

Pipelines & Power-Lines: Building the Energy Transport Future

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ABSTRACT: The United States is in the middle of three profound energy revolutions—with booming production of renewable power, natural gas, and oil. The country is replacing coal power with renewable and natural gas power, reducing pollution while saving consumers money. And it has dramatically cut its oil imports while becoming, for the first time in half a century, an important oil exporter. The U.S. is on the cusp of an energy transformation that will provide immense economic and environmental benefits.

This new energy economy will require massive investment in energy transport—especially power lines to bring wind and solar power to market and gas pipelines to back up these renewable sources. But increased interest from overlapping jurisdictions in energy transport approvals has resulted in delays and uncertainty that make private companies wary of long-term capital investments in new energy facilities. The drive for more careful and holistic environmental assessments of new energy facilities has also repeatedly delayed new infrastructure. And land-owners and property rights groups are increasingly asking the courts to curtail the use of eminent domain by pipeline and power-line companies.

This Article develops a unified scholarly and policy approach to these high-profile threats to energy transport investment. Although most often discussed in the context of controversial oil pipelines, these threats are actually a far greater danger to investment in cleaner power sources like wind, gas, and solar. At this pivotal moment, this Article describes how reforming energy infrastructure reviews can lower the cost of investment in a new energy economy while accommodating increased public interest in pipelines and power-lines. It proposes legislation to ensure a comprehensive, thorough, and unified approval process for energy transport projects.

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INTRODUCTION:

The United States is in the middle of three profound energy revolutions. First, the falling cost of wind and solar power now make it among the cheapest energy sources in many parts of the country. Second, directional drilling and hydraulic fracturing—or “fracking”—has unlocked new reserves of low-cost, clean-burning natural gas from shale formations, and this gas is now powering new gas power plants that can easily back-up intermittent sources like wind and solar power. Third, fracking has also dramatically increased production of oil, making the U.S. the world’s biggest petroleum producer and, for the first time in decades, an important oil exporter.

Each of these three revolutions is creating a pressing need for long-distance energy transport, and every new project costs billions of dollars. Wind power is cheapest in the prairie states and needs long-distance power lines to carry it to the urban centers that need power in the Southeast and West Coast. Natural gas is expensive to transport because it is a gas: it must either be sent by air-tight steel pipelines buried in the ground or be sent to massive facilities that can cool it until it becomes a liquid and loaded onto specialized tankers for shipment by sea. Oil is the easiest to transport of these three commodities because it is a liquid, so it can be moved by pipeline, barge, or rail—but even an interstate oil pipeline costs billions of dollars.

Energy transport policy is undergoing similar upheavals. Increased public interest in climate, infrastructure, and energy issues has put increasing pressure on the established system for approving energy transport projects. The federal government has, at times, pushed for a larger role in considering proposals for oil pipelines and power transmission, which traditionally have been assessed by the states. Some states have pushed for a role in regulating interstate natural gas pipelines, which are traditionally under federal regulation. Native American groups have pushed for a larger role in approving infrastructure that could impact their historical homelands—which go beyond reservation lands to cover nearly all of the United States. Land owners have asked state and federal courts to limit the use of eminent domain for pipelines and power lines. And climate activists increasingly demand that governments and courts impose expanded environmental reviews and new substantive standards on energy transport projects to ensure they do not endanger the globe.

These simultaneous energy market and energy policy revolutions are on a collision course: just as U.S. energy markets are demanding massive new investments in power and fuel transport, changing U.S. energy policy is making investors wary. Multi-billion dollar investments in power lines, pipelines, and liquefied natural gas facilities will only pay off over decades. Even the work necessary to submit an application for energy transport—entering transport contracts, securing easements, applying for government approvals, and purchasing equipment and materials—often costs billions of dollars.¹ The larger the risk that a project will not be approved, or that policies will artificially lower its profits in coming years, the more money investors must be paid to compensate for this uncertainty. Consumers ultimately pay these higher costs. They pay a larger risk premium to investors willing to build energy transport. Or, if investors shy away from these investments, consumers forgo the benefits of cheaper oil, gas, and renewable power that they would otherwise receive.

This article seeks to avoid a collision of these energy market and energy policy upheavals, advocating principles that can accommodate increased interest in energy policy while, at the same time, providing increased certainty to energy transport investors. Uniquely, it addresses

¹ TransCanada Corporation v. U.S., Notice of Intent to Submit a Claim to Arbitration Under Chapter 11 of the North America Free Trade Agreement, <http://www.energylawprof.com/wp-content/uploads/2016/01/TransCanada-Notice-of-Intent-January-6-2016.pdf> (Jan. 6, 2016) at *1-2, 27 (requesting \$15 billion in damages and noting that the company had already spend billions of dollars because “before construction can begin, it is necessary, for example, to secure thousands of land easements, purchase equipment and hundreds of miles of pipe, and enter into long-term contracts with shippers to transport their oil” and that transport companies cannot “wait for the issuance of a permit to begin this long lead time work because, under State Department rules, if construction of a pipeline does not begin within five years after a permit is issued, the permit expires”); Licia Corbella, *Death of Petronas LNG [Liquefied Natural Gas] project a wake-up call for Canada*, CALGARY HERALD (July 27, 2017) <http://calgaryherald.com/business/energy/editorial-death-of-petronas-lng-project-a-wake-up-call-for-canada> (cancelled liquefied natural gas project spent \$400 million moving through “federal and provincial regulatory processes” and billions securing natural gas reserves). See James W. Coleman, *Energy Market and Policy Revolutions: Regulatory Process and the Cost of Capital*, in Energy Law & Economics (Klaus Mathis ed., 2018).

energy transport as a whole—it shows how power-lines, pipelines, and other energy transport methods are similarly impacted by cross-cutting questions of federalism, eminent domain, and environmental assessment. In braiding together strands in the existing energy law literature, it demonstrates the necessity of a broader perspective. For example, climate campaigners often take a “kitchen sink” approach to pipeline litigation: arguing for any procedural or substantive rule that can stop new fossil fuel infrastructure. This article’s comprehensive approach shows how new procedures developed in these pipeline battles will also slow the new power transmission that is necessary to transition the United States to a low carbon economy. By revealing the internal architecture of energy transport law, this article serves as a blueprint for all parties interested in changing the U.S. energy system, demonstrating which supporting policies may be safely removed, and which cannot be altered without damage to the rest of the system.

Part I explains how booming production of U.S. renewable power, natural gas, and oil is creating a pressing need for more power lines and pipelines. Part II documents how procedures for approving energy transport structure are changing as a result of pressure from the federal government, states, groups, and land owners. It shows how these procedures are common to pipelines, power lines, and other methods of energy transport—showing how pressures on one type of transport inevitably affect other modes of energy transport. It concludes by showing why climate campaigners would be better served by pursuing substantive regulations that would surgically target fossil fuels rather than imposing new energy transport procedures that will have collateral impacts on renewable power transmission. In doing so, it explores the complex distinctions between substantive, cross-cutting, and procedural energy transport laws, showing which laws should be targeted by those who want to transform the U.S. energy system.

Part III explains how these changing procedures are increasing uncertainty for energy transport investors, raising prices for energy consumers, and endangering U.S. efforts to create a new energy economy. This Part also explains how this uncertainty is particularly deadly to efforts to lower U.S. greenhouse gas emissions because high-carbon sources like oil may be able to get by using makeshift transport methods such as rail, road, and water transport, whereas renewable power absolutely must have long-term transport infrastructure. A central irony of energy systems is that our dirtiest sources, coal and oil, are easiest to

transport, and our cleanest sources, gas and renewables, are most dependent on expensive long-term infrastructure. Thus, a myopic focus on oil pipelines can be dangerous: the oil industry will be fine whether or not new energy transport is built but the renewable industry is almost entirely dependent on this infrastructure.

With the growing problem defined, Part IV advocates four principles that can help accommodate increased interest in energy transport while, at the same time, increasing certainty for energy investors. It labels the first principle “wide participation, one decision-maker,” recommending that states go further to ensure that federal interests are represented in state approval procedures and vice versa, but counseling against a dual-approval process that would increase uncertainty by allowing re-litigation of issues already decided in one forum. The second principle is that energy transport approval processes should not change mid-stream after an application is made. The third principle is that applications for energy transport facilities should be subject to timelines that could motivate reasonably prompt actions from decision-makers. The fourth principle is that the federal government should use its expertise to perform more general policy studies of U.S. energy markets, producing studies on the environmental impacts of different fuels and the compatibility of increased infrastructure with energy and climate goals; these studies could inform individual permit decisions from state and federal decision-makers. Part V concludes the article.

I. THREE ENERGY MARKET REVOLUTIONS: RENEWABLE POWER, NATURAL GAS, AND OIL

The United States has always been an energy superpower: through the first half of the twentieth century it was responsible for over half of the world’s oil production, powering the Allies through two

World Wars.² Although the U.S. became a net energy importer in 1953,³ it remained among the world's top three oil producers along with the U.S.S.R. and Saudi Arabia.⁴ But in recent years, U.S. innovation has moved it to the forefront of energy production across multiple categories: it is now the world's largest producer of wind power,⁵ petroleum (oil and other liquids),⁶ and natural gas.⁷ Cheaper renewable power and

² The Oil Age: World Oil Production 1859-2050, <http://www.oil-poster.org/posterlarge.html>. See also DANIEL YERGIN, *THE PRIZE: THE EPIC QUEST FOR OIL, MONEY, AND POWER* (1990) (explaining the origins of the oil and gas boom in early 20th Century Texas and the development of the United States as the world's first energy superpower).

³ U.S. ENERGY INFO. ADMIN., *ANNUAL ENERGY OUTLOOK 2017* (2017) 18 [https://www.eia.gov/outlooks/aeo/pdf/0383\(2017\).pdf](https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf) (“The United States has been a net energy importer since 1953, but declining energy imports and growing energy exports make the United States a net energy exporter by 2026 in the Reference case projection.”).

⁴ U.S. ENERGY INFO. ADMIN., *ANNUAL ENERGY REVIEW 2007* (2007) xxxiv http://people.virginia.edu/~gdc4k/phys111/fall09/important_documents/aer.pdf (“From 1974 through 1991, the former U.S.S.R. was the world's leading crude oil producer. After 1991, Saudi Arabia was the top producer until 2006 when Russia's production exceeded Saudi Arabia's for the first time. U.S. production peaked in 1970 but still ranked third in 2007.”).

⁵ American Wind Energy Association, *U.S. number one in the world in wind energy production* (Feb. 29, 2016) <http://www.awea.org/MediaCenter/pressrelease.aspx?ItemNumber=8463> (“Wind produced over 190 million megawatt-hours (MWh) in the U.S. last year China is close behind the U.S. at 185.1 million MWh and followed by third-place Germany at 84.6 MWh. Although China has nearly double the installed wind power capacity as the U.S., strong wind resources and production-based U.S. policy have helped build some of the most productive wind farms in the world.”).

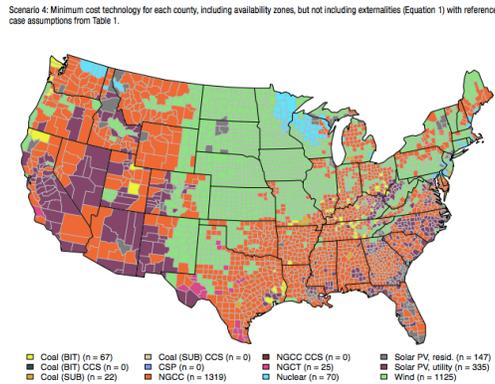
⁶ U.S. ENERGY INFO. ADMIN., *UNITED STATES REMAINS THE WORLD'S TOP PRODUCER OF PETROLEUM AND NATURAL GAS HYDROCARBONS* (Jun. 7, 2017) <https://www.eia.gov/todayinenergy/detail.php?id=31532> (although Russia and Saudi Arabia sometimes surpass U.S. crude oil production, the U.S. has a clear lead in “petroleum” production which accounts for production of lease condensate as well as crude oil).

⁷ *Id.*

shale oil and gas have transformed U.S. energy markets and are creating a pressing need for new energy transport.

A. The Renewable Revolution

In the last ten years, the U.S. power sector has been transformed by the falling cost of renewable power sources like solar and wind. Wind and solar power, supported by state policies and federal tax credits, now produce electricity at costs that are competitive with conventional sources of power generation.⁸ Even without any subsidies, wind power is now on average the cheapest source of new power across a windy triangle of the United States extending from North Dakota to Illinois to the Texas panhandle.⁹ In the meantime, there are large desert areas in California, Arizona, and Nevada where solar is the cheapest



⁸ U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2017 (2017) 85-86 [https://www.eia.gov/outlooks/aeo/pdf/0383\(2017\).pdf](https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf); U.S. ENERGY INFO. ADMIN., LEVELIZED COST AND LEVELIZED AVOIDED COST OF NEW GENERATION RESOURCES IN THE ANNUAL ENERGY OUTLOOK (2017) https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf (“For technologies such as solar and wind generation that have no fuel costs and relatively small variable O&M costs, LCOE changes in rough proportion to the estimated capital cost of generation capacity.”). There are, however, important caveats. *Id.* (for example it “includes the impacts of the Clean Power Plan (CPP), state-level renewable electricity requirements as of November 2016, and an extension and phase-out of federal tax credits for renewable generation”).

⁹ Joshua D. Rhodes et al., White Paper, New U.S. Power Costs: by County, with Environmental Externalities (2017) 11, 17 http://energy.utexas.edu/files/2016/09/UTAustin_FCe_LCOE_2016-A.pdf.

power source.¹⁰ As a result, most investment in new capacity for power production has been in renewable sources like wind and solar power.¹¹

This good news raises a question: if a zero-emission source of electricity, with no fuel costs, is the cheapest source of power in wide swathes of the country, why not simply transition to an all renewable economy? There are two fundamental difficulties. First, the regions where renewable power and solar power are the cheapest options tend to be the least populated portions of the United States: wind is strongest on the lone prairie and sun is strongest in areas that are literally desert.¹² If solar and wind are going to power the U.S. grid, it will take a massive build-out of power transmission to bring that power to the urban centers where power is actually consumed.¹³ And that is exactly what utilities are planning: they believe they will smash investment records by investing over \$22 billion dollars in power transport in 2017.¹⁴

Second, the power grid must constantly balance the power provided to the grid with the power demanded by consumers—every light switched on, every phone plugged in, every cycle of the dishwasher.¹⁵ If

¹⁰ *Id.*

¹¹ U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2017 (2017) 85 [https://www.eia.gov/outlooks/aeo/pdf/0383\(2017\).pdf](https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf).

¹² Joshua D. Rhodes et al., White Paper, New U.S. Power Costs: by County, with Environmental Externalities (2017) 11, 17 http://energy.utexas.edu/files/2016/09/UTAustin_FCe_LCOE_2016-A.pdf. Ashley Brown & Jim Rossi, *Siting Transmission Lines in a Changed Milieu: Evolving Notions of the 'Public Interest' in Balancing State and Regional Considerations*, 81 U. COLO. L. REV. 706 (2010).

¹³ This may lead to a further energy transport revolution in which direct current (DC) transmission lines are used rather than traditional alternating current (AC) lines because DC transmission is more efficient for long-distance one-way electricity transport. Alexandra B. Klass, *Takings and Transmission*, 91 N.C. L. REV. 1079, 1111 & n.196 (2013) (“Today, new, high-voltage DC (‘HVDC’) lines are often proposed as the most efficient and economical method of transporting wind power long distances.”).

¹⁴ EDISON ELECTRIC INSTITUTE, TRANSMISSION PROJECTS: AT A GLANCE (Dec. 2016) http://www.eei.org/issuesandpolicy/transmission/Documents/Trans_Project_lowres_bookmarked.pdf v.

