



Testimony

Submitted on behalf of the
Pennsylvania Chamber of Business and Industry

Before the:
United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Environment and Climate Change

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Washington, DC
March 18, 2021

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Executive Summary of Testimony

The PA Chamber encourages lawmakers on both sides of the aisle to come together to produce durable, bipartisan policy that applies the lessons from Pennsylvania's successful leveraging of our historic leadership positions in energy and industry to produce electricity, natural gas and a host of goods and commodities in an increasingly affordable and sustainable manner, to federal policy that positions America for continued leadership in an increasingly competitive and dynamic global marketplace.

Among all states, Pennsylvania ranks second in total energy production, second in natural gas production, second in installed nuclear capacity, third in coal production, third in electricity production and eighth in manufacturing output. Pennsylvania is also the largest net-exporter of electricity of any state and is the largest producer on the 13-state PJM grid.

Pennsylvania's energy assets have contributed to significant nationwide decreases in commodity costs for gas and electricity and in emissions of NAAQS and greenhouse gasses. Our state has helped position the United States as a leader in sustainable economic growth, as our nation has outpaced other developed countries in keeping energy prices low while growing the economy and reducing emissions.

The private sector is deploying a number of innovative technology and energy solutions to support traditional and emerging industries in a sustainable manner.

Federal infrastructure and air quality permitting must be reformed to position our country for continued leadership. Unilateral obstruction of federally approved interstate projects has real-world consequences for ratepayers, energy security and the economy.

Permitting under the National Environmental Policy Act must be made transparent, fair and nimble so that vital energy and transportation infrastructure necessary for a modern economy can be built in a timely manner.

Pursuing additional reforms to several components of air quality regulation, such as New Source Review and emission reduction credits, will also encourage the expansion of domestic operations.

Federal policy should reward stewardship and build upon existing public and private commitments and leverage the human capital and technology base of traditional industries. This includes continued investment into mining, energy transmission infrastructure and research and development involving advanced nuclear and carbon capture.

Regardless of the future energy mix, our nation's economy will require a strong, competitive domestic industrial base to provide critical minerals, timber, aggregates, concrete, steel and cement.

A strong economy and continued improvements in quality of life depend upon ongoing increases in labor productivity in every region of the country. At present, the only rural communities that are matching urban and metropolitan regions in terms of wage and productivity growth are those communities with natural resource development. Federal policy must support the continued operation and expansion of critical energy and manufacturing industries in these non-metro areas.

Good morning Chairman Tonko, Ranking Member McKinley, and honorable members of the House Energy and Commerce Committee.

My name is Kevin Sunday, Director of Government Affairs for the Pennsylvania Chamber of Business and Industry (PA Chamber). The PA Chamber is the largest, broad-based business advocacy organization in the Commonwealth. Our organization represents thousands of member companies, across every commercial and industrial sector and ranging in size from sole proprietorships to Fortune 100 companies.

It is an honor and a privilege to appear before you this morning to discuss federal energy and environmental policy following the recent introduction of the CLEAN Future Act. It is our sincere hope that lawmakers on both sides of the aisle come together to produce durable, bipartisan policy that applies the lessons from Pennsylvania's successful leveraging of our historic leadership positions in energy and industry to produce electricity, natural gas and a host of goods and commodities in an increasingly affordable and sustainable manner, to federal policy that positions America for continued leadership in an increasingly competitive and dynamic global marketplace. The private sector is continuing to innovate and lead on technology solutions to energy challenges, and it is imperative that federal policy produce a reformed permitting and regulatory process that allows innovation to flourish through a predictable and timely decision-making process. In contrast, policy that brackets energy resources into either mandates or bans, or that simply encourages the closure of domestic facilities and the offshoring of their output to locales with less stringent environmental requirements, will not produce a sustainable economy.

Pennsylvania is the second-largest energy producing state, the second-leading state in natural gas production, the third-largest coal producing state, and the third-largest electricity producer.¹ Our state is also the largest net-exporter of electricity in the country and is the largest electricity producer on the 13-state PJM grid that provides power to 65 million Americans, thanks to our competitive, diverse fleet of power generation resources, including the second-largest amount of nuclear power of any state in the country. Pennsylvania is also eighth in total manufacturing output, with leadership positions in food manufacturing, refined products, pharmaceuticals, steel, cement, aggregates and pulp and paper.

