

November 2019

ACE in the Hole: The EPA's Proposed Affordable Clean Energy Rule; Have Your Coal and Burn It Too

Cy M. Hudson

Follow this and additional works at: <https://scholarship.law.wm.edu/wmelpr>



Part of the [Administrative Law Commons](#), [Energy and Utilities Law Commons](#), and the [Environmental Law Commons](#)

Repository Citation

Cy M. Hudson, *ACE in the Hole: The EPA's Proposed Affordable Clean Energy Rule; Have Your Coal and Burn It Too*, 44 Wm. & Mary Envtl. L. & Pol'y Rev. 307 (2019), <https://scholarship.law.wm.edu/wmelpr/vol44/iss1/8>

Copyright c 2020 by the authors. This article is brought to you by the William & Mary Law School Scholarship Repository.
<https://scholarship.law.wm.edu/wmelpr>

ACE IN THE HOLE: THE EPA’S PROPOSED AFFORDABLE CLEAN ENERGY RULE; HAVE YOUR COAL AND BURN IT TOO

CY M. HUDSON*

INTRODUCTION

Coal is an important source of energy in the United States and its development as a clean power source must be encouraged. The Affordable Clean Energy Plan (“ACE”) proposed by the Environmental Protection Agency (“EPA”) in August 2018 takes steps in the right direction by reducing the regulatory and financial burdens on existing coal-fired plants; its motives, however, are misplaced.¹ A broader regulatory and legal framework needs to be established to ensure and incentivize the long-term viability of coal, and the full exploitation of the United States’ coal resources. ACE falls short in that it seeks to maintain the viability of coal, but does not take the necessary steps to help foster the growth of clean coal power in the United States.²

ACE would replace the Clean Power Plan (“CPP”), a burdensome and costly plan for the coal power industry, promulgated under the Obama administration.³ Just as the Trump administration was able to quickly propose new regulations favoring coal, the next presidential administration could just as easily revert back to a policy that is harmful to the

* JD Candidate, William & Mary Law School 2020; BS Accounting, Frostburg State University 2017, *summa cum laude*. The author would like to thank his parents, Steve & Malissa; his sister, Chloe; his grandfather, Jerry; and his very patient girlfriend, Courtney, for all their love and support throughout all his endeavors. The author would also like to thank all the 2L staff and the Editorial Board, who worked very hard in helping to get this Note into its final form.

¹ See Press Release, U.S. EPA, EPA Proposes Affordable Clean Energy (ACE) Rule (Aug. 21, 2018), <https://www.epa.gov/newsreleases/epa-proposes-affordable-clean-energy-ace-rule> [<https://perma.cc/7JSS-96YU>] [hereinafter U.S. EPA, Press Release].

² See *generally* Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program, 83 Fed. Reg. 44,746 (proposed Aug. 31, 2018) (to be codified at 40 C.F.R. pts. 51–52, 60).

³ See *FACT SHEET: Proposed Affordable Clean Energy Rule—Overview*, U.S. EPA (Aug. 21, 2018), https://www.epa.gov/sites/production/files/2018-08/documents/ace_overview_0.pdf [<https://perma.cc/8MJ8-V4NK>] [hereinafter U.S. EPA, *Overview*].

industry.⁴ This is an environment of uncertainty that makes it difficult for energy businesses to plan for the future; this is especially worrisome because long-term investment in energy technology is what is needed to allow coal—an abundant resource in the United States—to be economically and environmentally feasible.⁵

In this Note, I will first explore, in Part I, the coal resource base in the United States to allow for a basic understanding of the vast reserves available.⁶ Next, I will introduce two new technologies, Carbon Capture Technology and Coal Liquefaction, which present great promise for the expansion of clean coal in the United States power sector.⁷ Then I will address the proposed ACE plan, its goals and implementation, in contrast with the CPP and the independent strengths of both plans. Finally, I will conclude by explaining why ACE does not go far enough to support the long-term full exploitation of the United States' coal resources.

A. *The Coal Resource Base in the United States*

The United States possesses roughly 28 percent of the world's proven recoverable coal reserves.⁸ This gives the United States a tremendous opportunity to achieve long-sought, but seemingly elusive, “energy independence.”⁹ New technologies in coal power generation and Carbon Capture Technology¹⁰ could present an opportunity for the United States to develop a large amount of its energy for electric power domestically, instead of relying on potentially volatile foreign oil and the international politics involved therein.¹¹ Based on current usage rates, the United States

⁴ See U.S. EPA, Press Release, *supra* note 1.

⁵ See Press Release, Dep't of Energy, Department of Energy Announces \$100M in Investments in Coal FIRST (Apr. 12, 2019), <https://www.energy.gov/articles/department-energy-announces-100m-investments-coal-first> [<https://perma.cc/63H4-5239>].

⁶ See *generally* Coal, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/coal/> [<https://perma.cc/3ZQS-HGSH>] (last visited Oct. 28, 2019) [hereinafter U.S. ENERGY INFO. ADMIN., *Coal*].

⁷ Richard N. Cooper & William A. Pizer, *A Robust Strategy for Sustainable Energy. Comments and Discussion*, 2 BROOKINGS PAPERS ON ECON. ACTIVITY 270, 272 (2005).

⁸ *United States leads world in coal reserves*, U.S. ENERGY INFO. ADMIN. (Sept. 2, 2011), <https://www.eia.gov/todayinenergy/detail.php?id=2930> [<https://perma.cc/VY5S-RYK7>].

⁹ See *Energy Security*, STRAUSS CTR., UNIV. OF TEX. AT AUSTIN, <https://www.strausscenter.org/energy-and-security/energy-security.html> [<https://perma.cc/NL8Q-CWGU>] (last visited Oct. 28, 2019) (defining energy independence).

¹⁰ See *infra* Parts I, II.

¹¹ See *Chart: U.S. Imports from OPEC Countries of Crude Oil and Petroleum Products*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MTTIMXX1&f=M> [<https://perma.cc/L939-APSM>] (last visited Oct. 28, 2019) [hereinafter

is estimated to have enough coal to meet the current level of demand for over 230 years.¹² While developing these technologies and promoting increases in the use of coal would lessen that long time horizon, that development and increase would buy valuable time to develop renewable energy sources that are economically efficient and environmentally friendly.