¹⁵ U.S. ENERGY INFO. ADMIN., LEVELIZED COST AND LEVELIZED AVOIDED COST OF NEW GENERATION RESOURCES IN THE ANNUAL ENERGY

either too much or too little power is supplied to the grid, electrical devices will fail in homes and workplaces everywhere. Grid managers are accustomed to avoiding such problems by ordering more or less power from power plants across the grid to manage fluctuations in demand.¹⁶ This challenge becomes more difficult when using power supplies that also fluctuate uncontrollably, and the wind and sun only provide power when the wind is blowing or the sun is shining.

There are several ways to integrate more cheap and clean renewable power into the grid. The most plausible options will require more capital investment in energy transmission and each of these options will have to be pursued simultaneously if the U.S. wants a timely transition toward renewable sources. First, long-range inter-regional transmission can help smooth local fluctuations in renewable power—when it is cloudy and still in one region, it may be sunny and windy in another region that could be connected by transmission.¹⁷ Second, renewable sources can be paired with natural gas power plants that can easily ramp up and down to ensure that power supply matches demand, but that will require a huge build out in natural gas pipelines.¹⁸

OUTLOOK (2017) https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf (“Since load must be balanced on a continuous basis, units whose output can be varied to follow demand (dispatchable technologies) generally have more value to a system than less flexible units (non-dispatchable technologies), or those whose operation is tied to the availability of an intermittent resource.”).

¹⁶ Shelley Welton, *Grasping for Energy Democracy*, 116 Mich. L. Rev. 581, 595-96 (2018); Shelley Welton, *Public Energy*, 92 N.Y.U. L. REV. 267, 293 & n.115 (2017).

¹⁷ Hari M. Osofsky & Hannah J. Wiseman, *Hybrid Energy Governance*, 2014 U. ILL. L. REV. 1, 44-52 (2014). Herman K. Trabish, *Why Aren't Those Wind Turbines Turning?*, GREEN TECH MEDIA, Mar. 24, 2011, <https://www.greentechmedia.com/articles/read/why-arent-those-wind-turbines-turning#gs.GlGzFNk> (describing why wind generators must sometimes be “curtailed”—producing no energy even when wind is strongest—because of the lack of power transmission).

¹⁸ See *infra* Part I.B; James W. Coleman & Sarah Marie Jordaan, *Clearing the Air: How Canadian Liquefied Natural Gas Exports Could Help the World Meet Its Climate Goals*, C.D. HOWE INSTITUTE, ISSUE BRIEF (2016).

Third, renewable sources can be paired with facilities that can store power. At the moment ninety-eight percent of these facilities use what is known as “pumped hydro,” where excess electricity can be used to pump water from a lower reservoir to a higher reservoir and then can be released backed to the lower reservoir to create electricity when it is needed.¹⁹ But these pumped hydro facilities are also limited to certain locations: they are most economical where there is suitable terrain, limited evaporation and wildlife, and ideally, pre-existing hydropower or, at least, reservoirs.²⁰ As a result, these facilities are, if anything, more geographically constrained than solar and wind power. And transitioning to a low carbon economy will require massive investments in new storage facilities and transmission from storage locations to the urban grids that demand power.²¹ To support a move to pure renewable power, studies suggest that the U.S. would need over 2,500 Gigawatts of power storage, more than twice the country’s current *generation capacity*.²² Currently the

¹⁹ John Roach, *For Storing Electricity, Utilities Are Turning to Pumped Hydro*, YALE ENVIRONMENT 360, Nov. 24, 2015, http://e360.yale.edu/features/for_storing_electricity_utilities_are_turning_to_pumped_hydro (“Pumped storage hydropower is still the only method [of power storage] that is mature, reliable, and commercially available.”). The next biggest sources of power storage are compressed air energy storage, where air is pumped underground and then released when power is needed, and thermal storage, where excess electricity is used to produce heat or cold that can be stored in insulation and used when necessary. U.S. Dept. of Energy, *Grid Energy Storage* (2013) 11 <https://energy.gov/sites/prod/files/2014/09/f18/Grid%20Energy%20Storage%20December%202013.pdf>. Battery storage is a distant fourth. *Id.*

²⁰ U.S. ENERGY INFO. ADMIN., *Pumped storage provides grid reliability even with net generation loss*, July 8, 2013, <https://www.eia.gov/todayinenergy/detail.php?id=11991> (showing location of pumped hydro plants in the United States).

²¹ Other options for moving to a low carbon economy, such as nuclear power or carbon capture, would also require massive capital investments. Georg Woite, *White Paper, Capital Investment Costs of Nuclear Power Plants*, International Atomic Energy Agency Bulletin (1978); Edward Rubin, Chao Chen, & Anand Rao, *Cost and performance of fossil fuel power plants with CO₂ capture and storage*, 35 ENERGY POL. 4444 (2007).

²² Christopher T. M. Clack et al., *Evaluation of a proposal for reliable low-cost grid power with 100% wind, water, and solar*, 114 PROC. NATL. ACAD. SCI. 6722, 6724

U.S. has 22 Gigawatts of power storage capacity—less than one percent of what is needed.²³ No one has yet estimated the massive scale of transmission required to connect that much pumped hydro, dispersed across the country, to power grids that need electricity storage.

The power industry already attracts more capital investment than any other U.S. industry.²⁴ Just to maintain the current level of service, it will need another trillion dollars of investment.²⁵ Transitioning to a low-carbon economy will require even more investment to transmit power from dispersed renewable resources, integrate power storage, and provide natural gas transport and storage to back-up these variable sources of power.

B. The Natural Gas Revolution

In the past decade, directional drilling and hydraulic fracturing have transformed global natural gas markets. Fracking has unlocked in-

(2017) <http://www.pnas.org/content/114/26/6722.full.pdf> (noting study that suggested U.S. could rely on 100% renewable power assumes a total of 2,604 GW of storage charging capacity, more than double the entire current capacity of all power plants in the United States”).

²³ U.S. ENERGY INFO. ADMIN., *Pumped storage provides grid reliability even with net generation loss*, July 8, 2013, <https://www.eia.gov/todayinenergy/detail.php?id=11991>.

²⁴ DANIEL YERGIN, *THE QUEST* 401 (2012) (“Electric power is a classically long-term business. A power plant built today may be operating 60 to 70 years from now. It is also a big ticket business—in fact, it is the most capital-intensive major industry in the United States. Fully 10 percent of all capital investment in the United States is embedded in the power plants, transmission lines, substations, poles, and wires that altogether make up the power infrastructure.”).

²⁵ Alexandra B. Klass & Jim Rossi, *Revitalizing Dormant Commerce Clause Review for Interstate Coordination*, 100 MINN. L. REV. 129, 140 (2015) (“The U.S. electric grid constitutes an \$876 billion asset managed by over 3,000 utilities serving nearly 300 million customers.”). *Id.* (“in order to maintain even current levels of grid reliability, the electric industry must make investments in transmission and distribution alone of nearly \$900 billion”).

creased production in formations like the Marcellus shale, which is centered in Pennsylvania, and the Barnett shale in Texas.²⁶ And formations that are generally known for oil production, such as the Bakken shale in North Dakota and the Eagle Ford in Texas, are also producing more gas from the same wells, inevitably increasing U.S. gas production.²⁷

Increased production of natural gas has crashed natural gas prices across much of North America: prices for producers crashed more than 80% from July 2008 to May 2012.²⁸ Natural gas prices are especially subject to price swings because it is so expensive to transport a gas.²⁹ Solids like coal can be transported in almost any container—even an open railroad car. Liquids like oil can also be transported in many vessels, including truck, rail, barges, and tankers. But gas can only be transported with expensive air-tight, and sometimes refrigerated vessels.³⁰ So if coal or oil

²⁶ Thomas W. Merrill & David M. Schizer, *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy*, 98 MINN. L. REV. 145, 152-64 (2013); James W. Coleman, *Importing Energy, Exporting Regulation*, 83 Fordham L. Rev. 1357, 1364-65 (2014).

²⁷ *Id.*

²⁸ Coleman, *supra* note [] at 1364; U.S. Energy Info. Admin., *U.S. Natural Gas Wellhead Price*, EIA.GOV, <http://www.eia.gov/dnav/ng/hist/n9190us3m.htm>.

²⁹ See James W. Coleman, *The Shale 'Revolution' Is About Gas Prices & Oil Production*, ENERGY COLLECTIVE, Jul. 17, 2014, <http://theenergycollective.com/energylawprof/432466/shale-revolution-about-gas-prices-oil-production> (“Increased production of natural gas has had a dramatic effect on natural gas prices because natural gas is hard to transport. If you can’t send natural gas by an existing pipeline to an existing market, your next best option may be to cool it into a liquid at -162°C , load the liquid onto a giant, insulated, quarter-billion dollar vessel and ship it across the ocean, where it can be regasified and burned.”).

³⁰ Jacqueline L. Weaver, *Implied Covenants in Oil and Gas Law Under Federal Energy Price Regulation*, 34 VAND. L. REV. 1473, 1518 n. 169 (“Gas is not easily stored above ground and can be transported only by pipeline. Moreover, gas pipelines require large capital investments and can be justified only if the pipeline owner has secure sources of supply under long-term gas purchase contracts.”); Nancy J. Forbis, *The Shut-in Royalty Clause: Balancing the Interests of Lessors and Lessees*, 67 TEX. L. REV. 1129, 1131 (1989) (“Natural gas is difficult, if not impossible, to store outside a reservoir, and thus producers must either

is more expensive in one region than another, companies can simply ship these fuels to the place it is worth more until prices equalize.³¹ On the other hand, when there is a local increase in production, it must all be used locally even if there is little need to burn more gas in the immediate area until transport can be built to carry it to markets where gas is desperately needed.³² This is why natural gas prices around the world can vary by orders of magnitude, whereas the price of oil, which is cheaper to transport, differs only by percentage points across the globe.³³

As a result, fracking and new gas production have opened up wide natural gas price differentials around the globe. Even markets in close proximity can have very different gas prices if there is not enough transport capacity to serve the demand in the high cost market: for example, while Pennsylvania and Texas have the cheapest natural gas in

transport gas to a pipeline as it is produced or retain it at the wellhead until they can locate a willing purchaser.”); Mark P. Gergen, *The Use of Open Terms in Contract*, 92 COLUM. L. REV. 997, 1018 n. 68 (discussing economic peril for gas producer “where gas found cannot be sold currently because a pipeline is unavailable and the gas cannot otherwise be marketed”).

³¹ James W. Coleman, *The Shale Revolution’ Is About Gas Prices & Oil Production*, ENERGY COLLECTIVE, Jul. 17, 2014, <http://theenergycollective.com/energylawprof/432466/shale-revolution-about-gas-prices-oil-production>.

³² *Id.*

³³ *Id.* Renewable energy, of course, faces the same dilemma. Someone is always willing to pay for electricity somewhere, but it is often too expensive to transport electricity from wind-abundant regions to places where it is needed. So wind and solar farms often receive very little for their electricity or even have to pay other parties to take it. Avery Thompson, *It’s So Windy in Britain That the Price of Electricity Went Negative*, POPULAR MECHANICS, Jun. 8, 2017, <https://www.popularmechanics.com/science/energy/a26827/britain-price-of-electricity-negative/>; Cassie Werber, *California is getting so much power from solar that wholesale electricity prices are turning negative*, QUARTZ, Apr. 8, 2017, <https://qz.com/953614/california-produced-so-much-power-from-solar-energy-this-spring-that-wholesale-electricity-prices-turned-negative/>. There are signs that the same dynamic will gradually impact more and more regions as they add renewable power to the grid. ISO New England, *A regional first: New Englanders used less grid electricity midday than while they were sleeping on April 21*, ISO NEwire, May 3, 2018, <http://isonewswire.com/updates/2018/5/3/a-regional-first-new-englanders-used-less-grid-electricity-m.html>.

the world, nearby markets in Massachusetts and Mexico at times pay the world's highest prices for natural gas.³⁴

These price differentials has set off a global race to connect new production with high gas price markets in Asia and on the U.S. East Coast.³⁵ The two main methods of moving natural gas—pipeline and

³⁴ Naureen S. Malik, *Cold Snap Makes New England the World's Priciest Gas Market*, BLOOMBERG, Dec. 27, 2017, <https://www.bloomberg.com/news/articles/2017-12-26/cold-snap-makes-new-england-the-world-s-priciest-market-for-gas>; U.S. ENERGY INFO. ADMIN., *Today in Energy: December Natural Gas Prices Spike in Boston*, EIA.GOV (Dec. 6, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=14071>; Adebola S. Kasumu et al., *Country-Level Life Cycle Assessment of Greenhouse Gas Emissions from Liquefied Natural Gas Trade for Electricity Generation*, 52 ENVTL. SCI. & TECH. 1735, 1739 (2018) (showing a spike in natural gas prices in Mexico in mid-2013 from under \$5 per million British Thermal Units (MMBTU) to over \$15 per MMBTU while U.S. Gulf Coast prices remain low).

³⁵ Thomas W. Merrill & David M. Schizer, *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy*, 98 MINN. L. REV. 145, 152-64 (2013); Coleman, *supra* note [] at 1364-65. [During the decade of peaking natural gas prices, the U.S. added over 20,000 miles of natural gas pipelines to connect expanding sources of natural gas production with natural gas demand. United States Energy Information Administration, Major Changes in Natural Gas Pipeline Transport Capacity 1998-2008, http://www.eia.gov/oil_gas/fwd/ngpipelinetc.html (“More than 20,000 miles of new natural gas transmission pipeline, representing more than 97 billion cubic feet per day of capacity, were placed in service in the United States over the past 10 years.”). That building boom has continued in the new era of natural gas abundance and is only likely to increase. And there is every likelihood that the pace of pipeline building will continue as the nation moves from coal to natural gas for electricity and heating oil to natural gas for heating. United States Energy Information Administration, Natural Gas Year-in-Review (With Data for 2011) (2012) http://www.eia.gov/naturalgas/review/print_version.cfm. In the decade of high gas prices, U.S. importers sought to build several new LNG import facilities. Clifford Krauss, *Exports of American Natural Gas May Fall Short of High Hopes*, N.Y. TIMES, Jan. 5, 2013 at B1 Now with shale-gas driving U.S. prices below \$3 per million BTUs, and Asian shale-gas prices over \$15 investors have submitted several applications to the Department of Energy for new LNG export facilities that could ship to Asia. Ernst & Young, Global LNG, Will new demand and new supply mean new pricing?, <http://www.ey.com/Publication/vwLUAs->

ships carrying liquefied natural gas—both require billions of dollars of capital investment.³⁶ Interstate natural gas pipelines must be designed to avoid gas leakage, and liquefaction facilities must cool natural gas most of the way to absolute zero until the gas turns into a liquid that can be transported on quarter-billion dollar refrigerated ships.³⁷

sets/Global_LNG_New_pricing_ahead/\$FILE/Global_LNG_New_pricing_ahead_DW0240.pdf. Since 1981, the global LNG trade has doubled every eight years. International Gas Union, World LNG Report 2011, <http://www.igu.org/gas-knowhow/publications/igu-publications/LNG%20Report%202011.pdf> Figure 1. Knut Einar Rosendahl & Eirik Lund Sagen, *The Global Natural Gas Market: Will Transport Cost Reductions Lead to Lower Prices?*, 30 ENERGY J. 17, 17 (2009) (“[o]ver the last decade the costs of LNG have been significantly reduced, more producers have entered the gas market in general and the LNG market in particular, and the trade between continents has increased”).

³⁶ Coleman, *supra* note [] (Because it of the cost of shipping gas “when natural gas production rises, prices fall quickly because there is little use for the excess gas in the markets it can reach. Prices will keep falling until 1) gas is so cheap that energy users reliant on alternatives like coal and heating oil switch to gas, 2) gas is so cheap that it can be profitably liquefied and sent overseas, or 3) gas is so cheap that it’s no longer worthwhile to keep expanding production.”). The U.S. government has repeatedly said that until global prices converge, global liquefied natural gas transport will continue to increase. United States Energy Information Administration, *Effect of Increased Natural Gas Exports on Domestic Energy Markets*, http://www.eia.gov/analysis/requests/fe/pdf/fe_lng.pdf (“Unlike the oil market, current natural gas markets are not integrated globally. In today’s markets, natural gas prices span a range from \$0.75 per million British thermal units (MMBtu) in Saudi Arabia to \$4 per MMBtu in the United States and \$16 per MMBtu in Asian markets that rely on LNG imports. Prices in European markets, which reflect a mix of spot prices and contract prices with some indexation to oil, fall between U.S and Asian prices.”).

