Blast Zone

Natural Gas and the Atlantic Coast Pipeline: Causes, Consequences and Civic Action

RACHEL CARSON COUNCIL

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Authors

Zoë Ackerman, *Rachel Carson Council*
Robert K. Musil, PhD, MPH, *Rachel Carson Council*
Tyler Wakefield, *Duke University*
Emily McAuliffe, *Duke University*
Elena Mannion, *Duke University*
Genevieve Silva, *Yale University*
Duane Bean, *Yale University*

Graphic Design by Ross Feldner, newagegraphicsonline.com
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The Rachel Carson Council, founded in 1965, is the national environmental organization envisioned by Rachel Carson to carry on her work. We promote Carson's ecological ethic that combines scientific concern for the environment and human health with a sense of wonder to build a more sustainable, just, and peaceful future.

Rachel Carson Council
8600 Irvington Avenue
Bethesda, MD 20817
www.rachelcarsoncouncil.org
(301) 214-2400
Facebook.com/RachelCarsonCouncil
Twitter: @RachelCarsonDC
Instagram: @RachelCarsonDC

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BLAST ZONE: NATURAL GAS AND THE ATLANTIC COAST PIPELINE

CAUSES, CONSEQUENCES AND CIVIC ACTION

The Atlantic Coast Pipeline (ACP) is a proposed $5.5 billion, 600-mile structure that will transport fracked natural gas from the Marcellus and Utica Shale Basins in Ohio, West Virginia, and Pennsylvania to markets in Virginia and North Carolina. The Rachel Carson Council's new report, *Blast Zone*, highlights the economic and political forces driving this unnecessary, unsafe, and unjust pipeline, as well as ways to build a more just and clean energy future.

Though touted as a bridge fuel, natural gas is not a source of clean energy. Methane leakage rates from gas wells range from 3.8%-12%, and rates above 3.2% render natural gas worse for the climate than coal over a 20-year lifecycle. Methane is 84 times more powerful than carbon dioxide over a 20-year period at trapping heat in the atmosphere and contributes to global warming. **In order for the U.S. and world to meet Paris Accord goals and keep global warming beneath 2°C, natural gas consumption must be reduced.**

The natural gas boom relies on hydraulic fracturing, or "fracking" technology. While the majority of traditional oil and gas reserves can be cheaply extracted with conventional drilling techniques, shale rock formations require this new approach. **Wall Street and large players in the drilling industry such as ExxonMobil, Cabot Oil and Gas, Chesapeake Energy and EQT Corp, work closely with legislators at all levels to push their agenda.** The drilling industry enjoys large subsidies and lax regulation with little public input or knowledge. Despite its impressive technical precision, the use and pollution of water in the fracking process creates serious environmental and health risks. Fracking requires extraordinary quantities of water mixed with sand and toxic chemicals to be pumped into wells. Recovered wastewater from fracking wells pollutes drinking water sources.

In accordance with the foundations of an extractive economy, pipeline build-outs are not initiated or controlled by local communities. Workers' safety and wellbeing are put at risk, and homeowners' property rights are violated. **Pipelines reveal the power of the fossil fuel and energy industries to overpower local governance and manipulate governmental control to place profit over people.**

Dominion Energy, Duke Energy, and Southern Company (which form "Atlantic") are private and investor-owned holding companies. They own subsidiary companies responsible for various utility services such as electricity transmission and generation, and natural gas storage and distribution. **While subsidiaries may be state-regulated monopoly utilities in the states where they operate, the holding companies themselves operate free of any specialized regulation and only face federal regulation because of their plans to construct an interstate pipeline.**

Dominion claims that the gas is needed for new power plants, large-scale manufacturing operations, and "underserved" areas of eastern North Carolina. However, investigations have found that a sufficient supply of gas could be maintained into the future with minor adjustments to existing infra-

structure. Additionally, U.S. energy demand has been holding steady and is projected to grow only 0.7% annually until 2040. If the pipeline is not needed, why is the ACP being built? **The short answer: because Atlantic is virtually guaranteed to earn a 15% rate of return on its $5.5 billion investment.** Outdated regulatory schemes at the federal and state levels incentivize the construction of new fossil fuel infrastructure and guarantee its success in the long run.

Atlantic claims the pipeline will decrease energy costs, but several studies found that their methodology underestimated natural gas prices and overestimated the economic benefits. Atlantic's return will be paid by electricity consumers (ratepayers) through rate hikes. **Ratepayers in Virginia alone are expected to provide around $200 million annually to fund the new pipeline.**

In the U.S., communities of color and low-income communities are more likely to live near sources of pollution and face increased environmental health risks. **The ACP reinforces this unjust trend, especially in North Carolina, where 27 out of 42 of the census tracts within one mile of the pipeline route have higher poverty levels than the state average, and 30 out of 42 have higher minority levels.** In eastern North Carolina, the pipeline will be located above the Northern Coastal Plain Aquifer, which supplies well water to disproportionately rural low-income communities and communities of color along the path, and is vulnerable to contamination.

Alternatives to natural gas abound. Energy efficiency improvements can reduce energy consumption, save money, and produce jobs. Renewable energy can compensate for declining fossil fuel energy generation. Though the future of energy is clearly not dependent on fossil fuels, utilities and the natural gas industry are resisting this logical transition in order to secure profits that are tied to their extractive business model. Energy efficiency, residential and third-party solar reduce their revenues, so they oppose them. Utilities will continue to make plans based on large central station generation even when other alternatives might make more economic sense. The only thing that will deflect them from this path is to change the rules by which they are regulated. **The Rachel Carson Council believes in the power of coordinated environmental justice, campus organizing, and national advocacy campaigns to bring about regulatory and systemic change.** *Blast Zone* references dozens of organizations working at all levels to bring about the just transition to a regenerative, rather than extractive, economy.

Take action today: see "Toolboxes" throughout the report for more details.

- Do you live in Virginia or North Carolina? Talk to your neighbors about the economic, health, and social justice implications of the ACP and encourage them to express their concerns to the Governor.
- Do you have family and friends in Virginia or North Carolina? Call them and warn them about higher electricity bills.
- Do you live somewhere else? Learn whether fracking or pipelines are being proposed in your state. Get involved with a regional or national organization addressing these issues.
- Push for local energy efficiency or renewable energy commitments from businesses, schools, neighborhoods, city councils, county commissions, and state legislatures.

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INTRODUCTION: A LETTER FROM THE RACHEL CARSON COUNCIL

After Rachel Carson published *Silent Spring* over 50 years ago, the pesticide industry's business-as-usual model would be forever disrupted. Carson's book not only laid out the science of pesticide dangers, but, as environmental writer Sandra Steingraber articulates, *Silent Spring* earned Carson meetings with top presidential science advisers, congressional hearings, and brought about a new governing body, the Environmental Protection Agency.[1]

Hawk Mountain, Pennsylvania, was a site of inspiration for Carson. It lay in the fall migratory path for hawks, and also reminded her that "ancient seas...once lay over all this land...these whitened limestone rocks on which I am sitting...were formed under that Paleozoic ocean, of the myriad tiny skeletons of creatures that drifted in its waters."[1] **Over 400 million years, deceased marine life transformed into "gaseous bubbles of methane" and when "pressed under the accumulated weight of silt" were eventually solidified into what is now known as the Marcellus Shale.[1]**

What would Rachel Carson think of the natural gas industry's modern-day desecration of the land and forests of Pennsylvania? How would she respond to this massive multi-billion dollar industry that drills for gas in the Marcellus and Utica Shale Basins and pipes it across streams, through mountains, and near people's homes in the name of a "quick and easy profit?" [A]

The gas industry is not unique in its chase of high profits, the driver of the 21st-century **extractive economy**. In this economy, workers are expected to divorce their values, and deepest sense of what is right and wrong, from their labor, in order to maintain a living. What is distinct, however, is that natural gas has captured a leading role in this economy by being falsely portrayed as a reliable, cheap, and climate-neutral source of energy for the United States as it transitions away from coal. Proponents also claim that natural gas enhances national security by relieving U.S. dependence on foreign oil and gas, all while inflicting minimal damage on the environment and human health. The Rachel Carson Council (RCC) analysis of the effects of decisions made by industry executives, regulators, and other actors pushing for further investment in natural gas, from fracking in the Marcellus-Utica Basin to the construction of the Atlantic Coast Pipeline (ACP), however, paints a very different picture.

Though Carson did not explicitly write about human rights, she was aware of the human health effects of the extractive economy. She spent her childhood in Springdale, Pennsylvania, where in 1929, "two coal-burning power plants flanked the town and were plainly contaminating both the river and the air."[1] In a 2010 investigation, the *Pittsburgh Post-Gazette* found that residents of Springdale had "higher than average rates of death from lung cancers and heart ailments linked to air pollution."[1] In *Silent Spring*,

[A] This phrase appears in Carson's foreword to Ruth Harrison's Animal Machines, and refers to the industrial animal agriculture's primary motivation.

she wrote about the failures of government to protect its people: **"If the Bill of Rights contains no guarantee that a citizen shall be secure against lethal poisons distributed either by private individuals or public officials, it is surely only because our forefathers, despite their considerable wisdom and foresight, could conceive of no such problem."**[1]

Across the U.S., fracking and pipeline operations sacrifice the integrity of land, water, air, and human health. The injection of fracking wastewater into storage wells, for example, has given rise to thousands of earthquakes in the Midwest. During the 2015 Aliso Canyon disaster, a natural gas well spewed 100,000 tons of methane into the atmosphere over four months. Thousands of residents near the spill became ill. In the case of the ACP, across West Virginia, Virginia, and North Carolina, property owners are being coerced into forfeiting rights to their land through easement payments and eminent domain. The ACP is an **environmental justice (EJ)** issue in eastern North Carolina as well because it would bring disproportionate harm to indigenous communities and to some of the most "economically depressed counties of the state, most with higher populations of color than the state as a whole."[2] The pipeline's blast zone extends 943 feet on each side, according to a new report by the grassroots advocacy organization Clean Water for North Carolina.[3] The frequency of pipeline explosions and other significant incidents has increased since 2010, and mirrors pipeline companies' acceleration of building natural gas infrastructure.[3] In the event of an explosion, survival would be unlikely for the many homeowners, schoolchildren, and nursing home residents in its path.

Many construction workers feel trapped in the natural gas business as well. A union member at a hearing on Pennsylvania's Atlantic Sunrise Pipeline, for example, acknowledged that he had some reservations about pipeline work, but did not see alternatives. The issue reaches beyond the Mid-Atlantic as well, as energy customers nationwide face dwindling power to make choices for themselves in the extractive energy economy. Though many hope for **energy justice**, and with it more access to decision-making power over their energy sources, vertical integration has resulted in a concentration of power by the energy elite.

Though the political landscape is bleak, and many say the ACP could be permitted and built as early as Fall 2017, the movement to stop fracking and this pipeline is uniting grassroots, EJ, and national organizations to work towards a **regenerative economy** that reduces "greenhouse gas emissions at the source, restores equity, and puts decision-making in the hands of communities." These intersecting movements for sustainability and social justice are built on values of self-determination and collective action, lighting a path away from fossil fuels and towards a truly equitable, productive, clean, and sustainable economy.

The possibility of slowing down and stopping fracking and pipelines is already a national reality. Maryland and Vermont temporarily banned fracking, and New York recently denied a water quality permit to the Constitution Pipeline. In August 2017, a federal appeals court in the District of Columbia ruled that in the case of the Southeast Market Pipelines Project, the Federal Energy Regulatory Commission (FERC) "inadequately considered climate change and greenhouse gases in approving the project."[4] This ruling sets a precedent for the ACP, and would provide more grounds for environmental organizations to sue if the pipeline is approved. In July 2017, after a combination of direct action,

litigation, fluid spills, and water contamination in Pennsylvania, a judge halted all of Sunoco's drilling operations associated with the proposed Mariner East 2 pipeline for two weeks.[5] The Dakota Access Pipeline (DAPL) is perhaps the most well-known example of popular resistance to pipeline infrastructure. DAPL is an oil pipeline starting in the Bakken shale oil fields in North Dakota and ending in Illinois. Dakota Access, LLC, a subsidiary of Energy Transfer Partners, began construction in June 2016, which indigenous leaders at Standing Rock attempted to stop. Though the camps that attracted transnational "water protectors" were forcibly disbanded by the Trump administration, leaders have mounted a new movement to encourage cities, campuses, and businesses to publicly divest from the pipeline's funders.

Broad and diverse coalitions are also charting the path to new economies with safer and healthier jobs in the name of **climate justice**. The Climate Justice Alliance rolled out *Our Power Plan* (OPP), in 2015, an environmental justice response to the Obama Administration's Clean Power Plan. The Alliance believes that "in order to effectively confront the climate crisis we must also shift our economic priorities from global systems of production and consumption...to more localized systems that are sustainable, resilient and regenerative."[6] The OPP demands natural gas not be treated as a clean energy source. In August 2017, NC Warn released the *NC Clean Path 2025* plan which shows that "local solar and battery storage can rapidly replace fossil fuels, save tens of billions of dollars and create thousands of jobs across the state."[7] Both of these plans map a more just transition to renewable energy and energy efficiency.

According to Carson, our moral responsibility to protect the environment is also a question of human rights: "The threat is infinitely greater to the generations unborn; to those who have no voice in the decisions of today."[1] Through the Rachel Carson Campus Network, we are supporting and mobilizing the next generation of leaders and their mentors. Campus advocates—including students, faculty, administrators, and staff—are important members of the movement for a just and democratic energy economy. According to a recent poll, only two percent of college graduates rank working in oil and gas as their top career choice.[8] Campuses can clearly be mobilizing spaces and "cultural tipping points" for carrying out public interest research and advocacy. As of 2015, more than $50 billion in divestment pledges have come from 28 universities, 41 cities, 72 religious institutions, and 30 foundations.[9] In the coming years, it will be more important than ever for campuses to work in partnership with local and national organizations and communities to carry out research and conduct advocacy that furthers the **energy democracy** agenda.

