REPORT | June 2019

# OUT OF GAS: NEW YORK'S BLOCKED PIPELINES WILL HURT NORTHEAST CONSUMERS

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# About the Author

**Robert Bryce**, a senior fellow at the Manhattan Institute, is the author of five books on energy, innovation, and the environment, including, most recently, *Smaller Faster Lighter Denser Cheaper: How Innovation Keeps Proving the Catastrophists Wrong*. His articles have appeared in dozens of publications, including the *Wall Street Journal, National Review, New York Times,* and *Sydney Morning Herald*. Bryce has lectured widely and appeared on television and radio programs ranging from Fox News to Al Jazeera. He is the producer of a new feature-length documentary, *Juice: How Electricity Explains the World*, which will be released later this year. In March 2020, PublicAffairs will publish Bryce's sixth book: *A Question of Power: Electricity and the Wealth of Nations*.

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# Executive Summary

U.S. natural gas production is soaring, up 91% since 2005—and the country is now exporting liquefied natural gas (LNG) all over the world, including to China, Chile, and India.* Despite this surfeit, dozens of communities in New York and Massachusetts are subject to moratoriums on new gas connections due to shortages of the fuel.

The shortages are due in large part to New York State regulators, who are refusing to allow the construction of new gas pipelines. While these restrictions are claimed to be necessary to protect the environment from harm, they will likely result in increased use of heating fuel oil, which means increased air pollution and carbon-dioxide emissions. New York and the New England states already have some of the highest residential gas and electricity rates in the country, and these rates will only rise as a result of the blockade. This paper highlights the need for more natural gas supplies in the Northeast to heat homes, buildings, and generate electricity, and it explains how efforts to restrict those supplies are hurting consumers and the environment.

*Energy Information Administration (EIA), "Short-Term Energy Outlook," Apr. 9, 2019. In 2019, EIA expects domestic gas production to exceed 90 billion cubic feet per day (Bcf/d). In 2005, production was about 47 Bcf/d.

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## Introduction

In 1821, the first successful natural gas well in America was completed, in Fredonia, New York. That well led to the creation of the Fredonia Gas Light Company, the first natural gas distribution company in the country.[1] Today, New York is the sixth-largest gas-consuming state in the United States.[2] It is served by about 4,500 miles of natural gas transmission pipeline and about 87,000 miles of gas distribution and service lines. Those pipelines are critical to the future of the state: natural gas generates about 46% of New York's electricity and is used widely to heat homes and buildings.[3]

Nevertheless, in March, Consolidated Edison (Con Ed) ceased providing new natural gas connections in most of its service area in Westchester County, which lies north of New York City (**Figure 1**). The utility, which provides natural gas and power to customers in and around the city, explained that demand for gas has "been experiencing significant growth primarily due to the construction of new buildings, the opening of new businesses, and conversion of oil to cleaner-burning natural gas in existing buildings."[4] While demand is rising, however, there is a shortage of the fuel. Con Ed cited several reasons for the shortage, including "constraints on interstate pipelines that bring natural gas to customers in Westchester County."[5]

Those constraints are largely due to New York State regulators, who have repeatedly delayed or denied the certifications needed to build new pipelines. As a utility spokesman explained, there is a "lot of natural gas around the country but getting it to New York has been the strain."[6] The last pipeline expansion in Con Ed's service area was completed in 2013. That project brought new gas supplies into lower Manhattan and helped the utility convert several thousand buildings from heating oil to natural gas, a move that was lauded for its clean-air and emissions-reduction benefits. In 2018, the utility submitted a proposal to the New York Public Service Commission (NYPSC) that would allow it to spend $305 million over six years to increase energy-efficiency efforts that would reduce gas demand. But even if those measures are approved, a Con Ed spokesman told the *Wall Street Journal* in January, "we'll still be short to meet the growing demand we have for natural gas. … It's not going to make up that gap."[7]

A few days after Con Ed announced the moratorium, NYPSC chairman John B. Rhodes issued a statement saying that his agency is "taking quick and diligent steps to address" the issue. The agency, he said, would "push utilities to address changing market dynamics" and "help consumers conserve energy and to solicit for natural gas supply alternatives." His statement had four mentions of "clean energy" but said nothing about new pipeline capacity.[8]