B. *The Benefits of New Clean Coal Technologies*

Two technologies are developing every day: Carbon Capture Technology and Coal Liquefaction. Both of these technologies present great promise for removing a large percentage of emissions from the combustion of coal. The right policies and incentives would allow these technologies to better proliferate and spread their benefits throughout the electricity generation market.

I. CARBON CAPTURE TECHNOLOGY

The first major technology to greatly reduce the environmental impacts of coal is Carbon Capture Technology. Carbon Capture Technology isolates the carbon dioxide produced by burning coal and traps it for storage underground.¹³ Safely storing trapped carbon dioxide underground keeps the gases out of the atmosphere while allowing for the development of new technologies for environmentally friendly disposal or even to leave it there indefinitely.¹⁴

Reservoirs suitable for storage of the trapped carbon dioxide already exist in many areas where oil, coal, or natural gas are extracted, leaving either caverns or porous rocks no longer containing the removed fossil fuels.¹⁵ Admittedly, as with hydraulic fracturing,¹⁶ there are risks

U.S. ENERGY INFO. ADMIN., *U.S. Imports from OPEC* (showing total U.S. petroleum product imports from OPEC member countries from 1993 to 2018).

¹² See *Fast Facts About Coal*, ROCKY MOUNTAIN COAL MINING INST., <http://rmcml.org/education/coal-facts> [<https://perma.cc/BL6N-S6JQ>] (last visited Oct. 28, 2019); U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹³ See *Carbon Capture and Storage*, ROCKY MOUNTAIN COAL MINING INST., <http://rmcml.org/education/clean-coal-technology> [<https://perma.cc/Y73F-NHE8>] (last visited Oct. 28, 2019) [hereinafter RMCMI, *Carbon Capture and Storage*].

¹⁴ See *id.*

¹⁵ See *id.*

¹⁶ See *What is hydraulic fracturing?*, U.S. GEOLOGICAL SURV., https://www.usgs.gov/faqs/what-hydraulic-fracturing?qt-news_science_products=0#qt-news_science_products [<https://perma.cc/VV86-G8AK>] (last visited Oct. 28, 2019) (explaining the basic process of hydraulic fracturing).

of stored carbon leaks that could have adverse effects on either public health or the environment.¹⁷ However, appropriately managed sites that are properly maintained will store the carbon long-term until it is turned into hydrocarbons or brine,¹⁸ permanently trapping the carbon underground.¹⁹ Many areas of gas and oil production in the country, particularly areas where hydraulic fracturing is used, will necessarily have areas of empty porous rocks where petroleum is extracted.²⁰ This would be a good place to reinsert the used carbon for storage.²¹

Coal power plants are roughly distributed around the United States in a similar pattern to underground coal mines and oil and gas wells.²² For many plants in major fossil fuel producing regions, such as northern Appalachia, these plants may be able to directly inject their captured carbon into reservoirs that have been emptied of their fossil fuel content, eliminating the need to transport the captured carbon.²³ While this convenience is certainly attractive, there will be a need to transport this stored carbon for plants not built on top of, or next to, such empty underground reservoirs.²⁴

One of the final steps to carbon capture addresses the problem of transporting the carbon.²⁵ High pressure is applied to the captured carbon to transform it into a semi-liquid state, specifically to make it easy to

¹⁷ See *Should Carbon Capture and Storage (CCS) Technology Be Developed?*, PROCON.ORG, <https://alternativeenergy.procon.org/view.answers.php?questionID=001401> [<https://perma.cc/F2U7-2NRA>] (last updated Sept. 28, 2009).

¹⁸ Bryan D. Hoyle & E. Julius Dasch, *Brines, Natural*, in WATER ENCYCLOPEDIA, <http://www.waterencyclopedia.com/Bi-Ca/Brines-Natural.html> [<https://perma.cc/2PTS-P98N>] (last visited Oct. 28, 2019) (explaining brine is a naturally occurring solution of water and dissolved constituent particles).

¹⁹ See *id.*

²⁰ See *How Hydraulic Fracturing Works*, NAT'L GEOGRAPHIC, <https://www.nationalgeographic.org/media/how-hydraulic-fracturing-works/> [<https://perma.cc/HF5B-57TQ>] (last visited Oct. 28, 2019).

²¹ See Charles C. Mann, *Renewables Aren't Enough. Clean Coal is the Future*, WIRED (Mar. 25, 2014), <https://www.wired.com/2014/03/clean-coal/> [<https://perma.cc/WTL4-4NAY>].

²² See *Map: Locations of Coal-Fired Power Plants in the United States*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/state/maps.php> [<https://perma.cc/XL27-HR3X>] (last visited Oct. 28, 2019) (showing the location of coal-fired power plants in the United States); *Map: Underground Coal Mine and Oil and Gas Well Locations in the United States*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/state/maps.php> [<https://perma.cc/Q83C-2KQ9>] (last visited Oct. 28, 2019) (showing locations of coal fields, underground coal mines, oil and gas wells, and shale fields in the United States).

²³ See *id.*

²⁴ See *id.*

²⁵ See Mann, *supra* note 21.

transport in pipelines.²⁶ Because of the relative pattern of many of these plants being close to these underground reservoirs, a relatively short distance of pipelines, or perhaps a network shared among plants, can safely transport the stored carbon to its final resting place.²⁷

Carbon Capture Technology works by forcing the exhaust from the combustion of coal through a solution of water and monoethanolamine,²⁸ which binds to the carbon dioxide.²⁹ The mixture is then put in a stripper, which reverses the reaction and separates out the monoethanolamine from the water and carbon dioxide.³⁰ Upon separation, the monoethanolamine can be reused to capture more carbon dioxide.³¹ The carbon, having been separated, is treated with high pressure, as mentioned above, to form a semi-liquid, ready for transportation to the final storage site.³²

This technology can remove an astounding 90 percent of a given coal-fired power plant's carbon dioxide emissions.³³ This makes Carbon Capture Technology an invaluable resource to a country like the United States with large coal reserves. If 90 percent of coal emissions could be trapped underground, even indefinitely, coal, at its low price, would be a major contender for relatively eco-friendly power generation.

