated that NH would receive only 22 percent of the gas, largely for electrical power generation. NED is a main line, which would not provide gas for home heating in our area, as we have no distribution infrastructure. *The following questions and answers were compiled and researched by local citizens. The information should not substitute for expert research or legal advice.*

## Please describe the general characteristics of the proposed Kinder Morgan (a.k.a Tennessee Gas) Pipeline

It would be a 36" pipeline requiring approximately 100 feet of construction ROW, with 50 feet of operational ROW. These pipelines are an Interstate System which transports natural gas across state lines and literally across the country. Transmission pipelines carry un-odorized gas across interstate boundaries, usually to and from compressors or to a distribution center or storage facility. Transmission lines are large steel pipes. These pipelines are pressurized and PSI (pounds per square inch) is from 200 to 1600. The info we have indicates this will be a 1200 PSI pipeline. There were five major pipeline explosions in the US in January 2015. Some caused contamination to drinking water, resulting in months and even years of clean-up efforts, plus property damage. These were new and old pipelines, gas and oil.

*www.Phmsa.3dot.gov.pipeline* (Pipeline and Hazardous Materials Safety Administration)

## Is there any information about the "fear factor" affecting property values?

The fear factor can negatively affect surrounding land values. Three studies completed by gas line companies found this to have little to no effect on property values, however studies by appraisal firms found there is measurable devaluation of residential properties with easements. The average reduction of property values due to fear factor has been as high as 15%.

*http://www.forensic-appraisal.com/gas-pipelines*

## Construction is estimated to last for about two years. How will southern New Hampshire town property values (abutters and non-abutters) be affected during construction of the pipeline?

Activities that occur during construction include corridor marking, clearing, grading, trenching, stringing, pipe bending and welding, XRay, weld coating, coating repair, backfilling, hydrostatic testing, and cleanup.

- Damage to irrigation systems and wells
- Damage due to crop loss
- Soil compaction: Compaction of soil can stunt future plant growth in perpetuity, depending on the depth of the compaction. Heavy equipment and machinery, especially during times of moist soil conditions can cause damage and/or deep rutting. Even one pass of heavy equipment on soil surface can cause 70-90% of the resulting impact.
- Clearing and grading: This includes the removal of brush, trees, rocks, stumps. Rock removal may include blasting, the resulting impacts of which include: the scattering of rock and debris; vibrations, especially with regard to structures and underground utilities; vibrations with regard to public and private wells and septic systems; disposal of excess rock and materials-unsuitable for backfilling
- Noise, dust, ground disturbance, tree removal, shrub/landscape removal
- Removal of structures such as fences, sheds, and trailers
- Disruption from machinery, noise and personnel

## Are there other considerations that will affect the value of property in southern New Hampshire towns?

**Topography:** Temporary work areas typically are required at road, railroad, wetland, and water body crossing locations, and for areas requiring specialized construction techniques, including steep slopes and agricultural land. The configurations and sizes of these (ATWS) areas will be based on site-specific conditions. Additional temporary acres may be needed during construction based on the topography of the land. Where the pipeline is encumbered by steep slopes, the method of cut and fill may require more construction space for maneuverability and storage.

**Pipe Yards and Contractor Yards:** Additional acres will be needed for equipment, pipe, materials, for pipe assembly, and for temporary field offices.

*http://www.forensic-appraisal.com/valuation_issues*
(Environmental Report NED Project Resource Report 1 December, 2014, General Project Description)

## What types of situations would affect property values after the pipeline is complete and it is operating?

**Disruption from Compressor Stations:** compressor stations house gas fueled turbine-driven compressors and electric-driven compressors. Noise and exhaust from these stations provide a negative impact to residents and wildlife. Compressor stations from natural gas pipelines run constantly, and are an ongoing noise disruption to landowners and walkers, hikers, etc.

**Disruption from Maintenance:** vegetation maintenance every three years; annual maintenance of a 10 foot corridor over the pipeline. Additional vegetation management is required seasonally. Supplies and equipment must be maintained for emergency repairs. Maintenance is required on access roads.