³⁷ Jacob Dweck et al., *Liquefied Natural Gas (LNG) Litigation after the Energy Policy Act of 2005: State Powers in LNG Terminal Siting*, 27 ENERGY L.J. 473, 473 (2006) (“Transporting natural gas very long distances from gas fields located in regions of the world with little or nonexistent consuming markets across the oceans to large consuming markets is made feasible by chilling the gas to minus 260 degrees Fahrenheit, at which point the natural gas changes to a liquid state, reducing its volume to 1/600th that of vaporous natural gas.”). Absolute zero is minus 460 degrees Fahrenheit. Sarah Zielinski, *Absolute Zero*, SMITHSONIAN,

Apart from the economic imperative to bring new U.S. gas production to the markets where it is needed, increased natural gas transport has also been a central part of U.S. environmental and geopolitical strategy. Compared to other fossil fuels like oil and coal, gas burns extremely cleanly, which is why it can even be burned inside a home.³⁸ So liquefied natural gas exports could help urban areas phase out dirtier fuels like heating oil, and help developing countries address their air pollution problems by closing coal plants.³⁹ Natural gas can also complement intermittent sources like solar and wind power because, unlike other power sources, it can ramp up to meet demand when those sources do not provide enough power.⁴⁰ Finally, better natural gas transport would mitigate one negative side effect of the U.S. oil boom—oil from shale formations often is accompanied by gas, and if there is no market for that gas, it is

Jan 1, 2008, <http://www.smithsonianmag.com/science-nature/absolute-zero-13930448/>.

³⁸ Union of Concerned Scientists, Environmental Impacts of Natural Gas, <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas#.WshoHdPwZjs> (“Cleaner burning than other fossil fuels, the combustion of natural gas produces negligible amounts of sulfur, mercury, and particulates”).

³⁹ James W. Coleman & Sarah Marie Jordaan, *Clearing the Air: How Canadian Liquefied Natural Gas Exports Could Help the World Meet Its Climate Goals*, C.D. HOWE INSTITUTE, ISSUE BRIEF (2016).

⁴⁰ *Id.* at 2 (“Unlike solar and wind power, natural gas plants can be run at any time on demand. Such plants even work well with solar and wind because they are easy to ramp up or down to match power demand by supplementing the intermittent power these renewable sources provide.”). Fast-ramping gas plants can also increase the value of renewable sources. When solar and wind farms sell their power on a grid dominated by nuclear, hydro, or coal power, they often fetch a low price because those sources will bid into the market at a very low price rather than incur the expense of shutting down intermittently. By contrast, a natural gas plant will gladly turn the grid over to renewable sources at somewhat higher prices, because the gas plant can ramp down almost costlessly and will save money on the natural gas it would otherwise need to purchase to serve demand.

simply burned off (known as “flaring”), wasting the fuel and emitting greenhouse gases.⁴¹

C. The Oil Revolution

Directional drilling and hydraulic fracturing have also transformed U.S. oil production. U.S. oil production nearly doubled in seven years from under five million barrels per day in 2008, to nearly ten million barrels per day in 2015.⁴² And, after a short downturn in 2016, the oil boom is back stronger than ever. The U.S. is now projected to surpass its previous record oil production, set in 1970, and is already producing more than ten million barrels per day.⁴³

The geographical distribution of North American oil production has also shifted dramatically. Fracking has created three super-fields, each producing over one million barrels of crude oil per day. The Permian Basin in western Texas and southeastern New Mexico was the first to reach one million barrels in 2012 and has been rising steadily since that time, recently reaching 2.5 million barrels per day.⁴⁴ The Eagle Ford shale in southern Texas was next, hitting one million barrels per day in

⁴¹ Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 1009-15 (2015) (describing extensive flaring in North Dakota as a result of lack of transport options to bring natural gas to markets in need of gas).

⁴² U.S. ENERGY INFORMATION ADMINISTRATION, CRUDE OIL PRODUCTION, https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbldpd_m.htm.

⁴³ U.S. ENERGY INFORMATION ADMINISTRATION, U.S. MONTHLY CRUDE OIL PRODUCTION EXCEEDS 10 MILLION BARRELS PER DAY, HIGHEST SINCE 1970, Feb. 1, 2018, <https://www.eia.gov/todayinenergy/detail.php?id=34772>

⁴⁴ U.S. ENERGY INFORMATION ADMINISTRATION, PERMIAN REGION DRILLING PRODUCTIVITY REPORT (July 2017) <https://www.eia.gov/petroleum/drilling/pdf/permian.pdf>.

2013.⁴⁵ The Bakken shale also reached that benchmark in 2013.⁴⁶ As recently as 2010 oil production in North Dakota had been negligible; now it is the second-biggest oil producer.⁴⁷

The pace of this development is astonishing. After just a few years of widespread fracking, each of these fields is now producing more oil than is produced in all the fields of oil powers like Libya.⁴⁸ And Texas's traditional reputation as an oil capital may obscure the scale of the revolution that has occurred there: in just four years it went from just over one million barrels per day of production to over three and a half million barrels per day. After more than fifty years of development, oil superpowers like Kuwait and Nigeria produce two and a half million barrels per day.⁴⁹ Texas added two and a half million barrels a day on top

⁴⁵ U.S. ENERGY INFORMATION ADMINISTRATION, EAGLE FORD REGION DRILLING PRODUCTIVITY REPORT (July 2017) U.S. ENERGY INFORMATION ADMINISTRATION, PERMIAN REGION DRILLING PRODUCTIVITY REPORT (July 2017) <https://www.eia.gov/petroleum/drilling/pdf/eagleford.pdf>.

⁴⁶ U.S. ENERGY INFORMATION ADMINISTRATION, BAKKEN REGION DRILLING PRODUCTIVITY REPORT (July 2017) <https://www.eia.gov/petroleum/drilling/pdf/bakken.pdf>. The Bakken shale also extends into portions of Montana and Saskatchewan.

⁴⁷ *Id.* See Chart, Crude Oil Production by State, @energylawprof, Mar. 29, 2017, <https://twitter.com/EnergyLawProf/status/979376653573947392>.

⁴⁸ Salma El Wardany, *Libya Oil Output at 4-Year High Loosens OPEC Grip on Supply*, BLOOMBERG, July 2, 2017, <https://www.bloomberg.com/news/articles/2017-07-02/libya-s-oil-production-said-to-exceed-1-million-barrels-a-day>.

⁴⁹ CIA FACTBOOK, <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2241rank.html> (Kuwait produced 2,562,000 and Nigeria produced 2,317,000 barrels of oil per day in 2015).

of its existing production in less than fifty months.⁵⁰ It now produces more oil than Kuwait, Libya, and Qatar combined.⁵¹

Canada has also contributed to the explosion of onshore oil production in North America. As recently as 2000 the country produced less than two million barrels per day of oil.⁵² But expanding production in Alberta's oil sands, as well as fracking in Alberta and Saskatchewan have doubled Canadian production, which now stands at four million barrels per day, not including offshore production in Eastern Canada.⁵³

This onshore oil boom has scrambled oil transport markets, which for decades were designed to carry oil into the center of North America. Historically the best price for crude was obtained at refineries in the U.S. Midwest near Chicago.⁵⁴ And refineries in Texas took in oil from overseas to slake the thirst of fuel markets in the South and Southeast.⁵⁵ Now a flood of oil must travel the other way, from Alberta, North

⁵⁰ U.S. Energy Information Administration, Petroleum & Other Liquids, Crude Oil Production, https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm. See Chart, Crude Oil Production by State, @energylawprof, Mar. 29, 2017, <https://twitter.com/EnergyLawProf/status/979376653573947392>.

⁵¹ *Id.* CIA FACTBOOK, <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2241rank.html> (Kuwait produced 2,562,000 and Nigeria produced 2,317,000 barrels of oil per day in 2015).

⁵² U.S. ENERGY INFORMATION ADMINISTRATION, Canadian Crude Oil production, <https://www.indexmundi.com/energy/?country=ca&product=oil&graph=production>

⁵³ CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS, CRUDE OIL FORECAST, MARKETS AND TRANSPORTATION (2017) 4, <http://www.capp.ca/publications-and-statistics/publications/303440>.

⁵⁴ Andrew Leach, *The Shifting Flow of Oil*, CANADIAN BUSINESS, Sep. 19, 2013, <http://www.canadianbusiness.com/blogs-and-comment/the-shifting-flow-of-oil/>; Andrew Leach, *Explaining Canada's Hurry to Build Pipelines in the U.S.*, MACLEANS, Nov. 21, 2011, <http://www.macleans.ca/economy/economicanalysis/explaining-canadas-hurry-to-build-pipelines-in-the-u-s/>.

⁵⁵ *Id.*

Dakota, and Texas to parts of the country, and parts of the world, that have not been part of the fracking boom.⁵⁶

This new oil geography has led to a boom in pipeline proposals designed to take oil from the center of the continent to the coasts, which is where most U.S. refineries are located.⁵⁷ While infamous pipelines like Keystone XL and Dakota Access attracted controversy, numerous other pipelines and pipeline expansions were approved and built, bringing oil south toward the coast.⁵⁸ But these proposals have not been able to keep up with the flood of crude: large volumes of oil are now traveling by rail

⁵⁶ Andrew Leach, *Explaining Canada's Hurry to Build Pipelines in the U.S.*, MACLEANS, Nov. 21, 2011, <http://www.macleans.ca/economy/economic-analysis/explaining-canadas-hurry-to-build-pipelines-in-the-u-s/>.

⁵⁷ CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS, CRUDE OIL FORECAST, MARKETS AND TRANSPORTATION (2015) iv; CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS, CRUDE OIL FORECAST, MARKETS AND TRANSPORTATION (2017) 23, <http://www.capp.ca/publications-and-statistics/publications/303440>; U.S. ENERGY INFO. ADMINISTRATION, *Regional Refinery Trends Evolve to Accommodate Increased Domestic Crude Oil Production*, Jan. 15, 2015, <http://www.eia.gov/todayinenergy/detail.php?id=19591>. Once oil reaches the coast, it can also be shipped abroad if prices rise overseas.

⁵⁸ See, e.g., Robert Tuttle, *Keystone Left Behind as Canadian Oil Pours into the U.S.*, BLOOMBERG, Nov. 14, 2014, <https://www.bloomberg.com/news/articles/2014-11-14/keystone-left-behind-as-canadian-oil-pours-into-u-s-> (noting construction of Flanagan South and Seaway pipelines); CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS, CRUDE OIL FORECAST, MARKETS AND TRANSPORTATION (2015) iv (noting five significant expansions of Enbridge pipelines headed east and south during 2015).

as well.⁵⁹ Transporting this oil by pipeline would be safer than rail, which can lead to explosions when trains derail.⁶⁰

II. ENERGY POLICY REVOLUTIONS: CHANGING PROCEDURES FOR APPROVING ENERGY TRANSPORT PROJECTS

Recent years have seen major upheavals in the process for approving all forms of energy transport. This has been driven by four important forces. First, as energy issues have grown more contentious, the federal government has pushed for an increased role in considering proposed interstate oil pipelines and power transmission, which have traditionally been approved by the states. Second, on the flip side, some states have asserted a right to block federally-approved interstate gas pipelines. Third, environmental groups have increasingly asked governments and court to impose expanded consultation requirements and environmental

⁵⁹ Indeed, the ease of transporting oil by other means is one reason that production has increased so dramatically—when local production of oil rises dramatically, it can just be shipped abroad to places still in need of oil. James Coleman, *The Shale 'Revolution' Is About Gas Prices and Oil Production*, ENERGY COLLECTIVE (July 17, 2014), <http://theenergycollective.com/energylawprof/432466/shale-revolution-about-gas-prices-oil-production>. Prices will not fall dramatically until world demand is saturated. *Id.* In contrast, because natural gas is so hard to transport, local booms in natural gas production often have a drastic impact on local gas prices. *Id.*

⁶⁰ Crude-by-rail is particularly dangerous for the light and highly flammable crude oil unlocked by hydraulic fracturing: in just one incident, a train carrying oil from new oil fields in North Dakota derailed in the Canadian town of Lac Mégantic, killing 47 people in a massive explosion. Grant Robertson, *North Dakota's explosive Bakken oil: The story behind a troubling crude*, THE GLOBE & MAIL, Dec. 31, 2013, <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/north-dakotas-explosive-bakken-oil-the-story-behind-a-troubling-crude/article16157981/>; United States State Department, Final Supplemental Environmental Impact Statement (Jan. 2014) ES-12 (estimating that transport by rail instead of pipeline could cost oil producer “up to \$8” extra per barrel of oil transported); *id.* at 35 (estimating that denying the Keystone XL pipeline “would result in an estimated 49 additional injuries and six additional fatalities . . . on an annual basis” due to increased oil transport by rail). *See also* Klass & Meinhardt, *supra* note 41 at 974-75 & n. 172.

reviews on energy transport projects. Fourth, land owners have asked federal and state governments to limit eminent domain for power-lines and pipelines.

These four trends have come together most prominently in opposition to oil pipeline proposals such as Keystone XL and the Dakota Access Pipeline. But even if these moves were developed as a legal strategy to stop fossil fuels (or even make cleaner fuels look better by comparison), they will have a serious impact on all energy transport projects if they are successful. Federalism, environmental assessment, and the rights of indigenous peoples and land owners all present cross-cutting issues that are equally applicable to power and fuel transport. And there will always be challengers who object to new infrastructure because of impacts on local communities, disagreements about the best future for the electricity grid, and the environmental impact of energy transport. This section demonstrates how these issues cut across modes of energy transport, posing the greatest risk to cleaner source of energy such as renewable power.

A. Federal Government's Expanded Role in Interstate Oil & Power Transmission

Approval of interstate power-lines and oil pipelines have historically been left to the states crossed by these energy projects.⁶¹ That is, if a company that wants to build a power-line or pipeline from Kansas to Texas, it must get the approval of Kansas, Texas, and Oklahoma, which lies between the two states.

In theory, the federal government also has some authority over these pipelines because they inevitably cross “federal waters,” which include navigable waters such as rivers as well as some wetlands and non-

⁶¹ Klass & Meinhardt, *supra* note 41 at 982-88 & 1027-53 (noting varied approaches to oil pipeline siting in different states and collecting state statutes). One prominent exception is energy transport projects that, like Keystone XL, cross an international border—those have historically required a presidential permit under Executive Orders 11423 (1968) and 13337 (2004). *Sierra Club et al. v. United States Army Corps of Engineers*, 990 F. Supp. 2d 9, 17 (D.D.C. 2013) (denying motion for preliminary injunction against domestic crude oil pipeline because it, unlike Keystone XL “is an entirely *domestic* pipeline”)(emphasis in original).

navigable waters.⁶² The federal government must grant Clean Water Act Section 404 permits for these crossings.⁶³ But, in practice, the federal government has left review of these projects to the states, pre-authorizing water crossings by pipelines and power-lines.⁶⁴ In 2012 it reissued a nationwide general permit that allows energy infrastructure to be built without individualized environmental review.⁶⁵ So in practice the federal

⁶² *Rapanos v. U.S.*, 547 U.S. 715, 731, 759 (2006) (four justice plurality opinion states that this term only includes “relatively permanent” bodies of water, concurrence from Justice Kennedy says this term, instead, refers to waters or wetlands with a “significant nexus” with navigable waters); *Solid Waste Agency of Northern Cook Cty. v. Army Corps of Engineers*, 531 US 159, 167 (2001); *United States v. Riverside Bayview Homes, Inc.*, 474 US 121, 133 (1985) (includes wetlands adjacent to navigable waters).