In addition to naming and exploring the economic and political systems underlying fracking and the ACP, *Blast Zone* highlights organizations, businesses, and campuses working in interconnected ways toward the **just transition** through legal work, policy change, organizing, advocacy, and education. Together, we can end the U.S.'s dependence on fossil fuels and move toward a clean and equitable energy system. *We hope you will join us.*

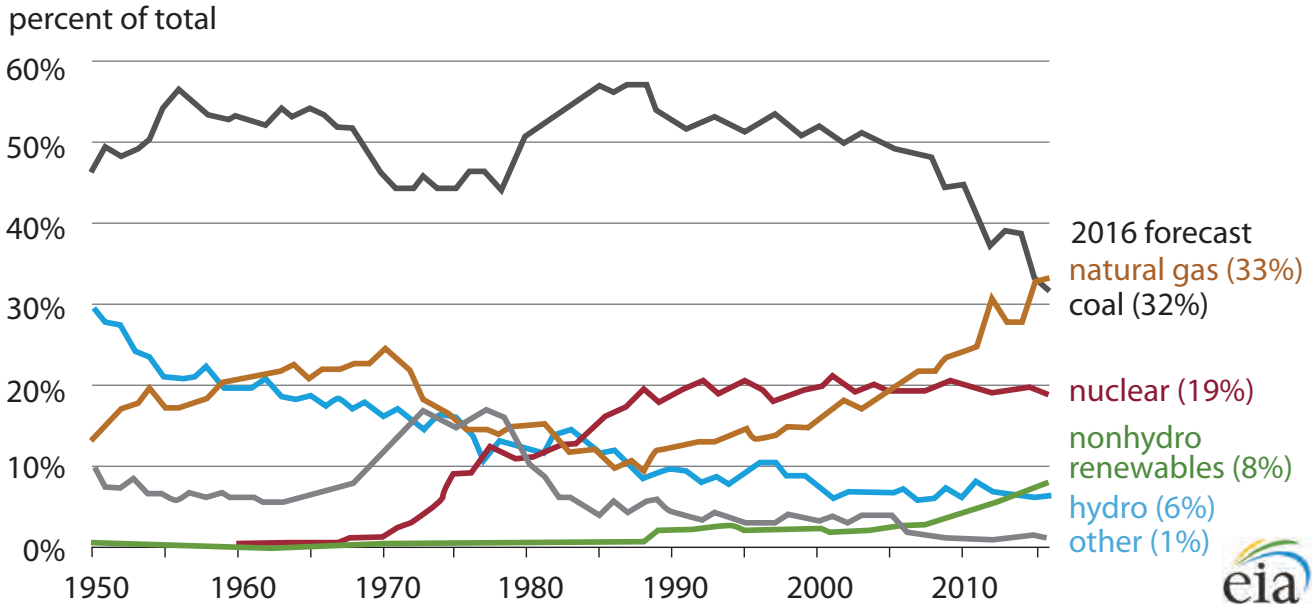
Robert K. Musil, RCC President & CEO
Zoë Ackerman, RCC Associate Program Director

NATURAL GAS: CURRENT AND FUTURE TRENDS

In 2016, natural gas surpassed coal as the main source of electricity in the United States.[1] For the first time in the nation's history, a fuel other than coal became the largest single source of electrical generation. While most natural gas (36%) is burned to generate electricity, much of it powers homes (16%), businesses (11%), and industry (28%) for uses such as heating, cooking, manufacturing, and mining.[2] Anyone who took a hot shower today likely consumed natural gas—either from a natural gas-fired water heater or from an electric water heater that consumes electricity partially generated by natural gas. Natural gas is also turned into plastics for items such as food containers and shampoo bottles. It has been used in the U.S. for over a century, but its rapid rise as an electricity source is a fairly recent phenomenon. Coal's relative share of the U.S. electricity mix, on the other hand, has been in decline since the 1990s, and its total consumption peaked in 2008.[3]

While the coal industry and its supporters are quick to blame strict environmental regulations for coal's decline, a growing consensus points to simple economics; natural gas grew cheaper in the late 2000s thanks to innovation and higher supplies.[4] This surge of low cost natural gas arrived after the early 2000s, a period with some of the lowest natural gas production and highest prices in the country's history. Public doubt about the safety of natural gas rose recently after floods from Hurricane Harvey inundated fracking sites in Texas and flushed toxins into rivers and waterways. In the hurricane season of 2005, Hurricanes Katrina and Rita damaged 457 pipelines, 113

Annual share of total U.S. electricity generation by source (1950-2016)



Source: U.S. Energy Information Administration, Monthly Energy Review, and Short-Term Energy Outlook (March 2016)

[B] MMBtu or "million British thermal units" is a unit measurement of energy. Natural gas volume is often measured by cubic foot (cf). 1,000 cf of natural gas equals roughly 1.037 MMBtu.[2]

drilling platforms, and caused 741,000 gallons of petroleum products to spill.[5] In September of 2005, natural gas prices spiked to $13.42/MMBtu.[B] Investors flocked towards natural gas drilling in chase of big returns.[6]

Then came the bursting of the housing bubble and subsequent financial crisis of 2008. The recession caused prices across the oil and gas industry to plunge dramatically. Despite low prices, investors searching for a rebound from the financial crisis saw an opportunity to profit from newly accessible natural gas reserves in the eastern United States. These reserves were made accessible by the combination of new drilling technologies and bullish financial projections that promised big returns for drillers and investors. In 2015, U.S. natural gas production reached its historical high, roughly 50% more than in 2005.[7] Prices dropped to $1.73/MMBtu, the lowest they have been in nearly 20 years.[6]

Outside of the coal industry, the transition to natural gas is being widely celebrated as economically and environmentally beneficial for the United States. The growth of the natural gas sector has created hundreds of thousands of new jobs[8]; according to the Federal Reserve, lower energy prices have boosted manufacturing by 3% and job creation by 2% since 2006.[9] Compared to coal, burning natural gas releases less than half the amount of the greenhouse gas carbon dioxide (CO_2). It also emits less nitrous oxide (NO_x), sulfur dioxide (SO_2), and particulates—all of which harm public and environmental health.[10] Unlike coal, natural gas combustion produces no solid ash waste which can pollute communities and waterways. For these reasons, people concerned about environmental health and climate change have been encouraging the use of natural gas as a "bridge" to a clean energy future since the early 1990s.

The "Bridge Fuel" Myth about Natural Gas

A well-established and growing body of research is countering the idea that the transition to natural gas will curb emissions and improve environmental health. While natural gas does release less CO_2 than coal when burned, the total greenhouse gas emissions associated with natural gas use can be even greater than those of coal. Natural gas is primarily composed of methane (CH_4), a greenhouse gas that is 84 times more powerful at trapping heat than CO_2 over a 20-year period, and 36 times more powerful over 100 years, according to the Intergovernmental Panel on Climate Change.[1] In many industry and government emissions projections, the fact that methane leaks into the atmosphere during drilling, transportation, and end use went entirely overlooked or was greatly underestimated. Independent research suggests that conventional gas leakage rates, from well to consumer, are between 3.8% and 5.4% of total production and as high as 12% for unconventional wells where fracking is used.[2] **If the leakage rate exceeds 3.2%, a natural gas plant would be worse for the climate than a coal plant over a 20-year lifecycle.[3]** Not only can these leaks pollute the air and cause explosions, but the entire extraction and transportation process of natural gas is fraught with toxic air pollution, water pollution, habitat loss, and even dangerous man-made earthquakes.

To reflect these new findings on methane leaks, the EPA recently adjusted national emissions estimates it had published in previous years, increasing methane emissions from oil and gas production by 27%.[4] Yet even these adjustments fall short, as they fail to account for "super emitters," events such as California's Aliso Canyon 2015 disaster, in which a faulty natural gas well

spewed 100,000 tons of methane into the atmosphere over four months. Thousands of residents near the spill became ill and were forced to evacuate their homes for months. Two schools temporarily closed, and many businesses and properties suffered losses in value.[5] According to the *New York Times Magazine*, this leak "produced the same amount of global warming as 1,735,404 cars in a full year," or "roughly the same amount of warming as the greenhouse gas emissions produced by the entire country of Lebanon."[6]

Despite the scientific recognition of methane leaks from natural gas production and use, both the United States and the international community have largely ignored this evidence. Twenty-nine states have enacted legal requirements, known as clean energy or renewable energy portfolio standards, to meet a certain share of renewable energy by a certain date. Several states allow natural gas or the entirely misleading "clean coal" to count towards their targets.[7] In 2014, under the Obama Administration, the EPA proposed the Clean Power Plan as a measure to reduce greenhouse gas emissions in the United States. While the plan was well intended, its outdated science on methane's leakage rates and potency as a greenhouse gas led to conclusions that encouraged a massive expansion of natural gas use. In calculating the Plan's projected emissions, the EPA used data on methane leakage rates from 1990 that grossly underrepresented the current rate of methane leakage associated with fracking and the natural gas transportation network.[2] And, instead of adopting methane's internationally recognized global warming potential of 36 times that of CO_2 over 100 years, the EPA adopted a potential of 25.[8] Given these two failures, the Clean Power Plan's projected emissions reductions from switching from coal to natural gas are significantly lower than reality.

Despite its failings, the Clean Power Plan was monumental in providing the U.S. with negotiating power and credibility at the 2015 international climate negotiations in Paris. That year, the U.S. and 194 countries adopted the historic Paris Climate Accord, which set targets for greenhouse gas mitigation, climate adaptation, and financing under the central goal of keeping global temperature rise below 2°C. However, for the U.S. and many countries, natural gas expansion paradoxically serves as a central component of their decarbonization[C] plans—something international oil and gas mega-corporations lobbied heavily for and delightedly received.[9] Because of this and other shortcomings, perfect implementation of the 2015 Paris Accord's pledges would only limit warming to roughly 2.8°C above pre-industrial times, while current policies in place around the world would limit warming[D] to roughly 3.6°C.[10] In June 2017, President Trump withdrew the United States—the world's second largest emitter—from the Paris Agree-

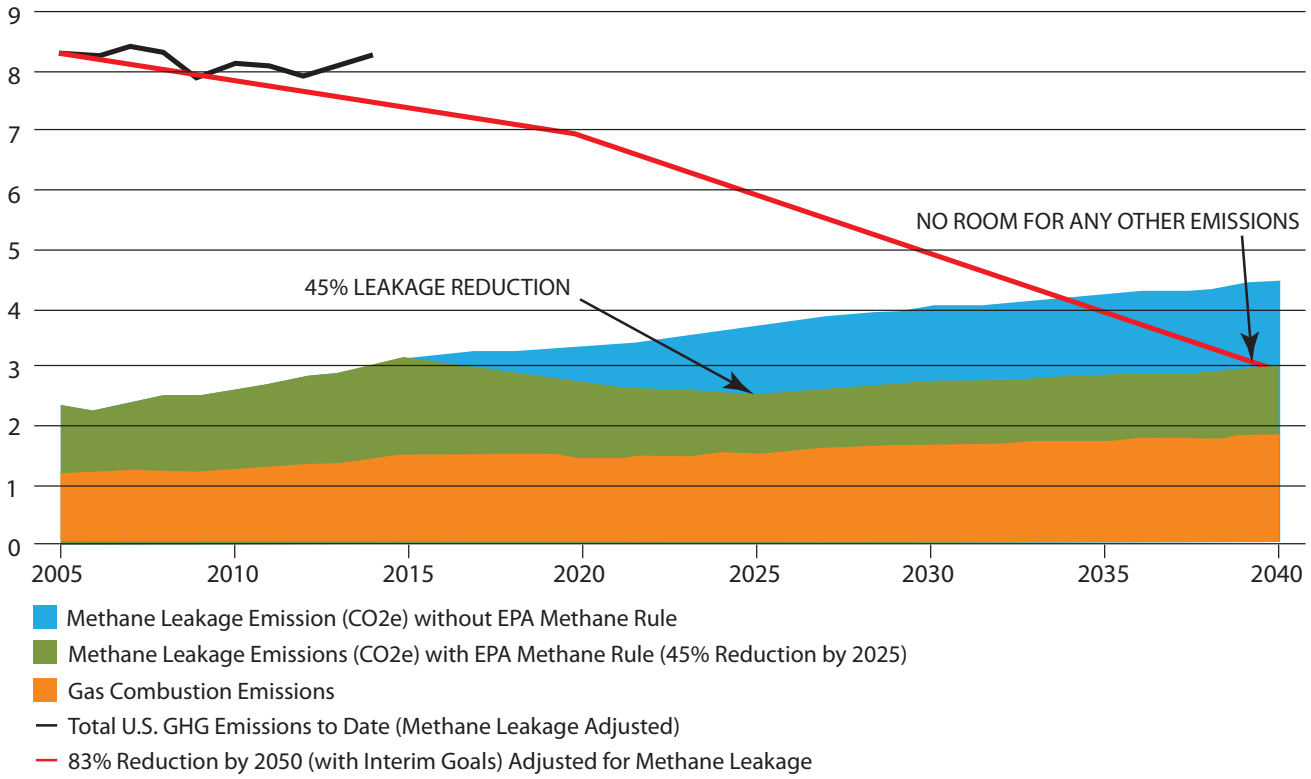
[C] Decarbonization is the process of reducing the amount of carbon dioxide or other greenhouse gasses emitted throughout the entire economy, various sectors of the economy, or specific activities.

[D] From 1880-2012, the earth warmed .85°C.[11] At current levels, climate change is already devastating ecosystems, individuals, and entire countries. According to the Intergovernmental Panel on Climate Change, climate change is rising sea levels, decreasing food and water security, displacing people, and intensifying deadly storms.[11] These effects are felt most acutely among poor and marginalized people. Reaching 2°C of warming greatly increases the prevalence and intensity of these effects, and also introduces significant risk of large-scale irreversible changes such as coral extinction and continuous sea level rise. Reaching 3°C of warming would further intensify these effects, and spur extensive mass extinctions and ecosystems collapse.[11]

ment and is currently attempting to dismantle the Clean Power Plan.

Before leaving office, the Obama Administration did institute an EPA rule to cut methane pollution by 45 percent from 2012 levels by 2025. Even if this rule (which is also now under attack by the Trump Administration) is successfully implemented, its achievements will be overshadowed by new methane leaks coming from the projected increase in natural gas production—which may grow as much as 55% by 2040.[12] Even if all other greenhouse gas sources were eliminated, and methane leaks were successfully reduced by 45%, emissions from natural gas and remaining methane leaks "would still blow the U.S. carbon budget."[E,12] **The science is unequivocal; the U.S. and the world will not meet emissions goals and keep global warming beneath 2°C if natural gas consumption is not reduced.**

Projected U.S. GHG Emissions from Gas Usage & Leakage vs. U.S. 2050 Climate Target



Sources: U.S. Energy Information Administration, Environmental Protection Agency, and the Intergovernmental Panel on Climate Change. Graph designed by Oil Change International.

[E] A carbon budget describes the concept that the world has a certain amount of carbon dioxide (and other greenhouse gasses) that it can emit before climate change reaches an irreversible tipping point.

POLICY TOOLBOX: OUR POWER PLAN

The **Climate Justice Alliance** is a coalition of 41 organizations working on the frontlines of the climate crisis. In 2015, CJA created *Our Power Plan: Charting a Path to Climate Justice*. The report builds on the Clean Power Plan (CPP) with the goal of cutting GHG emissions by 80% by 2050, the International Panel on Climate Change's target.[1] It puts forward solutions by frontline leaders:

- Eliminating loopholes that incentivize other extractive, dirty energy options such as natural gas, biomass, waste incineration, nuclear, etc.
- Assuring that EJ provisions are in Federal and State Implementation Plans and multi-state processes
- Assuring that the CPP maximizes the creation of quality, good-paying jobs and that communities of color and poverty have access to these jobs
- Assuring that energy conservation, efficiency, solar, wind and energy storage, zero waste, public transportation, ecosystem restoration, and regenerative plant-based organic agriculture are prioritized as carbon reduction strategies

On January 19, 2016, CJA launched the plan by converging on the 10 regional EPA offices to peacefully protest the federal implementation of the CPP. CJA members nationwide include, but are not limited to:

Alliance for Appalachia works to end mountaintop removal, halt destructive coal practices, and create a sustainable, just Appalachia: http://theallianceforappalachia.org/

Energy Justice Network has a grassroots energy agenda and supports communities threatened by polluting energy and waste technologies: www.energyjustice.net

Labor Network for Sustainability is based on the understanding that long-term sustainability must be achieved by combining environmental protection, economic fairness, and social justice: www.labor4sustainability.org/

NAACP Environmental and Climate Justice Program supports community leadership to address EJ and climate change: www.naacp.org/issues/environmental-justice/

Indigenous Environmental Network is an alliance of indigenous peoples whose shared mission is to Protect the Sacred: www.ienearth.org

UPROSE is an intergenerational, multiracial, nationally recognized community organization that promotes sustainability and resiliency in Brooklyn's Sunset Park neighborhood: www.uprose.org

Source: Farhad Ebrahimi and the Our Power Campaign, taken during the Our Power Day of Action in Richmond CA on August 9, 2014.