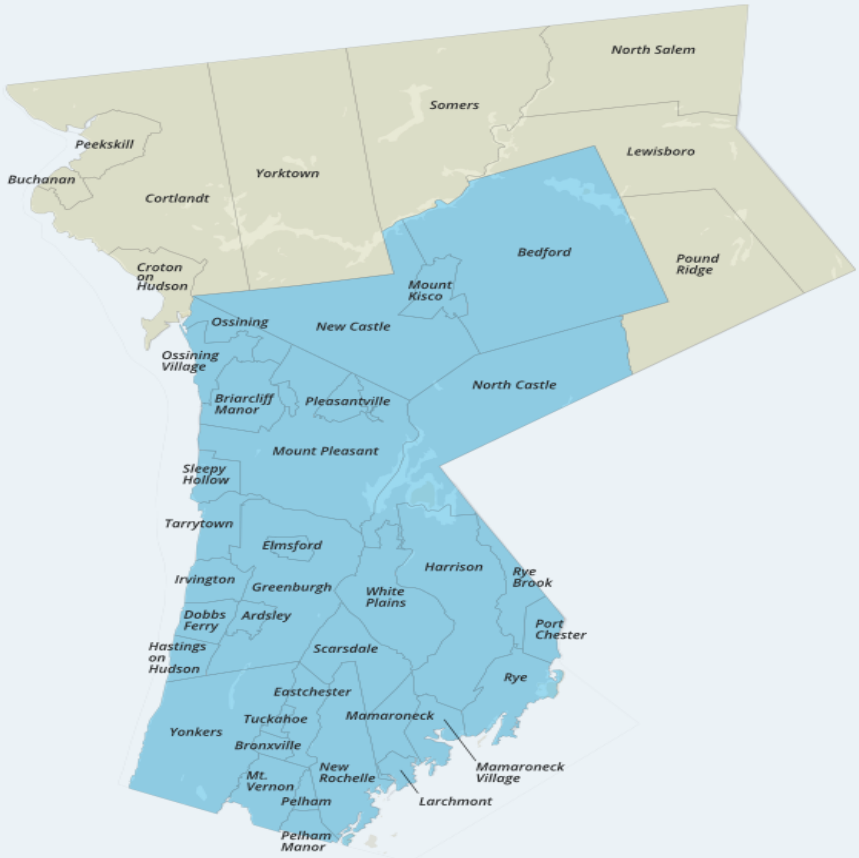
Between 2008 and 2018, New York's residential gas consumption jumped by 20%.[9] In addition, the state's electric sector has become increasingly dependent on gas-fired generators. In 2004, New York produced about 27

FIGURE 1.

## Westchester County Areas Affected by Con Ed's Gas Hookup Moratorium

- Area not affected
- Area affected by moratorium

Source: Con Ed, "About the Westchester Natural Gas Moratorium"




terawatt-hours of electricity from natural gas. By 2017, that figure had increased to about 47 terawatt-hours.[10] The electric sector will likely be even more reliant on gas in the future. In April 2020, Entergy, the utility that owns the Indian Point Energy Center, the 2,069-megawatt nuclear plant in Westchester County, will permanently shutter one of the two reactors at the facility.[11] It will close the other reactor in April 2021.

Indian Point supplies about 25% of the electricity consumed in New York City. In late 2017, the New York Independent System Operator (NYISO), the independent nonprofit agency that manages the state's electric grid, found that when the reactors at Indian Point are retired, their output will largely be replaced by three gas-fired generators. Two of those generators are in New York: the 678-megawatt CPV Valley Energy Center in Wawayanda; and the 1,020-megawatt Cricket Valley Energy Center in Dover.[12] The third is a 120-megawatt addition to the Bayonne Energy Center in Bayonne, New Jersey.[13]

A month after the moratorium began, Con Ed reached an agreement with Tennessee Gas Pipeline whereby the pipeline will upgrade its compression facilities outside New York State, which will enable the delivery of more gas to Westchester County. If that deal gets the needed approvals from the Federal Energy Regulatory Commission (FERC) and state and local agencies, the moratorium on new gas hookups could be lifted by November 2023.[14] (Gas pipelines move gas under pressure. By increasing the amount of compression, operators can increase the pressure and therefore move more fuel through a given pipeline.) But that project will need approval from some of the very same state agencies—including the New York Department of Environmental Conservation (NYDEC)—that are currently blocking gas pipelines.

New York is not the only state whose regulators have been blocking or attempting to block new gas pipelines. The ongoing battle is moving to the federal level. Recent moves by the Environmental Protection Agency (EPA) and legislation introduced in the U.S. Senate could expedite the pipeline-permitting process.

## Communities Affected by the Gas Shortage

On January 28, 2019, 10 days after Con Ed announced that it would be suspending new natural gas connections in Westchester County, Holyoke Gas & Electric in Holyoke, Massachusetts, announced that it was suspending new natural gas connections. That utility, which serves about 9,900 gas customers, said that "while inexpensive natural gas has never been more plentiful in the United States, there is insufficient pipeline capacity in our region to deliver additional load. Recent proposals that would increase natural gas capacity in the region have been met with opposition, and the current constraints are causing significant adverse environmental and economic impacts on the region's ratepayers."[15]

A few weeks later, Middleborough Gas and Electric Department, a municipally owned utility in Middleborough, Massachusetts, announced that it, too, would stop adding new gas customers "due to pipeline constraints." The utility said that it was "evaluating options to bring additional capacity to the region, but the time frame for securing additional capacity is uncertain, since pipeline projects can take many years to develop."[16]

In fact, some communities have ceased offering new gas hookups since 2014. That year, Columbia Gas issued a moratorium on new gas service in the towns of Northampton and Easthampton, Massachusetts.[17] In 2015, Berkshire Gas imposed moratoriums on the Massachusetts towns of Greenfield, Montague, Deerfield, Sunderland, Whately, Amherst, Hadley, and Hatfield.[18] By February 2019, 43 communities in New York and Massachusetts were being affected (**Figure 2**). In all, about 1.1 million residents are affected by the moratoriums, some 800,000 of whom live in New York.