The one major drawback of Carbon Capture Technology is that it is very expensive to implement.³⁴ It is worth noting that the costs of carbon capture, beyond the initial cost of building the facility, will decrease as the practice becomes more prolific.³⁵ The cost estimates per ton accordingly vary over time but for current projects are estimated at around sixty

²⁶ *See id.*

²⁷ *See* U.S. ENERGY INFO. ADMIN., *Map: Locations of Coal-Fired Power Plants in the United States*, *supra* note 22; U.S. ENERGY INFO. ADMIN., *Map: Underground Coal Mine and Oil and Gas Well Locations in the United States*, *supra* note 22.

²⁸ *See Product Safety Assessment—Monoethanolimide*, DOW CHEMICAL, http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_096d/0901b8038096dabf.pdf?filepath=productsafety/pdfs/noreg/233-00265.pdf&fromPage=GetDoc [<https://perma.cc/6VFU-UM65>] (last visited Oct. 28, 2019) (explaining monoethanolamide is a clear liquid that can be used to attach to gaseous carbon molecules).

²⁹ Mann, *supra* note 21.

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ David Grossman, *How Does Clean Coal Work?*, POPULAR MECHANICS (Aug. 23, 2017), <https://www.popularmechanics.com/technology/infrastructure/news/a27886/how-does-clean-coal-work/> [<https://perma.cc/WYU4-RY2S>].

³⁴ *Affordability*, CARBON CAPTURE & STORAGE ASS'N, <http://www.ccsassociation.org/why-ccs/affordability/> [<https://perma.cc/8C79-GS5X>] (last visited Oct. 28, 2019) (noting that first-time projects are likely to be expensive and require additional incentives).

³⁵ Grossman, *supra* note 33.

dollars per ton for a coal-fired plant.³⁶ The Department of Energy has partnered with the private industry to develop some carbon capture systems in the United States, but these have been limited to just a handful of projects.³⁷ Almost as a counterpoint to the slow and reluctant proliferation of the technology in the United States, China has used the efficiency of its state-controlled energy system, which relies very heavily on coal, to push the advancement and proliferation of Carbon Capture Technology in the country.³⁸ This is especially important if the route chosen is coal liquefaction, as that produces far more carbon dioxide than burning coal directly.³⁹

II. COAL LIQUEFACTION

Another technology is coal liquefaction.⁴⁰ This process helps to reduce the cost of carbon capture projects, as described above, by allowing for the use of existing infrastructure to be used in part. This is because the process of coal liquefaction allows for the use of coal as a liquid fuel.⁴¹ On its face, this technology produces even more carbon dioxide emissions than burning coal outright because the process of liquifying coal produces other harmful emissions.⁴² Because of this, coal liquification must be used in tandem with Carbon Capture Technology to net an environmental benefit.⁴³

Coal liquefaction is the process by which coal is turned into liquid hydrocarbons, such as gasoline.⁴⁴ There are currently two major techniques of coal liquefaction: Fischer-Tropsch and Bergius.⁴⁵ The Fischer-Tropsch technique involves reducing coal to “syngas,” a mixture of carbon and

³⁶ James Temple, *The carbon-capture era may finally be starting*, MIT TECH. REV. (Feb. 20, 2018), <https://www.technologyreview.com/s/610296/the-carbon-capture-era-may-finally-be-starting/> [<https://perma.cc/ZEG6-P9CM>].

³⁷ See *Clean Coal Power Initiative (CCPI)*, NAT'L ENERGY TECH. LABORATORY, <https://www.netl.doe.gov/research/coal/large-scale-demonstrations/clean-coal-power-initiative> [<https://perma.cc/65XP-V4LG>] (last visited Oct. 28, 2019).

³⁸ Mann, *supra* note 21.

³⁹ See *id.*

⁴⁰ See generally Karl Schulz, *Recent Development: China's Confidence in Coal Liquefaction Rests on an Unsteady Foundation*, 3 ENVTL. & ENERGY L. & POL'Y J. 184, 184–88 (2008) (explaining the process, efficiencies, and problems in the coal liquefaction process).

⁴¹ *Id.* at 186–87.

⁴² *Id.* at 188–89.

⁴³ See JAMES T. BARTIS ET AL., PRODUCING LIQUID FUELS FROM COAL: PROSPECTS AND POLICY ISSUES 13 (2008).

⁴⁴ See *id.* at 9, 12–13.

⁴⁵ Schulz, *supra* note 40, at 186–87.

hydrogen.⁴⁶ This syngas is then recombined with one of a number of catalysts to form new liquid petroleum compounds.⁴⁷ The Bergius technique, the less popular in modern times, functions by merely pulverizing the coal and combining the dust with hydrogen and coal at a very high temperature to break down chains of hydrocarbons into lengths suitable for liquid fuel refining.⁴⁸

Many countries throughout history have used the liquefaction process to use abundant domestic coal supplies to reduce dependence of volatile foreign oil imports.⁴⁹ These have included Nazi Germany, Apartheid-era South Africa, and even modern China as it seeks to maintain latitude to exert its growing influence while maintaining high economic growth.⁵⁰ This has implications in many sectors that would use liquid petroleum products, most notably for automotive fuel. But even for electricity generation, this would allow coal, both abundant and domestic, to be used in modern oil- and gas-fired power plants.⁵¹ Just as it has worked for the listed countries, and all others who have used this technique, it is another way for the United States to more fully utilize its vast coal reserves all while promoting energy security and independence.

As discussed above, coal liquefaction technology cannot be environmentally feasible on its own.⁵² This is because the process to convert the coal to liquid form and then to burn the liquid form of coal actually emits more carbon than if the coal is burned in its solid form.⁵³ Furthermore, carbon dioxide is emitted in the conversion process from solid to liquid state and then more carbon dioxide is emitted when the resultant liquid fuel is combusted.⁵⁴ However, when up to 90 percent of the carbon from *both* processes can be captured, it becomes very environmentally feasible.⁵⁵ This is because, even if the process to liquify the coal is dirty under normal circumstances, the resulting additional carbon release would largely be captured and stored.⁵⁶

⁴⁶ Peter Fairley, *China's Coal Future*, MIT TECH. REV. (Jan. 1, 2007), <https://www.technologyreview.com/s/407092/chinas-coal-future/> [<https://perma.cc/ERE6-ANER>].