The Path Forward: Energy Efficiency and Renewable Energy

Risks from climate change aside, the country's path towards natural gas dependence poses a great economic risk. The further buildout of natural gas power plants and pipelines needlessly locks energy costs to the rising price of natural gas, and it delays implementing energy efficiency measures and cheaper renewable energy.

Utility companies such as Duke Energy and Dominion Energy claim that natural gas expansion is needed in order to meet a growing demand for electricity and fill the gap that will be left as coal power plants continue to retire. They also claim that renewable energy is not mature enough or cheap enough to keep up with this growing demand.[1] However, Dominion Energy and Duke Energy projections of future demand growth are significantly higher than what independent regulatory agencies predict. In addition, these utilities have consistently overestimated demand growth throughout the past decade by as much as 6%.[2] In reality, United States electricity use has been holding steady and is projected to grow only 0.7% annually until 2040.[3] This growth could be entirely eliminated and even reversed by aggressive energy efficiency measures, and renewable energy could compensate for declining coal energy generation.[4] **Refusing to use natural gas is not only technically feasible, but it would be cheaper for energy customers in the long run and create far more jobs than natural gas expansion.**

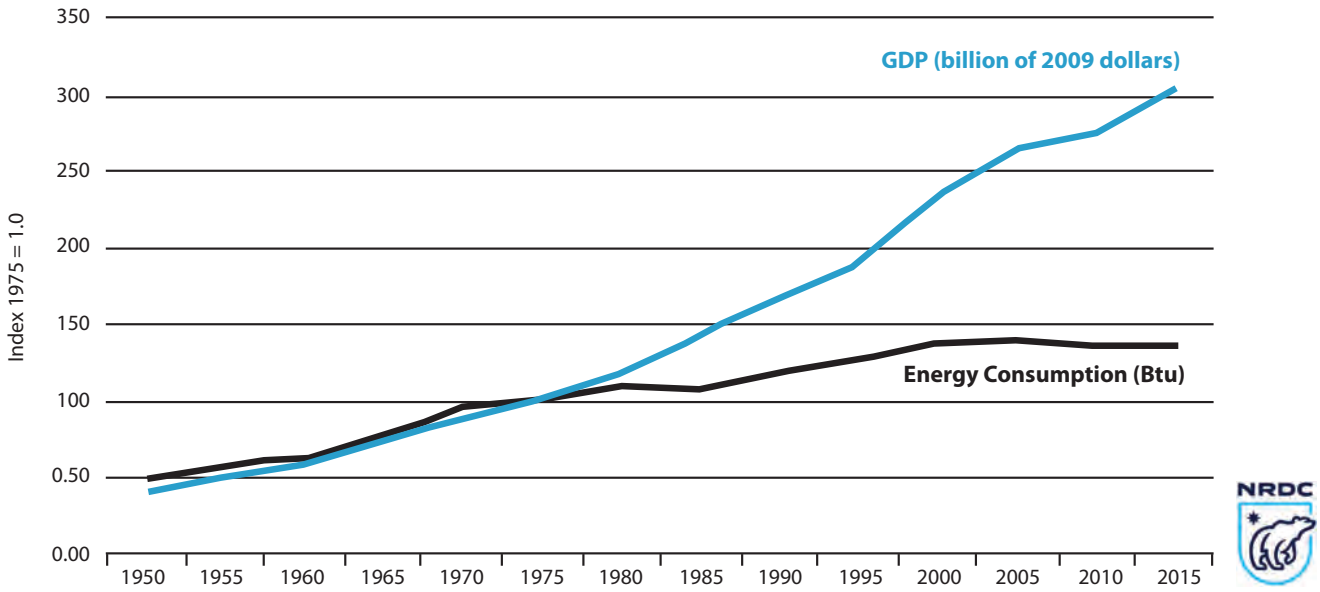
Energy efficiency improvements can reduce energy consumption, save money, and produce

jobs. In 2010, the consulting firm McKinsey found that by 2020, a well-designed energy efficiency initiative across the U.S. economy could reduce energy consumption by 23% and save a net $680 billion in energy costs.[5] While the U.S. has taken some energy efficiency measures since 2010, they are not nearly at this recommended scale. The McKinsey report was based on future projections, but a historical report by the Southeast Energy Efficiency Agency backed up their assumptions. It found that from 2010-2013, the return on investment for $20 million in energy efficiency improvements in the Southeast U.S. was 387%.[6] It also found that for every $1 million invested, 17 jobs were created. For oil and gas, $1 million invested produces only five jobs.[7] Aggressive energy efficiency measures would not only eliminate the need for more natural gas, but they would be one of the most productive uses of investment in the economy.

For the remaining energy demand that efficiency measures cannot eliminate, renewables can provide a lower cost solution than continued dependence on natural gas. At the moment, the "levelized cost of energy"—a measurement of the cost of production of a given energy source over its lifetime—of renewables is still on average slightly higher than that of natural gas in most regions.[8] Yet the low levelized cost of natural gas depends on natural gas prices staying low long into the future. With U.S. natural gas reserves lower than initially thought and much of the future supply planned for export, prices are expected to continue rising.[9] This rise in prices will, in turn, make the levelized cost of natural gas much higher, which will raise electric and heating bills for everyone. The continued buildout of pipelines and power plants with 20-60 year lifespans locks in this reality. Wind and solar energy, however, do not have fuel costs, which makes their levelized costs more certain. Even with current low natural gas prices, wind and solar are outcompeting it in some areas of the country, and are getting cheaper each year.[4] Between 2010 and 2015, the cost of solar panels decreased by 72%, and they are "predicted to emerge as the least-cost generation technology in most countries by 2030."[10] From 2009 to 2015, the cost of wind fell by 61%.[11] Batteries, a necessary component of moving towards 100% renewable energy, are decreasing rapidly in price and are predicted to continue declining.[12] Again, a $1 million investment in solar and wind creates 14 and 13 jobs respectively, while the same investment in oil and gas only produces five.[7] Furthermore, the renewable energy market is currently creating jobs 12 times faster than any other market in the U.S. economy.[13] While continued reliance on natural gas benefits the utilities and the natural gas industries, it harms energy customers and the economy as a whole.

Renewable energy generation offers other under-recognized advantages. As households and businesses continue to build their own solar arrays and storage facilities, and different municipalities create wind farms, electricity generation is spreading out geographically. This adds significant resilience to the grid. In the event of a natural disaster, technical failure, or an attack on energy resources, the potential for significant disruption goes down.[14] While a hurricane might knock out power for thousands of homes relying on natural gas supplies and power lines coming from one centralized power plant, fewer homes would lose power if the grid were heavily distributed with renewable sources; they are not dependent on one energy source and miles of power lines between them and the power plant. Renewable energy also boosts national energy security. In a decentralized grid, those looking to harm the grid cannot target a single source, unlike fossil fuel and nuclear

U.S. Growth in Energy Consumption and Gross Domestic Product Since 1950



Source: Reprinted with permission of the Natural Resources Defense Council

power, which tends to be centralized in a few locations. In addition, producing energy closer to where it is consumed decreases the amount of energy that is wasted while it travels through electrical wires, thus increasing the overall efficiency of the grid and decreasing the total energy consumed.

The future of energy is clearly renewable, yet utilities and the natural gas industry are resisting this logical transition in order to secure profits that are tied to their fossil-fuel-dependent business model. In Virginia and North Carolina, the utilities are vertically integrated monopolies which means they control generation, distribution, and retail sales and their customers have no choice in who provides their energy. In this market, an outdated regulatory scheme incentivizes constant construction of new fossil fuel generation. The only way utilities can earn more is to build more natural gas infrastructure, yet there is not sufficient demand for new electricity. Energy efficiency, residential and third-party solar reduce demand and revenues, so utilities oppose them. Utilities will continue to make plans based on large central station generation even when other alternatives might make more economic sense. The only thing that will deflect them from this path is to change the rules by which they are regulated.

Housing Toolbox: Efficient, Affordable, Durable Investments

According to the *Our Power Plan*, "making homes and industries more energy efficient and long-lasting through better design will spur new economic growth that creates many more skilled, localized trades in building, construction, and community maintenance."

Homeowners with access to capital can retrofit their homes by switching to more efficient appliances, LED bulbs, and invest in solar, geothermal, or energy efficient remodeling. Renters and people without disposable incomes can find out if utilities offer free energy efficiency consultations.

It is important to note that individual actions and state policies that do not consider climate and energy equity will not lead to a just transition. A 2015 SKEO report, for example, explains that "energy efficiency and renewable energy assistance and grant programs provide few options for renters or low-income households in older buildings [as they do not ensure] the buildings are up to code and are in good enough condition to allow for these upgrades."[2] Energy efficiency and renewable initiatives must be combined with the political will to invest resources. *Our Power Plan* describes efficiency efforts that ensure that all people, especially marginalized communities, benefit.

Building Clean is a partnership of the Energy Foundation, Elevate Energy, Natural Resources Defense Council, and National Housing Trust that helps architects, designers, consumers, contractors, and manufacturers find healthy energy efficiency retrofit products. It is part of a national drive to advance retrofits for low-income households suffering from adverse health effects and high energy bills: www.buildingclean.org

We Act for Environmental Justice runs a healthy homes initiative in New York City. We ACT marks these homes as having "an absence of health and safety threats (lead, indoor allergens, radon, CO) in the built environment" and supporting "physical, mental, social and environmental well-being." WeACT works to make energy efficiency, safe and healthy building materials, and equitable and fair labor practices accessible to everyone: https://www.weact.org/whatwedo/areasofwork/-healthy-homes/

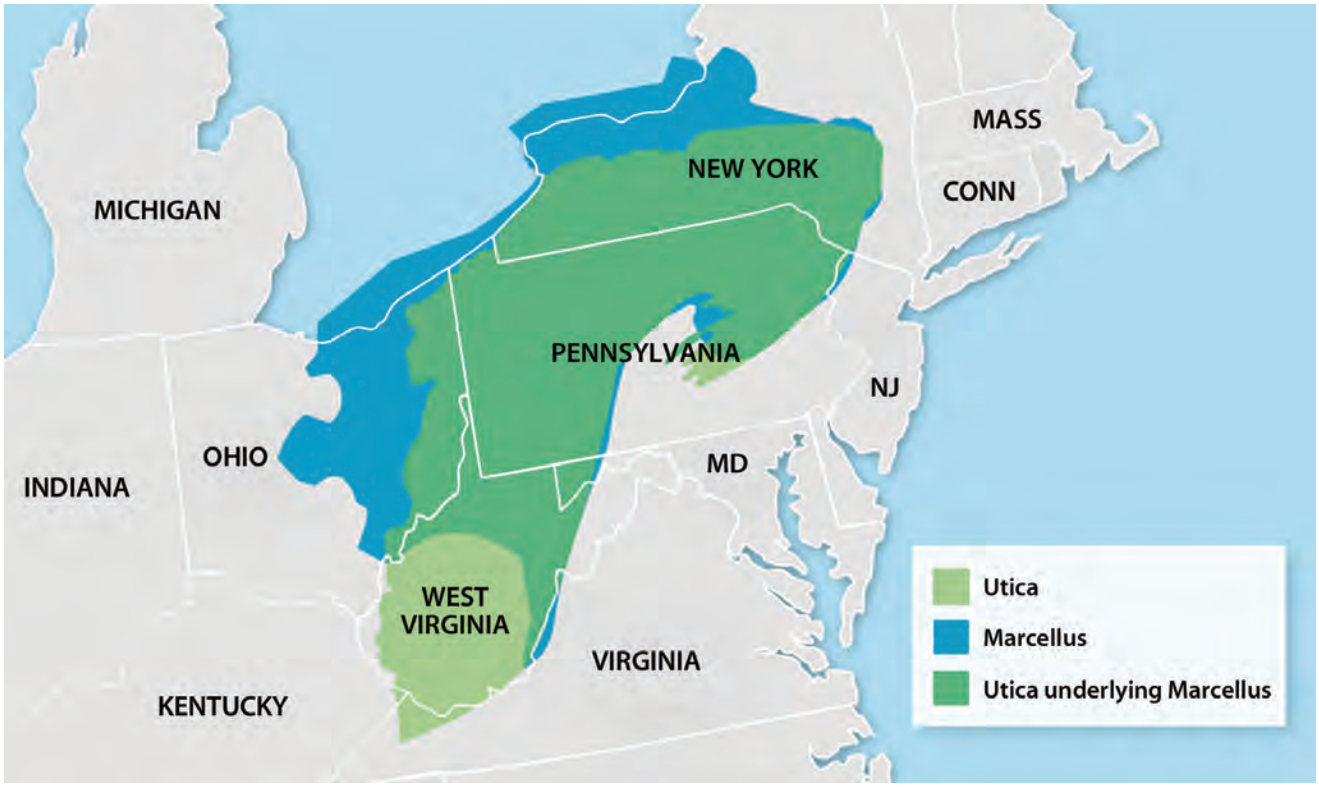
FRACKING IN THE MARCELLUS AND UTICA SHALE BASINS

The natural gas boom relies on hydraulic fracturing, or "fracking" technology. While the majority of traditional oil and gas reserves can be cheaply extracted with conventional drilling techniques, shale rock formations require this new approach. Unlike its historical presence in Texas and other western states, fracking's arrival in the Marcellus and Utica regions triggered alarm due to its proximity to populated areas unfamiliar with oil and gas extraction, and because of fracking's documented effects on waterways, health, and private property.

Fracking works by pumping millions of gallons of water mixed with toxic, carcinogenic chemicals and sand into the ground at high pressure, thereby fracturing the rock below and releasing formerly trapped oil and natural gas. This technology has been used for decades, but it became exponentially more productive when it was recently coupled with horizontal drilling and modern sensor technology. Horizontal drills can change direction underground to precisely access gas-rich strata. These technologies were developed with significant research funding and tax credits from the U.S. government.[1] While fracking is only one component of oil and gas drilling, it is often the term used by the media to describe the entire process.

Fracking gained its notoriety in the late 2000s when oil and gas drilling faced opposition in

Marcellus and Utica Shale formations



Source: Marcellus Shale Coalition

the Marcellus Shale, a rock formation rich in natural gas that spans much of New York, Pennsylvania, Ohio, West Virginia, and areas of Maryland and New Jersey. The Utica Shale formation sits beneath much of the Marcellus and is also rich in natural gas. Other major shale plays in the U.S. include Permian, Barnett, and Eagle Ford in Texas, Bakken in the Northwest, and Granite Wash in the Midwest.[2]

What Drives Fracking?

Wall Street

The public is told a simple story that innovation and supply/demand lie at the heart of the natural gas boom. In reality, the gas economy is increasingly controlled by the financial industry.