⁶³ 33 U. S. C. § 134. *United States v. Riverside Bayview Homes, Inc.*, 474 US 121, 123 (1985). The Congress could also pass new laws regulating pipelines and power-lines under its constitutional authority “To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes” under the U.S. Constitution’s Commerce Clause. CONST. ART. I § 8 CL. 3. Although this power is not unlimited, and may not extend to all water bodies, it certainly extends to water crossings. *See Solid Waste Agency of Northern Cook Cty. v. Army Corps of Engineers*, 531 US 159, 172-74 (2001) (reading “federal waters” in the Clean Water Act not to apply to isolated bodies of water to avoid “significant constitutional questions” about whether Congress could regulate such bodies of water).

⁶⁴ Nationwide Permit 12, http://www.usace.army.mil/Portals/2/docs/civilworks/nwp/2012/NWP_12_2012.pdf (environmental analysis that accompanies domestic crude pipelines makes no mention of climate change). President Obama even specifically streamlined this already minimal process. Press Release, Office of the Press Sec’y, Presidential Memorandum—Expediting Review of Pipeline Projects from Cushing, Oklahoma, to Port Arthur, Texas, and Other Domestic Pipeline Infrastructure Projects (Mar. 22, 2012), <https://obamawhitehouse.archives.gov/the-press-office/2012/03/22/presidential-memorandum-expediting-review-pipeline-projects-cushing-okla>.

⁶⁵ *Id.*

government has left review of interstate pipelines and power-lines to the states that these pipelines cross.⁶⁶

This equilibrium was upset when the United States government declared that it would do a full review of the controversial Dakota Access pipeline, which already had approvals from the states that it would cross: North Dakota, South Dakota, Iowa, and Illinois.⁶⁷ In contrast, to the usual expedited process, the pipeline underwent an in-depth environmental assessment and consultation process, consuming more than a year and 1,200 pages, which ultimately determined that the pipeline would have “no significant impact” on environmental or cultural resources.⁶⁸ This decision meant, however, that the pipeline would not have to undergo a full environmental impact statement process, which now average over five years to complete.⁶⁹

Nevertheless, in the waning days of the Obama administration, the Army Corps of Engineers announced it would do a full environmental impact statement for the pipeline, announcing that the federal gov-

⁶⁶ On the other hand, the federal government has consistently said that it must approve pipelines that would cross *international* borders, such as the Keystone XL pipeline proposal. EXECUTIVE ORDER 13337, April 30, 2004; EXECUTIVE ORDER 11423, Aug. 16, 1968; *Sierra Club et al. v. United States Army Corps of Engineers*, 990 F. Supp. 2d 9, 17 (D.D.C. 2013) (denying motion for preliminary injunction against domestic crude oil pipeline because it, unlike Keystone XL “is an entirely *domestic* pipeline”)(emphasis in original).

⁶⁷ Memorandum from Jo-Ellen Darcy, Assistant Secretary of the Army, to the Commander of the U.S. Army Corps of Eng’rs, Proposed Dakota Access Pipeline Crossing at Lake Oahe, North Dakota 3–4 (Dec. 2, 2016), <https://www.army.mil/e2/c/downloads/459011.pdf>.

⁶⁸ U.S. ARMY CORPS OF ENG’RS, MITIGATED FINDING OF NO SIGNIFICANT IMPACT, ENVIRONMENTAL ASSESSMENT DAKOTA ACCESS PIPELINE PROJECT WILLIAMS, MORTON, AND EMMONS COUNTIES, NORTH DAKOTA (Jul 2016) *available at* <http://www.energylawprof.com/wp-content/uploads/2017/03/DAPL-EA-VOL-1.pdf> & <http://www.energylawprof.com/wp-content/uploads/2017/03/DAPL-EA-Vol-2.pdf>.

⁶⁹ *Department of Transportation v. Public Citizen*, 541 U.S. 752, 757-58 (2004). For length of environmental reviews see *infra* Section IV.C.

ernment would take a wider role in approving interstate energy infrastructure as part of its responsibility to Indian tribes.⁷⁰ This shift was particularly dramatic because the federal government still insisted would have would have “no significant impact” on the environment.⁷¹

⁷⁰ Joint Statement from the Department of Justice, the Department of the Army and the Department of the Interior Regarding Standing Rock Sioux Tribe v. U.S. Army Corps of Engineers, Sep. 9, 2016, <https://www.justice.gov/opa/pr/joint-statement-department-justice-department-army-and-department-interior-regarding-standing> (“Furthermore this case has highlighted the need for a serious discussion on whether there should be nationwide reform with respect to considering tribes’ views on these types of infrastructure projects.”); EarthJustice, The Standing Rock Sioux Tribe’s Litigation on the Dakota Access Pipeline, Updates and Frequently Asked Questions, <http://earthjustice.org/features/faq-standing-rock-litigation> (interpreting the government’s joint statement as “calling for a national review of the government’s approach to Tribal consultation for major fossil fuel projects”).

Just before the end of the Obama administration, in January 2017, the three departments issued a report on their review of consultation with tribes on infrastructure decisions. Department of Justice, the Department of the Army and the Department of the Interior, Improving Tribal Consultation and Tribal Involvement in Federal Infrastructure Decisions (Jan. 2017) <https://www.bia.gov/cs/groups/public/documents/document/idc2-060030.pdf>. The tribes’ recommendations focused mostly on oil pipelines rather than infrastructure in general. *See, e.g., id.* at 15 (“Clarify the need to conduct an EIS for crude oil pipeline construction and operation.”), *id.* at 52 (“Tribes noted that the most problematic projects reviewed under the NHPA involve extractive industries (such as oil, natural gas and mining).”, *id.* at 65 (“Tribes similarly opposed the use of Nationwide Permits to authorize major infrastructure projects (particularly oil pipelines), which Tribes did not believe sufficiently safeguarded treaty rights.”). The departments, however, did not distinguish between different kinds of infrastructure projects. *Id.* at 16-24.

⁷¹ Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs, No. 16-1534 (JEB), 2016 WL 4734356, at *15 (D.D.C. Sept. 9, 2016). Memorandum from Jo-Ellen Darcy, Assistant Secretary of the Army, to the Commander of the U.S. Army Corps of Eng’rs, Proposed Dakota Access Pipeline Crossing at Lake Oahe, North Dakota 1, 4 (Dec. 2, 2016), <https://www.army.mil/e2/c/downloads/459011.pdf> (“On July 25, 2016, the U.S. Army Corps of Engineers (Corps) granted a permission to applicant Dakota Access, L.L.C. under Section 14 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 408 (Section 408 permission), for a proposed crossing of Lake Oahe, a Corps project on the Missouri River The Section 408 permission

This new policy was reversed by the incoming administration and is now embroiled in court disputes.⁷² The district court reviewing the Army Corp's decision ultimately determined that the lengthy environmental assessment process had failed to adequately consider the possibility of oil spills and the potential impact of the project on cultural resources.⁷³ It remains to be seen whether the courts or future administrations will continue to expand the federal role in interstate pipeline approvals.⁷⁴

was accompanied by an Environmental Assessment, as contemplated under the National Environmental Policy Act, 42 U.S.C. §4321–4335, and its implementation regulations. . . . The Environmental Assessment included a finding that granting the Section 408 permission for the proposed crossing of Lake Oahe did not constitute a major Federal action that would have significant environmental impacts. . . . [T]his decision does not alter the Army's position that the Corps' prior reviews and actions have comported with legal requirements.”); Ellen M. Gilmer, *Obama Admin Denies Final Easement for Pipeline*, E&E NEWS, Dec. 4, 2016 <https://www.eenews.net/stories/1060046601/>

⁷² U.S. ARMY CORPS OF ENG'RS, EASEMENT FOR FUEL CARRYING PIPELINE RIGHT-OF-WAY LOCATED ON LAKE OAHE PROJECT, MORTON AND EMMONS COUNTIES, NORTH DAKOTA (Feb. 8, 2017) http://www.eenews.net/assets/2017/02/09/document_ew_04.pdf. This re-reversal from the Army Corps was made in response to direction from the new administration. Presidential Memorandum Regarding Construction of the Dakota Access Pipeline, Jan. 24, 2017, <https://www.whitehouse.gov/the-press-office/2017/01/24/presidential-memorandum-regarding-construction-dakota-access-pipeline>. See, e.g., Plaintiff Standing Rock Sioux Tribe's Memorandum in Support of Its Motion for Partial Summary Judgment, Standing Rock Sioux Tribe & Cheyenne River Sioux Tribe v. U.S. Army Corps of Engineers, No. 1-16-CV-1534 (Feb. 14, 2017).

⁷³ Standing Rock Sioux v. U.S. Army Corps of Eng'rs, 255 F. Supp. 3d 101 (D.D.C. 2017); Ellen M. Gilmer, *Pipeline's fate uncertain after big legal victory for tribes*, E&E NEWS, Jun. 15, 2017, <https://www.eenews.net/stories/1060056071>.

⁷⁴ There are some signs that courts may be willing to overturn the general federal policy of minimal review for oil and power transport projects. A federal court in Louisiana recently held that the Army Corps's finding of no significant impact for an oil pipeline was invalid, although the decision was subsequently enjoined by the Fifth Circuit Court of Appeals. Ellen Gilmer, *Court lifts freeze*

At the same time that the federal government was seeking to layer federal review on top of state reviews of interstate oil pipelines, it was seeking to remove state review of certain power-line projects. Given the abundance of wind power in the plains states, and the dearth of renewable power in the populous U.S. Southeast, a company, Clean Line Energy Partners, proposed a new power-line from Oklahoma, across Arkansas, to Tennessee. Arkansas, however, saw little benefit in a new power line crossing the state to help power producers and consumers on either side, and rejected the power line. At this point, two federal agencies stepped in—the Department of Energy and the Southwestern Power Authority—and partnered with Clean Line Energy Partners, preempting Arkansas’s rejection of the power-line. This move by the federal government to alter the balance of power in energy federalism is also being challenged in court.⁷⁵

B. State Government’s Expanded Role in Interstate Natural Gas Pipelines

Natural gas pipelines are approved by the federal government, through the Federal Energy Regulatory Commission, and thus states have traditionally not had a significant role in regulating these projects.⁷⁶ But here too the balance of power in energy federalism is under attack as states assert a right to block federally-approved projects. Any significant construction project inevitably requires numerous state and local construction permits: permits to bring in heavy equipment, permits to cross streams, permits to close roads for construction. Historically, a federal permit was generally enough to ensure that these permits were

on *Bayou Bridge project*, E&E NEWS, Mar. 16, 2018, <https://www.eenews.net/energywire/2018/03/16/stories/1060076547>.

⁷⁵ *Downwind LLC v. U.S. Dept. of Energy*, Complaint, Case 3:16-cv-00207-JLH, (E.D. Ark. Aug. 15, 2016) <https://legalelectric.org/f/2016/08/DownwindLLCGoldenBridgeLLC-v-CleanLine.pdf>; Tom Kleckner, *Arkansas Landowners Seek to Stop Plains & Eastern Clean Line Project*, RTO INSIDER, Aug. 18, 2016, <https://www.rtoinsider.com/arkansas-plains-eastern-clean-line-30539/>.

⁷⁶ Natural Gas Act of 1938, 15 U.S.C. §§ 717c, 717f(c)-(h).

granted but first Connecticut and now the State of New York have asserted that they have authority under the United States Clean Water Act Section 401 to deny a state Water Quality Certification to pipelines approved by the federal government.⁷⁷

In 2016, New York denied a Water Quality Certification to the Constitution Pipeline, which was designed to transport natural gas from shale fields in Pennsylvania to consumers in New York, and had been approved by the federal government in 2014.⁷⁸ In doing so, New York was following the example of Connecticut, which in 2006 denied a water quality certification to the federally-approved Islander East pipeline.⁷⁹ New York argued that pipeline construction would endanger New York's water supplies⁸⁰—a contention rejected by the Federal Energy Regulatory Commission.⁸¹ Pipeline backers quickly filed suit, alleging that the state could not deny water quality permits to a federally approved pipeline.⁸² The Second Circuit rejected this lawsuit, holding that

⁷⁷ New York is arguably following the precedent of the Connecticut, which denied

⁷⁸ New York Department of Environmental Conservation, Water Quality Certification/Notice of Denial, Apr. 22, 2016, http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf; Alexandra B. Klass & Jim Rossi, *Reconstituting the Federalism Battle in Energy Transportation*, 41 HARV. ENVTL. L. REV. 423 (2017).

⁷⁹ *Islander East Pipeline Co. v. Conn. Dep't of Env'tl. Prot.*, 482 F.3d 79 (2d Cir. 2006); *Islander East Pipeline Co., LLC v. McCarthy*, 525 F. 3d 141 (2d Cir. 2008).

⁸⁰ *Id.*

⁸¹ Federal Energy Regulatory Commission, Order Issuing Certificates and Approving Abandonment, Dec. 2, 2014, https://elibrary.ferc.gov/id-mws/file_list.asp?accession_num=20141202-4011. Federal Energy Regulatory Commission, Final Environmental Impact Statement for Constitution Pipeline and Wright Interconnect Projects (Oct. 2014) ES-4-ES-5, <https://www.ferc.gov/industries/gas/enviro/eis/2014/10-24-14-eis.asp>.

⁸² *Constitution Pipeline Co. LLC v. N.Y. Dept of Env'tl. Cons.*, Memorandum Decision and Order, No. 1:16-cv-00568-NAM-DJS (N.D.N.Y. March 16, 2017), http://www.abralliance.org/wp-content/uploads/2017/03/Constitution_Pipeline_v_DEC_decision_20170316.pdf; *Constitution Pipeline Co. LLC v. N.Y. Dept of Env'tl. Cons.*, Case No. No. 16-1568, (2d Cir. Aug. 18, 2017) <http://www.politico.com/states/f/?id=0000015d-f5e8-d36c-a17f->

New York had acted reasonably.⁸³ The court, however, stated that the company could file suit in the D.C. Circuit Court of Appeals if it believed that New York had waived its authority to deny the pipeline by taking so long to deny the certificate.⁸⁴

Emboldened by its victory in the Second Circuit, in 2017 the state denied a Water Quality Certification to the Valley Lateral Pipeline proposal, an 8-mile long pipeline also designed to transport natural gas from Pennsylvania to New York.⁸⁵ This short interstate pipeline had been approved by FERC in 2016.⁸⁶ This time, New York did not rely on water quality arguments—instead it premised its decision on the argument that FERC had not done enough to assess how the pipeline would lead to more combustion of natural gas from users at the end of the pipeline.⁸⁷ This time, however, FERC acted, ruling that New York had taken too long to issue this denial and had thus waived its authority to deny the

f5f8b0210000; Constitution Pipeline Co. LLC v. N.Y. Dept of Env'tl. Cons., Complaint, No. 1:16-cv-00568-NAM-DJS (N.D.N.Y. May 16, 2016) <http://nylawyer.nylj.com/adgifs/decisions16/051916complaint.pdf>; Constitution Pipeline Co. LLC v. Seggos, No. 16-1568 (2d Cir. July 19, 2016) http://www.chamberlitigation.com/sites/default/files/cases/files/16161616/U.S.%20Chamber%2C%20et%20al.%20Motion%20to%20File%20Amicus%20Brief%20-%20Constitution%20Pipeline%20Company%2C%20LLC%20v.%20New%20York%20State%20Dept.%20of%20Environmental%20Conservation%20%28Second%20Circuit%29_1.pdf.

⁸³ Constitution Pipeline Co. v. New York State Dept. of Env'tl. Cons. et al., No. 16-1568 (2d Cir. Aug. 18, 2017).