⁴⁷ *See id.*

⁴⁸ *See id.*

⁴⁹ *See id.*

⁵⁰ *See id.*

⁵¹ *See* Schulz, *supra* note 40, at 184–87.

⁵² *See id.* (explaining the process, efficiencies, and problems in the coal liquefaction process).

⁵³ *See* Mann, *supra* note 21.

⁵⁴ *Id.*

⁵⁵ Grossman, *supra* note 33.

⁵⁶ RCMCI, *Carbon Capture and Storage*, *supra* note 13.

This process of coal liquefaction has a benefit that may not seem immediately obvious—it allows the use of existing infrastructure in the form of oil- and gas-fired power plants to continue to be used.⁵⁷ If Carbon Capture Technology was to be implemented in a coal liquefaction facility that was not necessarily for electricity generation but just produced the liquid fuel, then the carbon could be captured from that process and it would afford an ample, domestic source of supplemental petroleum for all aspects of the consumer market.⁵⁸

III. THE AFFORDABLE CLEAN POWER PLAN AND ITS IMPACT ON COAL POWER: DIFFERENCES IN THE IMPLEMENTATION OF CPP AND ACE

ACE replaces the CPP, which was stayed by the Supreme Court until it could be determined if the CPP exceeded the EPA's authority under the Clean Air Act.⁵⁹ For this reason, although ACE would supersede the CPP, it does not actually replace it. This is because the CPP, as of the publishing of this Note, is not currently in effect.⁶⁰ Primarily, ACE still seeks to reduce environmentally harmful emissions from the combustion of coal in the energy sector; however, in comparison to the CPP, it is far less aggressive in lowering the acceptable carbon dioxide levels.⁶¹ ACE also turns much of this reduction responsibility over to the states, allowing them to set many standards in their own states as it relates to presently existing and operating coal-fired plants, essentially allowing states to choose more relaxed standards for existing plants based on the need to keep them operating.⁶²

ACE identifies the most promising method of pollution reduction from coal-fired plants to be an improvement in the heat-rate efficiency of a given plant.⁶³ The Energy Information Administration defines heat

⁵⁷ See Schulz, *supra* note 40, at 184–87.

⁵⁸ See U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

⁵⁹ U.S. EPA, Press Release, *supra* note 1.

⁶⁰ Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program, 83 Fed. Reg. at 44,746.

⁶¹ Editorial Board, *Climate Fight Can't Be Slowed, Even by the EPA*, BLOOMBERGQUINT (Aug. 22, 2018), <https://www.bloombergquint.com/opinion/2018/08/21/trump-epa-s-affordable-clean-energy-rule-is-neither> [<https://perma.cc/R3BR-5ZL7>]; see U.S. EPA, Press Release, *supra* note 1.

⁶² See *id.*

⁶³ See Kristen Hildreth, *EPA Unveils Affordable Clean Energy Rule to Replace Clean Power*

rate as the amount of energy used to generate one kilowatt hour of electricity.⁶⁴ This is essentially a measure of efficiency: how much energy a plant uses to produce the same amount of electricity.⁶⁵ A lower number would yield a higher efficiency and would use less fuel to produce the same amount of energy, thus meeting demand while producing fewer environmentally harmful emissions.⁶⁶

One major divergence between the CPP and ACE is whether they take into account so-called “beyond the fence” reductions in emissions.⁶⁷ These reductions involve solutions beyond improving internal plant efficiency and include things like increasing the overall share of renewable energy generated electricity in the grid; a sort of cap and trade system amongst the states.⁶⁸ The CPP allowed states to regulate in ways that consider these “beyond the fence” measures, where ACE only allows states to regulate measures within the plant itself.⁶⁹ In other words, the CPP would permit a state to choose to allow a high emission plant, such as a coal plant, to offset its high emissions by using additional sources of energy that are cleaner than required, such as zero-emission solar.⁷⁰ ACE goes further and provides to states and affected plants a limited list of qualifying technologies that can be used within the plants to improve the heat-rate efficiency and thus reduce emissions.⁷¹

Another area of divergence between the two plans involves administrative burdens on the states. The CPP would have required states to file six reports with the federal government over fifteen years, while ACE only requires the filing of one report.⁷² This is an important step because,

Plan, NCSL BLOG (Aug. 22, 2018), <http://www.ncsl.org/blog/2018/08/22/epa-unveils-affordable-clean-energy-rule-to-replace-clean-power-plan.aspx> [<https://perma.cc/8QX2-KPCS>].

⁶⁴ *What is the efficiency of different types of power plants?*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/tools/faqs/faq.php?id=107&t=3> [<https://perma.cc/46HN-JVUZ>] (last visited Oct. 28, 2019).

⁶⁵ *Id.*

⁶⁶ *See id.*

⁶⁷ Hildreth, *supra* note 63.

⁶⁸ *Id.*; U.S. EPA, *The Clean Power Plan Explained by EPA Administrator Gina McCarthy*, YOUTUBE (Aug. 3, 2015), <https://www.youtube.com/watch?v=M8uUKIbaGaI> [<https://perma.cc/3ZCW-UWKU>] [hereinafter U.S. EPA, *Clean Power Plan*].

⁶⁹ U.S. EPA, *Clean Power Plan*, *supra* note 68.

⁷⁰ *See* Hildreth, *supra* note 63.