**The "Fear Factor":** Literature and Media greatly influence prospective home buyers/future business owners. The impact may come from electronic media, television, cable, radio, newspapers, and research libraries. Survey of realtors in rural areas is another source. Most reporting focuses on explosions, injury, death, safety and perception of danger. The pipeline industry literature is the only source we found which paints a positive picture of the pipeline.

*http://www.forensic-appraisal.com/valuationissues* (Forensic Appraisal Group Valuation Issues)
*http://www.who.int/peh-emf/meetings/archive/en/paper02shwehdi.pdf*
(Environmental Report NED Project Resource Report 1 December, 2014 General Project Description)

## What safety precautions are in place?

We found no data on the testing of pipeline operators. There is no independent source keeping watch, investigating or inspecting pipelines. Less than 300 inspectors cover more than 2 million miles of US pipeline. Odorant is not added to transmission pipelines due to its weight and cost, so leaks are harder to identify. Natural gas is a simple asphyxiate. Terrorist potential — Gas companies withhold information on the presence, pressure, size, depth, odor, and substance transported in pipelines citing Homeland Security measures, indicating the pipelines are a potential security threat.

*http://www.forensic-appraisal.com/valuation_issues*

## How do the pipeline companies monitor for safety?

Monitoring by pipeline companies includes fly-overs and inspection from the air, looking for evidence in ground cover, discoloration of vegetation, encroachment of improvements. Dead or dying vegetation indicates a possible problem. Airborne patrols for leak detection; preventative maintenance is completed as needed. Hissing sounds are another indicator. The gas is odorless and colorless. Explosion of a 36" diameter natural gas transmission line (the size/type proposed by Kinder Morgan) under high pressure could cause radiant heat to ignite secondary fires within a 1,000 foot radius.

*http://www.forensic-appraisal.com/gas-pipelines, http://www.forensic-appraisal.com/valuation_issues*

## What is the procedure in the event of an emergency; a pipeline leak or an explosion? How will emergency vehicles get access to the pipeline over dirt roads?

An exact location of the leak needs to be obtained and reported. The leak or fire is not contained, it continues until the operator can shut down the nearest compressor station. Local responders are trained for the possibility of a wide range of potential accidents and emergencies. It is suggested in terms of a gas pipeline emergency that there be a coordinated

response between local, state, federal, and the company. The pipeline company assumes major responsibility for control, direction, and extinguishing the primary ignition explosions. The affected area should be isolated and the pipeline operator should be should be notified, and an incident responder is dispatched to assess the situation.

**Controlling Fires and Vapors:** Many elements in an emergency incident must be evaluated and assessed. The decision to extinguish fires or spills involving water reactive materials must be based on information from a reliable source involving the pipeline operator.

- Extinguishing a primary fire can result in explosive re-ignition.
- Flammable gas fires should not be extinguished on gas pipelines unless the fuel source has been isolated or removed and the pipeline operator advises an authorization.
- Electrical motors, firearms, vehicles, cell phones, Emergency radios, cigarettes, construction equipment, Static electricity, open flames and sparks should be eliminated.

*www.KinderMorgan.com./Emergency response pipeline* (Note: Some info gathered from this website has since been removed)

## What types of accidents have occurred from similar pipelines?

In September 2010, there was a large explosion of a 30" pipeline in a neighborhood San Bruno, CA. The explosion killed 8 people and injured 50, creating a crater 72' in diameter and 300 foot flames. PG&E allowed the fire burn for 95 minutes prior to turning off the valves. PG&E safety management was found to be deficient and ineffective, ignoring a weakness in the pipeline that existed prior to the incident. Safety records of PG&E showed no pipeline weaknesses.

According to PHSMA there is a difficulty maintaining a staff of pipeline inspectors, because of high turnover due to Inspectors are hired by private companies for their expertise offering high salaries.

Alberta, Canada rupture causes explosion July 2009. The report misplaced for two years until 2011. The National energy board criticized TransCanada, the operator of the line for Inadequate field inspections and ineffective field management.. The Peace River Main Line in Northern Alberta exploded sending a 50 meter tall ball of flames into the air and razed a 2 hectare wooded area appearing as if a bomb has been dropped. The pipeline spewed 1.45 million cubic meters of natural gas (Volume of 580 Olympic sized swimming pools) over a period of hours before TransCanada stopped the flow and put out the fire. Investigation showed bacteria caused corrosion in the pipe.