All of our members are committed to the stewardship of our state and nation's land, air and water, and we seek to provide a thoughtful and balanced approach on ways we can continue to reduce our environmental impacts and grow the economy. As policymakers at the federal level take a long-term vision towards energy policy, it is imperative that the goals be established thoughtfully after careful consideration of their ability to be executed in an efficient and effective manner. As energy crises in multiple states have shown, failure to adequately consider the magnitude of downside risks by getting assumptions wrong can produce real-world suffering and impose enormous costs on businesses and consumers.

¹ Pennsylvania State Energy Profiles, US Energy Information Administration.
<https://www.eia.gov/beta/states/states/PA/rankings>

Competitive Markets and Private Sector Leadership Have Delivered Significant Environmental and Economic Progress in Pennsylvania and the United States

Among all states, Pennsylvania is the biggest net exporter of electricity in terms of megawatt hours, according to a recent analysis by the U.S. Energy Information Administration (EIA)². Based on an analysis of EIA data, Pennsylvania exported 36 percent of total megawatt hours in 2019. Pennsylvania is also the largest power producer in the 13-state PJM grid, the largest grid in the country and one that delivers power to the homes, schools, and workplaces of more than 61 million Americans. The competitive markets managed by PJM have resulted in significant reductions in NAAQS criteria and greenhouse gas emissions from the power generation sector. Remarkably, Pennsylvania has remained in a leadership position with respect to power generation and net exports even with a substantial decrease in both tons of emissions and emissions intensity among the portfolio. According to a profile of the state's generation and transmission assets compiled by PJM³, Pennsylvania's average CO₂ intensity declined from approximately 1,150 lbs/MWh in 2005 to approximately 765 lbs/MWh in 2019 (a reduction of 33 percent), and SO₂ intensity declined from 10 lbs/MWh in 2005 to less than 1 lb/MWh in 2019 (a reduction of more than 90 percent). Since 2005, only one other state has reduced its energy-related CO₂ emissions more in terms of absolute tons.⁴ Additional reductions from our state's power generation sector are expected to continue, with PJM reporting more than 11,000 MW of natural gas and solar in the state's capacity queue. Across the 13-state grid, significant amounts of wind (6,240 MW), solar (25,759 MW), storage (3,920 MW) and new natural gas (24,990) capacity are also in the queue.

These significant declines in air emissions have also been paired with decreases in the commodity costs within PJM's energy markets. During the first nine months of 2020, prices in the energy markets were the lowest in the 21-year history of the RTO's organized markets. Energy markets provide approximately two-thirds of the weight of wholesale power prices in PJM. Wholesale prices across PJM for 2019 were the lowest in 15 years, according to the Independent Market Monitor's recent annual report⁵.

Reductions in air emissions have not been limited to the power generation sector. Overall, Pennsylvania's industrial sources have achieved significant declines in emissions of federally regulated pollutants over the past several decades. According to data available on PA DEP and US EPA's websites, these reductions include decline in annual emissions of NO_x on the order of 65 percent, SO₂ by 90 percent, CO by 69 percent, VOCs by 36 percent and PM 10 by 37 percent. Further, these reductions are yielding a demonstrable improvement in air quality. Every monitoring point in the state is measuring attainment for the 2008 ozone standards of 75 ppb, and in just one year the number of monitoring points measuring non-attainment for the 2015 ozone standard of 70 ppb fell from eight to just four. The state is also measuring attainment at all points for both the annual and 24-hour standards

² Today in Energy, December 7, 2020. US EIA. <https://www.eia.gov/todayinenergy/detail.php?id=46156>

³ 2019 Pennsylvania State Infrastructure Report. PJM Interconnection, July 2020. <https://www.pjm.com/-/media/library/reports-notice/state-specific-reports/2019/2019-pennsylvania-state-infrastructure-report.ashx?la=en>

⁴ State Energy-Related CO₂ Emissions by Year, Adjusted (1990-2018). US Energy Information Administration, March 2, 2021. <https://www.eia.gov/environment/emissions/state/>

⁵ 2019 State of the Market Report for PJM. Independent Market Monitor, March 2020. https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2019.shtml

from PM 2.5, and the Allegheny County Health Department announced in February that for the first time in decades its monitors were measuring healthy levels of air quality for all criteria pollutants.