In 2013, Wall Street veteran Deborah Rogers published an alarming report, "Shale and Wall Street: Was the Decline in Natural Gas Prices Orchestrated?" that cataloged the manipulative manner through which banks artificially drove the shale gas boom.[3] Standing on the work of oil and gas industry watchdog Arthur Berman and geologist David Hughes, Rogers' report describes how banks overestimated the amount of gas that could be retrieved from given wells, thus inflating supply predictions. The perceived high supply lowered the market price of natural gas. But, when drillers began extracting the gas, they found smaller quantities than were predicted. With less production and higher drilling costs per well than expected, they could not recover their costs when they sold the gas because the market price was still low. As drillers faced losses instead of profits, they could not pay back drilling leases and loans provided by banks. Consequently, drillers hurriedly borrowed more money from these same banks with plans to pay them back with profits made from drilling future wells. When those well capacities also turned out to be overestimated, and prices remained depressed due to high supply forecasts from the drilling frenzy, drillers were forced into bankruptcy or mergers. Despite apparent failings in the industry, Wall Street profited through legal and financial transaction fees.

This manipulation by powerful banks not only harms small drillers, but it puts the entire industry and country at financial risk. As the larger players in the drilling industry—ExxonMobil, Cabot Oil and Gas, Chesapeake Energy, EQT Corp—acquire the failed small drillers through mergers, they also acquire their debt. As wells underperform, the billions in debt fueled by Wall Street rapidly grows. Murmurs of the need for an oil and gas industry bailout have already percolated through finance media outlets.[4] The risk of collapse may be less than it was in the 2007 housing market, yet analysts see frightening similarities in the efforts taken by banks to erode transparency and independent oversight from the Securities and Exchange Commission in order to implement mechanisms that allow them to profit from either industry failure or success.[5] Any formal bailout or new aid to a struggling oil and gas industry would likely receive tremendous political backlash. These relationships, however, fly under public radar; the industry continues to enjoy billions of dollars in subsidies and regulatory deference.

Legislators

Some legislators in natural gas-rich states believe the economic and employment gains from shale gas production trump any downsides. They also often receive significant campaign contributions from the natural gas industry. For example, the industry has spent $9.5 million on campaign contributions and another $59 million

Voter's Toolbox: Supporting Fossil-Free Leaders

Before November 2017, Virginians can urge all gubernatorial candidates to oppose the ACP and Mountain Valley Pipeline. Citizens can ask sitting Lieutenant Governor Ralph Northam, a candidate for Governor, to support a rigorous, transparent review of both pipeline's environmental effects.

North Carolina's **Emergency Methane Action Campaign** (http://www.ncwarn.org/ema/) includes NC Warn, the North Carolina NAACP, Clean Air Carolina and others urging North Carolina Governor Roy Cooper to commit to:

- Banning fracked natural gas use and transport in North Carolina by 12/31/2018
- Ending use and transport of natural gas by 12/31/2022 unless its methane emissions are at most 0.5% of gas pumped from the well and halting constructing of new natural gas pipelines or plants
- Replacing existing fossil fuel infrastructure with clean, renewable energy

The **Sunrise Movement** is a national network mobilizing young people to make climate change a priority and end the pernicious influence of fossil fuel executives on politics: www.sunrisemovement.org

Virginia River Healers call on 2017 candidates for Virginia offices to protect water security. See which candidates have agreed to oppose extractive energy: http://www.riverhealers.us/water-security-pledge

on lobbying in Pennsylvania since 2007.[6] In return, the fossil fuel industries in Pennsylvania received $3.2 billion in direct and indirect subsidies[F] during the fiscal year 2012-2013.[7] Deregulation is another form of subsidization that benefits the natural gas industry. The Energy Policy Act of 2005—known as the Halliburton Loophole due to former Halliburton CEO Dick Cheney's role in promoting the bill while he served as Vice President of the United States—exempts fracking from the Safe Drinking Water Act's Underground Injection Control program, except when diesel fuels are used.[8] Oil and gas drilling are also given specific exemptions from the Clean Water Act, Clean Air Act, Emergency Planning and Community Right To Know Act, and National Environmental Policy Act.[9] Financial gifts coupled with extensive deregulation allow oil and gas to be seen as cheap sources of energy. If their true costs for human health, the environment, and climate change were protected against, these dirty sources of energy would not be able to compete with clean, renewable energy.

Divisive Tactics & Militarism

The destructive activities of natural gas extraction can receive significant opposition from individuals and communities. Three states (New York, Vermont, Maryland) and many townships

have enacted legislation to ban fracking. In preparation for resistance, fracking companies have developed strategies to encroach on communities and ensure they are not able to organize effectively. In 2016, an executive from Range Resources, a major fracking company with operations in Texas and Pennsylvania, was reported to claim to site its wells "away from large homes where wealthy people live and who might have the money to fight such drilling and fracking operations."[1] Some studies that examined well siting patterns have reached different conclusions in regards to environmental injustice, though a comprehensive 2015 study published in the *Journal of Applied Geography* showed that fracking wells in Pennsylvania are more likely to be sited near people living in poverty.[2] Evidence across the board suggests that the people living near wells do not realize sufficient gains from drilling activity to offset its costs and negative effects.[3]

Beyond targeting poor communities, Range also boasted of employing Psychological Operations Army and Marine Corps veterans who served in the Middle East to manage government and community relations. At a 2011 fracking industry public relations conference, a Range spokesman encouraged other companies to consult U.S. Army/Marine Corps Counterinsurgency manuals in response to anti-fracking community organizing, which he referred to as an "insurgency."[4] Such tactics pervade the oil and gas industry. Recently, leaked documents and public records exposed the extent to which TigerSwan, a private security firm hired by Energy Transfer Partners, builders of the Dakota Access Pipeline, were engaged in self-described counterinsurgency operations. TigerSwan viewed the peaceful protests and prayers of the Standing Rock Sioux, other tribes, and protestors, as a "jihad." The firm conducted extensive surveillance and tracking of individuals with the goal of causing in-fighting within the camp.[5] TigerSwan also spread misinformation online and through media outlets and pressured local official to raise bail costs and issue more arrests.[5] In one weekend, 300 peaceful "water protectors" were injured, and 27 were sent to the hospital after police launched a barrage of water cannons, rubber bullets, and stun grenades in below-freezing temperatures.[6] Since the protest camp was forcibly evicted to allow the completion of the Dakota Access Pipeline, TigerSwan has remained active in surveillance of opposition to the Mariner East 2 pipeline in Pennsylvania.

Such tactics serve as a reminder that the extractive economy functions through predation of the weak and is secured by cooperation between private interests and state violence.

Labor

Proponents of natural gas drilling often advertise high-paying jobs the industry brings to local communities. While transportation, machinery operation, and fracking well jobs can offer high wages, the latter are some of the most dangerous in the entire labor market. From 2003-2012, the mortality rate across the U.S. oil and gas sector was 26 deaths per 100,000. The national average across all sectors is 4 per 100,000, but well drilling death rates stood at 47 per 100,000. Well operation is therefore almost 12 times as fatal as the average job.[7] A Food & Water Watch report found that at construction sites, "workers can be exposed to volatile organic compounds, including benzene and toluene, as well as fugitive methane."[7] When fugitive methane mixes with nitrogen oxide emitted from vehicles and equipment, ground-level ozone can form.[7] Workers can also be exposed to to fine particulates from silica sand, the material that is often used in the

fracking process and is a known human carcinogen. Long-term exposure to silica, a component that makes up as much as 99 percent of frac sand, "increases the likelihood of developing silicosis, which damages lung tissue and inhibits lung function."[7] Inhaling silica can make a person "more susceptible to tuberculosis and is associated with other diseases such as kidney disease and autoimmune disorders."[7] Injured or retired well workers describe work environments where safety regulations are regularly abandoned. Injured workers are often coerced into continuing to work and denied medical compensation. Perils multiply when workers face long and unpredictable hours as well as a culture which stigmatizes proper health and safety practices. Regarding exposure to unknown chemicals, one retired worker reported: "You aren't allowed to even talk about it; if you talk about it, you're gone. If you don't know, your company doesn't know, your workers will never know, because you're not allowed to discuss any of this on pads or they will fire you."[7]

While many workers experience exploitation on the job, many remain despite an understanding of the health and environmental risks. For them, economic prospects outweigh the dangers. In order to transition away from the destructive practices of the extractive economy that treats workers and their health as disposable, decision-makers should listen to needs of laborers. Cheap fossil fuels are subsidized by the undervaluation of workers' lives and health. A just transition recognizes that our nation's economic prosperity depends on workers' sacrifices and must properly compensate for this sacrifice.

Industry-Driven Research

The natural gas industry's influence on academia makes it difficult for institutions worldwide to carry out scientifically-sound research and advocacy. Various reports have documented how the industry works to seduce some universities to skew evidence for its own purposes. In 2014, an employee of the multinational energy and utility company Centrica wrote: "Our polling shows that academics are the most trusted sources of information to the public."[8] He went on to describe how Centrica is looking for ways to work with the academic community to present scientific facts around shale that would also lead to further shale production.

As universities continue to face funding cuts, the gas industry fills this void and in return, receives scientific backing for its political agenda. When research first came out pointing to the dangers of fugitive methane emissions, for example, researchers from the MIT Energy Initiative were quick to discredit its findings.[8] Not surprisingly, MIT Initiative's funders included BP Amoco, Shell, ExxonMobil, Hess, and Chevron USA.[8] An investigation in 2015 found close ties between the fracking industry and University of Colorado Leeds Business School after the university published reports in partnership with the Common Sense Policy Roundtable, a pro-fracking industry front group.[9] The reports found that fracking positively affects Colorado's economy and discouraged policy that would "inhibit oil and gas production."[9] The lack of transparency paired with large industry donations to universities compromises the "quality, topics, and credibility of academic research" across the country.[9]

Beyond research studies, the industry also funds "endowed professorships and capital improvements as means of influence."[10] According to a Food & Water Watch report, "Chesapeake Energy gave $2.5 million to the University of Oklahoma to renovate a student lounge and endow

two named professorships."[10] Cary Nelson, former president of the American Association of University Professors, said that faculty members who possess the expertise to conduct fracking research now choose other topics, as publishing on the subject "could put their...integrity at risk."[9]

Some colleges and universities located atop natural gas reserves have even opened their campuses for fracking "in exchange for funds from fees and royalties."[10] In 2012, for example, Pennsylvania opened 14 state universities to drilling, including six on top of the Marcellus Shale.[10]

Despite the many pernicious influences of industry on academia and funding cuts to research institutions, universities continue to carry out sound research about natural gas. In 2011, Robert B. Jackson, director of Duke's Center on Global Change, worked with a team that

Campus Toolbox: Research and Advocacy for the Public Interest

Community Campus Partnerships for Health is a nonprofit membership organization that promotes health equity and social justice through partnerships between communities and academic institutions: https://ccph.memberclicks.net/

Duke Climate Coalition is a student-led organization working to stop a new natural gas plant from being built on Duke University's campus. In April 2017, the organization successfully pushed Duke to "agree to delay a decision on proposed gas plant" and recommendations from the Campus Sustainability Committee "urged that no action be taken on the plant" until commitments on biogas generation could be fulfilled: https://www.facebook.com/pg/DukeClimateCoalition/

Food & Water Watch (FWW) recommends that universities take the following steps:

1. Prohibit any pro-fracking interest or organization from directly funding studies
2. Prohibit faculty with extensive industry ties to publish studies on fracking
3. Adhere to strict academic guidelines when publishing studies about fracking, including stringent peer review, to minimize the chance for questionable studies
4. Ban fracking on all college campuses and properties: https://www.foodandwaterwatch.org/insight/frackademia

The **Rachel Carson Council** builds the capacity of campus communities to carry out research and advocacy to advance environmental justice and the just transition. RCC can consult with faculty to incorporate this material, presentations, and trainings into curricula or master's projects. Join the Rachel Carson Campus Network to stay in the loop: www.rachelcarsoncouncil.org/campus-program

Wasson Oil Field, Detroit City, TX. Source: Mishka Henner

"collected and analyzed water samples from 68 private groundwater wells across five counties in Northeastern Pennsylvania and New York.[11] The researchers found "high levels of leaked methane in well water collected near shale-gas drilling and hydrofracking sites." In 2017, Purdue University and the Environmental Defense Fund teamed up to research natural gas' methane emissions. Paul Shepson, a Purdue Professor of Analytical and Atmospheric Chemistry, reported that although burning natural gas is cleaner than coal or oil, methane can be even more damaging over the short term if it isn't handled properly.[12]

In July 2016, James Madison University and the University of Virginia collaboratively conducted surveys in impacted communities to find out common perceptions of the proposed ACP. Rider Foley, an Assistant Professor at the University of Virginia School of Engineering stated, "People are [as concerned] about living within 50 miles of the pipeline...as they are with living within 50 miles of a nuclear power plant."[13] The team held workshops every other week throughout the summer to raise awareness and get a sense of people's concerns.

Fracking, Ecology, and Environmental Health

Water Consumption and Pollution

Despite its impressive technical precision, the use and pollution of water in the fracking process creates serious environmental and health risks. Fracking requires extraordinary quantities of water to be pumped into the well; compared to oil and gas extraction 15 years ago, fracking consumes 28 times more water—an average of 5.6 million gallons per well and as

much as 9.6 million gallons per well.[1] **To put this in perspective, if an average family of four in Ohio uses about 300 gallons of water per day, "the water used in one fracture would supply one household with water for 51 years."[2]**

Before water enters a well, it is mixed with sand and toxic chemicals including benzene, mercury, lead and uranium.[3] Over 600 chemicals are used, but fracking operations are not required to disclose exact chemical formulas. While contested, growing evidence suggests that this toxic water can leak from fracked natural gas wells into underwater drinking sources.[4,5]

Entirely uncontroversial, however, is the fact that recovered wastewater from fracking wells is polluting drinking water sources. After water is pumped into a well, it returns to the surface of the well and needs to be stored on-site, injected into storage wells, or transported to a private treatment facility. The natural gas industry claims that their safe technology and processes can handle this wastewater without affecting the groundwater supply. Unfortunately, its track record reveals an entirely different story. Wastewater has been found to migrate from on-site storage facilities, leak from wastewater storage wells, and contaminate water supplies even after treatment.[5] A 2015 National Resources Defense Council and FracTracker Alliance study showed an alarming prevalence of health and environmental code violations in the fracking industry. From 2009-2013, there were 1,933 reported spills from unconventional drilling in Colorado. During that same period, there were almost 4,000 violations by Pennsylvania's drilling companies.[6] Data on spills may be kept private in Pennsylvania, and many spills go unreported and unpunished for violations. A 2017 study showed that between 2008 and 2016, only 17% of violations were accompanied by a fine in Pennsylvania. Furthermore, those fines were often too low to deter the poor behavior.[7] Instead of viewing regulations and fines as something to avoid, companies reportedly plan to violate rules and project these minor fines into their financial planning.