*www.Phmsa.dot.gov.pipeline*
*http://www.usatoday.com/story/money/2014/09/02/pge-san-bruno-gas-explosion-fine/14979593/*

## What types of physical harm can Natural Gas do to humans if exposed?

Natural gas contains harmful contaminants that can lead to burning eyes, sore throats, nose bleeds, sinus congestion, and chest pain. There may also be more serious effects such as endocrine disruption in fetuses and small children, male reproductive problems, severe respiratory problems, asthma, chronic obstructive pulmonary disease, brain and nervous system disorders, gastrointestinal and liver disorders, immune system, kidney, blood and cardiovascular illness, cancer, and other serious illness, resulting in death or permanent disability.

*www.Phmsa.dot.gov.pipeline*

## Will residents of have problems getting Homeowner's Insurance? Who will pay if a home's foundation is cracked or a well is contaminated as a result of the blasting/drilling to construct the pipeline?

Damage such as cracking, settling of the foundation is not covered on homeowner's insurance. It is up to the individual property owner to try to collect payment from Kinder Morgan if damage is done to foundations or wells during the construction. The homeowner will need to have before and after proof of damages.

The insurance company may interpret an easement as a business use of the property, if the homeowner is compensated by Kinder Morgan. If it is considered a business use the damage would not be covered under the homeowner's policy.

Abutters have the danger of pollutants from a toxic fluid spill, which could seep into homeowner's land and/or well etc. The pipeline would be liable, unless their liability is waived by the state or landowner. There are some basic pollution

exclusions on homeowner's policies.

Note: All insurers asked said they have no underwriting procedures in place for properties where pipelines cross the property. The insurance carriers may not have these answers until the pipeline is built. The above info is based on general knowledge of homeowners and business insurance policies.

*Source: Concord Mutual Group Underwriting Dept*

## What are "blow down valves" used for?

As a safety precaution, each segment of a main line must have blow-down valves with enough capacity to allow the transmission line to be blown down as rapidly as possible. These valves are used to reduce pressure when compression is too high.

*www.Phmsa.dot.gov.pipeline*

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# New England's Regional Energy Profile

## Tell me about the New England electrical grid?

The New England electric grid is an 8,500-mile high-voltage transmission system that connects electric utilities, publicly-owned electric companies, power generators, suppliers, alternative resources, and end users in the six- state wholesale electricity marketplace. This includes 6.5 million households and businesses and 14 million people. The region has 13 transmission ties to neighboring power systems that allow electricity trade with New York, New Brunswick, and Québec. New England is a net importer of electricity and in 2013 the region imported over 14% of its electricity over these ties.

## What resources are used to generate our power?

In New England, generation is owned and operated either by private generation companies or electric, municipal, or consumer-owned utilities. The type of fuel we use to generate power is: 43% natural gas; 22% oil; 15% nuclear; 7% coal; 13% hydro and renewables.

## What is ISO New England?

ISO New England is the Regional Transmission Organization responsible for ensuring the reliable operation of the New England electric grid, administration of the region's wholesale electricity markets, and administration of the regional Open Access Transmission Tariff, including regional system planning. The ISO is a not-for-profit corporation governed by an independent board of directors. The ISO does not own transmission or generation assets and has no financial interest in any companies participating in the region's wholesale electricity markets.

## Currently, is NE running out of electricity?

No. In 2013, ISO New England reports that during the highest *Peak Demand* period we used 27,379 megawatts of electrical power. Currently, 35,596 megawatts of capacity is contracted and available to us. Note: The region's electricity demand peaks in the summer due to the use of air conditioning.

## What about the future?

In the 2013 Regional System Plan, ISO New England forecasted the region's overall electricity demand to grow 1.1% annually and the region's peak demand to grow 1.4% annually over the next decade. Interestingly, ISO's projected *Peak Demand* for the year 2022 is 31,525 megawatts - still significantly less then is generated for us today.