⁸⁴ *Id.*

⁸⁵ New York Department of Environmental Conservation, Valley Lateral Project, Notice of Decision, Aug. 30, 2107, http://www.dec.ny.gov/docs/permits_ej_operations_pdf/valleydecltr.pdf.

⁸⁶ Millennium Pipeline Company, L.L.C., 157 FERC ¶ 61,096 (2016).

⁸⁷ New York Department of Environmental Conservation, Valley Lateral Project, Notice of Decision, Aug. 30, 2107, http://www.dec.ny.gov/docs/permits_ej_operations_pdf/valleydecltr.pdf.

pipeline a Water Quality Certification.⁸⁸ Barring intervention from Congress, the result of lawsuits filed in both these cases will likely determine the balance of power in natural gas transport federalism.

C. The Push for Expanded Environmental Reviews for Energy Transport Projects

In June 2013, President Obama announced a new standard for the Keystone XL pipeline, which had been proposed in 2008 to carry oil from Alberta to the United States: he would only approve the project if it would not increase oil production (and thus greenhouse gas emissions) in Canada. Ultimately, the U.S. State Department, which reviewed the international project, determined that the pipeline probably would not increase oil production in Canada, but it rejected the pipeline anyway in November 2015 because, it said, it would be “perceived” to increase greenhouse gas emissions.⁸⁹ Environmental groups’ success in holding up the Keystone XL project for almost a decade has led to wider efforts to establish a “climate test” for energy transport projects—that would (a) quantify upstream and downstream emissions aided by pipelines and power transmission and (b) would reject projects that would significantly increase those emissions.⁹⁰

Environmental groups are also pushing the federal government to expand environmental reviews of new gas transport—both liquefied natural gas facilities and interstate pipelines—to consider how those transport facilities will encourage natural gas production and consumption.⁹¹ The U.S. government has thus far declined to consider how new

⁸⁸ Federal Energy Regulatory Commission, Declaratory Order Finding Waiver Under Section 401 of the Clean Water Act, 160 FERC ¶ 61,065, Sept. 15, 2017, <https://elibrary.ferc.gov/idmws/common/open-nat.asp?fileID=14681426>.

⁸⁹ James W. Coleman, *Beyond the Pipeline Wars: Reforming Environmental Assessment of Energy Transport Infrastructure*, 2018 UTAH L. REV. 119, 122 (2018).

⁹⁰ *Id.* at 123-34.

⁹¹ Aaron Flyer, *FERC [Federal Energy Regulatory Commission] Compliance Under NEPA [National Environmental Policy Act]: FERC’s Obligation to Fully Evaluate Upstream and Downstream Environmental Impacts Associated with Siting Natural Gas*

pipelines and liquefied natural gas facilities will affect natural gas production and consumption.⁹² The Federal Energy Regulatory Commission has approved 11 of 14 proposed liquefaction facilities and 154 pipeline applications since 2009.⁹³ Yet FERC has resisted calls to consider the environmental impact of increased natural gas production enabled by these new transport facilities.⁹⁴ Under the Obama administration, this led to increasingly high profile interagency conflicts with the Environ-

Pipelines and Liquefied Natural Gas, 27 GEO. INT'L ENVTL. L. REV. 301 (2015) (arguing that FERC must consider upstream and downstream impacts in natural gas pipeline and liquefied natural gas facility approvals); Amy Harder, *Are Natural Gas Exports the Next Keystone?*, WALL ST. JOURNAL, May 18, 2014.

⁹² See, e.g., Federal Energy Regulatory Commission, Sabine Pass Liquefaction Project Modification, Environmental Assessment (Apr. 2013) 66–67 (needs explanation parenthetical); Federal Energy Regulatory Commission, Environmental Assessment for the Sabine Pass Liquefaction Project (Dec. 2011) 2-99–2-100 <http://energy.gov/sites/prod/files/EA-1845-FEA-2011.pdf> (needs explanation parenthetical). FERC has exclusive authority to approve or deny siting, construction, and operation of liquefied natural gas facilities. 15 U.S. Code § 717b(e)(1) (As amended by the Energy Policy Act of 2005, Pub.L. 109–58, this provision reads: “The Commission shall have the exclusive authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal.”).

⁹³ The Department of Energy has approved 18 of these projects and is reviewing 38 more. United States Department of Energy, Summary of LNG Export Applications, <http://energy.gov/sites/prod/files/2016/03/f30/Summary%20of%20LNG%20Export%20Applications.pdf>.

⁹⁴ *Sierra Club v. FERC*, (D.C. Cir. No. 14-1249) 2016 WL 3525562; *Sierra Club v. FERC*, (D.C. Cir. No. 14-1275), 2016 WL 3524262; Michael Burger & Jessica Wentz, *Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review* 42 HARV. ENVTL. L. REV. __ (2016), available at https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=2748702, *23 (“FERC has consistently maintained that it has no obligation to consider greenhouse emissions or any other environmental effects associated with upstream and downstream activities in the natural gas production and supply chain”). In one older case, FERC did consider the downstream impact of increased natural gas use, concluding that it could be controlled by ensuring transport of low sulfur natural gas for combustion. *S. Coast Air Quality Mgmt. Dist. v. FERC*, 621 F.3d 1085, 1089-90 (9th Cir. 2010).

mental Protection Agency, which then believed that FERC should provide full reviews of the upstream and downstream impacts of natural gas projects.⁹⁵ And in two recent cases, the D.C. Circuit reached opposed decisions on whether FERC must consider the downstream impacts of approving natural gas pipelines or liquefied natural gas facilities.⁹⁶

It remains to be seen whether environmental groups will have more luck with the courts, but on February 3, 2017, an outgoing commissioner of FERC, Norman Bay, effectively endorsed these outside arguments for wider environmental assessments.⁹⁷ This argument came in

⁹⁵ U.S. Environmental Protection Agency, Letter to U.S. Federal Energy Regulatory Commission Re: Final Environmental Impact Statement for Columbia Gas Transmission, LLC—Leach Xpress Project, and Columbia Gas Transmission, LLC—Rayne Xpress Expansion Project, Oct. 11, 2016 (FERC’s environmental review “perpetuates the significant emission” by not considering downstream impact and so “We ... request a headquarters level meeting with us to seek a definitive resolution to this matter before you [approve the pipelines] and so that you do not continue to take this approach in additional NEPA documents”); U.S. Environmental Protection Agency, Letter to U.S. Federal Energy Regulatory Commission Re: Comments on the Draft Guidance Manual for Environmental Report Preparation for Applications Under the Natural Gas Act, Jan. 19, 2016 (FERC’s environmental reviews of liquefied natural gas terminals must add assessment of “emissions associated with the production, transport, and combustion of the natural gas”). FERC’s position has generally been supported by the other infrastructure and production approving agencies, such as the Army Corps of Engineers and the Bureau of Ocean and Energy Management. BUREAU OF OCEAN & ENERGY MGMT., OUTER CONTINENTAL SHELF OIL & GAS LEASING PROGRAM: 2012-2017, FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT 8-37 (July 2012) (rejecting consideration of upstream and downstream impacts for oil leases).

⁹⁶ *Sierra Club v. U.S. Dept. of Energy*, Case No. 15-1489 (D.C. Cir. Aug. 15, 2017) [https://www.cadc.uscourts.gov/internet/opinions.nsf/02747B91566F24638525817D004ECC42/\\$file/15-1489-1688746.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/02747B91566F24638525817D004ECC42/$file/15-1489-1688746.pdf); *Sierra Club v. U.S. Fed. Energy. Reg. Comm’n*, Case No. 16-1329 (D.C. Cir. Aug. 22, 2017) https://www.eenews.net/assets/2017/08/22/document_gw_01.pdf.

⁹⁷ Fed. Energy Reg. Comm., Order Granting Abandonment and Issuing Certificates, 158 FERC ¶ 61,145, Feb. 3, 2017, <https://www.ferc.gov/CalendarFiles/20170203194955-CP15-115-000.pdf>.

a separate statement to an otherwise uncontroversial pipeline approval.⁹⁸ Commissioner Bay continued to insist that NEPA does not require FERC to assess upstream and downstream emissions from gas pipelines, noting that “FERC has no authority to regulate the production of natural gas” because “in general, that authority resides with the states.”⁹⁹ Nevertheless, “in light of the heightened public interest and in the interests of good government,” Commissioner Bay said FERC should begin studying the impacts of increased upstream emissions and the downstream impact of natural gas.”¹⁰⁰

D. Objections to Eminent Domain for Energy Transport

A new front has opened in the energy transport battles, with several lawsuits alleging that private companies should not be allowed to use eminent domain to acquire easements for their projects.¹⁰¹ Eminent domain allows purchase of easements from landowners at fair market value if a deal cannot be reached by negotiation.¹⁰² It is particularly crucial for linear infrastructure such as roads, pipelines, and power-lines because otherwise each landowner along the proposed route can, in theory,

⁹⁸ *Id.*

⁹⁹ *Id.* at Separate Statement of Commissioner Bay *4.

¹⁰⁰ *Id.* at *5.

¹⁰¹ Keith Puntteney et al. v. Iowa Util. Board, Amicus Brief, No 17-0423 (Iowa Jul. 12, 2017) <https://niskanencenter.org/wp-content/uploads/2017/07/Amicus-brief-file-stamped.pdf>; Orus Berkeley et al v. Mountain Valley Pipeline LLC, Complaint, No. __, (W.D. Va. July 26, 2017) https://www.gentrylocke.com/wp-content/uploads/2017/07/Gentry-Locke_FERC-Complaint.pdf; Laura Urban et al. v. Federal Energy Regulatory Commission, Complaint, No. 5:17-cv-01005-JRA (N.D. Ohio, May 12, 2017) <https://www.courthousenews.com/wp-content/uploads/2017/05/NexusPipeline.pdf>.

¹⁰² Amnon Lehavi & Amir N. Lich, *Eminent Domain, Inc.*, 107 COLUM. L. REV. 1704, 1729 (2007).

hold out for a higher price to try to capture the entire economic value of the project.¹⁰³

These lawsuits, as yet unresolved, have been filed in multiple federal and state courts and allege that under state and federal constitutions, energy transport companies may not use eminent domain.¹⁰⁴ They rely on multiple theories. Some argue that private companies may not use eminent domain without a particularly strong government showing of why those companies are operating in the public interest.¹⁰⁵ Some argue that foreign corporations should not be allowed to use eminent domain.¹⁰⁶ Some scholars argue that the federal government simply was never intended to have the power of eminent domain.¹⁰⁷ And some suggest that the case could be a vehicle for overturning the Supreme Court's controversial decision authorizing eminent domain on behalf of private companies in *Kelo v. New London*, 545 U.S. 469 (2005).¹⁰⁸

¹⁰³ *Id.* at 1710 (noting that pipelines are among the “Quintessential Public Projects” because “often there may be one feasible route” and “persons owning land along the designated path are tempted to hold out for a high price in excess of the land's opportunity cost”).

¹⁰⁴ *Downwind LLC v. U.S. Dept. of Energy*, Complaint, Case 3:16-cv-00207-JLH, (E.D. Ark. Aug. 15, 2016) <https://legalelectric.org/f/2016/08/DownwindLLCGoldenBridgeLLC-v-CleanLine.pdf>; Tom Kleckner, *Arkansas Landowners Seek to Stop Plains & Eastern Clean Line Project*, RTO INSIDER, Aug. 18, 2016, <https://www.rtoinsider.com/arkansas-plains-eastern-clean-line-30539/>.

¹⁰⁵ *Orus Berkeley et al v. Mountain Valley Pipeline LLC*, Complaint, No. ___, (W.D. Va. July 26, 2017) https://www.gentrylocke.com/wp-content/uploads/2017/07/GentryLocke_FERC-Complaint.pdf.

¹⁰⁶ *Laura Urban et al. v. Federal Energy Regulatory Commission*, Complaint, No. 5:17-cv-01005-JRA (N.D. Ohio, May 12, 2017) <https://www.courthousenews.com/wp-content/uploads/2017/05/NexusPipeline.pdf>.

¹⁰⁷ William Baude, *Rethinking the Federal Eminent Domain Power*, 122 YALE L. J. 1738 (2013).

¹⁰⁸ Ellen M. Gilmer, *Burgeoning legal movement pits landowners against pipelines*, E&E News, Sept. 13, 2017, <https://www.eenews.net/stories/1060060443> (“it’s possible that they might rethink parts of *Kelo* or maybe even overrule it”).

If successful, these lawsuits would force energy transport companies to try to somehow piece together continuous easement routes from willing landowners—any route could be foiled by a single hold out landowner.¹⁰⁹ Thus, they pose an existential threat to pipelines and power-lines.

E. Cross-Cutting Energy Transport Law & Markets Require Simultaneous Focus on Both Pipelines and Power-lines

The highest profile energy transport battles have been for oil pipelines—particularly the Keystone XL and Dakota Access Pipelines—and, to a lesser extent, natural gas pipelines such as the Constitution Pipeline. Environmental advocates looking to stop pipelines have advocated for each of the changes suggested above: overlapping federal and state reviews, expanded environmental assessments, and restricted use of eminent domain. But focusing too intently on oil pipelines can obscure the ways that these changes to the approval process will also affect the other energy transport projects that the United States needs to move toward a cleaner energy transport system.¹¹⁰ First, each of these procedures may have a serious impact on approving new power transmission. Second, aligning energy transport procedures could enable a transition to cleaner energy because the current system is stacked in favor of fossil fuel transport.

Each of the new hurdles advocated for oil pipelines poses a serious risk of tripping up power-line projects. For example, a new federal commitment to do full environmental and cultural review of interstate energy transport projects like the Dakota Access pipeline would also require federal review of interstate power transmission projects. So power-lines and oil pipelines would both be subjected to two levels of review,

¹⁰⁹ Thomas W. Merrill, *The Economics of Public Use*, 72 CORNELL L. REV. 61, 74-77 (1986).

¹¹⁰ And, of course, policymakers should be wary of adopting procedural suggestions from groups whose substantive goals are to prevent any future approvals. Similarly, it would be a mistake to let anti-wind power groups set the procedure for approval of wind turbines.

requiring approvals from all state regulators as well as the federal government. And decisions to limit the use of eminent domain by private companies would impact power transmission as well. In fact, the impact would likely be more severe because landowners have traditionally been warier of granting easements for power lines than pipelines, because pipelines, once buried in the ground, are invisible.¹¹¹

Similarly, if upstream and downstream reviews gain traction in the courts, it may increase uncertainty for power-line proposals as well. Of course, power-lines for renewable power transmission have many beneficial downstream impacts—reducing emissions from fossil fuel plants.¹¹² Indeed, the Federal Energy Regulatory Commission has mandated that when states make transmission decisions they must consider how their decisions will impact the ability of neighboring states to meet their renewable targets.

But there is no reason to think that electric transmission will be uniquely immune from the uncertainties and delay caused by expanded and uncertain environmental assessments. First of all, power transmission has historically attracted *more* opposition than oil and gas pipelines because transmission is above the ground, leaving a permanent eyesore.¹¹³ Second, the renewable projects themselves often attract local op-

¹¹¹ Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947 (2015).

¹¹² Coleman, *supra* note [] at 1378 (“For example, a transmission line from in-state windmills to out-of-state consumers could also provide those consumers with cleaner air if it displaced local coal power.”). And FERC has told states it must consider these benefits in setting transmission policy. United States Federal Energy Regulatory Commission, Order 1000, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 76 Fed. Reg. 49842 (Aug. 11, 2011). See Amy Stein, *The Tipping Point of Federalism*, 45 CONN. L. REV. 217, 245–46 (2012) (exploring disparity between electricity generation siting which nominally remains in state control and siting regimes governing electricity and natural gas transmission); Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 VAND. L. REV. 1679, 1692 n.45 (2012).