## The Growing War Against Pipelines

Across the country, climate activists and local environmental groups are campaigning to slow or stop the construction or expansion of oil and gas pipelines. Thousands of protesters gathered near Cannon Ball, North Dakota, in 2016 and early 2017 to oppose the Dakota Access pipeline, a project designed to carry oil from the shale fields in North Dakota to an oil terminal in Illinois. More than 700 activists and others were arrested during the protest, which claimed that the pipeline, by crossing the traditional lands of the Standing Rock Sioux tribe, was violating the tribe's cultural and spiritual rights.[19] The pipeline was nevertheless fast-tracked for approval shortly after Donald Trump became president, and it began shipping oil in mid-2017.[20]

Activists have also targeted the Keystone XL pipeline, which is designed to carry crude oil from Alberta, Canada, to a terminal in Nebraska. From there, the oil would be linked to existing pipelines that can transport it to refineries on the Gulf Coast. Nearly 400 protesters were arrested near the White House while protesting against the pipeline in 2014;[21] since then, the pipeline has continued to face legal opposition, and in 2018, a federal judge claimed that the Trump administration had ignored concerns about climate change and ruled that the federal government had to do a more complete review of the project.[22]

In New York and New England, environmental protesters have largely focused on natural gas projects. In 2016, climate activists in Massachusetts were arrested after they attempted to block construction of a five-mile-long gas pipeline called the West Roxbury Lateral, one of them claiming that this was necessary "to avoid the worst effects of climate change."[23]

FIGURE 2.

## Gas Hookup Moratoriums in New York and Massachusetts (2014 – February 19, 2019)

| Community | State | Moratorium Imposed | Utility |
|---|---|---|---|
| Northampton | MA | 2014 | Columbia Gas |
| Easthampton | MA | 2014 | Columbia Gas |
| Franklin County | MA | 2014 | Berkshire Gas |
| Greenfield | MA | 2015 | Berkshire Gas |
| Montague | MA | 2015 | Berkshire Gas |
| Deerfield | MA | 2015 | Berkshire Gas |
| Sunderland | MA | 2015 | Berkshire Gas |
| Whately | MA | 2015 | Berkshire Gas |
| Amherst | MA | 2015 | Berkshire Gas |
| Hadley | MA | 2015 | Berkshire Gas |
| Hatfield | MA | 2015 | Berkshire Gas |
| Holyoke | MA | 2019 | Holyoke Gas & Electric |
| Middleborough | MA | 2019 | Middleborough Gas & Electric |
| Yonkers | NY | 2019 | Consolidated Edison |
| Mount Vernon | NY | 2019 | Consolidated Edison |
| Pelham | NY | 2019 | Consolidated Edison |
| Pelham Manor | NY | 2019 | Consolidated Edison |
| New Rochelle | NY | 2019 | Consolidated Edison |
| Larchmont | NY | 2019 | Consolidated Edison |
| Mamaroneck | NY | 2019 | Consolidated Edison |
| Eastchester | NY | 2019 | Consolidated Edison |
| Tuckahoe | NY | 2019 | Consolidated Edison |
| Hastings-on-Hudson | NY | 2019 | Consolidated Edison |
| Dobbs Ferry | NY | 2019 | Consolidated Edison |
| Irvington | NY | 2019 | Consolidated Edison |
| Greenburgh | NY | 2019 | Consolidated Edison |
| Scarsdale | NY | 2019 | Consolidated Edison |
| Rye | NY | 2019 | Consolidated Edison |
| Port Chester | NY | 2019 | Consolidated Edison |
| Rye Brook | NY | 2019 | Consolidated Edison |
| Harrison | NY | 2019 | Consolidated Edison |
| White Plains | NY | 2019 | Consolidated Edison |
| Elmsford | NY | 2019 | Consolidated Edison |
| Tarrytown | NY | 2019 | Consolidated Edison |
| North Castle | NY | 2019 | Consolidated Edison |
| Mount Pleasant | NY | 2019 | Consolidated Edison |

| Community | State | Moratorium Imposed | Utility |
|---|---|---|---|
| Sleepy Hollow | NY | 2019 | Consolidated Edison |
| Briarcliff Manor | NY | 2019 | Consolidated Edison |
| Pleasantville | NY | 2019 | Consolidated Edison |
| Bedford | NY | 2019 | Consolidated Edison |
| Mount Kisco | NY | 2019 | Consolidated Edison |
| New Castle | NY | 2019 | Consolidated Edison |
| Ossining | NY | 2019 | Consolidated Edison |

Source: Author's examination of utility announcements and various news reports

Also in 2016, a group of protesters temporarily blocked construction on a section of gas pipeline being built in the Hudson River Valley near Verplanck, New York. Their target was the Algonquin Incremental Market project. Despite the protests, the pipeline went into service in late 2016 carrying about 340 million cubic feet of gas per day from Pennsylvania to New England.[24] Three years later, a state judge found three of the protesters guilty of trespass but let them go free without punishment.[25]

In addition to pipelines, environmental groups also oppose the equipment needed to move energy through them. In 2017, FERC approved the permit for the Atlantic Bridge pipeline project, which is designed to transport about 130 million cubic feet of gas per day from Pennsylvania into New England and eastern Canada. The project included the siting of a new gas-compressor station in Weymouth, Massachusetts, which local residents and climate activists have been fighting.[26] In early 2019, after months of protests, the state issued the required air-quality permits for the facility.[27]

NYDEC is currently holding up three gas pipeline projects: the Constitution Pipeline, Northern Access Pipeline, and Northeast Supply Enhancement project. A provision in the federal Clean Water Act (CWA) is their weapon.