Toxic wastewater is a great threat to community health, yet in one instance, the industry claimed that public concerns are not legitimate because chemicals make up only 1% of fracking solutions. However, this 1% translates to 50,000-70,000 gallons of chemicals injected and in need of disposal from a single well site.[2] The evidence shows that citizens are right to be concerned: In Pennsylvania, a statistically significant increase in infant mortality was found to be associated with contaminated groundwater exposure in areas with fracking.[8] In addition, a report found that wastewater pipes can contaminate underground water tables by leaking dangerous chemicals, leading to "higher rates of cancer, skin and eye irritation, respiratory complications, nosebleeds, and headaches."[9] These devastating effects do not influence the public equally: a 2016 study published in the *American Journal of Public Health* found that fracking wastewater wells in Texas, for example, are disproportionately permitted in areas with higher proportions of people of color and people living in poverty.[10]

The injection of fracking wastewater into storage wells has also been found to cause earthquakes,[11] and new research is emerging that the original fracking process itself may also contribute to the earthquakes.[12] In 2009, Oklahoma witnessed 50 earthquakes. Then, fracking operations ramped up in the state. In 2015, that number rose to 6,479.[13] While most of these earthquakes are 3.0 or lower and barely noticeable, several large quakes have been directly linked to fracking

wastewater wells. In 2016, a 5.8 magnitude earthquake hit Pawnee, and a 5.0 magnitude earthquake in north-central Oklahoma damaged buildings, and residents were evacuated from retirement homes and schools. Experts agree that these unprecedented and dangerous quakes are being caused by fracking wastewater injections.[14]

Food & Agriculture

Fracking also has damaging consequences for agriculture. In water-scarce areas of the country, massive amounts of water drawn for fracking can compete with water supply for farms.[15] Furthermore, fracking wastewater endangers livestock and crops. A Cornell study found that cows exposed to fracking fluids in their water supply were at higher risk of death and infertility.[16] In these studies, 33%-50% of the cows died. Those not exposed to the fracking fluids did not show any adverse health effects.[16]

Food may become contaminated when fracking wastewater comes in contact with farmland or agricultural soils. Since drillers in some areas are not required to notify landowners nearby of a spill or accident, farmers may not even know they are producing toxic food. As 50% of all U.S. agricultural production is located in areas with active shale drilling and 11% of organic farms are located within half a mile of an oil or gas operation, there is a serious risk of contamination in human diets.[17]

Air Pollution

Fracking sites emit a variety of pollutants, including diesel exhaust from truck traffic, toxic hydrocarbons from the wells themselves, and silica from frac sand. According to the Environmental Working Group, none of the states "at the center of the 'frac sand' mining boom have adopted air quality standards for silica that are adequate to protect people living or working near" the sites, and children and other vulnerable populations are especially at risk.[18]

In addition to silica, fracking zones emit high rates of volatile organic compound and NO_x emissions, which contribute to ozone formation in the lower atmosphere.[19] Ozone is harmful to humans, causing "a variety of respiratory and cardiovascular effects, including shortness of breath, reduced lung function, aggravated asthma and chronic respiratory disease symptoms, inflammatory processes, and premature death."[19] Fracking and wastewater management have also been linked to respiratory issues, birth defects, cancer, and blood disorders in communities living near wells.[19]

Federal and state governments do not adequately report on these pollutants. Often their emission inventories underestimate the volume of toxins being released from these sites.[18] Overall, the scientific community needs to conduct more air monitoring studies near fracking sites and along truck routes measuring silica and other pollutants and how far they travel downwind.[18]

Advocacy Toolbox: Eliminating Fracking Dangers

Breast Cancer Action's mission is to achieve health justice for all women at risk of and living with breast cancer from oil and gas operations, among other causes. The organization works for change through legislative action, public education, and direct advocacy: https://www.bcaction.org/

Earthworks is a nonprofit organization dedicated to protecting communities and the environment from the adverse impacts of mineral and energy development while promoting sustainable solutions: https://www.earthworksaction.org/

FracTracker Alliance studies, maps, and communicates the risks of oil and gas development to protect our planet and support the renewable energy transformation: https://www.fractracker.org

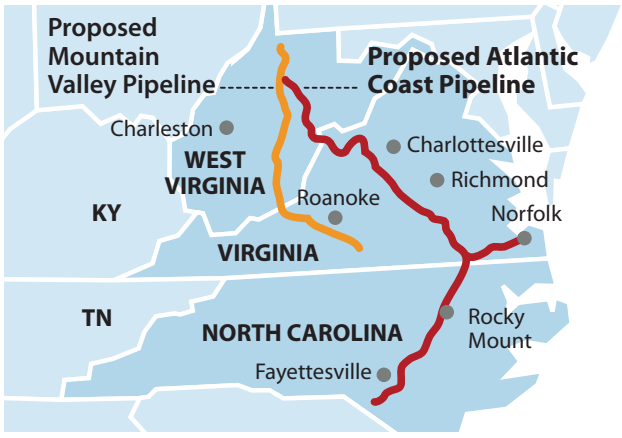
Southwest Pennsylvania Environmental Health Project is a nonprofit public health organization that assists and supports residents of Southwestern Pennsylvania and beyond who believe their health has been, or could be, impacted by unconventional oil and gas development. Their top concerns are air quality, water quality, noise & light, stress, soil, and emergency preparedness: http://www.environmentalhealthproject.org/

THE ATLANTIC COAST PIPELINE

Since 2013, a combined 2,746 miles of natural gas pipeline—enough to transport 43 billion cubic feet of gas per day (bcf/day)—have been proposed throughout the country to facilitate the extraction and exportation of increasing quantities of natural gas. The ACP represents 600 miles and 1.5 bcf/day of this buildout. Pipelines are not only destructive in their acceleration of natural gas extraction and consumption, but they create their own host of environmental, economic, and social issues. They also further reveal the power of the fossil fuel and energy industries to overpower local governance and manipulate governmental control in their favor. Yet despite their threat of destruction, they also have the potential to connect localities in a shared struggle against the widespread exploitation of the extractive economy.

In accordance with the foundations of an extractive economy, this buildout is neither initiated nor controlled by the affected communities. Workers and homeowners do not choose to have their safety put at risk or their property rights violated. Rather, the buildout is dictated by centers of wealth and power that are detached from and unconcerned with community interests. Wall Street and utility headquarters devise this infrastructure and its localized effects; they further successfully manipulate the political system in order to overpower any attempt to place people over profit. This section describes the decision-makers and their motivations for ignoring and opposing local interests.

Proposed Mountain Valley and Atlantic Coast Pipelines



Source: Institute for Energy Economics and Financial Analysis, IEEFA.org

The Power Behind the ACP

Pipeline Developers and Utilities

In 2014, several of the largest utility holding companies in the United States formed Atlantic Coast Pipeline LLC (referred to hereafter as Atlantic) to develop and own the ACP. Though not yet permitted, the 600-mile natural gas pipeline is scheduled for construction as early as fall 2017 and service beginning in 2019. It would transport fracked natural gas from Ohio, West Virginia, and Pennsylvania to markets in Virginia and North Carolina, with a capability of delivering up to 1.5 bcf/day, enough to power roughly 4.7 million homes.[1] According to Atlantic, the $5.5 billion project is needed to "better serve existing and growing customer demand, improve service reliability and allow for customer growth and economic development."[2] All interstate pipelines require approval from the Federal Energy Regulatory Commission (FERC), an independent regulatory agency within the Department of Energy which regulates the interstate transmission of electricity, natural gas, and oil, and reviews proposals to build liquefied natural gas (LNG) terminals.[3] FERC released its final Environmental Impact Statement in July 2017. Project approval is pending.

The Power Behind the Atlantic Coast Pipeline

Limited Liability Corporation (LLC)

48% | 47% | 5%

(Investor-Owned, For-Profit Utility Holding Company)

- 2016 earnings: $2.1 billion
- Market cap: $50.88 billion*
- 6 million energy customers

Regulated Utilities

Dominion Power
- Electric transmission & distribution
- 2.5 million electric customers in VA, NC**

Other Segments

Power Generation
- Owns & operates 24,300 MW generation**

Gas Infrastructure
- 12,200 miles of gas transmission (OH, WV, WY, ID, Rocky Mountains)
- Cove Point, MD liquefied natural gas export terminal
- Atlantic Coast Pipeline Partnership

(Investor-Owned, For-Profit Utility Holding Company)

- 2016 earnings: $2.1 billion
- Market cap: $61.56 billion*
- 7.5 million electric customers

Regulated Utilities

Duke Energy Carolinas
Duke Energy Progress (NC, VA)
Duke Energy Florida
Duke Energy Indiana
Duke Energy Ohio & Kentucky
Piedmont Natural Gas
- Partner in Atlantic Coast Pipeline before acquisition

Utilities collectively generate 50,200 MW

Other Segments

Commercial Transmission
Energy Services
Duke Energy Renewables
International Energy
- Refining in Saudi Arabia

(Investor-Owned, For-Profit Utility Holding Company)

- 2016 earnings: $2.7 billion
- Market cap: $51.83 billion*
- 9 million customers

Regulated Utilities

Alabama Power
Georgia Power
Gulf Power (FL)
Mississippi Power

Other Segments

Southern Power
- 12,600 MW generation

Southern Company Gas
- 4.5 million retail customers

Power Secure
- Technology services

Southern Nuclear
Southern Linc
Southern Telecom
Sequent Energy Management
Pivotal Home Solutions

*Market capitalization data from 6/16/17
**Dominion 2015 Summary Annual Report

Created by the Rachel Carson Council

Source: Guido Van Nispen, Wikimedia Commons

Atlantic ownership is comprised of three utility holding companies: Dominion Energy (48%), Duke Energy (47%), and Southern Company (5%).[4] These companies are private and investor-owned. They own subsidiary companies responsible for various utility services such as electricity transmission and generation, and natural gas storage and distribution. While subsidiaries may be state-regulated monopoly utilities in the states where they operate, the holding companies themselves operate free of any specialized regulation and only face FERC regulation because of their plans to construct an interstate pipeline.

Financial Sector

These massive projects would not be possible without significant support from the world's largest financial institutions. According to Atlantic's September 2015 application to FERC, the ACP's total estimated costs are between $5 and $5.5 billion. FERC has authorized a 15% return on equity, with 50% of the project contributed by its owners. Dominion and Duke own a combined 95% share of Atlantic, so they will be responsible for approximately $2.13-$2.38 billion of the pipeline's cost. The remaining 50% will be funded by debt financing.[G,5] The vast majority of this debt is provided by the same banks that are financing the Dakota Access Pipeline.

Myths about Job Creation

Job creation is seen as an undisputed benefit of the ACP, certain to provide hundreds of local workers with much-needed employment. Dominion Energy commissioned the consulting firm ICF International to conduct an economic analysis about the construction of the ACP. At one point, Dominion claimed it would create 4,000-5,000 construction jobs at 11 simultaneous sites to build the pipeline faster.

[G] Debt financing occurs when a firm raises money for capital expenditures (such as the construction cost of the ACP) by selling bonds, bills, or notes to individuals or institutional investors such as banks. In return, the investors become creditors and receive a promise that their money will be returned with interest.

Construction jobs generated by industries such as natural gas are not only temporary, lasting between 8-10 months, but also outsourced.[6] In the case of pipeline construction, workers will be brought in from other states; job creation will not offer a direct benefit to the communities affected by the construction. According to Nancy Sorrells of the Augusta County Alliance, Dominion "is looking at campgrounds where they can rent 300 spaces. If they were hiring local people, they wouldn't need to camp. They would just be coming from their homes."

The ICF analysis predicted that the ACP will create on average over 2,000 permanent jobs in the business sector due to companies saving money on their utility bills and spending more on new hires. Synapse Energy Economics was commissioned by the Southern Environmental Law Center to evaluate these analyses. Synapse found many inaccuracies in the ICF report, including a lack of evidence showing that lower energy costs lead to job creation.[7] Thomas Hadwin, a former utility company executive in Michigan and New York, says that fewer than 40 permanent jobs produced by the project will be created in Virginia, about 25 of which would be located in headquarters, and a possibly a few planned for North Carolina and West Virginia.

These limited job opportunities not only leave out local community members who will be directly affected, but the rising price of natural gas may threaten jobs located in the U.S. According to Hadwin, leading manufacturing CEOs and the Industry Energy Consumers of America warn that natural gas prices will increase as the U.S. continues to export and burn cheap gas. While the U.S. currently has a competitive advantage, building more pipelines, gas plants, and LNG export facilities will likely cause price increases and force jobs to be relocated overseas.

Energy efficiency, on the other hand, employs 2 million workers nationwide and, according to Hadwin, is a larger sector for employment than coal, oil and natural gas combined—and more appealing to the next generation of workers.

Myths about High Demand and Cheap Gas

Around 80% of the gas from the ACP is projected to flow to plants that will be built from 2018 to 2025. Of the remaining 20%, 9.1% will be for residential use, 8.9% for industrial use and 2.8% for commercial and other uses.

Dominion argues that the ACP needs to supply cheap gas to underserved areas of eastern North Carolina to enhance economic vitality and "lower energy bills for consumers and businesses." These claims, however, are not supported by the information Dominion filed with FERC. The ICF study, according to experts, relied upon several false assumptions to arrive at an incorrectly estimated $377 million savings from the ACP per year.[8] FERC authorized a tariff for transporting gas using the ACP that is over 60% of the current price of natural gas. It would be impossible for the ACP to supply cheaper gas to any of its customers given this high charge for transportation.

Owners of the ACP will ask utility ratepayers in Virginia and North Carolina to pay nearly $1 billion per year over 20 years to reserve capacity on the new pipeline and will be expected to pay this amount whether they use all of the capacity or not. This is a bad deal for ratepayers who can already get gas that is 3-8 times cheaper from existing pipelines or with minor adjustments to infrastructure.[7] North Carolina, for example, can receive all of the gas it needs at "a far lower cost by connecting to existing pipelines." Transco, for example, has been serving North Carolina for decades and is currently "adding four times the capacity of the ACP to its system."[8] In sum, the ACP is not about saving people money, but rather about making money for the utility's parent companies at the expense of ratepayers.

Sources of Current Outstanding Debt for Duke and Dominion

"DAPL" check-mark means these banks also funded the Dakota Access Pipeline

BANK	DOMINION	DUKE	TOTAL	DAPL
Bank of Tokyo-Mitsubishi	$342,423,077	$840,000,000	$1,182,423,077	✔
U.S. Bank National Association	$342,424,000	$514,000,000	$856,424,000	✔
Credit-Suisse	$342,423,077	$340,000,000	$682,423,077	✔
Bank of America	$333,192,308	$340,000,000	$673,192,308	✔
Citibank	$333,192,308	$340,000,000	$673,192,308	✔
Wells Fargo	$333,192,308	$340,000,000	$673,192,308	✔
JP Morgan Chase	$307,692,308	$340,000,000	$647,692,308	✔
Barclays	$307,692,308	$340,000,000	$647,692,308	✔
UBS	$307,692,308	$340,000,000	$647,692,308	✔
Mizuho Bank	$342,942,307	$264,000,000	$606,942,307	✔
Royal Bank of Canada	$339,942,308	$264,000,000	$603,942,308	✔
Bank of Nova Scotia	$333,192,308	$264,000,000	$597,192,308	✔
BNP Paribas	$333,192,308	$264,000,000	$597,192,308	✔
SunTrust	$324,730,769	$264,000,000	$588,730,769	✔
Goldman Sachs	$307,692,308	$264,000,000	$571,692,308	✔
Morgan Stanley	$307,692,308	$264,000,000	$571,692,308	✔
KeyBank	$100,000,000	$142,000,000	$242,000,000	
Bank of New York Mellon	$50,000,000	$142,000,000	$192,000,000	
TOTALS	**$5,389,308,618**	**$5,866,000,000**	**$11,255,308,618**	**16**

Source: "The Power Behind the Pipelines: Atlantic Coast Pipeline," June 2017, Public Accountability Initiative.