⁷¹ *Id.*

⁷² *FACT SHEET: Proposed Affordable Clean Energy Rule—Comparison of ACE and CPP*, U.S. EPA (Aug. 21, 2018), https://www.epa.gov/sites/production/files/2018-08/documents/ace-cpp_side_by_side.pdf [<https://perma.cc/L225-BWEF>] [hereinafter U.S. EPA, *Comparison of ACE and CPP*].

while the report is needed to ensure compliance, every report required increases costs for energy producers and states in the process of data collection. In fact, all costs considered, the EPA estimates \$6.4 billion would be saved each year in compliance costs alone under ACE as opposed to the CPP.⁷³ The CPP also set a more top-down approach by setting a federal greenhouse gas standard and forcing states to adopt it, giving them latitude only in how to achieve the federal standard.⁷⁴ ACE, by contrast, promulgates a set of guidelines but allows states to set their own standards.⁷⁵

One final major point of difference between the two plans relates to the permitting and New Source Review program.⁷⁶ The New Source Review program is a program required to be implemented under the Clean Air Act.⁷⁷ The Act requires plants to install modern emissions mitigation equipment whenever a new plant is constructed or a change is made to the plant that will increase that plant's emissions.⁷⁸ The CPP leaves the New Source Review program unchanged and would still require plants making physical changes in their generation processes to modernize and upgrade their pollution control procedures and report on them.⁷⁹ ACE changes the requirements of the New Source Review program, allowing states to decide whether to require review and modernization when upgrades are made to plants that increase their heat-rate efficiency.⁸⁰

The changes to the New Source Review program are a prime example of ACE not going far enough to ensure maximum utilization of coal. The revision would allow states to modify the criteria that trigger a New Source Review, a costly process, to make it applicable in fewer scenarios.⁸¹ While this could reduce costs on coal-fired plants, it is merely a prop-up of existing plants and takes no steps to reduce the costs of adapting new clean coal technologies to reduce carbon emissions from the plants to a level where coal is environmentally viable for expansion as a fuel source.⁸² This expansion in the power sector is what is most needed to ensure the fullest utilization of domestic resources.

⁷³ *FACT SHEET: Proposed Affordable Clean Energy Rule—Costs & Benefits*, U.S. EPA (Aug. 21, 2018), https://www.epa.gov/sites/production/files/2018-08/documents/ace_cost-benefit.pdf [<https://perma.cc/DXP2-XGYN>] [hereinafter U.S. EPA, *Costs & Benefits*].

⁷⁴ U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

⁷⁵ *Id.*

⁷⁶ Hildreth, *supra* note 63.

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72; Hildreth, *supra* note 63.

⁸⁰ U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

⁸¹ Hildreth, *supra* note 63.

⁸² *See id.*

IV. STRENGTHS OF BOTH THE CPP AND ACE

First, it is important to note that both of these plans support the same crucially important common goal—reduction of carbon emissions in the power generation sector.⁸³ Each of these plans, as compared and contrasted above, seek to do this to varying degrees in their own way.⁸⁴ Both plans have certain things that they do better than the other, and each have their own drawbacks. Here, I will address each in turn, naming the benefits of each plan over the other.

A. CPP

First, and perhaps most importantly, the CPP is widely cited as being projected to result in fewer deaths per year than would occur under the present regulatory framework, or even ACE for that matter.⁸⁵ This is significant because human life is precious and, from an economic perspective, a healthier population is a more economically productive population.⁸⁶ Therefore, from the standpoint of public health, the CPP could reasonably be seen as superior to ACE for this reason.

Next, the CPP is more aggressive in reducing carbon emissions than ACE.⁸⁷ This is largely related to the previous point, but it is worth noting because not only is the environment a valuable resource that needs to be necessarily exploitable, but it needs to remain in a healthy state to be able to be exploited for the nation's long-term good and the physical and economic health of generations to come.

Lastly, the CPP would likely have more uniformity in its results because it sets forth a federal standard and gives the states a more modest ability to tailor their regulatory approach to meeting these guidelines.⁸⁸ Because the effects of carbon pollution travel through the atmosphere and know no borders, pollution from one state will necessarily affect all surrounding states.⁸⁹ Accordingly, the CPP would achieve a more favorable

⁸³ U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

⁸⁴ *See id.*

⁸⁵ Lisa Friedman, *Cost of New E.P.A. Coal Rules: Up to 1,400 More Deaths a Year*, N.Y. TIMES. (Aug. 21, 2018), <https://www.nytimes.com/2018/08/21/climate/epa-coal-pollution-deaths.html> [<https://perma.cc/G3YW-Q74P>].

⁸⁶ David E. Bloom & David Canning, *Population Health and Economic Growth* 1 (World Bank Comm'n on Growth & Dev., Working Paper No. 24, 2008).

⁸⁷ U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

⁸⁸ *See* U.S. EPA, Press Release, *supra* note 1; U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

⁸⁹ *Interstate Pollution and the EPA's solution: What is at stake in EPA v. EME Homer City*

result in that states would be less able to free-ride on the aggressive and expensive investments and regulations of their neighboring states.⁹⁰

B. ACE

Many of the benefits of ACE over the CPP are also just addressing the CPP's weaknesses, so I will address them together. As mentioned above, the CPP is far more aggressive in regulating carbon emissions,⁹¹ and this has some very compelling positive features. However, as with many restrictive environmental regulations, this means it entails greater costs.⁹² ACE would still impose greater costs on private power generation facilities than under the present regulatory regime, but these are projected to be less expensive and burdensome for electric utilities than CPP regulations, particularly for coal power plants.⁹³ This comes down to a question of personal values, which is why it is such a virulent political issue. For those that believe the environment and human health must be protected no matter the cost, the CPP may seem a much more compelling option. However, for those that reduce everything to its economic value, this additional cost to the power sector and the corresponding energy security concerns it may entail, ACE may seem a more reasonable alternative in an economic cost-benefit analysis.⁹⁴

Next, while the CPP's uniformity in interstate regulation is attractive from the standpoint of ensuring all states evenly bear the cost of environmental regulations, it does raise some federalism and constitutional concerns. Because carbon emissions know no borders, the issue is appropriately beyond that of any one state or sovereign.⁹⁵ A detailed analysis of jurisdictional and constitutional issues regarding authority to regulate will not be discussed here; however, as seen in *Massachusetts v. Environmental Protection Agency*, carbon emissions are an interstate concern subject to regulation under the Clean Air Act.⁹⁶ Similarly, the Trump Administration expressed concerns over whether the regulations

Generation, ALLIANCE FOR JUSTICE (Dec. 9, 2013), <https://www.afj.org/blog/interstate-pollution-and-the-epas-solution-what-is-at-stake-in-epa-v-eme-homer-city-generation> [<https://perma.cc/D7WX-QBLC>].

⁹⁰ *See id.*

⁹¹ U.S. EPA, *Overview*, *supra* note 3.

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *See, e.g., id.*

⁹⁵ *See* ALLIANCE FOR JUSTICE, *supra* note 89.