Oil and gas pipelines are routinely built through, and under, waterways. During construction, miles of new right-of-way must be excavated, and many tons of earth must be removed and replaced. That activity can affect water quality due to runoff or increased sediment flows. Section 401 of CWA gives states the authority to certify whether a given project is consistent with its rules for protecting wetlands and streams. Those certifications are required before the project's owners can get the necessary permits from regulators at the federal level, including the U.S. Army Corps of Engineers. States are supposed to approve or deny certifications under Section 401 within a year of a project's application.

As Daniel Estrin, general counsel and advocacy director for the Waterkeeper Alliance accurately explained it, Section 401 of CWA "essentially gives states veto power over federal decisions." Climate activists have pressured states, particularly ones with Democratic governors, to use that provision to halt or slow the development of gas pipelines and other energy projects.[28]

Over the past two decades, state certification for pipeline projects has been fairly routine. But over the past three years, four states—Washington, Oregon, New Jersey, and New York—have used Section 401 to block energy projects.

In 2017, the Washington Department of Ecology refused to provide a water-quality certification to a proposed coal-export facility on the Columbia River.[29] In late 2018, a federal judge upheld the state's denial of a water-quality certification.[30] But a look at the Department of Ecology's ruling shows that the agency didn't just focus on water quality. Instead, it relied on other factors, including the capacity of the interstate rail system. The backers of the coal-export facility also claimed that the state agency had ignored its own environmental impact statement on the project, which had found that the project would not result in significant adverse effects on water quality.[31]

On May 6, 2019, the Oregon Department of Environmental Quality denied a water-quality certification for the proposed Jordan Cove LNG export terminal. In its announcement, the state said that it was denying the permit because of "insufficient information to demonstrate compliance with water quality standards." And on June 6, the New Jersey Department of Environmental Protection denied a certification for the Northeast Supply Enhancement project, a 24-mile pipeline that would deliver about 400 million cubic feet of gas per day eastward, from coastal New Jersey through Raritan Bay and Lower New York Bay to the western end of Long Island. In denying the permit, the state

said "the proposed dredging could adversely impact surface water quality within New Jersey waters of the Raritan Bay" and that the project's builder had "not fully demonstrated how it would avoid or minimize adverse impacts to surface water quality."[32]

State regulators in New York are using Section 401 as part of Governor Andrew Cuomo's efforts to slash the state's carbon-dioxide emissions. In 2015, the governor pledged to cut New York's emissions by 80% by 2050. Two years later, in 2017, NYDEC rejected a certification for a gas pipeline known as Valley Lateral, which was designed to provide gas to the Valley Energy Center in Orange County, New York. The state claimed that FERC, which had previously approved the project, had "failed to consider or quantify the downstream greenhouse gas emissions from the combustion of the natural gas transported" by the pipeline.[33]

The Valley Lateral project later moved forward after the U.S. Court of Appeals for the Second Circuit upheld FERC's decision on the pipeline project. The court ruled that NYDEC waived its authority to issue or deny the water-quality permit because it did not act within the one-year time frame established under Section 401.[34] The Valley Energy Center began commercial operation on October 1, 2018.[35]

The longest-running skirmish over pipeline permitting in New York involves the Constitution Pipeline. In 2014, FERC, after extensive review, approved the project, which would cover 125 miles and could move up to 650 million cubic feet of gas per day from northeastern Pennsylvania to a location a few miles west of Albany, New York. In 2016, NYDEC used Section 401 to deny the water-quality permit for the project, claiming that it did not have all the information it needed to decide on the project.[36] Shortly after NYDEC denied the permit, backers of the Constitution project said that they were told by the agency in late 2014 that their "application was indeed administratively complete." They continued, saying that they were "appalled" by the agency's claims that "Constitution failed to provide sufficient data to ensure" that every water crossing was "totally in compliance" with state guidelines."[37] In 2017, the Second Circuit upheld the state's right to deny the permit but added that the state had waited too long to reject it. In 2018, the U.S. Supreme Court denied Constitution Pipeline's request to appeal the Second Circuit's decision.[38] NYDEC still has not issued a permit for the project.

The Northern Access Pipeline would stretch 97 miles and could move up to 500 million cubic feet of gas per day northward, from north-central Pennsylvania to a terminal east of Buffalo.[39] In February 2017, FERC gave its approval to the Northern Access project. Two months later, NYDEC used Section 401 to deny the water-quality permit. In February 2019, the U.S. Court of Appeals for the Second Circuit ruled that NYDEC had not sufficiently explained why it had denied the water-quality permit for the pipeline and remanded the matter back to the state. While that ruling may ultimately help the project get built, the move simply gives the state authorities the right to deny the permit again.

