

Testimony

Submitted on behalf of the Pennsylvania Chamber of Business and Industry

Climate Challenges: The Tax Code's Role in Creating American Jobs, Achieving Energy Independence, and Providing Consumers with Affordable, Clean Energy

Before the:
United States Senate
Committee on Finance

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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 through competitive markets 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, where prices are at generational lows and GHG emissions have fallen 34% across the region since 2005.

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 tax and regulatory reform led to substantial wage growth across all occupations and job creation in Pennsylvania; however, the pandemic has wiped out a decade's worth of job growth. All sectors of Pennsylvania's economy fared worse than national averages in terms of lost jobs in 2020. Congress must not burden our state with uncompetitive, anti-growth tax and regulatory policy.

Federal infrastructure and air quality permitting must be reformed to position our country for continued leadership. Federal policy should also reward stewardship and build upon existing public and private commitments and leverage the human capital and technology base of traditional industries. 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. Given the high wage premiums for workers in the power generation, oil and gas, and manufacturing industries, federal policy must support the continued operation and expansion of critical energy and manufacturing industries in these non-metro areas.

Good morning Senator Wyden, Senator Crapo and honorable members of the Senate Finance Committee,

It is an honor and a privilege to appear before you this morning to discuss federal energy and environmental policy. 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. 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 65 million Americans. The competitive markets managed by PIM have resulted in significant reductions in NAAQS criteria and greenhouse gas emissions from the power generation sector. Since 2005, carbon dioxide emission fell across PJM by 34% in large part due to competition among generation and improvements in technology.³ 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 PJM⁴, 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.⁵ Additional reductions from our state's power generation sector are expected to continue, with PIM 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 MW) 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 report⁶.

With respect to natural gas costs, residential consumers in Pennsylvania have seen utility bills, inclusive of commodity costs and distribution charges, fall by as much as 56%, with annual savings ranging between \$321 and \$1,643 depending on the utility. With respect to commercial and industrial customers, total bills have fallen at minimum by 28% and as much as 56%, depending on the utility.

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

³ Emissions Continue to Drop Throughout PJM Footprint. PJM Interconnection, March 4, 2020. https://insidelines.pjm.com/emissions-continue-to-drop-throughout-pjm-footprint/

⁴ 2019 Pennsylvania State Infrastructure Report. PJM Interconnection, July 2020. https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2019/2019-pennsylvania-state-infrastructure-report.ashx?la=en

⁵ State Energy-Related CO2 Emissions by Year, Adjusted (1990-2018). US Energy Information Administration, March 2, 2021. https://www.eia.gov/environment/emissions/state/

⁶ 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

These cost reductions have resulted in significant improvements in one of the highest cost pressures for these types of facilities, and by extension their competitiveness.⁷

With specific regards to the commodity cost components of gas utility bills, utilities' purchased gas costs are between 67% and 83% lower compared to 2008 levels. These costs are passed directly to consumers with no mark-up by the utility. Absent infrastructure buildout and the onset of production from the Marcellus shale that has occurred since 2008, the average household would be paying between \$1,368 and \$2,467 more annually on commodity charges. Commercial customers would be paying between \$3,800 and \$6,855 more per year, and large commercial and industrial customers would be paying between \$68,400 and \$123,390 more. In a hypothetical alternative timeline in which natural gas production from the Marcellus shale never occurred and these higher costs held constant over the last twelve years, natural gas utility customers across all ratepayer classes would have paid tens of billions of dollars more in higher costs in Pennsylvania alone.

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 NOx 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 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." From 2005 to 2019, according to an analysis of World Bank, EIA and International Energy Agency data¹⁰, 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

⁷ Rate Comparison Reports for 2008 and 2020, Pennsylvania Public Utility Commission. https://www.puc.pa.gov/filing-resources/reports/rate-comparison-reports/

⁸ Purchased Gas Costs, Pennsylvania Public Utility Commission. https://www.puc.pa.gov/NaturalGas/pdf/PGC.pdf

⁹ 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.

¹⁰ 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

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 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.