Pennsylvania's contributions to growing the economy while reducing energy prices and emissions have positioned the United States for leadership in sustainable growth. As EPA's Acting Assistant Administrator Joseph Goffman noted in a recent memo to regional offices, "ongoing changes in electricity generation mean that the emission reduction goals that the [Obama administration's Clean Power Plan] for 2030 have already been achieved."⁶ From 2005 to 2019, according to an analysis of World Bank, EIA and International Energy Agency data⁷, the United States' economy grew by 64 percent, to roughly \$21.4 trillion in GDP, while reducing carbon dioxide emissions by 16%. Over the same period, Europe's economy grew at half the same pace (31 percent) yet lagged the United States on emissions reductions on an absolute basis – a reduction of 742 mmt for Europe compared to a reduction of 936 mmt for the United States, or a delta of 210 million metric tons of CO₂. More broadly, over the same 15 year period, OECD countries as a whole reduced on net carbon dioxide emissions by 1,524 mmt – of which the United States can proudly lay claim to having been responsible for more than 60 percent of those reductions. Policymakers must not lose sight of the fact that while these reductions were taking place in the developed world, as the economies of India and China grew, so did their greenhouse gas emissions. India's CO₂ emissions grew by more than 1,200 mmt, or a 115 percent increase, nearly singlehandedly dwarfing reductions in OECD countries. China's emissions grew by 4,400 mmt, or an 81 percent increase – nearly three times the total reductions of OECD countries. Further, as this international comparison in emissions demonstrates, the offshoring of domestic manufacturing as a result of uncompetitive tax, labor and regulatory policy will result in operations in countries that have much higher emissions intensities.

As the United States develops new technology solutions in both fossil and zero-carbon resources, it is imperative trade and energy policy support the continued export of these solutions to developing countries. In the near-term, this must include liquefied natural gas (LNG), which is currently being shipped to India and East Asia. In addition to providing a reliable, low-carbon resource for countries abroad while supporting domestic exploration and pipeline activity, LNG also provides, for the importing country, greater geopolitical optionality and a reduced reliance on energy developed in countries whose regimes favor neither democracy nor sustainable development.

IEA electricity and natural gas commodity pricing data also hint at why economic growth in the EU has trailed the United States. Industrial users in the United States pay much less for electricity than any European country – in some cases, less than half. Residential electricity prices in the United States are also the fourth-lowest among all developed nations. The United States is also second among all developed nations in terms of lowest natural gas commodity costs for industry and third for residential users. Leveraging these low costs with pro-growth tax and regulatory policy will position Pennsylvania and the United States for further global leadership in economic growth and emissions reductions, but

⁶ Memorandum to EPA Regional Administrators: Status of Affordable Clean Energy Rule and Clean Power Plan. United States Environmental Protection Agency Office of Air and Radiation. Feb. 12, 2021.

⁷ World Bank Open Data, March 9, 2021. <https://data.worldbank.org/>
International Energy Statistics, US EIA. <https://www.eia.gov/international/data/world>
CO₂ Emissions from Fuel Combustion, International Energy Agency.
http://wds.iea.org/wds/pdf/Worldco2_Documentation.pdf

policymakers must not sacrifice these economic advantages on costly mandates or unwieldy regulatory mechanisms that raise costs and offshore economic activity. In sum, higher energy prices due to taxes, regulatory requirements or a lack of infrastructure do not result in better environmental outcomes, but they do result in worse economic performance.