¹¹³ Lita Furby et al., *Public perceptions of electric power transmission lines*, 8 J. ENVTL. PSYCH. 19, 20 (1988) (“Transmission lines currently represent a problem

position driven by the effects of large solar and wind facilities on sensitive species, local land-use, and aesthetic values.¹¹⁴ These opponents of wind and solar projects will use the same tactics employed in pipeline debates: even a project that has received site approvals will never be built if it cannot connect to centers of demand. With an expanded environmental impact assessment, the transmission approval process will provide another opportunity to re-litigate familiar disputes that wind turbines endanger bird populations and damage scenic vistas or that solar farms have impacts on water use, land use, and endangered species.

Transmission opponents can and will add arguments that all the downstream economic activity that is served by electricity has negative impacts on the environment, or that the power transmission, which is open to all users, will be diverted to serve fossil fuel power plants.¹¹⁵ And the arguments for considering upstream and downstream consequences of electricity transmission are, if anything, more reasonable than the same case for oil pipelines: oil can go by rail, ship, or pipeline, electric power can only go by transmission lines. Thus, renewable power is, if anything, more vulnerable than oil pipelines to delay-by-environmental-review tactics. And so it has proved. When investors proposed the

area in the electric power system: they require considerable land for their corridors, and the use of that land for transmission lines may conflict with other land use practices or plans; they cause noise; they are perceived to cause health problems and safety risks for both animals and humans. As a result, high-voltage transmission lines have recently met a very significant amount of public opposition... Opposition to transmission line siting and construction has sometimes caused enormous costs to the utilities, through long delays in regulatory approval, litigation fees, and occasionally even vandalism.”).

¹¹⁴ Patrick Devine-Wright, Working Paper, *Reconsidering Public Attitudes and Public Acceptance of Renewable Energy Technologies: A Critical Review* (Feb. 2007), http://geography.exeter.ac.uk/beyond_nimbyism/deliverables/bn_wp1_4.pdf, at *3 (discussing “widespread local opposition towards renewable energy developments, particularly wind and biomass”).

¹¹⁵ Adam Orford, *Transmission and the Environment: Power to the People: Primer on NEPA and Transmission Lines*, 29 NAT. GAS & ELEC. J. 16, 21 (2013) (“Perhaps most commonly, today’s transmission opponents may argue that the agency should review and disclose the impacts of induced energy generation as an ‘indirect effect.’ This might include greenhouse gas emissions if the line is expected to induce, for example, new fossil generation”).

“Northern Pass” power line to take hydropower from Canada to Massachusetts, opponents objected that helping Canadian hydropower endangered fish populations in Canada.¹¹⁶ This strategy was ultimately successful when New Hampshire rejected the power-line in February 2018.¹¹⁷

Similarly, eminent domain arguments against oil pipelines are being used effectively against power lines for renewables as well. Resisting eminent domain was another key strategy of the successful opposition to the Northern Pass power-line.¹¹⁸ And in Missouri, opponents have been able to repeatedly delay construction of a power-line designed to carry wind-energy to the Midwest.¹¹⁹ Thus while oil pipelines grab the national headlines, power-lines across the country are being held up using the same legal arguments.

Finally, focusing on energy transport as a whole, and aligning energy transport procedures could be a very effective means of encouraging a transition to a cleaner energy system because the combination of market realities and current procedures favor fossil fuels. The irony of focusing on oil pipeline transport is that this is the least important link in the energy transport chain: whether or not oil pipelines are built, oil will typically get to market because oil can be easily moved by rail, barge, or truck. Natural gas and electricity, by contrast, can only be moved with

¹¹⁶ David Brooks, *What Does the Quick Approval of a Vermont Power Line Say About Northern Pass?*, CONCORD MONITOR, Jan. 8, 2016, <http://www.concord-monitor.com/Archive/2016/01/vermontElectricity-cm-010816> (noting that environmental groups oppose transmission to bring hydropower into New England because “reservoirs displaced native peoples and swamped ecosystems covering hundreds of square miles, including an infamous 1984 drowning of some 10,000 caribou during a water release from a dam”).

¹¹⁷ Michael Cousineau, *Northern Pass ‘shocked and outraged’ by application denial*, NEW HAMPSHIRE UNION LEADER, Feb. 1, 2018, <http://www.union-leader.com/article/20180201/NEWS05/180209909>.

¹¹⁸ Amanda Loder, *Why Eminent Domain Bills Are Center Stage In Northern Pass Controversy*, NATIONAL PUBLIC RADIO, Jan. 18, 2012, <https://stateimpact.npr.org/new-hampshire/2012/01/18/why-eminent-domain-bills-are-center-stage-in-northern-pass-controversy/>.

¹¹⁹ Eric Dundon, *Grain Belt Express denied a third time*, COLUMBIA DAILY TRIBUNE, Aug. 16, 2017, <http://www.columbiatribune.com/news/20170816/grain-belt-express-denied-third-time>.

large-scale projects such as pipelines, liquefaction facilities, and power lines. So if new procedures raise the cost of power lines and gas pipelines, that will raise the cost of moving to a system that relies more on gas and renewable power and less on easily transportable commodities such as oil and coal.

Furthermore, as between natural gas and power, current procedures are more favorable to gas transport because, New York notwithstanding, interstate gas pipelines generally only need a single federal permit. By contrast, interstate power lines must receive a permit from each state they cross. Utilities must often consider whether to burn more natural gas near its source and transmit power where it is needed or, in the alternative, to transport the natural gas to where power is needed and burn it locally. Under the current divided regulatory system, it is easier to get approval for an interstate gas pipeline than an interstate power line, so utilities tend to transport the gas. But to move to a renewable energy future, it would make more sense to build an interstate power line that could be used to transport power from all sources: not just gas power plants, but also new wind turbines and solar panels. Thus, our divided system for approving energy transport actively pushes companies into environmentally counter-productive investments. Thus, proponents of a cleaner energy system have more to gain from considering energy transport methods together and aligning them, rather than by attacking the system piece-meal.

III. HOW POLICY UNCERTAINTY IMPACTS INVESTMENT IN ENERGY TRANSPORT

Investors in energy transport projects demand a rate of return that compensates them for both the cost of the project and the danger that the project will be delayed or canceled. As uncertainty increases due to expanded reviews of these projects, investors will charge more to transport fuel and electricity. Thus, energy consumers and producers will end up paying the costs imposed by expanded reviews.¹²⁰ And each of

¹²⁰ This is another way that media focus on individual pipeline controversies sometimes misses the tensions driving energy policy. In the moment of transition, expanding review often has the most tangible effect on the energy company whose project is delayed. Yet after reviews have been expanded that is

these trends is exacerbated in restructured or “deregulated” markets where investors have no guarantee of getting their money back.¹²¹

Given their regulatory complexity, companies developing interstate energy projects already demand higher rates of return than they would receive for a typical intrastate project.¹²² As states and the federal government add further overlapping reviews, as environmental assessments are expanded, and as more landowners challenge the use of eminent domain for energy transport projects, investors will demand even higher rate of returns.

Higher rates of return will raise the cost consumers pay to achieve the promise of an energy transition enabled by affordable new production of wind and gas power.¹²³ One consistent theme of literature on the cost of transitioning to these power sources is that it would be minimized by creating regulatory certainty.¹²⁴

simply one more cost that energy companies will build into the structure of their project.

¹²¹ Jay Apt et al., *Promoting Low Carbon Electricity*, 23 ISS. ONL. IN SCI. & TECH. (2007) (“Profits are based on a set rate of return on capital, so more investment means more profit. When the PUC approves such investments, utilities find that they can borrow capital at reasonable rates, since the lenders correctly perceive that they face low risk because the rate of return is guaranteed and the utility faces no competition within its service territory. On the other hand, investors lending funds to competitive power producers face uncertain returns and so lend at much higher rates. Not surprisingly, the majority of utilities contemplating investments in large low-carbon plants are in regulated states, where they are attempting to secure access to capital by partnering with their public utility commissions to build such facilities.”).

¹²² Phil McKenna, *Pipeline Payday: How Builders Win Big, Whether More Gas Is Needed or Not*, INSIDE CLIMATE NEWS, Feb. 8, 2017, <https://insideclimate-news.org/news/02082017/natural-gas-pipeline-boom-corporate-profit-bubble-limited-demand-climate-emissions>.

¹²³ Biao Yang, Neil D. Burns, & Chris J. Backhouse, *Management of uncertainty through postponement*, 42 INT’L J. PROD. RES. 1049 (2004); Elizabeth Olmsted Teisberg, *Capital Investment Strategies under Uncertain Regulation*, 24 RAND J. ECON. 591 (1993).

¹²⁴ Organization for Economic Cooperation and Development, “Fragmentation in clean energy investment and financing” in OECD Business and Fi-

Apart from making energy transport more expensive, on the margin expanded reviews will also make some energy transport projects not worth pursuing. This too has costs. There are the economic costs to consumers who are unable to purchase cheaper power and fuel and to the producers who cannot serve them. But there are other costs.

There are environmental costs: unable to access cheaper and cleaner sources like wind power and natural gas, power producers are stuck with older, dirtier sources like oil and coal. For example, there are not enough gas pipelines to New England to serve all of its heating and power needs in severe cold weather.¹²⁵ Although Pennsylvania is flooded with some of the cheapest gas in the world, New England's inadequate

nance Outlook 2016 (2016) 144 <http://www.oecd.org/investment/investment-policy/BFO-2016-Ch5-Green-Energy.pdf> (“Future regulatory uncertainty makes it difficult for investors to formulate risk and return expectations, causing hesitation and preventing capital inflows.”). *Id.* at 149 (Key cost drivers include “The level of uncertainty, especially within broader enabling conditions, and attractiveness of domestic policy frameworks: projects may face significant speculative risks that are difficult for the private sector to quantify and mitigate, linked notably to unstable and unpredictable legal and regulatory frameworks, high political risk and construction risk.”). Frank Maarten Jan-Venmans, *The effect of allocation above emissions and price uncertainty on abatement investments under the EU ETS*, 126 J. OF CLEANER PROD. 595, 595 (2016) (high levels of uncertainty, creating a risk of offshoring even when companies innovate, creates an option value to postpone abatement investments”). Jay Apt et al., *Promoting Low Carbon Electricity*, 23 ISS. ONL. IN SCI. & TECH. (2007) (“[T]he timing and stringency of pollution constraints remain uncertain. In this climate, companies will likely continue to build conventional high-carbon-emissions plants, because they are cheaper. Indeed, uncertainty may encourage utilities to rush now to build conventional plants in the hope that they will be grandfathered under any new regulations, which would increase total costs by imposing more stringent emission constraints for plants built later.”). Peter Reinelt and David Keith, *Carbon Capture Retrofits and the Cost of Regulatory Uncertainty*, 28 ENERGY JOURNAL 101 (2007) (modeling indicates that regulatory uncertainty may increase the cost of transitioning to cleaner energy sources by as much as 61%). William Blyth et al., *Investment risks under uncertain climate change policy*, 35 ENERGY POL’Y 5766 (2007)

¹²⁵ Jim Polson & Naureen S. Malik, *Oil Tops Gas in New England Power Mix After Temperatures Plummet*, BLOOMBERG, Dec. 28, 2017, <https://www.bloomberg.com/news/articles/2017-12-28/oil-tops-gas-in-new-england-power-mix-as-temperatures-plummet>

pipeline access meant it had the most expensive natural gas in the world during the December 2017 cold snap.¹²⁶ As a result, power producers switched to the very dirtiest sources of power, coal and oil, leaving New England with high power prices and polluted air.¹²⁷

And there are costs for our nation's energy security as well. In late January 2018, New England was forced to import liquefied natural gas from Russia to supplement its poor pipeline access.¹²⁸ The gas came from a company sanctioned by the United States Treasury Department but was available for use in the U.S. because it had been first purchased by French intermediaries.¹²⁹ Thus, while U.S. producers were forced to sell their natural gas at the mid-continent's bargain prices, sanctioned Russian companies received a premium price from gas-starved New England consumers.

IV. PRINCIPLES TO ENABLE THE ENERGY FUTURE

To attract investment in a new energy economy, the U.S. will need procedures that can accommodate increased interest in energy transport decisions while, at the same time, providing certainty to energy transport investors. This section suggests four reforms that could accomplish these twin goals. First, energy transport approvals should invite wider consultation with affected parties while, at the same time, ultimately placing decision-making authority in one level of government. Second, if approval processes are to be reformed, that reform should generally be prospective only, not impacting projects already in the review pipeline. Third, further deadlines for environmental reviews and approvals should be used to motivate prompt action from agency decision-makers. Fourth, judicial review of projects under the National Environmental Policy Act should be streamlined and subject to time limits that address the worst delays. Fifth, the government should sponsor

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ Ben Lefebvre, *Russian gas defies U.S. sanctions to reach New England*, POLITICO, Jan 26, 2018, <https://www.politico.com/story/2018/01/26/russia-gas-sanctions-american-homes-312866>.

¹²⁹ *Id.*

more studies of key nationwide issues—such as the environmental impact of particular fuels or the long-term effects of increased fossil fuel infrastructure—that otherwise may derail individual approval processes.

A. Wide Consultation, One Decision-maker

Governments should make increased provision for wide participation in approvals of energy infrastructure, but energy transport projects should only require approval from federal regulators or state regulators—not both. Whichever regulators are chosen to make this final decision should facilitate input from all levels of government. Stakeholder interest in the global energy industry, both within and beyond their jurisdiction, is appropriate because carbon emissions from the energy industry affect all parts of the globe. Consumer interest in energy supply chains is here to stay.

At the same time, ultimate decision-making authority on energy projects should, to the extent possible, be centralized. It is natural that stakeholders who do not get their way at one level of government should seek to re-litigate the issue at another level. But overlapping decision-makers is a recipe for uncertainty. And there is no reason to think that subjecting each proposed project to multiple veto gates would improve overall economic and environmental results.¹³⁰ Multiple veto gates just mean more opportunities to kill proposed investments—and that is true whether those investments are in oil, gas, or renewable power.

Congress should pass legislation to give the Federal Energy Regulatory Commission authority to approve all modes of interstate energy transport: both power-lines and pipelines, whether they are transporting oil, gas, or power. In effect, this would expand the system that is currently in place for natural gas pipelines to oil pipelines and power lines. At the same time, Congress should explicitly give FERC authority, in consultation with the Environmental Protection Agency, to grant any

¹³⁰ Gary W. Cox & Matthew D. McCubbins, “The Institutional Determinants of Economic Policy” in *PRESIDENTS, PARLIAMENTS, AND POLICY* (eds. STEPHEN HAGGARD & MATHEW D. MCCUBBINS 1999) 48 (describing the concept of “veto gates”).

permits or pre-empt any state or local laws as necessary to complete construction of these federally-approved interstate projects. There is no need to transfer all permit granting authority to the federal agency—instead, FERC could merely step in when a necessary water quality certification or other permit is unreasonably denied or delayed.¹³¹

Canada’s traditional system of energy regulation may be a helpful model here. Canada has traditionally left regulation of energy production (and, to an extent, local pollution) to each province’s sole authority, which is similar to the traditional approach in the United States.¹³² But interprovincial energy transport issues, by contrast, are for the Canadian federal government to decide; provinces have input through the principle of cooperative federalism,¹³³ but cannot veto—or even “frustrate” interprovincial projects.¹³⁴ Although this system is being seriously stressed by Canadian oil pipeline politics today, this overall system allows for wide participation in energy decision-making but ensures that each issue is ultimately decided by a single responsible government.¹³⁵

Current controversies in Canada also provide examples of how the federal government can ensure that subnational governments grant the necessary permits for nation-wide infrastructure—avoiding the New York Constitution Pipeline scenario. In 2016, Kinder Morgan won federal approval to expand its Trans Mountain pipeline, which runs West from oil fields in the province of Alberta across the province of British Columbia to the port of Vancouver.¹³⁶ The pipeline, however, is quite

¹³¹ *Piedmont Envtl. Council v. FERC*, 558 F.3d 304, 320 (4th Cir. 2009).