Author: Derek Seidman: http://public-accountability.org/2017/06/the-power-behind-the-pipelines-atlantic-coast-pipeline/.

Financial Toolbox: Divest and Reinvest

"President Trump wishes to fast-track the construction of the Dakota Access Pipeline, against federal law and tribal treaty rights. Indigenous nations and communities will not be the sacrifice zones for President Trump's fossil fuel regime. We remain steadfast in our defense of our inherent rights and the protection of Mother Earth and we implore our allies to stand with us. We must remind the investors of this pipeline that they, via their financing, are threatening the lives of water protectors and it's time to be held accountable for that."

- Dallas Goldtooth, Indigenous Environmental Network

In response to the Standing Rock Sioux's plea, allies across the U.S. have divested over $83 million in personal finances and cities have divested upwards of $4 billion. While losing large sums may be insignificant to banks, if divestment is publicized, their reputation can take a hit in the court of public opinion.

Individuals can divest their personal or company savings from banks financing fossil fuel projects and reinvest in locally-rooted and mission-based credit unions and community development financial institutions. Find banks that invest in your community at www.banklocal.info.

DeFund DAPL has helped coordinate a personal divestment total of nearly $83 million, and city divestments of $4 billion from banks including CitiBank, Wells Fargo, Bank of America, and Chase. This movement grew out of national organizing around the Dakota Access Pipeline: http://www.defunddapl.org/defund

Divest Appalachia is a student-led organization at Appalachian State University in Western North Carolina that has been educating students about the ACP proposal: http://divestappalachian.weebly.com/

Fossil Fuel Divestment Student Network is building a powerful, multiracial student movement that aims to stigmatize the fossil fuel industry and create popular support for a just transition. The DSN trains, mentors, and coordinates students running nonviolent direct action c ampaigns for divestment and reinvestment, supporting them to become lifelong organizers: www.Facebook.com/DivestFossilFuels

Industry Motives: If It's Not Necessary, Why is the ACP Being Built?

If the ACP is not needed and cheaper alternatives exist for routing gas to communities that lack access, then why is Atlantic building a $5.5 billion, 600-mile pipeline? The short answer: because they are virtually guaranteed to earn a 15% rate of return on their $5.5 billion investment.[H]

The long answer: In the early days (late 19th and early 20th century) of electricity generation and distribution, investor owned utilities, municipal utilities, and rural electric cooperatives[9] constantly expanded to serve the demand of a growing country. As the gross domestic product rose, electricity demand increased—up to 10% a year.[I] As utilities built bigger generation facilities and transportation networks, they decreased customers' bills by becoming more efficient businesses and earned higher returns by increasing sales to the growing consumer base. Regulatory commissions, in turn, approved electricity rate decreases.

In the 1970s, after a series of events—including the 1973 oil embargo, high inflation, and high interest rates—electricity demand leveled for the first time since the Great Depression.[9] After decades of operating a decreasing-unit-cost business (the bigger they grew, the cheaper their electricity became), the paradigm shifted to an increasing-unit-cost model of business. As utilities built new infrastructure, regulatory commissions approved higher energy rates to cover the new costs and maintain profit margins for utilities in the slow-growth electricity market. Unlike a competitive market where consumers would cease to purchase at high prices or choose a different provider offering lower prices, ratepayers in the U.S. energy market would now be held captive by rising prices due to the monopoly status of their provider and the necessity of electricity in modern life.[J]

Today, this monopolized market structure incentivizes the construction of costly and superfluous infrastructure rather than cheaper alterations and efficiency improvements (incentivized in a competitive market). If FERC approves a pipeline such as the ACP, it will set a transport fee on the gas flowing through the pipeline that guarantees the owners a 15% return on their investment, a return that is inexplicably about 50% higher than guaranteed returns for other projects regulated by FERC such as interstate transmission lines. While Atlantic or any of its subsidiaries could make alterations to existing pipelines or minor extensions with significantly smaller environmental and community footprints, these projects would be less costly (and less profitable) than a 600 mile, $5.5 billion pipeline. **For Atlantic and the banks invested, a 15% return on a $100 million dollar improvement project is simply not as attractive as a 15% return on a $5.5 billion project.** This pipeline both outperforms other investment options on the market and contains little risk. Atlantic knows it will earn a 15% return by selling portions of its pipeline capacity to its subsidiaries. The subsidiaries will pay 3-8 times more to transport the gas using the ACP than they currently do to use existing

[H] Short of a catastrophic event or an extremely improbable end of production in the Marcellus and Utica Shale.

[I] Rural Electric Cooperatives came about after the Rural Electrification Act of 1936 and provide rural areas not being served by utility companies with access to electricity. Although not all co-ops produce renewable energy, many have the capacity for solar and wind energy.

[J] The term "captive ratepayers" describes this dynamic.

pipelines in their supply network.[10] The subsidiaries also know they will be able to afford the price increase because their respective state utility commissions will likely allow them to pass this higher cost on to their customers as part of the fuel factor charge. New pipelines are much more expensive to use than existing pipelines that have been mostly paid for by previous customers. The individual utility subsidiaries will not profit from this transaction, but the owners of the pipeline certainly will.

What does this mean for ratepayers?

While Atlantic and the banks come out on top, customers of the utility subsidiaries of Dominion Energy, Duke Energy, and Southern Company are forced to pay for this substantial return through higher utility bills as well as through under-compensated property loss, environmental damage, and community endangerment. According to Hadwin, "there are business advantages to paying themselves more rather than paying someone else less to transport the natural gas. However, the benefits accrue only to them. Ratepayers would pay higher transport fees for the ACP compared to existing pipelines."[10] Ratepayers of the utilities in North Carolina and Virginia that are subsidiaries of the ultimate owners of the pipeline will be asked to pay over $18 billion dollars to Atlantic over the next 20 years, regardless of the amount of pipeline capacity they actually use.

Structuring business operations so that a company can be both the buyer and seller of its own products along the supply chain is known as "vertical integration." For most businesses, this practice can increase efficiency, often lowering costs for consumers. However, the utility holding companies and their subsidiary utilities are not normal businesses. They are monopolies that, because of guaranteed returns on investments, are incentivized to increase capital expenditures in order to increase profits, rather than to decrease costs as they would be in a competitive market. When vertical integration becomes abusive in this manner, it is often called "self-dealing."

In order for the utility to gain approval from the five presidentially-appointed FERC commissioners, the project must serve "public convenience and necessity." However, FERC evaluates this on the basis of whether or not there are purchase contracts for all or a portion of the pipeline capacity. In the case of the ACP, Atlantic has been able to "demonstrate need" by providing the purchase contracts they have with their subsidiaries. No assessment of growth in actual demand or the ability of existing pipelines to supply energy has been conducted. According to the Department of Energy and independent studies, both Virginia and North Carolina have access to capacity in existing pipelines to supply all that will be provided by the ACP and more. These options are far less costly and produce significantly less disruption to the land, waters, and communities of West Virginia, Virginia and North Carolina than will be created by the construction of the ACP.[10]

In the case of the ACP and other pipelines, FERC has superseded state utility commissions' authority to protect ratepayers. Because FERC does not consider the adverse effect on ratepayers, they are left unprotected. Still, state regulators can exercise their power to protect ratepayers by limiting the cost of energy alternatives and denying the industry the ability to pass on higher charges to consumers. Environmental organizations are currently in the midst of trying to get the Virginia State Corporation Commission to rule on whether a price so much higher than existing alternatives should be passed on to ratepayers. However, Dominion has successfully argued that "since no charges existed this year, no discussion of the ACP should be allowed."

Environmental destruction occurs during pipeline construction. Source: Bacon's Rebellion

What is Paving the Way for the ACP?

Individuals and communities do not normally destroy their own property and risk danger without some clear purpose and long-term advantage. Instead, most fight adamantly against intrusion and extraction if these activities only serve private gain. If this resistance falls on deaf ears within the political institutions designed to protect and serve citizen rights and interests, then the institutions are, in effect, broken. Some outside entity has taken control without popular consent. In short, extractive economies and democratic failures go hand-in-hand.

The Atlantic team—Dominion, Duke, and Southern—has demonstrated an unrivaled capacity to usurp political power from the public and wield it in its favor. From the industry-saturated and biased FERC that grants private companies the right to intrude upon private property, to state environmental protection agencies which fail to comprehensively evaluate the pipeline's risks on the environment and public health, to the politicians who ultimately control these agencies, political processes and institutions have proved to be subservient to Atlantic.

Eminent Domain and Easement Payments

Property owners intimately feel this failure of democracy. Where the pipeline's path would cross private property, Atlantic is required to inform landowners of the project and negotiate easement payments. If landowners accept the payment, they retain ownership of the affected land but are prohibited from using it in ways that would jeopardize the pipeline's structural integrity. Even when landowners do not consent to the pipeline crossing their land, they have no legal right to refuse development. If FERC approves the pipeline, they authorize Atlantic to use eminent domain, a declaration that the pipeline is a "public good" and thus is permitted to cross private property without the owner's consent.

In 2013, Virginia passed an amendment that stated eminent domain could not be implemented for private gain. However, the amendment included an exemption for utility companies, citing them as public service corporations.[1] Despite Atlantic's claiming that the ACP is purely for domestic supply, it has abstained from reassuring the public of this—something it could easily do by including a non-export clause in its FERC application. Several experts note that the ACP connects to Transco, the pipeline that transports gas from the Gulf Coast through the Mid-Atlantic to the Northeast. Transco could easily send gas to Dominion's recently constructed LNG at Cove Point, Maryland, just one of 11 other export facilities currently approved or under construction.[2] If Atlantic does export gas from the pipeline, there will be no repercussions. A web of dozens of proposed or permitted pipelines are available to expedite delivery of natural gas to foreign markets and provide holding companies with massive profits. For the first time since 1957, the U.S. is expected to become a net exporter of natural gas in 2017, raising serious questions about the seizure of American citizens' land for "public good."[3]

Utilities routinely bully landowners into prematurely signing easements before the landowners fully understand the extent of their rights. Regarding the ACP, property owners in Virginia initially received letters from Dominion asking for permission to survey their land. According to Nelson County residents, the letter requested permission for Dominion to survey, yet provided nowhere to indicate refusal of permission. Many residents who did not want Dominion surveying their property ignored the letter; they assumed not signing would equal denying consent. Unbeknownst to landowners, ignoring the letter was legally equivalent to granting permission. The only way to deny consent was to send Dominion a certified letter. As it turns out, a Nelson County Circuit Court ruling held that even if a landowner sent the letter, Dominion could still survey without permission.[4]

Once Dominion surveys the land and decides which properties sit on the pipeline's ideal path, an agent delivers easement payments to the specified landowners. It is the land agent's responsibility to convince the landowner to sign the easement. Agents often bully and pressure landowners into signing the easements without reading the fine print.

When a landowner refuses the easement agreement and eminent domain takes effect, a judge determines a final "just compensation," or fair market value of the property.[5] The payment is calculated from the exact square footage to be used.[6] While payments offer some benefits, the addition of a pipeline has historically led to 30% decreases in property values.[7] One study found that homes in Pennsylvania that relied on private groundwater within 9/10 of a mile of a fracking well lost approximately $33,000 in value after drilling occurred.[8] Facing the negative effects of fracking or pipeline construction, some owners fear they will not be able to sell their homes and relocate.[9] In a 2015 survey to determine the effect of a pipeline on property values, surveyors asked homebuyers if a pipeline on an otherwise desirable property would influence their decision to buy. Over 62% of buyers answered that they would reject a property that had a pipeline even if safety risks were minor.[10] Neighbors who live near the path also face property devaluation. However, since pipelines do not cross their property, they are not entitled to compensation.

Regulatory Failure

FERC has been heavily criticized for "rubberstamping" pipeline projects that exploit emi-

nent domain for private gain. They have also been criticized for the methodology they use to evaluate need. FERC itself even recognized the danger of their flawed evaluation process back in 2000:

"The amount of capacity under contract also is not a sufficient indicator by itself of the need for a project... by relying almost exclusively on contract standards to establish the market need for a new project, the current policy makes it difficult to articulate to landowners and community interests why their land must be used for a new pipeline project. All of these concerns raise difficult questions of establishing the public need for the project."[11]

In February 2017, former FERC Chairman Norman Bay echoed these concerns. He also suggested that FERC evaluate the collective environmental and climate impact of the pipeline buildout they were sanctioning. Bay resigned from FERC immediately after President Trump replaced him as Chairman with Cheryl LaFleur, a former utility executive who is often criticized for being "on the side of the generators and the transmission owners instead of consumers."[12]

Landowners threatened by the ACP are using these exact arguments to question why their land and communities are being disrupted for an unnecessary pipeline. Unfortunately, FERC commissioners are traditionally appointed due to their ex-

Property Rights Toolbox: Challenging Eminent Domain

Richard and Jill Averitt have lived on their property in Nelson County, Virginia for over 10 years. A few years ago, they received notice from Dominion that their land would host the ACP, and that their home was in the blast zone. Shortly thereafter, Richard received his easement offer from Dominion. As a response, he started the "Burn Your Easement Challenge," a spinoff of the viral Ice Bucket Challenge.[3] He encourages other landowners at risk of having their property destroyed by the ACP or the Mountain Valley Pipeline (MVP) to follow suit. Across the U.S., others are inventing creative ways to fight eminent domain. A Nebraska rancher is installing solar panels along a 1.5 mile strip of land on his property that is part of the proposed route of the Keystone pipeline,[4] nuns built a chapel along the proposed route of a pipeline in Pennsylvania,[5] and opponents of a Massachusetts pipeline constructed a replica of Henry David Thoreau's cabin along the proposed route.[6]

Bold Appalachia Landowner Alliance is a non-profit education and legal defense group established for landowners fighting proposed pipelines throughout the Appalachia Region: http://boldalliance.org/appalachia/

Clean Water for North Carolina's educational materials and trainings offer techniques and actions for landowners in North Carolina to fight easements and eminent domain: http://cwfnc.org/

Friends of Nelson County recommends fending off Dominion by hiring an eminent domain lawyer. Lawyers can aid landowners in getting the highest possible compensation payment for the use of their land: www.friendsofnelson.com

Source: Wikimedia Commons

perience in the oil and gas industry. This practice has created a pro-industry imbalance that ignores citizen concerns. **Over the past 30 years, FERC has approved every pipeline except one; in 2016 they denied the Pacific Connector Pipeline because of the failure of the builders to demonstrate need with purchase contracts.** In the last five years alone, FERC has approved 104 new pipelines.[13] President Trump's two Republican FERC appointees are particularly known for promoting pipelines, protecting the fossil fuel industry against competition from renewables, and fighting the Clean Power Plan and Paris Climate Agreement. FERC appointees must be congressionally approved, yet many senators remain under-informed about the role and impact of FERC. Concerned citizens and organizations have submitted thousands of comments to FERC's environmental impact statements. However, there is scant hope that it will deny the permit.