Congress Should Not Enact Punitive Federal Tax and Energy Policy, Given the Pandemic Erased Substantial Economic Gains Achieved in Years Leading up to 2020

Various recent analyses noted the significant benefits that accrued to the nation, its economy and its workforce in the years following the passage of the Tax Cuts and Jobs Act. Research published in late 2019 from the St. Louis Federal Reserve concluded that "the evidence suggests that both innovation and [venture capital] investment increased significantly after the Tax Cuts and Jobs Act. The level of innovation and VC investment in 2018 and the first half of 2019 should support increased growth rates in the next years." Last month, the Joint Committee on Taxation reported to this committee that in

¹¹ Tax Cuts, Venture Capital, and Long-Term Growth. Juan M. Sanchez, Federal Reserve Bank of St. Louis Economic Research. Aug. 8, 2019. https://research.stlouisfed.org/publications/economic-synopses/2019/08/30/tax-cuts-venture-capital-and-long-term-growth

the year immediately following enactment of TJCA, business investment and employment rose in the United States. ¹² Finally, tax reform moved the United States from having the highest corporate rate among all OECD nations to a more competitive position. As the US Chamber noted in its recent statement to this committee, "... on the Tax Foundation's International Tax Competitiveness Index (ITCI), the United States ranks 21st out of 36 countries on overall competitiveness, a jump from the 28th ranking prior to tax reform, and 19th on corporate taxes, up from 35th before tax reform."¹³

Pennsylvania benefitted significantly from the passage of this act as well. Using 2016 as a baseline, economic conditions in Pennsylvania significantly improved through 2020, in part due federal tax and regulatory reform. As noted throughout various media reports, companies in Pennsylvania and across the country raised wages, increased hiring, and boosted benefits in the wake of the act's passage. Across all occupations, Pennsylvania added more than 238,000 jobs between 2016 and 2020. Based on the most recently available state and federal labor and employment data¹⁴, median wages across all occupations in Pennsylvania increased by \$6,410 in the four-year period, or roughly 13.5%. Notably, workers in the 25th percentile saw the biggest gains in average annual income (+16.84%) versus workers at the median (+13.8%%) or at the 75th percentile (+13.76%). The table below notes income gains among several broad categories of occupations in Pennsylvania. We also highlight the significant wage growth since 2016 in growing Pennsylvania sectors: chemicals manufacturing and natural gas power plant operations.

Occupation	Median wage, 2016	Median wage, 2020	Net increase in average wages since 2016	% chance since 2016
All occupations	\$47,540	\$53,950	\$6,410	+13.48%
Business financial	\$72,010	\$78,750	\$6,740	+9.36%
Community social service	\$42,840	\$48,360	\$5,520	+12.89%
Education	\$55,760	\$63,690	\$7,930	+14.22%
Healthcare	\$74,590	\$80,640	\$6,050	+8.11%
Food service	\$22,530	\$26,130	\$3,600	+15.98%
Personal care	\$25,190	\$30,030	\$4,840	+19.21%
Construction trades and extraction	\$49,610	\$55,570	\$5,960	+12.01%
Maintenance and repair workers	\$45,620	\$52,270	\$6,650	+14.58%
Manufacturing workers	\$38,130	\$42,010	\$3,880	+10.18%
Chemical plant operators Gas plant operators	\$54,130 \$58,730	\$72,480 \$70,440	\$18,350 \$11,710	+33.90% +19.94%

¹² U.S. International Tax Policy: Overview and Analysis. Joint Committee on Taxation, March 19, 2021. https://www.jct.gov/publications/2021/jcx-16-21/

¹³ U.S. Chamber of Commerce Letter to Senators Wyden and Crapo, regarding March 25, 2021 hearing. April 6, 2021.