¹³² Fenner L. Stewart, “How to Deal with a Fickle Friend? Alberta’s Troubles with The Doctrine of Federal Paramountcy” in 2017 ANNUAL REVIEW OF INSOLVENCY LAW (Janis P. Sarra & Barbara Romaine, eds.) (2018) 163.

¹³³ Fenner L. Stewart, *Jurisdictional Immunity, Federal Paramountcy, Co-operative Federalism, and the Disinterested Regulator: Exploring the Elements of Canadian Energy Federalism in the Grant Thornton Case*, BANKING & FINANCE L. REV. (2018) (forthcoming).

¹³⁴ Stewart, *supra* note 130; Stewart, *id.*; *Canadian Western Bank v Alberta*, 2007 SCC 22, [2007] 2 SCR 3; *Campbell-Bennett v. Comstock Midwestern Ltd.*, S.C.R. 207 (Sup. Ct. of Canada 1954).

¹³⁵ Stewart, *id.*

¹³⁶ Prime

controversial in British Columbia.¹³⁷ In fact, British Columbia's ruling coalition is formed by two parties who joined forces in the province's legislative assembly based on an agreement to "[i]mmediately employ every tool available to the new government to stop the" federally-approved "expansion of the Kinder Morgan pipeline."¹³⁸ In practice, this has meant that the provincial government and local governments have slow-walked and denied permits to Kinder Morgan as it attempts to complete expansion of the pipeline.¹³⁹

In response, the federal government has developed an expedited procedure for excusing compliance with provincial and local ordinances that hold up pipeline construction.¹⁴⁰ It has already employed this authority to invalidate various local roadblocks for the Trans Mountain pipeline such as plan approvals and tree cutting permits that Kinder Morgan had sought to complete its construction.¹⁴¹

Every national project requires numerous local permits: permits to cross local water bodies, permits to shut down roads to bring in heavy equipment, variances from local zoning requirements, permits for noisy

Minister Justin Trudeau's Pipeline Announcement, JUSTIN TRUDEAU, PRIME MINISTER OF CANADA (Nov. 30, 2016), <http://pm.gc.ca/eng/news/2016/11/30/prime-minister-justin-trudeaus-pipeline-announcement>.

¹³⁷ 2017 Confidence and Supply Agreement between the BC Green Caucus and the BC New Democrat Caucus, http://bcndpcaucus.ca/wp-content/uploads/sites/5/2017/05/BC-Green-BC-NDP-Agreement_vf-May-29th-2017.pdf.

¹³⁸ *Id.*

¹³⁹ Gordon Hoekstra, *B.C. considering appeal of NEB dispute process for permitting of Trans Mountain pipeline*, VANCOUVER SUN, Jan. 19, 2018, <http://vancouver-sun.com/business/energy/b-c-considering-appeal-of-neb-dispute-process-for-permitting-of-trans-mountain-pipeline>.

¹⁴⁰ National Energy Board of Canada, Decision on Motion, Trans Mountain Pipeline ULC (Jan. 18, 2018), <https://apps.neb-one.gc.ca/REGDOCS/Item/Filing/A89357>.

¹⁴¹ Claudia Cattaneo, *NEB rules in favour of Trans Mountain on Burnaby bylaw impasse*, FINANCIAL POST, Dec. 7, 2017, <http://business.financial-post.com/commodities/energy/neb-rules-in-favour-of-trans-mountain-on-burnaby-bylaw-impasse>.

equipment. Groups that are unhappy with national approvals of national infrastructure can use each of these permitting decisions as veto gates to frustrate national policies. Congress should give sufficient authority to FERC to ensure that national policy is implemented.

If, alternatively, the federal government chooses to maintain the current division between federal approval of natural gas pipelines and state-by-state approval of oil pipelines and power lines, it should assure that only one level of review is required: either federal or state. Thus, on one hand, federal reviews of interstate natural gas pipelines should be supplemented with federal authority to waive state requirements holding up those pipelines. And on the other hand, the federal government should refrain from imposing environmental reviews on power lines and oil pipelines, which are reviewed by the states.

B. Changes to Approval Process Should Be Prospective Only

To the extent possible, changes to the rules of environmental review and the standards for approval should be implemented only prospectively, so that the goalposts are not moved half-way through the review process. This would allow continued improvement in environmental assessment while providing a measure of certainty to investors in interstate energy transport.¹⁴²

For example, scientists continue to improve techniques for assessing the “life cycle” impacts of energy production; these assessments show the net impact of a fuel over its full cycle from production to transport to consumption.¹⁴³ These techniques can be helpful to answer general questions about fuel such as: When you consider the land used by corn, does ethanol really cause less greenhouse gas emissions than gasoline? Or when you consider the power plants that provide electricity,

¹⁴² In fact, this change would remove one current disincentive for improving environmental review procedures: reformers would no longer have to worry about sending current projects back to square one.

¹⁴³ James Coleman et al., *Calibrating Liquefied Natural Gas Export Life Cycle Analysis: Accounting for Legal Boundaries and Post-Export Markets*, CAN. INST. RES., May 2015, at 1.

do electric cars cause less greenhouse gas emissions than gasoline vehicles?¹⁴⁴

These techniques, however, do not yet provide resolution to determine whether a single energy transport project will raise or lower global greenhouse gas emissions.¹⁴⁵ (And may never be able to provide this resolution.) Governments should continue attempting to improve this method of environmental assessment but should not impose it as part of existing reviews. Developing experimental methods of study within an environmental review process simply imposes too much delay and uncertainty on the environmental review process.

Judicial review of environmental reviews have a natural tendency to change the rules midstream because judicial review is inherently backward-looking. When a judge holds that a long-standing environmental review practice does not comply with the National Environmental Policy Act, she holds that review invalid. She cannot make her ruling prospective only.¹⁴⁶ This makes the National Environmental Policy Act a particularly dangerous tool to energy transport investors who would like to be able to rely on a federal approval once it is given. This problem is particularly vexing because NEPA does not include a statute of limitations;

¹⁴⁴ James W. Coleman & Sarah Marie Jordaan, *Clearing the Air: How Canadian Liquefied Natural Gas Exports Could Help the World Meet Its Climate Goals*, C.D. HOWE INSTITUTE, ISSUE BRIEF (2016) 2.

¹⁴⁵ James W. Coleman, *Beyond the Pipeline Wars: Reforming Environmental Assessment of Energy Transport Infrastructure*, 2018 UTAH L. REV. 119, 142-45 (2018).

¹⁴⁶ *Harper v. Virginia Dept. of Taxation*, 509 US 86 (1993) (“a rule of federal law, once announced and applied to the parties to the controversy, must be given full retroactive effect by all courts adjudicating federal law”). For the split rationale that the court used to reach this conclusion *see* *James B. Beam Distilling Co. v. Georgia*, 501 U.S. 529, 535 (1991) (Souter, J., opinion of the court) (judicial decisions are “overwhelmingly” “fully retroactive, applying both to the parties before the court and to all others by and against whom claims may be pressed, consistent with res judicata and procedural barriers such as statutes of limitations”) & 546-47 (White, J., concurring) (arguing that judicial rulings may sometimes be prospective because judges sometimes “make” law) & 549 (Scalia, J. concurring) (“judges in a real sense ‘make’ law [b]ut they make it as judges make it, which is to say as though they were ‘finding’ it — discerning what the law is, rather than decreeing what it is today changed to, or what it will tomorrow be”).

NEPA actions are only limited by the Administrative Procedure Act's six-year statute of limitations.¹⁴⁷ In theory then, a power line or pipeline that received approval and was built in 2018 could lose its authorization to operate due to a suit filed in 2024 (and potentially resolved years later).¹⁴⁸

Thus, aggressive judicial expansion of environmental reviews is a unique danger to energy transport investment. To combat this, reviewing courts should take two steps. First, courts should be wary of reading new procedural requirements into environmental reviews. Time and time again, the Supreme Court has unanimously reversed lower courts that demanded expanded environmental reviews.¹⁴⁹ In fact, the Supreme Court has never held that a NEPA review was insufficient.¹⁵⁰ The average NEPA review now takes five years to complete and even a finding of no significant impact—a finding that a full NEPA review is not necessary—can cover 1200 pages.¹⁵¹ Any court can find imperfect reasoning in such a gargantuan document, but courts must give more weight to both the imperative of speeding reviews and the consistent guidance of

¹⁴⁷ *Sierra Club v. Slater*, 120 F. 3d 623, 630-31 (6th Cir. 1997).

¹⁴⁸ If the government believed it was prejudiced by the delay, it could attempt to argue that the decision was protected by the doctrine of *laches*. *Id.* Of course, the government defending the permitting decision could be an entirely different government than the one that made the initial decision, and might have an entirely different energy policy.

¹⁴⁹ Richard J. Lazarus, *The National Environmental Policy Act in the U.S. Supreme Court: A Reappraisal and A Peek Behind the Curtains*, 100 GEO. L. J. 1507 (2012) (“The Supreme Court has decided seventeen cases arising under the National Environmental Policy Act (NEPA) and the government has not only won every case, but won almost all of them unanimously.”).

¹⁵⁰ *Id.*

¹⁵¹ See e.g. U.S. ARMY CORPS OF ENG'RS, MITIGATED FINDING OF NO SIGNIFICANT IMPACT, ENVIRONMENTAL ASSESSMENT DAKOTA ACCESS PIPELINE PROJECT WILLIAMS, MORTON, AND EMMONS COUNTIES, NORTH DAKOTA (Jul 2016) available at <http://www.energylawprof.com/wp-content/uploads/2017/03/DAPL-EA-VOL-1.pdf> & <http://www.energylawprof.com/wp-content/uploads/2017/03/DAPL-EA-Vol-2.pdf>.

the Supreme Court that NEPA does not impose any procedures beyond those “stated in the plain language of the Act.”¹⁵²

Second, although courts cannot make their civil rulings prospective-only, they can limit the practical impact of striking down an environmental review by allowing the project proponent to continue building and operating its facility while the federal agency supplements its environmental review.¹⁵³ The energy company building a power line or pipeline should be allowed to take the risk that the federal agency might change its views after completing the supplemental review ordered by the court. In most cases, by the time a court rules that the government should have considered a question more carefully, the government will already have asserted that it would have reached the same decision in any event. Thus, in the run of the mill case, the government’s supplemental court-ordered environmental review is exceedingly unlikely to change its ultimate decision on an energy transport project. To avoid needless delay, project proponents should be allowed to continue building their project at their own risk.¹⁵⁴

Finally, if courts do not moderate their demands for ever-lengthier environmental reviews, Congress should step in to restore a balance between making reviews more predictable and timely while maintaining their rigor. An amendment to NEPA would be an imprecise tool for

¹⁵² Vermont Yankee Nuclear Power Corp. v. Natural Res. Defense Council, Inc., 435 U.S. 519, 548 (1978). In other words, courts should take more seriously their oft-stated commitment not to “flyspeck” a weighty environmental review. Theodore Roosevelt Conservation P’ship v. Salazar, 661 F.3d 66, 75 (D.C. Cir. 2011); Northwest Indian Cemetery Protective Association v. Peterson, 795 F.2d 688, 695 (9th Cir.1986) *reversed on other grounds by Lyng v. Northwest Indian Cemetery Protective Assn.*, 485 U.S. 439 (1988).

¹⁵³ In the context of natural gas pipelines, this means remanding to FERC without vacating the certificates it has granted the pipeline company. Ellen M. Gilmer, *Shutdown day for Southeast pipeline? All eyes on the court*, E&E NEWS, Feb. 7, 2018, <https://www.eenews.net/stories/1060073089>; Ellen M. Gilmer, *Sabal Trail permits 'defective and unlawful' — enviros*, E&E NEWS, Feb. 20, 2018, <https://www.eenews.net/stories/1060074237>.

¹⁵⁴ This is effectively what the district court allowed in the Dakota Access case. *Standing Rock Sioux v. U.S. Army Corps of Eng’rs*, Memorandum, (D.D.C. Oct. 11, 2017) https://scholar.google.com/scholar_case?case=16913861855548665724

accomplishing this balance, but if necessary, Congress could raise the bar for winning a preliminary injunction under NEPA or codify further deference to agency decisions. As explained below, a more radical step would simply immunize from review any project that had languished in the approval process for more than four years.

C. Deadlines for Environmental Reviews.

Congress should mandate and federal agencies should implement faster deadlines for environmental reviews of energy transport projects. The average federal environmental impact statement currently takes five years to prepare.¹⁵⁵ These delays make it impossible for U.S. companies to respond nimbly to the shifting geography of energy supply and demand. And they are not necessary to protect the environment; Canada, a nation that is arguably on the cutting edge of environmental assessment practice, has recently proposed expanding the scope of its environmental reviews and completing them in a maximum of 300 days—less than a year.¹⁵⁶ There is simply no reason that a careful environmental review should take half a decade to complete.

The NEPA environmental impact statement process has always been slow and is getting slower. A ten-year 2008 study found that the average NEPA review took 3.4 years and that this average time period was growing over time.¹⁵⁷ A 2015 Department of Energy study found that the average NEPA review took over 4 years,¹⁵⁸ and a 2016 review

¹⁵⁵ See *infra* notes 157-159.

¹⁵⁶ Government of Canada, A Proposed New Impact Assessment System, <https://www.canada.ca/en/services/environment/conservation/assessments/environmental-reviews/environmental-assessment-processes.html> (describing proposal). The very largest projects would be allowed double the time, 1.6 years, which is still less than a third of the average time for a U.S. review. See *infra* notes 157-159.

¹⁵⁷ Piet Dewitt & Carole A. DeWitt, *How Long Does It Take to Prepare an Environmental Impact Statement?*, 10 ENVIRONMENTAL PRACTICE 164 (2008).

¹⁵⁸ UNITED STATES DEPARTMENT OF ENERGY, LESSONS LEARNED QUARTERLY REPORT, Mar. 2016, <http://energy.gov/nepa/downloads/lessonslearned-quarterly-report-march-2016>. A 2014 study from the U.S. Government Accountability found that the average time for a NEPA review was

by the National Association of Environmental Professionals found that the average review took 5.1 years to complete.¹⁵⁹ Some reviews last much more than a decade.¹⁶⁰

These timelines slow U.S. companies trying to keep pace with changes in the geography of energy supply and demand. Consider how energy markets can change in four years:

- In 2008, the U.S. Energy Information Administration projected that the U.S. would have 30 Gigawatts of wind power generation by 2015 and just 140 Megawatts of solar photovoltaic power.¹⁶¹
- In 2012, the U.S. already had installed over 39 Gigawatts of wind power and 380 Megawatts of solar photovoltaic and was projected to have 54 Gigawatts of wind power and 2,000 Megawatts of solar photovoltaic power installed by 2015.¹⁶²
- In 2008, the United States, faced with high natural gas prices, was building multi-billion-dollar terminals to import liquefied natural gas from countries across the world.¹⁶³

4.6 years. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, LITTLE INFORMATION EXISTS ON NEPA ANALYSES, Apr. 2014, <https://www.gao.gov/assets/670/662543.pdf>.

¹⁵⁹ National Association of Environmental Professionals' (NAEP's) National Environmental Policy Act (NEPA) Practice, *NAEP Annual National Environmental Policy Act (NEPA) Report for 2016*, <http://www.naep.org/nepa-2016-annual-report>.

¹⁶⁰ Dewitt *supra* note 157 at 165.

¹⁶¹ U.S. ENERGY INFO. ADMIN, ANNUAL ENERGY OUTLOOK 2008 142 (2008) [https://www.eia.gov/outlooks/archive/aeo08/pdf/0383\(2008\).pdf](https://www.eia.gov/outlooks/archive/aeo08/pdf/0383(2008).pdf).

¹⁶² U.S. ENERGY INFO. ADMIN, ANNUAL ENERGY OUTLOOK 2012 206 (2012) [https://www.eia.gov/outlooks/archive/aeo12/pdf/0383\(2012\).pdf](https://www.eia.gov/outlooks/archive/aeo12/pdf/0383(2012).pdf).