FERC is not the only regulatory agency with power over the permitting process. In addition to interstate approval from FERC, pipeline waterway crossings in Virginia and North Carolina must be approved by their respective Departments of Environmental Quality (DEQ) under Section 401 of the Clean Water Act. Section 401 requires states to issue State Water Quality Certifications to any project seeking federal approval that may result in discharges to a body of water. Initially, the Virginia DEQ announced it would conduct reviews of the 401 permits for each stream and wetland crossing but later backtracked, announcing it would defer to a Nationwide Permit 12 issued by the Army Corps of Engineers. This Nationwide Permit would grant sweeping approval to hundreds of water crossings without any site-specific reviews. Some groups have claimed this reversal is an abdication of DEQ's legal requirements to meet Virginia's Water Quality Standards.[14]

This reversal is unsurprising considering the influence Dominion has leveraged on the DEQ. For example, the "DEQ's longstanding director, David

Lobbying Toolbox: Re-envisioning FERC

In August 2017, a federal appeals court in the District of Columbia ruled that in the case of the Southeast Market Pipelines Project, the Federal Energy Regulatory Commission (FERC) "inadequately considered climate change and greenhouse gases in approving the project."[7] This ruling sets a precedent for the ACP, and would provide more grounds for environmental organizations to sue if the pipeline is approved. In the coming months and years, it will be important to educate lawmakers and the public to restructure FERC to become an unbiased reviewer that considers the cumulative impacts (climate, environmental, health) of all of its projects.

Beyond Extreme Energy has been running a campaign for more than five months to call attention to FERC's abuses of power. The campaign has included call-ins, letter-writing drives, Twitter storms, lobby days, and civil resistance focused on educating senators and pressuring them to oppose the nominations: https://beyondextremeenergy.org

Delaware Riverkeeper Network protects communities that rely on the Delaware River. In response to several new pipeline proposals that would affect the river, the Network and 180+ organizations in 35 states filed a lawsuit in 2016 which constitutionally challenged FERC and called for a congressional review: http://www.delawareriverkeeper.org/

Oil Change International is a research, communication, and advocacy organization focused on exposing the true costs of fossil fuels and facilitating the transition towards clean energy. They frequently make statements on FERC and keep tabs on the agency: www.priceofoil.org

K. Paylor, received gifts from Dominion including a trip to the 2013 PGA Masters Tournament in Augusta, Georgia, and a $1,200 dinner for Paylor and nine of his associates. In 2015, Dominion's philanthropic foundation donated $45,000 to the Alliance for the Chesapeake Bay, an organization whose Virginia chapter is headed by Nissa Dean, who sits on the Virginia DEQ's seven-member Water Control Board, which must sign off on the ACP's water permit."[15] Furthermore, the DEQ outsourced other environmental reviews of the ACP to EEE consulting, a firm which Dominion has previously hired for non-related projects.[16]

Aside from conducting the Nationwide Permit 12 as requested by Virginia's DEQ, the U.S. Army Corps of Engineers is also responsible for ensuring compliance with the Rivers and Harbors Act and Clean Water Act section 404(b)(1). For this section, the Corps "must consider whether the proposed projects represent the least environmentally damaging practicable alternative pursuant to the CWA section 404(b)(1) guidelines. The term *practicable* means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall purpose of ACP."[17]

Political Support and Lobbies

Atlantic's path towards construction is further eased by its tremendous political influence in Virginia and North Carolina. In the last ten years, "Dominion has given $10,246,077 to Virginian

Source: Chesapeake Climate Action Network

politicians through PACs and trade groups," including "$75,000 to Virginia Governor Terry McAuliffe, who appoints key figures involved in the approval of the ACP."[18] In Virginia's 2017 gubernatorial primaries, the ACP was a main point of contention between candidates. As of April 19, 2017, Dominion has given a total of $155,108 to the three candidates either actively supporting the pipeline or "remaining neutral." One candidate, Tom Perriello, joined a growing movement among Virginia legislators to reject campaign contributions from Dominion.[19] Seventy-four non-incumbent House of Delegates candidates and two non-incumbent Lieutenant Governor candidates in Virginia have pledged to not accept campaign contributions from Dominion.[20]

In April 2017, 16 legislators across party lines from Virginia and North Carolina sent a letter to FERC in support of the ACP.[21] While designed as an attempt to demonstrate bipartisan support, it more effectively conveyed the deep financial influence of Dominion and Duke over state politics. Combined, the two utilities have given a total of $677,689 in campaign contributions to the 16 legislators.[22] Duke Energy was ranked as the most powerful political influence in North Carolina by a Facing South study.[23] According to InfluenceMap, a UK-based organization which quantifies political and social opposition to climate change mitigation and adaptation policy, Southern Company ranks the worst among all utilities worldwide, with Duke second, and Dominion fourth.[24] In addition to their political spending, Dominion is spending an undisclosed amount on a massive advertisement campaign targeting Virginia TV audiences.[25]

The ACP and the Environment

Pipelines have become essential for transporting the water, sewage, oil, and natural gas that our industrialized society produces and consumes. They can be effective tools for transporting

Source: Michael M. Barrick

these materials across the country or within a city block. As with most infrastructure, they can be highly technical and labor intensive projects which provide the well-paying jobs that support families and healthy communities. For most of our nation's history, pipelines were viewed as real and symbolic steps towards modernity: a future that would provide greater comfort, well-being, and safety for all. In recent decades, however, attention has been drawn to the destructive consequences of pipeline infrastructure. Construction and inevitable leaks devastate the ecosystems where people play, farm, hunt, fish, and draw water. Communities oppressed by racial and economic inequity have spoken up and taken action to demonstrate how natural gas infrastructure disproportionately hurts their communities while benefiting others.

Effects on Forests and Mountains

The ACP would be constructed with steel piping ranging from 20-42 inches in diameter and buried three feet underground, making it among the largest natural gas pipelines in the United States. Construction would include flattening land and clearing all tree growth and vegetation along a 75-125 foot wide path, the width of a four-lane highway. Once completed, this right-of-way path could shrink to 50-75 feet but would remain free of trees, new structures, and buildings for the pipeline's potentially century-long lifetime. While portions of the ACP would follow existing right-of-ways, much of it would cut through private and public land, including the George Washington National Forest, Blue Ridge Parkway, Great Eastern Trail, and the Appalachian Trail.[1]

Approximately 38 miles of mountains in West Virginia and Virginia would require 10 feet or more of their ridges to be removed using an excavating and blasting process similar to mountaintop removal, an ecologically disastrous process pioneered by large-scale coal mining in the 1970s.[2] This process would generate millions of cubic

yards of unusable rock, known as overburden, which would need to be transported away from the site. If overburden is merely dumped to the sides of the pipeline pathway, it can bury and pollute streams and increase risks of landslides, all of which endanger fragile habitats.

Building a pipeline through this precarious terrain also heightens the risk of deadly landslides when extreme weather events occur. On August 19th, 1969, Hurricane Camille, the most deadly hurricane in the Mid-Atlantic caused a flash flood, mudslides, and debris flows in Nelson County, Virginia. Roads and bridges disappeared, homes were destroyed, and more than 150 people died. These landslides created permanent scars in the landscape of Nelson County. According to geological analyses, similar events are likely to happen again in this region, and climate change exacerbates the risks.[3]

Land and Water

The ACP will cross some of Virginia and North Carolina's most important bodies of water, including the James River and South River, which feed into the Shenandoah.[4] In North Carolina, the pipeline will cross the Neuse and Tar Rivers,

Policy Toolbox: Water Quality Permits

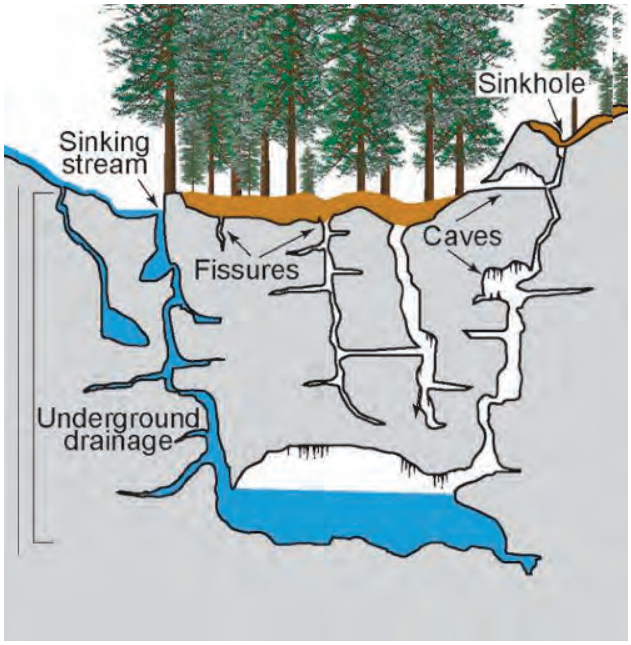
Allegheny-Blue Ridge Alliance (ABRA) is a coalition of 50+ organizations in Virginia and West Virginia. ABRA recognizes the ACP's "potential hazard to regional water supplies but without benefits to the communities and citizens it would affect." They encourage concerned citizens to write to FERC and contact Congress. Members include:

- **Dominion Pipeline Monitoring Coalition** ensures that the Virginia Governor, Secretary of Natural Resources, and DEQ fulfill the state's legal duties and commitments: https://pipelineupdate.org
- **Shenandoah Riverkeeper**, part of the Potomac Riverkeeper Network, created a list of talking points to help Virginians band together and reject the ACP: http://www.potomacriverkeepernetwork.org/
- **West Virginia Rivers** created a *Citizens Guide to Fracking Permits* with suggested comments to submit to challenge the ACP's 401 permit: http://wvrivers.org/

Frack Free NC is a coalition of 30+ grassroots organizations opposed to fracking and pipelines, which bring "harm to our waters, land, air, communities and public health." Among others, members include:

- **Appalachian Voices** works in North Carolina, Virginia and West Virginia to educate residents about ways to submit comments, speak at hearings, and influence change: http://appvoices.org/
- **Clean Water for North Carolina** encourages everyone, not just those close to the proposed route, to submit comments North Carolina Department of Environmental Quality: http://www.cwfnc.org/

Karst formations



Source: Emporia State University

along with rivers that carry endangered species such as the Carolina Madtom catfish, mussels, and numerous plants.[5] In eastern North Carolina, the ACP will be located above the Northern Coastal Plain Aquifer, which supplies well water to disproportionately rural low-income communities and communities of color along its path and is "vulnerable to contamination."[5]

In addition, construction of the ACP will clear cut around 600 acres of wetlands, more than North Carolina permits for an entire year.[5] According to Clean Water for North Carolina, "wetlands provide natural water filtration and protect and replenish surface waters. It would require more money and resources to recreate the same benefit from local water treatment facilities to accomplish what the existing wetlands are doing for free."[5] Though the ACP will cause long-term disruption to waterways and wetlands, these effects have been dismissed as "temporary" in the environmental review, ignoring the downstream effects and destruction of riparian buffers that prevent runoff from polluting streams.[5]

The ACP will also traverse karst formations, geologic features that form from dissolved limestone bedrock and are riddled with holes, caverns, caves, and cracks.[6] According to Kirk Bowers, an organizer with the Virginia Sierra Club, karst is highly susceptible to sinkholes, and the pipeline could collapse with the terrain. Coupled with the increasing threat of heavy rain events, the risk of sinkhole formation makes the ACP an even bigger hazard.

Nancy Sorrells of Augusta County compares karst to "swiss cheese" and worries about the combination of the pipeline, karst, and the county's water supply. During her three years on the Augusta County Service Authority, she became well acquainted with the public water system. Subsurface caverns in Augusta house the headwaters of the James and Shenandoah Rivers. Injecting a foreign object of this scale into the land will likely alter the way in which the water travels and contaminate it with sediment. This would harm the drinking water not only for Augusta County and other more rural regions, but also for millions of consumers in Richmond and Washington, DC.[7]

Pipeline Explosions

The risk of disaster from oil and gas pipelines has proven far greater than indicated by the industry: since 1986 there have been roughly 9,000 "significant"[K] incidents, resulting in 500+ deaths, 2,500+ injuries, and over $8.5 billion in financial

[K] Significant incidents are those including any of the following conditions: fatality or injury requiring in-patient hospitalization; $50,000 or more in total costs (measured in 1984 dollars); highly volatile liquid releases of 5 barrels or more or other liquid releases of 50 barrels or more; and liquid releases resulting in an unintentional fire or explosion.

Natural gas pipeline explosion in West Virginia. Source: AP Photo/West Virginia State Police

damages.[8] While Atlantic is required to conduct routine safety checks, Dominion itself admits that it is impossible to guarantee total safety; it would be difficult to control a leakage event because shutoff valves are placed sparsely along the pipeline.[9] Uncontrolled leaks would cause gas to drain from valves and release a large amount of methane into the atmosphere.[10] According to Clean Water for North Carolina, between "2010 and 2015, a total of 12.8 billion cubic feet of methane leaked from the natural gas lines nationwide, totaling 700 incidents where 70 people were killed and nearly 300 injured."[11] The most immediate risk for pipeline neighbors in West Virginia, Virginia, and North Carolina would be explosions. At 2000 pounds-per-square-inch, the predicted pressure of the pipeline, the blast zone would extend to 943 feet on either side of the pipeline radius, and the evacuation zone to a 3071-foot radius.[11] With wind speed and other factors, this distance could be even larger. Currently, nearly 9,000 households lie within the evacuation zone—along with dozens of schools, nursing homes, and churches—totaling over 15,000 people who would be put in serious danger each day. Moreover, in rural parts of North Carolina, the pipeline is projected to be half an inch thinner, increasing the risk of explosions.[12]

Environmental Justice and Health

In the U.S., communities of color and low-income communities are more likely to live next to sources of pollution and face increased environmental health risks.[13] The ACP reinforces this unjust trend, especially in North Carolina, where 27 out of 42 of the census tracts within one mile of the pipeline route have higher poverty levels than the state average, and 30 out of 42 have higher minority levels.[14] The North Carolina Commission of Indian Affairs submitted comments to the DEIS, stating "American Indians constitute only 3.8% of the total population of the counties along the proposed pipeline route and 1.2% of the state population, yet they make up 13% of North Carolinians living in census blocks along the proposed route."[15] The *Fayetteville Observer* reported that at an August 2017 listening session with the North Carolina Department of Environmental Quality, Ryan E. Emanuel, a professor at North Carolina State University and member of the Lumbee tribe, described the climate justice and economic implications of the ACP. By 2100, "climate change is expected to cost this country about 1% of its gross domestic product. That's $4 billion a year for North Carolina. But Robeson, like many other poorer, more rural areas, would be hit harder, Emanuel said—a possible loss of 10 to 15 percent a year to the Robeson economy."[16]

The pipeline would affect burial grounds and other land that is sacred to the Lumbees, and it was not until mid-August that state officials met with the tribe to hear their views.[16] Earlier, the Lumbee and Coharie tribes submitted comments stating that neither FERC, Atlantic, or Dominion had "adequately engaged" the tribes throughout the pre-filing and DEIS process.[17] The engagement process completely excluded a "non-recognized entity (Tuscarora Nation) that

Friends of Buckingham and members of Concern for a New Generation rally outside of Union Hill Baptist Church. Source: Jonathan Sokolow