Pennsylvania's Energy and Manufacturing Sectors Continue to Lead

Pennsylvania is a leading state in terms of food manufacturing, refined products, pharmaceuticals, steel, concrete, cement, aggregates and pulp and paper, as well as industries that helped us weather and overcome the pandemic: health care, telecommunications and logistics. Every one of these industries are working to innovate and make use of domestic energy resources to improve resiliency and sustainability. A few examples include:

- A major metropolitan airport working with leaders in natural gas and renewables to develop a microgrid using natural gas developed on-site
- Innovative deployment of nuclear power to provide reliable, baseload, zero-carbon power to a data center warehouse
- Fertilizer and ammonia manufacturers producing vital products for the agriculture sector through the use of domestic natural gas liquids and carbon capture and sequestration technology
- Use of natural gas helps a leading pharmaceutical company's manufacturing facility reduce emissions and costs to remain competitive
- A cement manufacturer switching to natural gas to reduce costs and emissions
- A leading pulp and paper manufacturer turning to natural gas for on-site heat and power to reduce cost and emissions
- A global integrated oil and gas company selecting southwestern Pennsylvania to site a multi-billion petrochemical facility, with its produced products boosting domestic medical, automotive, and food manufacturing industries
- A leading consumer products company harnesses local gas reserves to provide all of its heating and power needs while sending excess power back out to the grid
- Waste management, logistics and utility companies are partnering to capture biogas for use as a clean fuel for heavy trucking

These success stories demonstrate just a fraction of the renewal of opportunity that can be achieved in part through policy that allows all segments of the energy value chain to flourish. These segments include the development of our natural resources, power generation from a diverse portfolio of fuel sources, expanded oil, gas and electric infrastructure, and the use of those commodities in manufacturing and industry. The American economy stands to benefit tremendously as energy is developed and moved through infrastructure for final use in homes and businesses; we can also continue to secure additional improvements in air and water quality as we develop this value chain.

Federal Infrastructure Decision-Making Must Be Streamlined to Support Domestic Manufacturing and Energy Security

As federal lawmakers debate a long-term vision for energy and environmental progress, administration officials and Congress must not lose sight of the many challenges currently facing our existing industries. Addressing these issues through bipartisan reforms can unlock further investment and continue to position the United States for long-term growth. Among these include streamlining the permitting process for infrastructure, providing for a more common-sense and flexible air quality permitting regime, and rewarding stewardship in key industrial sectors.

First, while Pennsylvania has abundant supplies of energy and exports roughly one-third of its electricity and three-quarters of its natural gas, nearby states are facing self-imposed energy crises due to short-sighted political decisions on infrastructure. As a few examples of the real-world impacts of these states attempting to impose unilateral vetoes on federally approved infrastructure projects, utilities in New Jersey have warned state regulators that there may be inadequate supplies of natural gas during the winter season⁸. Electricity market regulators in New England continue to grapple with fuel security and natural gas supply issues, with ISO-NE noting “inadequate infrastructure to transport natural gas has at times affected the ability of natural gas-fired power plants to get the fuel they need to perform. This energy-security risk has become a pressing concern for New England, considering the major role natural gas-fired generation plays in keeping the lights on and setting prices for wholesale electricity.”⁹ Infamously, several winters ago a ship carrying LNG delivered its cargo to a Boston port despite the city being just a short drive away from some of the most prolific producing shale gas wells in the world in northeastern Pennsylvania. Our federal infrastructure permitting regime was not designed with the intention of allowing single states to unilaterally veto federally approved interstate projects – a position the Biden Administration endorses in its recent Supreme Court filing in *PennEast Pipeline v. New Jersey*.¹⁰

Oil pipelines and associated infrastructure are also being impacted or threatened by federal and state regulatory actions – the result of which would eliminate jobs and jeopardize economic vitality. To our north, our allies in Canada are crying foul over the federal government’s revocation of the Keystone XL pipeline’s cross-border permit. To our west, the state government in Michigan is attempting to obstruct the international, interstate Line 5 project – which supplies crude oil and natural gas liquids to domestic refiners in Michigan, Ohio and Pennsylvania as well as Ontario and Quebec. Crude shipped on Line 5 makes its way to northwest Pennsylvania to be refined and sold at retail outlets in the Great Lakes region. Growing our economy, ensuring reliable energy and meeting environmental goals will require a durable federal permitting approach that considers state interests in interstate permitting but does not allow them to obstruct the construction of vital and necessary projects.