In an analysis of the Second Circuit's ruling on the Northern Access project, Elizabeth J. McCormick and Chuck Sensiba of the law firm Troutman Sanders quoted from the Second Circuit's decision: "Although this is a close case, the Denial Letter here insufficiently explains any rational connection between facts found and choices made." McCormick and Sensiba went on to explain: "Specifically, the Court found that the denial contained no citations to the record it considered when making its determination, to specific projects, or to other studies New York DEC might have considered. The Court also found that New York DEC relied on considerations beyond National Fuel's proposal, including stream-crossing methods not proposed by National Fuel and 'mistakenly identified project features' in making its determination." The two lawyers continued: "Finally, the Court found that, while New York DEC was not obligated to agree with FERC's findings as to the pipeline's anticipated impacts on water quality, it should have addressed evidence in the record supporting FERC's water quality findings."[40]

New York has also blocked the Northeast Supply Enhancement project.[41] In April 2018, the Cuomo administration rejected the project. In its rejection letter, NYDEC said that it was denying certification for the project because of "incomplete information and an ongoing environmental review."[42]

National Grid, the utility company that will use the gas from the Northeast Supply Enhancement project, provides gas to 590,000 customers on Long Island and 1.2 million more in New York City's outer boroughs. The company has warned some of its large customers that it may not be able to provide uninterruptible gas service if the new pipeline is not approved. National Grid has also warned that it may declare a moratorium on new gas connections if the state doesn't issue a permit for the project.[43] Despite the warnings, on May 15, 2019, NYDEC again rejected the Northeast Supply Enhancement project because the pipeline is "projected to result in water quality violations and fails to meet New York State's rigorous water quality standards." Two days after the NYDEC announcement, National Grid announced that it would quit processing applications for new natural-gas connections in its New York City and Long Island service territory. The utility

FIGURE 3.

## Pipelines Blocked by New York Regulators

| Project | Capacity (thousand cubic feet per day) | Miles of pipe |
|---|---|---|
| Constitution Pipeline | 650 | 125 |
| Northern Access Pipeline | 500 | 97 |
| Northeast Supply Enhancement Project | 400 | 24 |
| Total | 1,550 | 246 |

Source: Media reports and author calculations

further said that it will not take action on those applications until the Northeast Supply Enhancement project is approved by New York regulators.[44]

The combined capacity of the three pipelines now being held up is about 1.5 billion cubic feet per day—roughly equal to the amount of gas consumed by New York's entire residential sector (1.3 billion cubic feet per day in 2018).[45] To be clear, that residential-consumption figure reflects *average* daily gas use for the entire year. But utilities need to add more gas-supply capacity to provide enough fuel during periods of peak demand, such as cold winter days. New York's gas needs are largely met by 19 interstate pipelines with a total capacity of about 14 billion cubic feet per day.[46]

The U.S. has about 3 million miles of natural gas pipelines.[47] Of that, some 300,000 miles are transmission lines, the high-volume pipes that allow intrastate and interstate transportation of natural gas.[48] The three transmission pipelines being blocked by New York would stretch a total of 246 miles (**Figure 3**). On the state level, New York currently has about 4,500 miles of transmission pipelines.[49] Thus, the three new pipelines would increase the length of the state's gas-transmission network by about 11%.

# Gas Production Trends in the U.S.

Communities in New York and New England are experiencing shortages of natural gas at the same time that customers in other parts of the U.S.—and the world—are benefiting from an unprecedented boom in natural gas production. Between 2005 and early 2019, U.S. gas production increased from 47 billion cubic feet per day to about 90 billion cubic feet per day.[50] This new supply has had a significant impact on global gas markets. By the end of 2018, the U.S. was exporting a total of about 4 billion cubic feet of LNG per day. Those LNG exports went to 30 countries, including Kuwait and the United Arab Emirates.[51] By mid-2020, the Energy Information Administration (EIA) expects domestic LNG export capacity to reach 10.6 billion cubic feet per day.[52]

The economic benefits of the shale revolution have largely bypassed New York, even though part of the Marcellus Shale, one of the biggest and most prolific sources of natural gas in the country, extends into New York's Southern Tier (the counties along or near the Pennsylvania border). In 2008, New York drillers were producing about 150 million cubic feet of natural gas per day—not enough to meet all the state's needs but still a substantial amount.[53] That same year, New York legislators passed a moratorium on hydraulic fracturing, the process used to wring oil and gas out of shale and other geologic formations.[54] In 2015, the Cuomo administration made the moratorium permanent.[55] By 2018, New York's gas production had declined so much that the EIA quit publishing numbers on it.[56] New Yorkers do, of course, burn shale gas that is extracted thanks to hydraulic fracturing, as long as it is produced elsewhere.

Utility rates in New York are already among the highest in the country—and shutting off access to more natural gas is only going to make things worse. In 2018, U.S. residential gas customers paid an average of $10.53 per million Btu.[57] By contrast, in January 2019, Con Ed's gas customers were paying $19.97 per million Btu, roughly 90% more than the national average. By April, with the cold weather over, Con Ed's gas customers were still paying $17.57 per million Btu, about 67% more than the national average.[58]

In addition to higher natural gas costs, New Yorkers and New Englanders are paying higher electricity prices than average Americans. According to EIA, in the winter

of 2018–2019, residential electricity consumers in the Northeast were paying 17.2 cents per kilowatt-hour, 33% higher than the U.S. average.[59] But New Yorkers are paying even more than other northeastern residents. In January 2019, residential customers in New York were paying about 17.3 cents per kilowatt-hour, while average U.S. residential customers were paying about 12.5 cents. Thus, New Yorkers were paying 38% more for electricity than the national average. Only four other states on the East Coast have higher residential electricity rates than New York. All of them are in New England: Connecticut, Massachusetts, New Hampshire, and Rhode Island.[60]