¹⁴ State Occupational Employment and Wage Estimates – Pennsylvania, 2020 and 2016. U.S. Bureau of Labor Statistics. May 2020. https://www.bls.gov/oes/current/oes pa.htm

However, our state's economy suffered greatly during the pandemic and in just one year lost major ground in terms of Pennsylvanians employed. Comparing February 2021 to February 2020, Pennsylvania lost nearly 436,000 jobs, the 7th highest job loss figure of all states. To put it another way, in just one year, the pandemic (and the impacts of mitigation response measures and individual behavior) cost Pennsylvania nearly twice as many jobs as were created over four years, and the total number of Pennsylvanians employed in the state today is smaller than it was ten years ago, despite a larger population.¹⁵ Over the past year, Pennsylvania has outpaced national averages in job losses in all sectors, with outsized losses in mining and logging, manufacturing, and leisure and hospitality. While state and federal pandemic recovery efforts are helping these industries recover, federal policymakers must not enact tax, trade and regulatory policy that will further damage already ailing sectors. As we note throughout this testimony, Pennsylvania is a leader in the vital energy, manufacturing and service industries that produce the goods necessary to sustain a modern economy.

	February 2016	February 2020	Net change, 2016 vs. 2020	% change, 2016 vs. 2020	February 2021	Net change, 2020 vs. 2021	% change, 2020 vs. 2021, PA	% change, 2020 vs. 2021, USA
Total Nonfarm Jobs	5,855.10	6,093	238	4.06%	5,656.70	-435.90	-7.15%	-6.21%
Goods Producing Industries	826.8	861.5	35	4.20%	812	-49.50	-5.75%	-4.59%
Mining & Logging	29.6	26.1	-4	-11.82%	21.4	-4.70	-18.01%	-14.64%
Construction	229.6	264.6	35	15.24%	253	-11.60	-4.38%	-4.03%
Manufacturing	567.6	570.8	3	0.56%	537.6	-33.20	-5.82%	-4.38%
Service Providing Industries	5,028.30	5,231	203	4.03%	4,844.70	-386.30	-7.38%	-6.56%
Trade, Transportation & Utilities	1,125.90	1,129.40	4	0.31%	1101.7	-27.70	-2.45%	-2.86%
Information	85.8	89.2	3	3.96%	81	-8.20	-9.19%	-8.51%
Financial Activities	318.5	333.4	15	4.68%	323.6	-9.80	-2.94%	-1.18%
Professional & Business Services	780.9	812.8	32	4.09%	770.3	-42.50	-5.23%	-3.59%
Education & Health Services	1,192.60	1308.6	116	9.73%	1,233	-75.60	-5.78%	-5.28%
Leisure & Hospitality	558.6	584.2	26	4.58%	439.2	-145.00	-24.82%	-20.4%
Other Services	259.8	264.3	5	1.73%	228.2	-36.10	-13.66%	-7.41%
Government	706.2	709.2	3	0.42%	667.2	-42.00	-5.92%	-6.08%

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

¹⁵ Pennsylvania Local Area Unemployed Statistics. U.S Bureau of Economic Analysis, April 14, 2021. https://data.bls.gov/timeseries/LASST4200000000000006?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true

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 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 further exacerbate the challenges already facing rural communities. Many of the provisions envisioned in the American Jobs Act and Clean Energy for America Act are sweeping in their scope and may have significant unintended consequences; as such we strongly encourage deliberation and economic evaluation of these proposals, given the potential for economic harm to much of our state's energy economy. A recent jobs and wage report from the National Association of Energy Officials notes that while energy workers earn on average 34% more than the media worker, the lowest paid energy jobs are those in solar, wind and energy efficiency. ¹⁷ Conversely, workers in natural gas earn 59% above median wages and 42% above average for power generation workers. Within Pennsylvania, oil, petroleum and natural gas provide the most employment of all energy resources, according to the report.

Sweeping Changes to Federal Tax and Regulatory Policy Would Threaten Long-term Investment, Given Challenging Dynamics at the State Level

While much detail remains to be filled in regarding how the Biden administration would pay for proposed infrastructure investments and other social programs under the American Jobs Act, our members remained concerned with discussions around proposals to raise the corporate tax rate. As noted by the US Chamber in its statement for the record to this committee dated April 6, 2021, the 2017 Tax Cuts and Jobs Act resulted in significant improvements in the United States' competitiveness among OECD nations. Raising the federal corporate rate to 28% while leaving in place provisions of TCJA that broadened the tax base would result in the United States being in an even worse competitive situation than prior to 2017. Additionally, as the US Chamber's statement notes, various reports, including those compiled by the Joint Economic Committee, have estimated labor bears a significant burden of the corporate income tax – "70% or higher [being] the most likely outcome" according to one of the analyses. As the Tax Foundation has noted, just a 1 percentage point increase in the federal corporate rate would reduce long-run GDP by \$56 billion, with commensurate losses in average wages and employed Americans. An increase to 25% would reduce GDP by \$220 billion and cost more than 175,000 jobs. 19