⁹⁶ *See Massachusetts v. EPA*, 549 U.S. 497 (2007).

that would have been imposed by the CPP were actually within the EPA's authority to regulate under the Clean Air Act.⁹⁷ Hence, a valid concern of federalists is that the federal bureaucracy, in the absence of an express grant of power from Congress, to whom the power was delegated by the Constitution, is able to mandate that the states meet federal guidelines for emissions reductions. This is important because it is wholly distinct from the question of whether states *should* regulate.

Understandably, each plan will have its own pros and cons; however, ACE is superior to the CPP in that it allows time for contested issues to be sorted out while still restricting current carbon emissions.⁹⁸ Coal is of pivotal importance to the United States' economy and energy security; if we were to implement the CPP and abruptly curtail emissions, the impacts on the U.S. economy would likely be quite negative.⁹⁹ Although the goals of the CPP are righteous and just, the risks posed to our economy outweigh the potential environmental benefits. Advances in renewable energy technology are already happening, and furthering its development should be a priority.¹⁰⁰ However, until such technology becomes feasible, both practically and economically to replace fossil fuels for power generation, this is not the right time to hammer away at reliable, reasonably priced, and readily available fuel sources.¹⁰¹ With the right policies and incentives advancing the clean coal technologies discussed above, coal can be made quite clean and environmentally viable.¹⁰² This should be the focus of current regulations. Coal is here, coal is cheap.¹⁰³ The United States might as well exploit the resource base it has and use it to further energy security and independence goals.

V. IMPACT ON COAL AS AN ENERGY SOURCE

The actual effects of ACE are yet to be known, as the rule is merely a proposal to be implemented in place of the CPP.¹⁰⁴ However, the development of the policy does show some trends that can inform understanding

⁹⁷ U.S. EPA, *Costs & Benefits*, *supra* note 73.

⁹⁸ See U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

⁹⁹ See Cooper & Pizer, *supra* note 7, at 272–73.

¹⁰⁰ See, e.g., *Advancing Renewable Energy*, BUS. ROUNDTABLE, <https://www.businessroundtable.org/advancing-renewable-energy> [<https://perma.cc/KN4S-AMXL>] (last visited Oct. 28, 2019) (discussing the advancing renewable energy technology and the growing trend in the private sector to adapt to the evolving technology).

¹⁰¹ See U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹⁰² See, e.g., Mann, *supra* note 21.

¹⁰³ U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹⁰⁴ See U.S. EPA, Press Release, *supra* note 1 (stating rule is merely proposed at this point).

of coal power policy more generally. First, the fact remains that coal will need to be made cleaner, otherwise it risks being regulated out of economic feasibility as a fuel source.¹⁰⁵ This is readily apparent in that ACE still pursues policies with a similar stated target of carbon dioxide emission reduction to the CPP that the coal industry decried.¹⁰⁶ Further, President Trump made support for the coal industry a major part of his campaign, and this rule was proposed under his administration.¹⁰⁷ This proposal is therefore insightful as to the steps the administration, and its agencies, are taking, and are willing to take, to further support the coal industry and the energy industry generally.¹⁰⁸

Next, the EPA has made projections of coal production under both the ACE and CPP regimes, and these shed light on the effects both plans would have on coal production.¹⁰⁹ From these projections, demand for coal under the two regimes can be inferred.¹¹⁰ The EPA projects that coal production in the United States will increase by over 7 percent by 2035 as opposed to the scenario where the CPP is fully implemented instead.¹¹¹ Because coal is largely used for power generation, it can be inferred from these predictions, if accurate, that coal generated power will be in greater demand under ACE than the CPP.¹¹² This is important if the abundant coal resources of the United States are to be fully exploited before obsolescence.

The coal industry has itself reacted to this new, harsher regulatory environment by closing coal power plants. The Energy Information Administration predicted that, in 2018 alone, about 13.5 gigawatts of coal generated power would go offline.¹¹³ This partly is due to lessened demand in electricity and cost reductions of other fuel sources, but also to the harsher regulation of coal even under a friendly administration.¹¹⁴ It also should be underscored here that the harsher regulatory environment at

¹⁰⁵ See AUSTIN TROY, *THE VERY HUNGRY CITY* 141–43 (2012).

¹⁰⁶ See *id.*

¹⁰⁷ See Coral Davenport, *Donald Trump, in Pittsburgh, Pledges to Boost Both Coal and Gas*, N.Y. TIMES (Sept. 22, 2016), <https://www.nytimes.com/2016/09/23/us/politics/donald-trump-fracking.html> [<https://perma.cc/EM4R-8R2P>]; U.S. EPA, Press Release, *supra* note 1.

¹⁰⁸ See U.S. EPA, Press Release, *supra* note 1.

¹⁰⁹ U.S. EPA, *Overview*, *supra* note 3.

¹¹⁰ See *id.*

¹¹¹ Matthew Adams & Andrew Shaw, *Trump Administration Continues to Overhaul Climate Change Regulations*, 18 PRATT'S ENERGY L. REP. 331, 333 (2019).

¹¹² See U.S. EPA, *Overview*, *supra* note 3; U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

¹¹³ See *Today in Energy*, U.S. ENERGY INFO. ADMIN. (Jan. 9, 2018), <https://www.eia.gov/toodayinenergy/> [<https://perma.cc/445Z-M84F>].

¹¹⁴ *Id.*

the federal level is bolstered by more stringent standards at the state and municipal levels.¹¹⁵

The culmination of the new regulatory environment for coal is that the power industry itself is starting to decarbonize, which is a good thing, but it leaves coal underutilized.¹¹⁶ Ultimately, ACE is a lifeline of sorts to the coal industry, especially when compared to the regulations that would be implemented under the CPP, but ACE is only acting in a way that will stall an inevitable demise. Only by adopting clean coal technologies to make coal power as clean or cleaner than other low-cost alternatives, like natural gas, can coal truly grow and be widely exploited in an environmentally feasible way in the United States.