Meanwhile, inadequate gas pipeline capacity has already hit New Englanders particularly hard. During the January 2018 "bomb cyclone" (the name for extreme winter storms that are marked by plummeting atmospheric pressure), spot prices for natural gas in Boston hit $35 per million Btu, roughly six times the spot price at the Henry Hub terminal in Louisiana at that time.[61] The price spike, noted *Forbes* energy writer Christopher Helman, gave Boston the "priciest gas market in the world." The shortage of natural gas resulted in a spike in electricity prices. During the deep freeze, electricity prices in New England hit $289 per megawatt-hour, nearly six times higher than the annual average for the region.[62]

Residents in northeastern states are also facing increased electricity-reliability risks due to shortages of natural gas. In 2018, the Independent System Operator New England (ISO-NE) looked at 23 different scenarios for future electricity supplies and how those results could affect the grid's ability to deliver reliable electricity in the winter of 2024–25. It found that New England "could be headed for significant levels of emergency actions, particularly during major fuel or resource outages." It also found that "in almost all future resource combinations, the power system was unable to meet electricity demand and maintain reliability without some degree of emergency actions." Without new pipeline capacity, the grid operator would, in 19 of the 23 scenarios, be required to impose "rolling blackouts or controlled outages that disconnect blocks of customers sequentially."[63]

In February 2019, ISO-NE reiterated its concerns about the "growing energy security risk" in the region, saying that because of the retirement of coal-fired and nuclear plants, the electric grid "will have less stored fuel and depend more on just-in-time fuel deliveries, and weather. Loss of nuclear plants will intensify the risk to reliability and put upward pressure on emissions and prices." It noted that gas-fired generation had gone from 18% of system capacity in 2000 to 47% in 2018 and that increased reliance on a single fuel could mean less reliable electricity.[64] In addition, ISO-NE has stated that "there is a real risk that the region's fuel-security risk could worsen to the point that the ISO would be required to take more severe emergency actions to keep the lights on and protect the power grid during winter. These actions could include public pleas for electricity conservation, voltage reductions (brownouts)—and, as a last resort, load shedding (rolling blackouts)."

According to ISO-NE, "several factors make fuel security a growing concern," including that the region's electricity grid is "increasingly dependent on natural gas for power generation" and that the region's pipeline capacity is "not always adequate to deliver all the gas needed for both heating and power generation during winter."[65]

On March 25, 2019, ISO-NE submitted a request to FERC that will allow it to implement new policies to help assure that utilities have enough on-site fuel capacity during extreme weather events to avoid blackouts. Those policies include compensation methods that will pay the region's utilities between $112 million and $158 million per year. Those costs would be passed on to New England's ratepayers in the form of higher prices for electricity. The plans laid out by ISO-NE include potential payments *for delivery of liquefied natural gas from overseas suppliers* into the Everett LNG receiving terminal in Boston Harbor.[66] New Englanders have already been forced to rely on imports of LNG. In January 2018, a cargo of LNG was unloaded at that terminal in Boston Harbor that contained gas from the Yamal LNG plant in Russia. LNG imports provide as much as 20% of New England's gas supplies.[67]

Inadequate supplies of natural gas in the Northeast will mean higher costs for the region's electricity consumers; it will also mean higher operating costs for government entities such as schools. Shortly after Con Ed announced the moratorium on connections in Westchester County, school officials in Yonkers noted that it will likely slow or stop their efforts to renovate aging school buildings in the city. In February, during a hearing conducted by NYPSC, Jason Baker, sustainability director for Yonkers, said: "There is no doubt this gas moratorium will end any possibilities of improving or repairing the learning environments in which our 27,000 students learn." The Yonkers school district has estimated that switching all its facilities away from fuel oil to gas could save $2 million per year.[68]

According to EIA, it costs about $1,520 per year to heat a home in the Northeast with heating oil. Heating that same home with natural gas costs about $752. Restrictions on new gas supplies mean that consumers in the region will have no choice but to continue using more expensive heating oil.[69]

There are 7.3 million households in New York.[70] About 25% of those households, or roughly 1.8 million, use fuel

oil for heating.[71] Not all those households are candidates for converting from fuel oil to natural gas, due to their distance to existing gas grids. But if we assume that 450,000 households (25%) could switch, the energy savings would total about $750 per household per year, roughly $337.5 million in sum.

Pipeline restrictions will also slow economic growth. Shortly after Con Ed announced its moratorium on new gas connections, Westchester County projected that construction on 16,000 homes as well as some 2 million square feet of retail and commercial space could be halted because of the shortage of gas.[72]

## Fewer Pipelines Mean Higher Pollution and Emissions

For decades, buildings in New York City and the surrounding area have relied on fuel oil for heating. In 2011, the city passed a law aimed at improving air quality and reducing greenhouse gas emissions. The measure phases out the use of No. 6 heating oil by 2015 and No. 4 heating oil by 2030.[73] By 2030, all buildings in the city must use cleaner fuels, such as No. 2 heating oil, or natural gas.[74] Switching from heating oil to natural gas helps reduce traditional air pollutants like sulfur dioxide. It also reduces carbon-dioxide emissions by about 27%.[75]

More recently, Mayor Bill de Blasio introduced the "New York City Green New Deal," which calls for dramatic reductions in energy consumption. The biggest reductions are projected to come from mandates requiring that "all large, existing buildings" be retrofitted "to be more efficient and lower emissions."[76] That will be exceedingly difficult if parts of the city are still relying on heating systems that use fuel oil rather than gas.