⁸ New Jersey utilities warn of gas shortages, argue for new pipelines. Politico Pro New Jersey, Oct. 25, 2019. <https://subscriber.politicopro.com/states/new-jersey/story/2019/10/25/new-jersey-utilities-warn-of-gas-shortages-argue-for-new-pipelines-1225986>

See also comments of New Jersey Natural Gas, Levitan & Associates, and PSEG Services Corporation in New Jersey Board of Public Utilities Docket GO19070846.

⁹ Natural Gas Infrastructure Constrains. ISO-NE. <https://www.iso-ne.com/about/what-we-do/in-depth/natural-gas-infrastructure-constraints>

¹⁰ See Brief of the United States as Amicus Curiae Supporting Petitioner, filed March 8, 2021. https://www.supremecourt.gov/DocketPDF/19/19-1039/171249/20210308193306999_19-1039tsacUnitedStates.pdf

Second, and relatedly, the decision-making process for infrastructure permitting in this country needs streamlining. Whether the project in question is a port expansion, a new highway, or an energy project, the National Environmental Policy Act (NEPA), while well-intentioned, has resulted in years of delay to the point where it can take longer to approve a project than to build it. These unreasonable delays are not only costly, but deprive the public and our economy of the benefits that modern infrastructure can deliver. Keeping our transportation, logistics, manufacturing, aviation and energy industries competitive in an intensely dynamic global marketplace will require a more transparent, fair, and nimble approval process, and as Congress and the Biden administration turn the page to an infrastructure package, it is vital these projects be built quickly and efficiently. The PA Chamber is a proud member, alongside leaders from the building trades, agriculture, construction, transportation, manufacturers and trade associations as part of the Unlock American Investment coalition that supports reforms to NEPA.

Paired with tax and regulatory reform, the unprecedented output of our nation's natural resources and the strength of its diverse power generation portfolio of nuclear, coal, natural gas, and renewables has positioned this country to return to levels of GDP growth unseen in more than a decade. An energy-focused economic development strategy for Pennsylvania, as outlined in a recent report entitled *Forge the Future*, has the potential to bring an additional \$60 billion in state GDP and more than 100,000 jobs to our state. The Appalachian region, including Pennsylvania, Ohio, West Virginia and Kentucky, could become a petrochemicals and plastic manufacturing hub – according to the American Chemistry Council, more than \$28 billion in economic expansion and more than 100,000 jobs could be created should the region capitalize on an ethane storage project and secure the construction and operation of several petrochemical plants. Given the significant energy security, economic opportunity and environmental benefits such a storage hub would represent, we strongly encourage the Biden administration and lawmakers to continue to support an ethane storage hub in Appalachia.

Federal Energy and Environmental Policy Must Also Encourage Investments into Efficiency Improvements, Domestic Output and Long-Term Energy Security

We must, however, not lose sight of the fact that even if federal infrastructure policy accommodates the rapid and efficient buildout of new and expanded infrastructure, end-users in industrial and manufacturing sectors must be able to operate in a regulatory environment that encourages the adoption of cleaner burning fuels and allows such facilities' to continue and expand domestic operations.

As noted previously in testimony before this committee¹¹, economic growth and environmental progress depend upon a well-functioning and rational regulatory system; the federal air quality permitting regime shows signs of being neither and must be modernized. PA Chamber members have reported that the current process is an impediment to investing in the efficiency of their operations and

¹¹ New Source Review Permitting Challenges for Manufacturing and Infrastructure, Feb. 14, 2018.
https://www.pachamber.org/advocacy/legislative_agenda/communications/PA_Chamber_House_EC_Sub_Enviro_NSR_Testimony_021418.pdf

Modernizing Environmental Laws: Challenges and Opportunities for Expanding Infrastructure and Promoting Development and Manufacturing, Feb. 16, 2017.
https://www.pachamber.org/advocacy/legislative_agenda/communications/House_EC_Sub_Enviro_Modernizing_Environmental_Laws.pdf

improving their ability to compete abroad. Because of the costs associated with triggering New Source Review (NSR) thresholds, companies have canceled projects that would have reduced emissions, lowered operating costs and provided an overall benefit to public health and the environment. Disputes between state and federal regulators over interpretation and application of regulatory criteria result in sizeable legal and engineering costs and leave projects in limbo for months, or years. Lenders will not provide financing until the revolving door of lawsuits from third-party groups over the perpetually changing universe of Best Achievable Control Technology (BACT) and Lowest Achievable Emissions Rate (LAER) controls stops spinning.