VI. ENVIRONMENTAL IMPACTS

Critics of ACE argue that the plan results in far greater emissions and adverse health effects than the CPP.¹¹⁷ This method of attack is misleading for two main reasons. First, as mentioned above, the CPP has never been implemented, or gone into effect, so the comparison is not a loosening of standards, but a comparison of two alternate, proposed regulations.¹¹⁸ Secondly, states already have the ability to choose how emissions should be reduced on their own.¹¹⁹ Further, the private energy industry has made the decision to decarbonize absent regulation rather than later be forced into a less friendly position where they are not only told to reduce, but also how to reduce.¹²⁰ Lastly, there are existing technologies that can be further developed to mitigate carbon emissions, but if coal is ruled out as a power source before they can come to fruition, then they will not be implemented and America will be at a loss to fully utilize its abundant resources.

An important note, and possible counter-argument, to the argument herein advanced is that the coal could merely be extracted and exported. Certainly, from the standpoint of propping up the coal industry, this approach would succeed assuming adequate demand. The flaw, however,

¹¹⁵ *Id.*

¹¹⁶ *See id.*

¹¹⁷ BLOOMBERGQUINT, *supra* note 61.

¹¹⁸ *See* Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program, 83 Fed. Reg. at 44,746; Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662 (codified at 40 C.F.R. pt. 60).

¹¹⁹ *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662.

¹²⁰ *See* Davenport, *supra* note 107.

is twofold. First, several of the countries to whom the United States exports coal are developing countries that place a much higher emphasis on growth than on environmental protection.¹²¹ Because of this they are unlikely, and in many cases unable, to adopt even more modest pollution control technology on their use of the coal.¹²² The United States is a technologically advanced and wealthy first-world country that can afford to implement the clean coal technologies discussed when properly incentivized. The second flaw in this argument is, that for the reasons just described, this would likely lead to greater carbon emissions worldwide if the United States was to simply dump a large supply of coal on the international market. Because climate change knows no borders, this will result in negative climatologic effects not only in the importing country, but around the world, including the United States.¹²³

The above counter-argument aside, the most cited statistical criticism of ACE, is that it will cause 1,400 more premature deaths annually and 15,000 more cases of respiratory illness because of the greater emission of fine particulate matter.¹²⁴ On its face, this is a damning statistic that should be considered. However, there is a critical flaw in this argument. The comparison makes it sound as though the government is implementing a policy that will allow the coal power sector to kill off 1,400 people annually.¹²⁵ This is simply not the case. These are merely *projections* and are among two different alternatives—neither of which have been implemented. It is not as if 1,400 more people will die in 2021 than in 2020 solely because ACE is adopted, rather, the *projection* is that 1,400 more people would die under one alternative (ACE) than the other (CPP).¹²⁶

The point to take here is that, the number of deaths would be less under ACE than they are at the time this Note is being written because ACE still seeks to reduce carbon and particulate emissions from coal fired plants to levels below where they are currently allowed.¹²⁷ The CPP has been stayed by the Supreme Court and is in the process of being rolled back and eliminated pursuant to an Executive Order.¹²⁸ This is important

¹²¹ *Coal explained—Coal imports and exports*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/index.php?page=coal_imports [<https://perma.cc/Q5RL-HV3Q>] (last updated May 9, 2019) (noting two of the largest five importers of U.S. coal are India and Brazil).

¹²² *See id.*

¹²³ *See* ALLIANCE FOR JUSTICE, *supra* note 89.

¹²⁴ Friedman, *supra* note 85.

¹²⁵ *See id.*

¹²⁶ *See id.*

¹²⁷ *See* U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

¹²⁸ Exec. Order No. 13,783, 82 Fed. Reg. 16,093 (Mar. 31, 2017); *see also* Exec. Order No. 13,807, 82 Fed. Reg. 40,463 (Aug. 24, 2017).

because it is critical to evaluate ACE, and its effects, as compared to the CPP, understanding that the CPP has not been implemented and that, given the stay and regulatory rollback, the CPP will be unlikely to be implemented whatever its effects may have been.¹²⁹

The comparison also neglects to consider other ways to move forward while still relying on coal power. These new technologies allow for the capture of up to 90 percent of the carbon emissions from a coal power plant.¹³⁰ This would allow the United States to rely heavily on domestic, affordable coal to power the country until renewables are ready to step in and take over. The CPP, however, because it would essentially force, through the cost of complying with its provisions, power plants to switch fuel sources in hopes of satisfying the demands of the CPP in the short term, would likely foreclose on the implementation of the new clean coal technology in the long term.¹³¹ This would likely happen because once the coal plants have either shut down or been converted, the demand for the technology to reduce coal emissions would be removed.

While the elimination of coal as a fuel source for electricity generation would certainly have very positive environmental effects, it would come at a great cost. The United States has more coal than any other nation in the world by no small margin.¹³² It can be had cheaply and easily throughout much of the country.¹³³ This means that coal can allow the United States to be more independent than other forms of energy available for power generation.¹³⁴ Furthermore, coal remains very cost effective because its abundance and price-to-energy ratio is quite high.¹³⁵ For these reasons, the environmental impacts, while critically important, must not cloud judgment to the point that they are the only thing considered by policymakers.

¹²⁹ See Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 82 Fed. Reg. 48,035 (proposed Oct. 19, 2017) (to be codified at 40 C.F.R. pt. 60); Exec. Order No.13,783, 82 Fed. Reg. 16,093 (Mar. 31, 2017).

¹³⁰ Grossman, *supra* note 33.

¹³¹ See U.S. EPA, *Comparison of ACE and CPP*, *supra* note 72.

¹³² See U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹³³ See *generally Average weekly coal commodity spot prices*, U.S. ENERGY INFO. ADMIN. (Feb. 1, 2019), <https://www.eia.gov/coal/markets/#tabs-prices-1> [<https://perma.cc/D4T5-CQ9Q>].

¹³⁴ Jason Bordoff et al., *Understanding the Interaction Between Energy Security and Climate Change Policy*, in *ENERGY SECURITY: ECONOMICS, POLITICS, STRATEGIES, AND IMPLICATIONS 222* (Carlos Pascual & Jonathan Elkind eds., 2010).

¹³⁵ *Total Energy*, U.S. ENERGY INFO. ADMIN. (Sept. 27, 2012), <https://www.eia.gov/totalenergy/data/annual/showtext.php?t=ptb0303> [<https://perma.cc/B8ZQ-N86W>].