## What about energy efficiency?

In 2014, the ISO released its third annual energy-efficiency (EE) forecast to estimate the long-term effects of state-sponsored EE programs for the period from 2018 through 2023. Regionally, the EE forecast shows lower annual growth in peak demand and flat annual energy use compared to modest rates of growth under the traditional forecasts. While the region's energy consumption is projected to grown an average of 1.1% annually through 2022, when the energy-saving effects of EE are included, **the forecast shows essentially no growth.**

*Sources:*
*http://www.iso-ne.com/nwsiss/grid_mkts/key_facts/final_regional_profile_2014.pdf*
*U.S. Census Bureau, 2013 Regional System Plan, 2012 Annual Markets Report, FCA results, and other public ISO information. ISO New England: www.iso-ne.com; and www.isonewswire.com*

*Note: This information has been compiled by local citizens as a service to our community and is not meant to take the place of personal research or legal advice.*

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# Kinder Morgan's Record of Safety

All incidents related to the transportation of gas, oil and other hazardous materials are reported to a branch of the Department of Transportation, called The Pipeline and Hazardous Materials Safety Administration (PHMSA is pronounced "FIMsa"). It is responsible for protecting the people and the environment from the risks that accompany projects like these. As defined in PHMSA policy, a "serious incident" means any of the following events:

(1) A pipeline leak AND a death or personal injury necessitating inpatient hospitalization, or estimated property damage, including cost of gas lost, of the operator or others, or both, of $50,000 or more.
(2) An event that results in an emergency shutdown of an LNG facility.
(3) An event that is significant, in the judgment of the operator, even though it did not meet the criteria of paragraphs (1) or (2).

## PHMSA Pipeline Risk Report

From 2006 to 2014, Kinder Morgan and its affiliates experienced 401 "incidents", resulting in two fatalities, fifteen injuries that required hospitalization, and multiple fires and explosions that flattened homes, damaged roads, and blasted deep craters across the country. Damage to public and private property ran well over $230,000,000, and over 30,000 barrels of toxic material spilled into the ground. Just one of these barrels contains 42 gallons of toxic fluid, and scant percentages were ever recovered.

Regarding a commitment to safety and maintenance, the financial research firm Hedgeye reported that immediately following the 2012 acquisition of the El Paso pipeline, Kinder Morgan "cut maintenance expenses by 70-99% and maintenance [capital expenditures] by about 60% on most of those assets."

## KM's History of Pollution Across the Nation

Kinder Morgan has been fined numerous times by the US government for stealing coal from customers' stockpiles, lying to air pollution regulators, illegally mixing hazardous waste into gasoline, and many other crimes. Kinder Morgan's pipelines are plagued by leaks and explosions, including two large and dangerous spills in residential neighborhoods in **Canada**. One hedge fund analyst has accused the firm of "starving" its pipelines of maintenance spending. Kinder Morgan was convicted on six felony counts after one of its pipelines in **California** exploded, killing five workers. In **Louisiana**, Kinder Morgan's terminal spills coal directly into the **Mississippi River** and nearby wetlands. The pollution is so heavy that satellite photos show coal-polluted water spreading from the facility in black plumes. The same site generates so much windblown coal dust that nearby residents won a class action lawsuit because their homes and belongings are so often covered in coal dust. In **South Carolina**, coal dust from Kinder Morgan's terminal contaminates the bay's oysters, pilings, and boats. Locals have videotaped the company washing coal directly into sensitive waterways. In **Houston**, Kinder Morgan's terminal operators leave coal and petcoke, a highly toxic byproduct of oil refining, piled several stories high on its properties. The company's petcoke operations are so dirty that even the firm's promotional literature shows plumes of black dust blowing off its equipment. In **Virginia**, Kinder Morgan's coal export terminal is an open sore on the neighborhood, coating nearby homes in dust so frequently that the mayor has spoken out about the problem. In **Oregon**, Kinder Morgan officials bribed a ship captain to illegally dump contaminated material at sea, and the firm's operations have repeatedly polluted the Willamette River. In **Pennsylvania**, Tennessee Gas settled for $800,000 for multiple violations of the Clean Stream Law during construction of a natural gas pipeline.