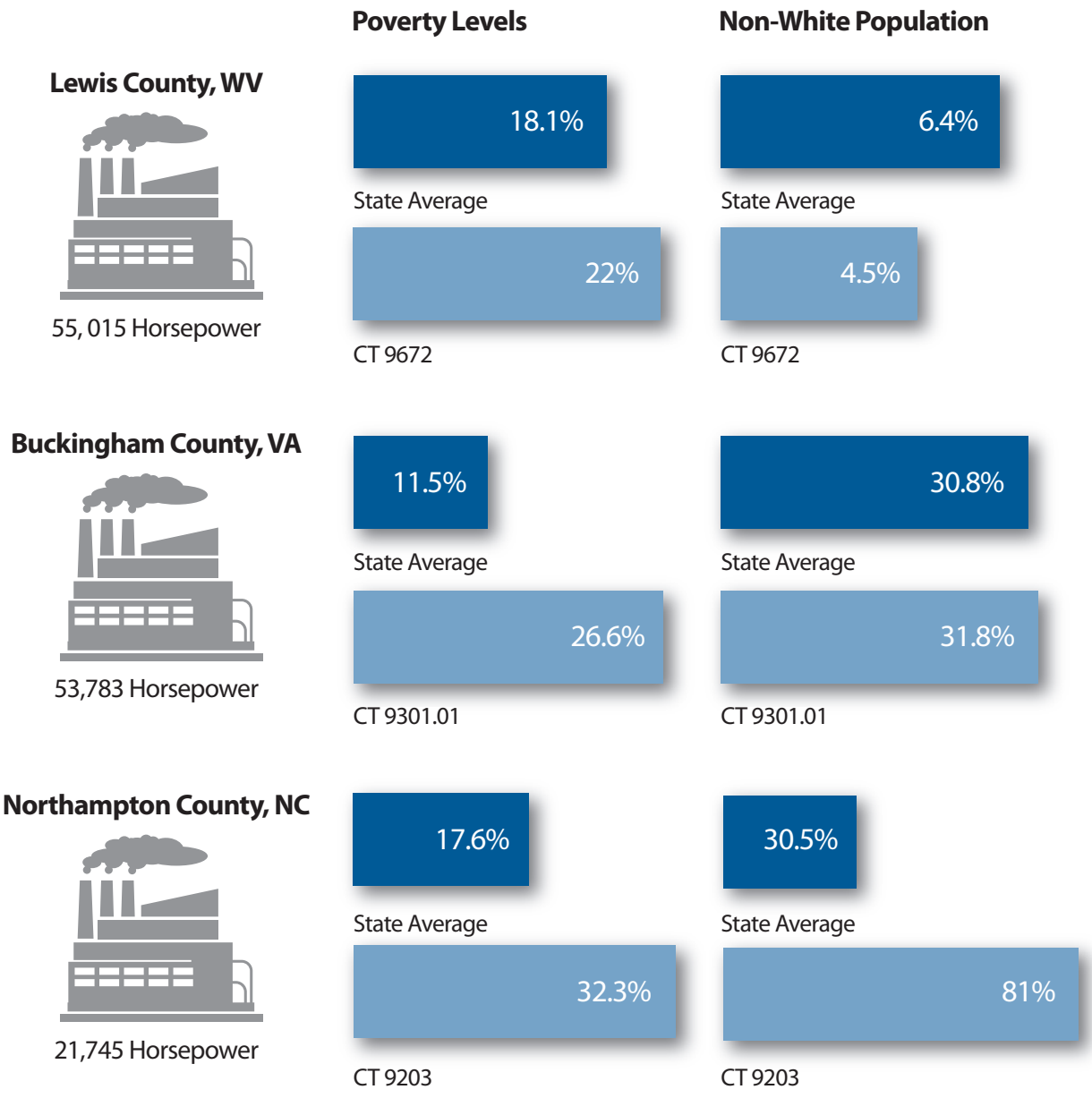
has experienced discrimination even relative to other tribal groups."[5]

The pipeline will also require the construction of new compressor stations in three locales: Lewis County, West Virginia, Buckingham County, Virginia, and Northampton County, North Carolina. Four existing compressor stations will be modified to increase their horsepower. Normally, compressor stations are constructed every 40-100 miles along pipelines to pump and combust natural gas. The ACP's three new compressor stations will provide up to 55,015 horsepower. According to Physicians for Social Responsibility, compressors "emit air pollutants such as benzene, toluene, formaldehyde, nitrogen oxides, sulfur dioxides and particulate matter." [18] Recent research notes consistent respiratory, neurological, and cardiovascular symptoms in residents living near compressor stations, and neighbors "have complained of high levels of noise, extensive lighting, disrupted sleep, and offensive odors." [19] According to Friends of Buckingham, a citizen organization based in Buckingham County, Virginia, "depending on topography and wind flow direction, the area exposed can be up to 15 miles."[20] Noise pollution is also a health risk to residents during construction time; a study by the University of Pittsburgh shows that prolonged and loud operations cause health concerns such as stress, which can exacerbate existing health issues. Finally, compressor stations present risks of deadly explosions. In recent years, dozens of explosions have killed and injured workers and several have forced residents to evacuate.[21]

Of the three census tracts that will host a new compressor station, two have higher minority levels than the state average, and all three have higher poverty levels than the state average. Yet

Environmental Justice & Compressor Stations

How do the census tracts (CT) where the compressor stations are sited compare to the state average?



Created by the Rachel Carson Council

even this characterization understates the severity of the environmental injustice. Using census tract data alone to evaluate disproportionate effects on environmental justice populations distorts reality. Census tracts can be miles wide and thus fail to represent the demographic of people living directly next to compressor stations. For example, the 53,783 horsepower compressor station in Buckingham County, Virginia, is located in the small town of Union Hill which sits inside census tract 9301.01. Census tract data show a 31.8% minority representation in the population. **Yet a careful survey of the houses on the three roads adjacent to the compressor station revealed that the population directly impacted by the compressor station has an 81.6% minority representation.**[22] FERC's analysis of environmental justice does not consider the 31.8% representation to be an "EJ population," but 81.6% would constitute such a population under FERC criteria.

When people accused Atlantic of targeting particular demographics in their route planning, Atlantic denied this, saying, "Socioeconomics and demographics have nothing to do with infrastructure."[23] Ironically, this repudiation exposes the attitude which has consistently harmed disadvantaged communities. Throughout the United States' history of infrastructure development, socioeconomics and demographics have had *everything* to do with siting decisions; such projects have historically impacted low-income communities and communities of color disproportionately. A 1983 report commissioned by the Government Accountability Office found that "three of the four landfills it examined were located in some of the region's poorest or predominately black communities."[24] A United Church of Christ report released in 1987 built on the GAO report and found that hazardous waste facility sitings nationally were more likely to be located in communities of color.[24] Low-income areas and communities of color are viewed as having fewer political and legal resources with which to oppose exploitation compared to wealthier and whiter communities. Therefore, they are perceived as less likely to resist industrial sitings.[13]

Despite receiving many public comments that describe the ACP's environmental justice implications, FERC's DEIS states, "there is no evidence that the ACP would cause a disproportionate share of high and adverse environmental or socioeconomic effects on any racial, ethnic, or socioeconomic group."[25] Atlantic's claims of impartiality on this topic compound historical injustice. Instead of avoiding responsibility, infrastructure planning should be guided by the precautionary principle: it should intentionally consider historically oppressed communities and avoid causing additional harm.

Civil Rights Toolbox: Driving Racial and Social Justice

Union Hill is a majority elderly, African American community of freedmen descendants in the geographical center of Virginia. Atlantic chose to site the ACP's only compressor station in Union Hill after vastly underestimating its population density. The Draft Environmental Impact Statement counted 25 people per square mile whereas Friends of Buckingham County, an environmental advocacy organization, tallied 166 people per square mile after surveying 2/3 of the homes in Union Hill. Friends of Buckingham also found that over 1/3 of the residents descend from freedmen and women.[8] Union Hill residents fear that the noise and emissions from the compressor station will decrease property values, threaten their health, and further erase the community's cultural history.[9]

Black Workers for Justice formed in 1981 out of a struggle led by Black women workers at a Kmart store in Rocky Mount, North Carolina against race and gender discrimination. This fall, members plan to bring a resolution against the ACP to the Public Sector Workers Union Summit: http://blackworkersforjustice.com/.

Concern for a New Generation and **Friends of Buckingham County** work with county leaders to foster a sustainable, healthy environment and celebrate Buckingham's diverse cultural heritage. They oppose the placement of a compressor station in Buckingham county: www.friendsofbuckinghamva.org.

Movement for Black Lives advocates for a strict enforcement of environmental protection standards and the end to transporting and placement of toxics in poor and black communities in their "A Right to Restored Land, Clean Air, Clean Water and Housing" policy brief: https://policy.m4bl.org/wp-content/uploads/2016/07/Restored-Land-Air-Water-Policy-Brief.pdf

NC Warn fights the climate crisis and promote the transition to clean, renewable, affordable energy for all, "including those often excluded...because of racism, sexism, classism, and other forms of oppression." The organization recently released a report, *NC Clean Path 2025*, in tandem with Powers Engineering, which charts North Carolina's path away from fossil fuels. They oppose the ACP and work to prevent fracking and pipeline buildouts: www.ncwarn.org

Physicians for Social Responsibility teamed up with Friends of Buckingham to identify effects of fracking and natural gas on EJ communities. A Virginia of PSR chapter is coming soon: www.psr.org

TAKE ACTION TO OPPOSE NATURAL GAS

Blast Zone covers many intersecting topics: economic concentration, the influence of money on politics, climate change and natural gas, the feasibility of renewable energy, the economic sense of energy efficiency, the environmental health and safety dangers of fracking and pipelines, and the environmental justice hazards of natural gas infrastructure. Moving forward, there are many ways to link up with local, state, and national organizations leading the fight for a just transition to a clean energy future. The Rachel Carson Council believes that the coordinated power of campuses, community organizing, and national advocacy can affect real political and social change, even in an overwhelming circumstance like the proposed ACP. Contact the RCC at office@rachelcarsoncouncil.org, on Twitter @RachelCarsonDC or on Facebook at www.facebook.com/RachelCarsonCouncil to discuss ways to take action today.

	Immediate Action	Long-Range Action
Local	Attend hearings and pressure municipalities to enforce strict air quality standards for compressor stations Divest finances from pipeline-financing banks and reinvest in local/state credit unions	Support city-level renewable energy and energy efficiency actions plans. Join an environmental justice committee that advocates for low-income communities and communities of color to be prioritized in these plans
State	Press Governors and Departments of Environmental Quality to reject permits based on the Clean Water Action Sections 401/404	Support statewide versions of the Our Power Plan, following the example of Kentucky and North Carolina
Federal	Monitor FERC decisions that involve oil/gas interests and stop dirty energy bills from passing the House and Senate	Educate lawmakers and the public on the need to restructure FERC to become an unbiased reviewer that considers cumulative impacts. Meet with legislators to push for renewables and end fossil fuel subsidies
All levels	Pressure sitting legislators not to accept donations from the fossil fuel industry Lobby officials to oppose pipelines and natural gas infrastructure and support renewable energy and energy efficiency	Elect officials who stand up to the fossil fuel industry Support environmental justice organizations working at all levels for systemic change

Direct Action & Advocacy Toolbox

Alliance to Protect Our People and Places We Live is a North Carolina alliance that organized a walk along the proposed pipeline in March 2017. The purpose of the walk was to connect to the water, homes and families, farms, schools, and churches that would be affected by the pipeline route: http://www.apppl.org/

The **Chesapeake Climate Action Network** opposes the construction of any new pipelines in Virginia and supports the creation of a new economy based on solar and wind energy, more permanent jobs, a more stable climate, and clean energy system that does not jeopardize our lives and the environment. Join their movement to resist the ACP and the MVP: https://www.nonewpipelines.org/#sign-the-pledge

The **Community Environmental Legal Defense Fund** assists communities in developing laws to protect workers, environmental and democratic rights, and the rights of nature. CELDF partners with civil society, indigenous peoples, communities, and governments to advance Rights of Nature laws and policies. This includes providing legislative and policy drafting, legal research, public engagement and education, and trainings: https://celdf.org/

Powershift Network, formerly known as Energy Action Coalition, organizes Power Shift convergences and builds relationships in the youth climate movement. Their members work on a range of issues, from fighting toxic tar sands to building local renewable energy projects to supporting young people of color to run for office: https://powershift.org

Virginia Student Environmental Coalition formed out of a Powershift convergence and is devoted to unifying students across Virginia to create a network for advocacy, education, and action around environmental justice issues. In 2015, VSEC organized a group of 30 college students to cross Virginia by bike and "spark dialogue and voice concerns about the proposed ACP." The inter-campus crew included students from James Madison University, University of Virginia, Virginia Commonwealth University, University of Mary Washington, Christopher Newport University, and the College of William and Mary: http://www.vsecoalition.org/

Walking the Line Into The Heart of Virginia: This coalition of Cville Rising, ARTivism and others started as a two-week walk along the proposed path of the ACP. Since then, the group has been pressuring the Virginia Department of Environmental Quality to deny 401 water quality permits to Atlantic, urging political candidates for state office to make the right decision about pipelines, and demand they cease accepting donations from Dominion: https://www.facebook.com/cvillerising/

GLOSSARY

Climate Justice is a frame of climate protection that centers economic and social justice, and cannot be achieved without gender and racial justice.

Environmental Justice is a movement and framework that "seeks to reduce harm for everyone as opposed to distributing harms equally throughout society."[1] The 17 Principles of Environmental Justice were written in 1991 and are rooted in "the need for a healthy and safe work environment, and the importance of economic and political alternatives to develop environmentally safe production methods and livelihoods."[1] The movement traces its roots to the resistance to an illegal siting of a landfill in Warren County, North Carolina.

Energy Democracy is "a political, economic, social and cultural concept that merges the technological energy transition" with a strengthening of the democratic process and public participation through innovation, planning, and decision-making.[2] True energy democracies build healthier environments, reduce energy costs for all, and curb climate change.

Energy Justice requires ending disproportionate harm around energy extraction and designing "solutions and fair distribution of benefits, such as green jobs and clean air."[3] More specifically, it requires "*distributive justice* with equitable allocation of risks and opportunities; *procedural justice* with access to decision-making power; and *recognition justice* involving respect for all peoples and worldviews.[3]

Extractive Economies operate "through the depletion and degradation of natural resources, the exploitation of human labor and the accumulation of wealth by interests outside the community."[4] Work in the extractive economy is divorced from values, and exploiting humans in this way enables ecological erosion.

Just Transition is a holistic approach encompassing both the need to end the extractive economy and a vision for healthy, thriving, and connected local economies in its place. The term "just transition" was originally coined after labor unions and frontline communities joined forces for peacebuilding in the 1990s, and a fundamental component is the belief that neither communities nor toxic-related workers should pay in the form of suffering health and economic effects.[5]

Movement for Black Lives Policy Platform is a vision created in August 2016 focused on domestic policies that will improve racial, gender, class justice and more. Relating to the environment, the platform calls for an end to the "ravages of global capitalism and anti-black racism, human-made climate change, war, and exploitation." It also "recognizes and honors the rights and struggle" of Indigenous people for land and self-determination.[6]

Regenerative Economies are characterized by ecological restoration and labor that furthers the preservation and promotion of biocultural diversity. In this framework, diversity must be the primary purpose of an economy that addresses the ecological crisis.

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Rachel Carson Council
8600 Irvington Avenue
Bethesda, MD 20817
www.rachelcarsoncouncil.org
office@rachelcarsoncouncil.org
(301) 214-2400
Facebook.com/RachelCarsonCouncil
Instagram and Twitter: @RachelCarsonDC