With respect to NSR, when a new industrial facility is seeking a permit to be built, or when an existing facility is seeking to expand, the project must go through the NSR and Prevention of Significant Deterioration (PSD) permitting processes. The backbone of these programs are the National Ambient Air Quality Standards. NSR was established as part of the Clean Air Act to ensure that counties and regions can progress towards attaining and maintaining air quality that is protective of public health while new facilities are built and existing facilities are modified and expanded.

In practice this regulatory construct discourages expansion of existing manufacturing (and the attraction of new facilities) in non-attainment areas, despite historic improvements in air quality. In many cases, the NSR rules as applied don't allow for significant improvements to existing facilities, as they require application of the highest Clean Air Act standard, rendering projects uneconomic due to compliance costs. Most large-scale manufacturing and industrial facilities will trigger NSR thresholds for one or more NAAQS pollutant, subjecting these facilities to NSR's rigid standards. When these facilities seek to expand their operations, they must calculate, per NSR regulations, if there will be a significant net emissions increase as a result of the modification, compared to recent operational profiles, and EPA has established that such a calculation must assume that a source will produce its maximum possible emissions every hour of every day for the duration of its existence (referred to as "potential to emit" or PTE), even though such a calculation is not representative of any facility's actual operations. Companies must then account for these emissions that will never be emitted by accepting a more stringent limit and installing more costly control technology than would be necessary had the calculation on future net emissions been representative of actual future operational practice. In reality, this has discouraged companies from investing in installing cheaper and cleaner-burning heaters in their boiler systems or other on-site heating and power units. In other words, modifications that increase a facility's output per unit of fuel can trigger NSR thresholds, even if the overall impact is a net environmental benefit.

In a separate step of the NSR process, an existing facility's recent output is compared to the hypothetical, 24/7 output resulting from a modification (potential actual emissions). This comparison penalizes facilities that have not been running at full capacity in the years running up to submitting its plans for NSR review. Importantly, the text of the Clean Air Act and NSR regulations allows applicants a so-called "demand growth exclusion," which allows applicants to exclude a portion of the difference between actual baseline emissions and potential actual emissions by subtracting out emissions that would have been generated but for a lack of market demand. This is a useful, common sense and necessary component of a well-functioning regulatory program to allow for operational flexibility – however, during the Obama administration, the EPA took a severely restrictive view of when the demand growth exclusion can be utilized. In contrast, the Trump administration finalized regulatory reforms to project emissions accounting under NSR regulations, as well as guidance regarding source

aggregation determinations, which were welcome steps towards a more rational permitting approach. We have also applauded and endorsed the Trump administration's change to permitting under hazardous air pollutants (HAPs) regulations, which reward sustainability by no longer requiring facilities who reduce annual emissions below major source thresholds to continue to be permitted and operate as major sources. Such was the illogical and counterproductive approach under the previous federal approach, dubbed "once in, always in."

There is often disagreement on interpretation of NSR requirements between state and federal regulators, putting project applicants in a bind when, fairly late in the game, EPA delivers a series of comments and questions to the state on a project. Compliance with NSR and other environmental requirements has a major impact on the business planning and operational design of facilities. Financial viability of a project depends on receiving timely approvals. PA Chamber members have reported that this tension between state and federal regulators, and the lack of communication to project applicants about that tension until several months into permitting discussions, is not only extremely frustrating, but costly. What may seem like a minor dispute over the calculation of future versus actual emissions can result in tens of thousands of dollars in engineering and legal fees and a need to resubmit an application.