Since 2011, Con Ed has switched more than 5,000 buildings from fuel oil to natural gas.[77] National Grid has also been switching customers from fuel oil to natural gas at a rate of about 8,000 customers per year. According to National Grid, that fuel switching has cut heating-oil consumption in the region by about 900,000 barrels per year. The utility further estimates that those conversions are reducing carbon-dioxide emissions in New York by about 200,000 tons per year.[78] But insufficient flows of natural gas due to inadequate pipeline capacity mean higher emissions.

Indeed, utilities in the Northeast have been choosing to burn oil in their generators during times of peak demand rather than natural gas because oil was cheaper. As the Environmental Defense Fund (EDF) noted in a February 28, 2019, comment to NYPSC, the amount of oil burned for electricity generation surged during the winter of 2017–2018 because of the shortage of natural gas and the subsequent price spikes for that fuel. The result was that during that winter, generators used far more oil than they had "in all of 2016, as well as in all of 2017 prior to the cold snap." Between Christmas Day 2017 and January 9, 2018, electricity producers in New England burned nearly 2 million barrels of oil. During that period, oil accounted for about 27% of the electricity produced in ISO-NE. EDF concluded that high natural gas prices "at the New York City gates caused a market reaction whereby the cost of supply increased across the Northeast and into New England. The higher supply prices affected the relative economics for fuels used by electric generators with the net result being an increase oil burn, and consequently emissions."[79]

## Alternatives to Natural Gas?

Proponents of renewable energy claim that additional natural gas supplies aren't needed because New York and New England can switch to sources like wind and solar.[80] This claim is contrary to reason and experience. During extreme weather events, for example, electricity producers in New England and other parts of the country have not been able to rely on renewable energy.

A March 2018 report by the National Energy Technology Laboratory (NETL) found that during the bomb cyclone of 2017–18, non-hydro renewables contributed no more than 5% of New York's and New England's electricity needs when energy demand was highest.[81] The report noted that "wind and solar contributed 1[%] to 5% of generation at peak" during the bomb cyclone. "In addition, over 160,000 barrels per day of oil were consumed in ISO-NE and more in NYISO, due to constrained gas supply and lack of alternative, competitive generation." As most fuel oil in the region is "imported or derived from imported crude," the report noted, "one may infer that the Northeast relied on foreign sources of energy for its emergency electricity production."[82]

NETL also noted that renewable energy wasn't available in other parts of the country during the bomb cyclone. In the region of the country covered by the PJM Interconnection—a regional electricity transmission

organization that coordinates the movement of wholesale power in all or parts of 13 states, including Pennsylvania, Illinois, and Michigan—"cloud cover and wind speeds outside of operational parameters caused a reduction in average daily contribution from intermittent renewables." The result was "a need for dispatchable fossil generation to make up this generation."[83] In other words, grid operators had no choice but to rely on traditional generation units that burn oil, gas, or coal that can be dispatched—that is, turned on and off when they are needed.

Regardless of reliability, land-use conflicts make it unlikely that large increments of new renewable-energy capacity will be built in New York or New England over the next few years. For instance, two large proposed wind projects in New York that were facing staunch opposition from local landowners and governments have recently been canceled. In February, Apex Clean Energy, a wind-energy developer, withdrew its application to build 108 megawatts of wind capacity on Galloo Island, a small island off the eastern shore of Lake Ontario.[84] In April, Apex announced that it was also suspending work on the Lighthouse Wind project, a 200-megawatt project that aimed to put dozens of turbines on the shores of Lake Ontario.[85]

As of April 2019, *there were no wind projects under construction in the state.* New York currently has about 2,000 megawatts of installed wind capacity.[86] That's only slightly more capacity than the 1,812 megawatts of capacity that the state had back in 2014.[87]

The relatively small amount of onshore wind capacity in New York reflects a general lack of enthusiasm for wind energy in New England. In Vermont, where opposition to wind has been fierce, just 30 megawatts of new wind capacity has been proposed. New Hampshire has 28 megawatts of proposed new wind capacity, Massachusetts has 10 megawatts, and Rhode Island has 21 megawatts.[88] Several thousand megawatts of offshore wind capacity have been proposed for Maine, Massachusetts, Rhode Island, and New York. But offshore wind projects are contentious. A decade-long battle over the 468-megawatt Cape Wind project in Massachusetts ended in 2015 when the project was scuttled.[89]

Similarly, the Northeast continues to experience land-use conflicts over the high-voltage transmission lines that are needed to move renewable energy from remote areas into cities. In 2018, New Hampshire regulators rejected a high-voltage electricity transmission project called Northern Pass Transmission that was to carry power from Quebec hydroelectric facilities to consumers in Massachusetts. The 192-mile, $1.6 billion project—which was to go through New Hampshire's White Mountains—was vetoed in a unanimous vote by the New Hampshire Site Evaluation Committee.[90]

As part of the effort to reduce natural gas use, New York officials have proposed increased use of heat pumps. On February 7, NYPSC chairman John B. Rhodes issued a statement saying that the state would pursue "beneficial electrification" through deployment of heat-pump technology, which will "reduce future gas demand."[91] Heat pumps provide an alternative to gas-fired heating systems. Similar in design to refrigerators or air conditioners, heat pumps move thermal energy in the opposite direction of spontaneous heat transfer. For instance, they absorb heat from a cold area and release it in a warm one. They also work in the opposite direction, absorbing cold from a warm area and releasing it in a cold one.