A. *ACE Does Not Go Far Enough to Ensure Full Exploitation of Coal and Coal Power*

The ACE plan is good in its intentions to ensure utilization of the nation's vast coal resources, but it fails by merely propping up an environmentally unsustainable, although vital to the economy and national energy security, fuel source.

B. *Why Coal Power Should Be Expanded*

Coal has several drawbacks over other fuel sources, but the biggest has always been that it is exceptionally dirty.¹³⁶ This is very unfortunate given the United States' extreme wealth of the resource—a staggering 28 percent of worldwide proven coal reserves.¹³⁷ In fact, it is because of this vast wealth of coal, and its readily available extraction infrastructure, in addition to the other reasons spelled out below, coal presents the best opportunity to provide domestic energy in the next 100 or so years until renewables can be utilized to the fullest at a reasonable economic cost.¹³⁸

VII. NATIONAL SECURITY AND ENERGY INDEPENDENCE IMPLICATIONS

Energy independence is an elusive political concept that came about after the oil crisis in the 1970s.¹³⁹ That event made U.S. politicians all too aware that the energy supply, that is the lifeblood of the economy, can be suddenly disrupted by foreign powers in unstable regions that control resources that the U.S. imports.¹⁴⁰ However, while this concept has existed for decades, no policies have yet weaned the United States from foreign fuel, or really even made a large dent.¹⁴¹ Coal could prove to be the answer. Coal is available in unmatched quantities in the United States and can be had cheaply and readily used for electricity generation.¹⁴²

If the United States would embrace and adapt to the clean coal technologies discussed,¹⁴³ it could make full use of its abundant coal

¹³⁶ TROY, *supra* note 105.

¹³⁷ U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹³⁸ Mann, *supra* note 21.

¹³⁹ Bordoff et al., *supra* note 134, at 212; BRENDA SHAFFER, ENERGY POLITICS 136 (2009).

¹⁴⁰ Bordoff et al., *supra* note 134, at 212.

¹⁴¹ See U.S. ENERGY INFO. ADMIN., *U.S. Imports from OPEC*, *supra* note 11.

¹⁴² U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6; RMCMI, *Carbon Capture and Storage*, *supra* note 13.

¹⁴³ See discussion *supra* Parts I, II.

resources,¹⁴⁴ shielding it from unstable political actors abroad,¹⁴⁵ and minimize the harm to the environment in the process.¹⁴⁶ This is seen as a viable option by China, which has readily adopted this technology as it uses coal for much of its power.¹⁴⁷

ACE, however, falls short of meeting these goals. ACE is itself a viable and necessary stop-gap measure to prop up coal during the years that would be needed to roll out the technologies of carbon capture and coal liquefaction on a large scale. While it indeed fosters greater coal utilization in the short term, it needs to ensure complete utilization in the long term. Until the other renewable energy sources can be feasibly rolled out, the United States will continue to rely on fossil fuels for its electricity generation.¹⁴⁸ The United States is so rich with this fossil fuel, that can be had cheaply, and there already is a vast electricity generating infrastructure in place.¹⁴⁹ For that matter, the other motivations for coal power discussed above demand it.

CONCLUSION

The policy direction that should be taken is the incentivization of projects for Carbon Capture Technology and coal liquefaction. The success of such a policy would afford the United States ample, cheap, domestic power supplies providing energy for Americans until a large-scale roll out of efficient renewable energy is viable and economically feasible, at which point, coal will no longer be required.¹⁵⁰ Additionally, the use of this domestic coal would greatly reduce the United States' reliance on oil from volatile regions, particularly in the area of power generation where large immobile facilities make this technology the most practical.

¹⁴⁴ See U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹⁴⁵ See U.S. ENERGY INFO. ADMIN., *U.S. Imports from OPEC*, *supra* note 11 (showing total U.S. petroleum product imports from OPEC member countries from 1993 to 2018).

¹⁴⁶ See Grossman, *supra* note 33 (stating that up to 90 percent of coal emissions can be sequestered).

¹⁴⁷ Mann, *supra* note 21.

¹⁴⁸ Cooper & Pizer, *supra* note 7; U.S. ENERGY INFO. ADMIN., *Coal*, *supra* note 6.

¹⁴⁹ For a visual on underground coal mine, oil, and gas well locations in the United States, see *U.S. Energy Mapping System*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/state/maps.php> [<https://perma.cc/Y78U-SP5T>] (last visited Oct. 28, 2019) (showing locations of coal fields, underground coal mines, oil and gas wells, and shale fields in the United States).

¹⁵⁰ Mann, *supra* note 21 (stating that renewable energy sources are not yet at a state to supply a major part of U.S. electrical power at all times, but that progress is being made rapidly).

In fact, some such efforts to incentivize the use of these technologies are already under way.¹⁵¹ There have been efforts in Congress that have achieved bipartisan support to extend and expand tax credits to energy producers for the use of Carbon Capture Technology.¹⁵² These are the sorts of efforts, in addition to the more flexible regulatory regimes, like ACE, that will be needed to promote coal over the next century or so until renewables are ready to step in.¹⁵³ However, a more concerted effort between polices is needed, as these efforts have not yet resulted in much proliferation of clean coal technologies.¹⁵⁴

Given the potential in these new technologies to provide the United States with the fabled "energy security," it is reasonable to consider their development a matter of national security.¹⁵⁵ They would give the United States greater autonomy and ability to maneuver and exert influence abroad, without worrying about negative repercussions from states on whom the United States relies for energy imports.¹⁵⁶

In conclusion, ACE is a major step in the right direction. It appropriately balances the problems of climate change and human health with the very real, albeit intangible to many, concerns of affordable electricity and energy independence. Therefore, it needs to be merely a component of a larger policy push to include incentivization of clean coal technologies over the long term to truly accomplish its policy goals of saving the coal industry.

¹⁵¹ Temple, *supra* note 36.

¹⁵² *Id.*

¹⁵³ See Mann, *supra* note 21.

¹⁵⁴ NAT'L ENERGY TECH. LABORATORY, *supra* note 37.

¹⁵⁵ See discussion *infra* Part VII.

¹⁵⁶ See U.S. ENERGY INFO. ADMIN., *U.S. Imports from OPEC*, *supra* note 11.