For a complete report by Sightline Institute, an independent nonprofit research and communications center download the Report at *http://www.sightline.org/research/the-facts-about-kinder-morgan-2/*

*Sources: http://primis.phmsa.dot.gov/comm/publications/PIPA/PIPA-PipelineRiskReport-Final-20101021.pdf, http://primis.phmsa.dot.gov/comm/States.htm?nocache=3971, http://www.sightline.org/press/releases/report-energy-giant-kinder-morgans-history-of-pollution-law-breaking-cover-ups/, http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=20661&typeid=1*

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# Natural Gas Compressor Stations

High pressure natural gas pipelines require compressor stations with large engines to maintain pressure and move the gas through the pipeline toward the market. According to the Tennessee Gas Resource Report 10 (filed with FERC on 12/8/14) Kinder Morgan's proposed NED pipeline would be a 36" diameter pipe highly pressurized up to 1460 psi.

## Where are the Compressor Stations going to be located?

On June 1, 2015 KM made a FERC submission that stated stations would be in Northfield MA and New Ipswich NH.

## What facilities make up these compressor stations, and how powerful will they be?

Both locations would house "Two Titan 250 turbines; one Titan 130 turbine, Compressor building, Offices for Tennessee personnel, and Ancillary facilities" according to Report 10. The Titan 250 turbines are 30,000 Horsepower each, and the Titan 130 is 20,000 HP - for a total of 80,000 HP. There is NO compressor station this large in all of New England. Most "big" ones are around 20,000 HP. The Southwick MA compressor station (often shown in KM's presentations) is only 2,000 HP.

## How much land is used for a compressor station?

The locations would be cleared for 10–75 acres, with an anticipated 165 acre buffer zone including 20 acres for construction.

## How noisy can these stations be?

The normal operating sound in close proximity of a single Titan 130 turbine running at less than full capacity is 113 decibels (without sound barriers). Mass Department of Environmental Protection standards allow for an increase in noise by only 10 decibels above ambient , so KM will likely have to enclose the compressors to keep the constant sound to less than 55 decibels at the nearest dwelling.

A blowdown is the intentional venting of gas to release pressure. Much of this gas is methane, a potent green house gas. This can last for 2 hours. Half a mile away it would be 60-90 decibels (volume of a lawn mower in close proximity). No sound containment is possible for blowdowns. To watch (and hear) a video of a blowdown, scc: http://www.youtube.com/watch?v=nJXj9Y-XinQ&sns=em

## What are the environmental consequences?

Emissions from these stations include air pollution through blowdowns, leaks, and accidental releases. Estimates are in the range of 324,000 tons of $CO_2$, 121 tons of carbon monoxide, 106 tons nitrogen oxide, 26 tons of volatile organic compounds per year **per Titan 250 turbine**. Between 100 and 3,000 pounds each of benzene, toluene, xylene, and formaldehyde per year **per Titan 250 turbine**. There is nothing "green" about this process.

Emissions can lead to serious health issues for citizens who live close by, including eye and respiratory tract irritation, nausea, memory impairment, damage to liver, kidney, and central nervous system, and elevated risk of cancer .

## Are these stations safe?

Explosions and fires at compressor stations are documented throughout the country. There has been an average of more than one "significant incident" per week along high-pressure gas transmission lines nationwide since 1995.

*Sources:*
*www.gazette.coldhaus.com*
*Tennessee Gas Pipeline Company, Resource Report 10, filed with FERC Dec 8, 2014 and Sept 16, 2014*
*Solar Turbines: A Caterpillar Company, "Noise Prediction Guidelines for Industrial Gas Turbines"*
*Office of Energy and Environmental Affairs, "Noise Pollution Policy Interpretation". Mass.gov*
*Next Generation Processing, LLC., "Haven Gas Plant PSD permit summary." Kansas. Reports on Titan 250 turbines.*
*Madison County, NY Department of Health. Comments to the FERC concerning Docket CP14-497. October 15, 2014*
*Pipeline and Hazardous Materials Safety Administration (PHMSA) <https://hip.phmsa.dot.gov/analyticsSOAP>*

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