In addition, the current permitting process allows for a revolving appeals process that has killed numerous projects. To move forward with a new facility, applicants must work with regulators to establish what controls (and/or the appropriate amount of offset credits) are needed on the project. Industry must work with regulators at the state and federal level to determine what is the appropriate Best Available Control Technology¹² (or BACT, applied to facilities in attainment areas) or Lowest Achievable Emissions Rate¹³ (or LAER, applied to facilities in non-attainment areas). These evaluations examine control technologies employed at constructed facilities throughout the country. Before beginning construction, a facility needs to obtain a pre-construction permit, which establishes what appropriate controls are needed based on presumed impact. A pre-construction permit has a lifespan of 18 months. Too often, however, third-party NGO's challenge the permitting agency's conclusion in the pre-construction permitting process, and the associated litigation results in years of delay. Even if the applicant and agency are successful in court, EPA policy (and the lifespan of the preconstruction permit) requires agencies to undertake another determination on impacts and appropriate technology. Third-party NGO's can then appeal again that the agency's determination was flawed, the process repeats itself and the project never gets off the drawing board – not for an actual lack of being able to comply with the relevant requirements but because there is no clear process to get to a "yes." There is room within the existing regulatory and statutory framework to provide certainty to applicants by limiting the universe of relevant BACT and LAER as it existed when a final and complete application was submitted.

Moreover, policymakers should enact NSR reforms such that the permitting obligations do not discourage a power plant, manufacturing or industrial facility looking to retrofit CCUS technology into the facility's operations. A company proposing to install CCUS technology at an existing facility will have to undergo applicability determinations with state and federal regulators to determine if the project is significant enough to constitute a "major modification" and thus subject to NSR

¹² 42 USC § 7479.

¹³ 42 USC § 7501.

requirements. NSR may also be triggered if the installation of carbon capture technology results in a significant change in the process design of the plant, even if the overall emissions profile of the facility does not change. In a hypothetical future carbon-constrained policy environment, NSR may also be triggered by power plants or industrial facilities seeking to install and operate carbon capture technology that will allow the facilities to run more frequently but with less emissions intensity. Depending on the structure of state air quality requirements (i.e., if the state outright adopts by reference federal NSR requirements) and the judgment of EPA's regional air offices, applicability determination process may include notice and comment and public hearings. Should the project be located in an area that is in attainment with NAAQS, the project may be required to conduct air modeling, which can take a year. As noted in this testimony, there is also risk of litigation from third-party NGO's over what is the relevant technology under LAER or BACT. We project that, absent litigation and with a commitment from air quality regulators on timely permitting, it will take upwards of two years to permit a CCUS project in a best-case scenario. Within PJM, the installation of the technology may require the power plant to go idle for a period of time and lose out on energy and capacity market revenues, which again speaks to the need for a timely, fair and predictable process. Finally, there may be additional delays in constructing and operating infrastructure associated with a CCUS project, due to permitting requirements as they relate to endangered species, pipeline siting, underground injection and NEPA. These challenges were discussed in a recent report from DOE's Lawrence Liverpool National Laboratory¹⁴, which examined challenges associated with constructing CCUS projects in California – an analysis that is especially salient given that much of the CLEAN Future Act appears to borrow, in both intent and design, from environmental policy established by California state regulators.

We also encourage contemplation of two reforms regarding the use of offset credits – one, given the focus of the Clean Air Act on interstate impacts, being expanding the geography of where a credit may be secured beyond the purchasing facility's region or county, and two, given the shortage of some types of credits and regulators' penchant for justifying new rules on the co-benefits of emissions not being directly regulated, being more accommodating to securing and retiring emission reduction credits (ERCs) of one pollutant (for example, nitrogen oxide) to offset emissions of another (for example, particulate matter).

Federal Energy and Regulatory Policy Should Reward Stewardship and Build on Existing Capital and Policy Commitments

As noted, beyond Pennsylvania's leadership in power generation and energy production, our state is also a leader in aggregates, concrete, refined products, timber, food manufacturing and life sciences industries, which are vital and necessary sectors to any modern economy. These industries are continuing to deploy capital and leverage Pennsylvania's energy resources in innovative ways. We encourage federal policy that rewards stewardship. We also encourage federal policy to build on on-going innovations in our state with respect to carbon capture and other emerging solutions.