¹⁶³ U.S. ENERGY INFO. ADMIN, ANNUAL ENERGY OUTLOOK 2008 48 [https://www.eia.gov/outlooks/archive/aeo08/pdf/0383\(2008\).pdf](https://www.eia.gov/outlooks/archive/aeo08/pdf/0383(2008).pdf).

- In 2012, the United States, benefiting from massive new production of natural gas was looking forward to years of low prices and a future as a liquefied natural gas exporter.¹⁶⁴
- In 2010, United States oil production had fallen for four decades and stood at 5.5 million barrels per day of oil.¹⁶⁵ Meanwhile, the country imported 9.4 million barrels of petroleum products per day.¹⁶⁶
- By 2014, United States oil production had spiked to 8.8 million barrels per day and net imports had fallen to 5.1 million barrels per day.¹⁶⁷

The need to shorten the absurd time frames now required to complete environmental reviews is one of the few areas of bipartisan

¹⁶⁴ U.S. ENERGY INFO. ADMIN, ANNUAL ENERGY OUTLOOK 2012 91 [https://www.eia.gov/outlooks/archive/aeo12/pdf/0383\(2012\).pdf](https://www.eia.gov/outlooks/archive/aeo12/pdf/0383(2012).pdf).

¹⁶⁵ U.S. Energy Information Administration, Petroleum & Other Liquids, Crude Oil Production, https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm.

¹⁶⁶ U.S. Energy Information Administration, Petroleum & Other Liquids, U.S. Net Imports of Crude Oil and Petroleum Products, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mtt-ntus2&f=a>.

¹⁶⁷ U.S. Energy Information Administration, Petroleum & Other Liquids, Crude Oil Production, https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm. U.S. Energy Information Administration, Petroleum & Other Liquids, U.S. Net Imports of Crude Oil and Petroleum Products, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mtt-ntus2&f=a>. See also graph at: <https://twitter.com/EnergyLawProf/status/862718015091208192>. In the same year, petroleum product exports *from the* United States reached 4.2 million barrels per day. U.S. Energy Information Administration, Petroleum & Other Liquids, U.S. Exports of Crude Oil and Petroleum Products, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mttexus2&f=a>. By 2017, it reached 6.3 million barrels per day. *Id.*

agreement in investment and infrastructure policies.¹⁶⁸ Several initiatives have been taken to try to shorten these reviews.¹⁶⁹ But these initiatives have not been sufficient—reviews still get longer every year.¹⁷⁰

Congress could go further and impose deadlines on environmental reviews. In other areas, agencies have been able to implement timelines for drug approvals.¹⁷¹ Two keys to this have been industry funding

¹⁶⁸ President Obama’s regulatory czar recently highlighted the absurdity of the current burdensome environmental review process. Cass R. Sunstein, *Trump Did Something Good This Week*, Bloomberg (Aug 17, 2017) <https://www.bloomberg.com/view/articles/2017-08-17/trump-did-something-good-this-week> (The status quo is not great. It’s ridiculous. If the permitting bureaucracy were a supervillain, it would be the Blob. It can take several years, and millions of dollars, to obtain environmental clearance for construction permits, even if the goal is to develop green infrastructure and to improve the environment.) These reviews take more than three years on average and may last decades. Piet DeWitt & Carol A. DeWitt, *How Long Does It Take to Prepare an Environmental Impact Statement?*, 10 ENV. PRAC. 164 (2017) <http://www.tandfonline.com/doi/abs/10.1017/S146604660808037X> (The time to prepare an EIS ranged from 51 days to 6,708 days (18.4 years). The average time for all federal entities was 3.4 years. Average times differed significantly by year and by entity. The time for all entities to prepare their EISs increased during our study period by an average of 37 days per year). And these delays often are particularly burdensome for environmentally beneficial projects such as public transport. *See, e.g.*, *Friends of the Capital Crescent Trail v. Fed. Trans. Admin.*, Memorandum Opinion, No. 14-01471 (D.D.C. May 22, 2017) https://ecf.dcd.uscourts.gov/cgi-bin/show_public_doc?2014cv1471-138 (enjoining construction of the purple line mass transit system in Maryland).

¹⁶⁹ Fixing America’s Surface Transportation Act (2015), Public Law No: 114-94, Title XLI; Presidential Memorandum, *Expediting Review of Pipeline Projects from Cushing, Oklahoma, to Port Arthur, Texas, and Other Domestic Pipeline Infrastructure Projects* United States Army Corps of Engineers, Mar. 22, 2013.

¹⁷⁰ *See supra* notes 157-159.

¹⁷¹ Susan Thaul, *Prescription Drug User Fee Act (PDUFA): 2012 Reauthorization as PDUFA*, CONGRESSIONAL RESEARCH SERVICE (Feb. 2013) at 1, 6 <https://fas.org/sgp/crs/misc/R42366.pdf> (noting “general view” that congressionally-mandated deadlines for Food & Drug Administration approval of new drugs “has succeeded”); Margaret Gilhooley, *Drug User Fee Reform: The Problem of Capture and A Sunset, and the Relevance of Priorities and the Deficit*, 41 N.M.

and agreed timelines for review.¹⁷² And the experience of countries like Canada suggests that much shorter deadlines—less than a year in all but the most complex cases—are workable for environmental reviews. At a minimum, Congress should mandate that all environmental reviews be completed in less than two years and give responsible agencies financial incentives to meet these deadlines.

The most frequent criticism of such efforts is that they will lead to rushed environmental reviews that are even more vulnerable to being invalidated by the courts.¹⁷³ But this criticism is misplaced and likely mistaken. It is misplaced because if compliant environmental review under the National Environmental Policy Act unavoidably requires five years then the Act, or its interpretation, must be changed. And it is likely mistaken because if all reviews are accomplished in a timelier fashion, it would likely change expectations of what is feasible in a review: it is doubtful whether judges will expect agencies to complete five years of work in two years.

Finally, Congress could proscribe a more direct and drastic supplemental approach to speeding environmental reviews and declare that compliance with NEPA is waived for projects where the environmental assessment of the project takes more than five years. If an agency wants to reject a project based on its environmental impact, it should be able to do so based on four years of analysis. If it wants to approve the project, and maintains that conviction for longer than a single Presidential term, the project should be approved even if the agency is too dilatory to complete its analysis. Of course, if an energy transport company fails to give the federal government key information that it needs to make a decision in a timely fashion, the federal government should be allowed to delay the decision further. But assuming timely responses from the proponent company, no environmental review should last longer than five years.

L. REV. 327 (2011); Robert Temple, *Commentary on “The Architecture of Government Regulation of Medical Products”*, 82 VA. L. REV. 1877 (1996).

¹⁷² *Id.*

¹⁷³ Ellen M. Gilmer, *Critics on new leasing policy: ‘BLM is inviting lawsuits’*, E&E NEWS, Feb. 2, 2018, <https://www.eenews.net/stories/1060072713>

D. Speeding Judicial Review Under the National Environmental Policy Act

Even when environmental reviews have been concluded, investors cannot count on completing their project—they can get caught in years of litigation over the adequacy of this review. Every year, about 100 projects are challenged under the National Environmental Policy Act, and more than half of these claims are filed in district courts within the U.S. Court of Appeals for the Ninth Circuit.¹⁷⁴ Investors must count on the government to defend their permit, particularly in the Ninth Circuit where project proponents are not even allowed to help the government defend their permit in court.¹⁷⁵

Plaintiffs challenging these environmental reviews enjoy average to above average success rates, and even if a company's permit survives district court review, it can be invalidated in the Court of Appeals.¹⁷⁶ In theory, the government could appeal a loss to the Supreme Court, but the Court has only taken 17 NEPA cases in the half century that the law has operated.¹⁷⁷ Each time the Supreme Court has taken a case, the government has won; indeed almost all of these decisions have been unanimous and several rebuked the lower courts for requiring too much of government environmental reviews.¹⁷⁸

But government agencies cannot count on the Supreme Court to reign in the lower courts—the Supreme Court simply takes too few cases. So if the government wants to ensure that its environmental reviews will stand—that its half decade of review is not struck down—it may gild the lily, doing more and more review to avoid a loss in court. And investors look at this process and see they will have to wait over

¹⁷⁴ Robert L. Glicksman & David E. Adelman, *Presidential Politics and Judicial Review*, _ ARIZ. ST. L. J. _ (forthcoming 2018).

¹⁷⁵ *Churchill County v. Babbitt*, 150 F.3d 1072, 1082 (1998).

¹⁷⁶ *Id.*

¹⁷⁷ Richard J. Lazarus, *The Power of Persuasion before and within the Supreme Court: Reflections on NEPA's Zero for Seventeen Record at the High Court*, 2012 U. ILL. L. REV. 231 (2012).

¹⁷⁸ *Id.*

five years for their review and, even when that is done, may be stuck in years of further litigation.¹⁷⁹

To streamline these reviews, Congress should take two steps. First, NEPA challenges to FERC approvals of natural gas projects already receive expedited review starting in the Courts of Appeals: either the D.C. Circuit or the Circuit where the company's headquarters is located.¹⁸⁰ All energy projects, including solar farms on federal land, and power-lines to support those projects, should receive expedited review in the D.C. Circuit.¹⁸¹

Second, when a company is forced to wait an unreasonable length of time for a permit, that permit should eventually be immunized from invalidation under NEPA. After all, if a government issues an environmental impact statement and permit six years after a project is proposed, what is the benefit of allowing judicial review of that environmental impact statement? The environmental review took six years. If a court believes that is still not enough review, what more would it like: twelve years of review?

¹⁷⁹ Glicksman & Adelman, *supra* note 174 (noting that 25% of district court cases under NEPA last from 3.25-10 years).

¹⁸⁰ 15 U.S. Code § 717r.

¹⁸¹ John O'Connell, Environmental group appeals Gateway West line, Capital Press, Feb. 26, 2017 <http://www.capitalpress.com/Idaho/20170226/environmental-group-appeals-gateway-west-line>; "Sunrise Powerlink Transmission Project," which was proposed by San Diego Gas & Electric Company in 2005 and approved by the California Public Utilities Commission, <https://www.martenlaw.com/newsletter/20090826-lawsuits-to-block-project-approvals>; Susquehanna-Roseland transmission line, [http://www.njherald.com/story/22567023/power-line-foes-fault-60m-deal-with-park#//](http://www.njherald.com/story/22567023/power-line-foes-fault-60m-deal-with-park#/); National Parks Conservation Association v. Jewell, 965 F. Supp. 2d 67, (D.D.C. 2013) https://scholar.google.com/scholar_case?case=5551950006259095397&q=susquehanna+roseland+&hl=en&as_sdt=806; National Parks Conservation Association v. Semonite (D.D.C. 2017); https://scholar.google.com/scholar_case?case=359744031732589671&q=skiffes+creek&hl=en&as_sdt=806 ; https://www.nationalparkstraveler.org/sites/default/files/attachments/final_james_river_transmission_line_complaint.pdf%20Skiffes%20Creek%20Complaint ; Sherwood v. Tennessee Valley Authority, 842 F. 3d 400 (6th Cir. 2016) https://scholar.google.com/scholar_case?case=1675444823495045920 ; Sherwood v. Tennessee Valley Auth., 590 Fed. Appx. 451, 456 (6th Cir. 2014); https://scholar.google.com/scholar_case?case=15820246705084966363 .

And if the government's review is still truly inadequate after six years, why should the private company building the project be punished further? If the government had wanted to, it could have denied the permit at any time in the preceding six years. If it remained committed to the project through multiple administrations and successive congresses, what practical purpose is achieved by further delay?

If NEPA review was precluded after some interval—whether 6 years, 8 years, or 10—the government would still have an incentive to issue timely reviews. Project proponents do not want to wait six years for a permit—they would like their reviews and permitting completed within one or two years. But a time limit would solve the worst cases of delay and address investors' worst fears.

E. Wider Study of Cross-Cutting Issues

There are some cross-cutting issues that tend to arise in multiple individual permitting decisions. For instance: What is the impact of wind power on avian populations? What is the life-cycle impact of natural gas or oil produced by fracking? What level of natural gas infrastructure would be compatible with meeting U.S. climate goals? These are important questions that cannot be fully resolved in individual permitting decisions. The federal government should invest in studies that carefully address these questions on a nationwide level and are designed to be used in individual permitting decisions.

For instance, if an agency like FERC did a careful study of what level of fossil fuel pipeline infrastructure build-out would likely be built if the country adopted an optimal carbon tax, or if the nation met its current greenhouse gas reduction goals, that study could be a relevant consideration in pipeline and transmission approvals. Giving due credit to the distributed knowledge reflected by markets,¹⁸² if the pipeline build out was faster than anticipated, that could signal either that 1) the previous studies, like so many energy studies, had failed to predict market developments, that 2) new pipelines should not be approved, or that 3) the country was not willing to abide by the strict limits reflected in theoretical commitments to price carbon or reduce emissions.

¹⁸² See Scott Shane, *Prior Knowledge and the Discovery of Entrepreneurial Opportunities*, *Organization Science*, 11 ORG. SCI. 448–69 (1990).

Thus, these studies, unlike assessments of individual infrastructure would be able to provide useful information because they would take advantage of existing life-cycle analysis's focus on large scale markets where more information may be a public good because of its wide benefits, rather than the project-level decisions that is better studied by individual companies with money on the line.¹⁸³ Again, these studies would likely not be a determinative factor in any review: inconsistencies between the study and infrastructure investment would be more likely to result from the study's necessary generality and forward looking nature. But, over time, they could be calibrated to improve the country's energy transport infrastructure forecasting.¹⁸⁴

V. CONCLUSION

For a century the United States has relied on two principle sources of energy: coal for electricity and oil for transport. Coal and oil are cheap

¹⁸³ There is little reason, however, to think that pipeline companies regularly build projects that would not have been viable in a world where carbon was priced. After all, fossil fuel companies are more likely than any broad category of industry to make decisions based on the assumption that carbon will be priced in the future. *See* World Bank Study; ExxonMobil letter to shareholders on Energy & Carbon: Managing the Risks 17 (planning for carbon prices ranging from \$20/ton to above \$40/ton); Royal Dutch Shell plc letter to May 16, 2014, 14 (planning for \$40/ton carbon prices).

¹⁸⁴ Thus far, the U.S. has made little systematic effort to identify these issues or produce studies designed to enable individual permitting decisions. For example, in its recent guidance on considering greenhouse gas emissions in National Environmental Policy Act decisions the U.S. Council on Environmental Quality suggested reliance on the Department of Energy's study of the climate impact of liquefied natural gas exports. "Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews" (Aug. 1, 2016) https://energy.gov/sites/prod/files/2016/08/f33/nepa_final_ghg_guidance.pdf. But that study only compared gas exports to other fossil fuels such as coal. Timothy J. Skone et al, *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from United States*, United States Department of Energy, National Energy Technology Laboratory, Report (2014), <https://energy.gov/sites/prod/files/2014/05/f16/Life%20Cycle%20GHG%20Perspective%20Report.pdf>.

and easy to transport, crisscrossing the country every day by rail, barge, pipeline, truck, and tanker. But they come at an environmental cost: burning these heavy fossil fuels pollutes the air that we breathe and warms the globe.

The United States now has a golden opportunity to transition to cleaner sources of energy, with more and more transportation powered by electricity, and more electricity powered by natural gas and renewables. And new technology has suddenly made these energy sources even cheaper than coal and oil in much of the country.

But there is a catch: gas and power are much, much more expensive to transport to energy users across the United States. Without massive new investments in energy transport, these resources will largely go to waste. And, at the same moment, energy transport infrastructure has grown more controversial due to a complex mix of environmental concerns, state and federal jockeying for power, and landowner concerns.

Congress and the courts must provide energy transport investors with a stable, predictable, and timely process to build the pipelines and power-lines that can build a cleaner energy future. By working together investors and policymakers can ensure that the United States reaps the full environmental, economic, and security benefits of its new energy boom.