But heat pumps are not efficient in regions where temperatures fall near or below freezing on a regular basis.[92] A January 2019 report by the New York State Energy Research and Development Authority (NYSERDA) found that for residential users, heat pumps are more expensive than natural gas-fired heating units in almost all cases. The report notes that "generally" replacing natural gas-fueled equipment with heat pumps has "negative internal rates of return (indicating that customers do not experience any payback during the life of the installed equipment)."[93]

Nevertheless, NYSERDA, NYPSC, and New York Power Authority (NYPA) have pledged $250 million of taxpayer funds to help Con Ed and customers in Westchester find alternatives to natural gas. That sum includes $165 million in grants from NYPSC, to be spent by Con Ed to deploy heat pumps and increase gas efficiency among its customers. NYSERDA agreed to provide $28 million in grants for low-to-moderate-income residential developments that have been wait-listed for gas service by Con Ed and another $25 million in grants for energy efficiency in Westchester. NYPA will provide $32 million in low-cost financing services to help Westchester customers retrofit their heating systems to non-gas alternatives.[94] The goal of the effort is to reduce gas demand by the equivalent of what would be needed by 90,000 homes.[95]

Ironically, more heat pumps in homes and other buildings during the winter mean higher electricity demand—and that means that New York's electric generators will need even more natural gas to produce the power needed to fuel the heat pumps. Thus, by preventing the direct use of gas in homes and businesses—which would be more efficient than burning it in power plants, where more than half the heat energy is lost during the process of converting the gas into elec-

tricity—the state is forcing the region's utilities to rely even more heavily on natural gas.[96]

## Accelerating the Pipeline-Permitting Process

In 2018, a group of Republicans in the U.S. Senate introduced a bill to amend Section 401 of CWA and limit the ability of states to block energy-related projects.[97] The Water Quality Certification Improvement Act drew immediate opposition from environmental groups claiming that the bill "tramples states' rights to protect their waterways and communities."[98]

In April 2019, the measure was reintroduced by Sen. John Barrasso (R., WY), who said that the measure was needed because the "water quality certification process is being abused in order to delay important energy projects."[99] That same month, President Trump issued an executive order that calls Section 401 of CWA "outdated" and says that federal regulations are "causing confusion and uncertainty and are hindering the development of energy infrastructure." The order directs EPA to revise its guidance and regulations for how states can use Section 401 to vet projects that cross bodies of water and to focus on "expectation for reasonable review times for various types of certification requests."[100]

New York governor Andrew Cuomo denounced Trump's order as a "gross overreach of federal authority that undermines New York's ability to protect our water quality and our environment."[101] Greenpeace USA called the order "nothing but an attempt to trample people's rights to protect their air, water, and climate from polluting oil and gas pipelines." On June 7, 2019, in response to Trump's executive order, EPA issued "updated guidance" aimed at expediting permitting under Section 401. It recommends that states "establish a process to ensure appropriate and sufficient information is submitted to facilitate timely evaluation and action" on applications. It also says that state certifications on infrastructure projects should be limited to water quality issues that are described in the CWA. But EPA's guidance doesn't have the force of law and therefore states will not be bound to abide by it. It is also likely to face legal challenges.[102]

Last year, the Western Governors' Association, along with several other groups, wrote a letter to congressional leaders urging them to "reject any legislative or administrative effort that would diminish, impair, or subordinate states' ability to manage or protect water quality within their boundaries." In May, the Western Governors' Association reiterated its stance, telling EPA that curtailing states' authority under the CWA would "inflict serious harm to the division of state and federal authorities established by Congress."[103] Thus, it's clear that any federal effort to limit the ability of states to slow or stop energy infrastructure projects must be careful to preserve states' rights.

## Conclusion

Homeowners and businesses in northeastern states face natural gas shortages, plus rising electricity and gas prices, thanks largely to repeated efforts by New York regulators to delay or deny the approvals necessary to build new pipelines. There are moratoriums on new gas hookups in dozens of communities in New York and Massachusetts, and these moratoriums will last for years to come. Nevertheless, New York needs pipelines to continue switching buildings in the residential and commercial sector away from fuel oil to cleaner-burning natural gas. The state will also need more gas to replace the electricity being generated by the Indian Point nuclear plant after it is shut down over the next few years. It will also need more natural gas–generated electricity to counter the intermittency of renewables like solar and wind that are being added to the state's grid. Finally, and ironically, the constraints on natural gas supplies in New York and New England result in more pollution and higher carbon-dioxide emissions from burning oil.

Section 401 of the federal CWA has essentially given state governments and regulators a veto over the construction of new pipelines. Some change at the federal level will be necessary to put reasonable limits on states' ability to delay or deny energy infrastructure projects.

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