As Dr. Brian Anderson, director of the Department of Energy's National Energy Technology Laboratory (NETL), situated in southwestern Pennsylvania, recently testified to the Pennsylvania State

¹⁴ Permitting Carbon Capture & Storage Projects in California. George Peridas, Lawrence Liverpool National Laboratory, Feb. 2021. https://www-gs.llnl.gov/content/assets/docs/energy/CA_CCS_PermittingReport.pdf

Senate¹⁵, given the carbon-emitting resources' significant share of domestic energy resources and the intermittent nature of renewable resources such as wind and solar, carbon capture and underground storage "will continue to be necessary to grid-scale energy storage for grid reliability during this energy transition." In other words, should Congress establish a goal of net-zero emissions for the United States by mid-century, it will be absolutely necessary to continue to invest in fossil fuel exploration and associated transmission infrastructure – so that both the fuels themselves and the greenhouse gases produced during combustion can be moved through a robust and safe network of pipelines. Several leading energy companies are working with DOE NETL on innovative research and demonstration projects involving carbon capture, including applications in power generation and consumer products. PA Chamber members are also working with innovative leaders in the ammonia and fertilizer industries to pair carbon capture technology with locally produced natural gas to produce vital products for the agriculture sector. Companies working in the concrete and cement industries are also switching to natural gas in the near-term to power their industrial processes and examining ways to, in the long term, develop their products with carbon capture. As these efforts show, traditional energy resources can be paired in innovative ways with new technology to create new markets and support vital existing industries.

As domestic and international demand for renewable resources expands, it is also imperative the United States establishes policy that encourages the domestic mining of critical minerals, which are used not just in solar panels but a variety of applications in telecommunications, computer chips and other hardware. Pennsylvania's mining, steel, and timber industries, as well as that of other states, must not be regulated out of existence. Regardless of the composition of our energy mix, our economy will still need timber, aggregates, concrete, steel and cement to build infrastructure, and the human capital and equipment stock used by these industries today can be put to use for critical minerals mining and low-carbon manufacturing and infrastructure buildout tomorrow. Federal energy policy must also continue to support development of an Appalachian ethane storage hub, as well as advances in modular nuclear technology, hydrogen and other emerging energy resources.

We appreciate the recognition in the CLEAN Future Act legislation, specifically its provisions regarding community transitions, which recognizes that significant federal intervention into the private sector through energy and environmental policy may result in economic damage to local communities, many of them in rural America. The energy and manufacturing base in many such communities create high labor productivity and well-paying jobs for workers. While from a national perspective, workers in metropolitan areas on average are more highly paid and productive than in rural areas, as researchers at the Brookings Institution have noted, the most productive industries outside cities are those involving natural resources. To quote their analysis, "many small metro economies are highly productive as well, especially those that specialize in oil, gas and mining."¹⁶ As we have noted throughout this testimony, the United States will continue to need a strong domestic manufacturing, mining, energy production and infrastructure base to continue to grow its economy and meet environmental goals. Regulatory policy that results in the loss of these industries will not produce a sustainable economy and will only

¹⁵ Written Comments of Dr. Brian Anderson, Director of the National Energy Technology Laboratory, US Department of Energy, Informational Briefing to the Pennsylvania Senate Environmental Resources and Energy Committee, March 10, 2021. https://environmental.pasenategop.com/wp-content/uploads/sites/34/2021/03/2021-03.10.2021-Anderson-Written-Comments_PA-Senate-ERE-Committee-8MAR2021.pdf

¹⁶ Understanding US productivity trends from the bottom-up. Joseph Parilla and Mark Muro, Brookings Institution, March 2017. <https://www.brookings.edu/research/understanding-us-productivity-trends-from-the-bottom-up/#cancel>

further exacerbate the challenges already facing rural communities. Many of the CLEAN Future Act's provisions are sweeping in their scope and may have significant unintended consequences; as such we strongly encourage deliberation and economic evaluation of these proposals.

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In closing, Pennsylvania's success in energy production and leading in a variety of industrial and manufacturing segments while reducing emissions demonstrates how competitive markets, private sector innovation and stable policy can reap enormous dividends for our environment and our economy. Our success has helped the United States keep costs low, produce massive economic growth and lead the world in reducing greenhouse gas emissions. We stand ready to work with leaders in Washington to continue those trends. I reiterate our encouragement that the Biden administration and lawmakers on both sides of the aisle come together to produce durable, effective, bipartisan energy and environmental policy that keeps the United States in a flagship position in an increasingly challenging and dynamic global marketplace. Thank you for the opportunity to appear before you today.