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

¹⁷ Wages, Benefits and Change: A Supplemental Report to the Annual US Energy and Employment Report. NASEO and Energy Futures Initiatives, 2020. https://www.usenergyjobs.org/

¹⁸ Labor Bears Much of the Cost of the Corporate Tax. Tax Foundation, Oct. 24, 2017. https://taxfoundation.org/labor-bears-corporate-tax/

¹⁹ Proposed Corporate Rate Hike Would Damage Economic Output. Aug. 23, 2018. https://taxfoundation.org/proposed-corporate-rate-hike-damage-economic-output/

The National Association of Manufacturers also released an analysis of the detrimental consequences to our economy should Congress raise taxes on business and repeal key provisions of the TCJA.²⁰ These consequences include a significant decline in total employment – nearly 1 million jobs by 2023 – as well as a reduction in annual employment of 600,000 jobs per year and a reduction in national GDP of \$117 billion over the next two years.

Should Congress raise the federal corporate tax rate, Pennsylvania's economy would be disadvantaged worse than most states, given our state corporate net income tax rate is 9.99%, the second-highest flat rate among all states. In addition, Pennsylvania is one of only a handful of states that limits the ability of companies to carry forward net operating losses. Significant increases in corporate rates at the federal level, on top of Pennsylvania's middling status for competitiveness and attractiveness for new and expanded investment, would further disadvantage our state's economy and, by extension, its vital industries that, as noted in this testimony, have helped this nation grow its economy and reduce its emissions.

Further, to impose sweeping tax and regulatory changes just a handful of years after the largest change to the federal tax code in a generation threatens to set up a dynamic which will ultimately harm the long-term attractiveness of investment in Pennsylvania and the United States – which is rapid swings of the pendulum of policy. Such a dynamic would make long-term planning and investment extremely challenging.

In addition, key industries in energy and manufacturing in Pennsylvania face an inordinate number of challenges at the state and regional level. These include: persistent calls by some policymakers and stakeholders for a punitive severance tax on natural gas development (in addition to the already challenging business tax structure at the state level and the state's unique impact fee that is assessed on every unconventional gas well), neighboring states attempting to obstruct the construction of federally approved infrastructure or taking other regulatory actions to raise costs on our state's manufacturing, energy and infrastructure facilities, continual litigation over local land use and state and federal permitting approvals for new and expanded infrastructure and operations, and a generally challenging regulatory environment for air and water permits.

To reiterate, our state's energy economy, including continually increasing output from the Marcellus shale and other natural gas plays, has helped position the United States in a leadership position with respect to emissions reductions and economic growth. Among independent, non-integrated oil and gas drillers, an outsized portion of capital expenditures are related to intangible drilling costs – in some cases upward of 80% - which is expected given their predominant business is extracting hydrocarbons. Changes to federal tax policy that discourages continued investment into the exploration and production of oil and gas would not only harm our state's economy, they would have the effect of restricting supply of vital commodities but not the demand for them – with the result being higher energy costs paid by consumers and businesses. As the International Energy Agency's most recent World Energy Outlook notes, the world and the United States still need to invest \$390 billion per year into oil and gas development after 2030 to meet energy demand.

²⁰ Study: Tax Increases Cause Major Job Losses, Harm U.S. Economy. National Association of Manufacturers, April 2021. https://www.nam.org/wp-content/uploads/2021/04/TaxStudyOnePager.pdf

The U.S. Department of Labor announced recently that the Consumer Price Index increased month-over-month by a level unseen in a decade, in large part due to higher gasoline and natural gas prices.²¹ Tax or regulatory policy that discourages new production or the construction or operation of associated infrastructure will only further cause further upward pressure on prices, given expected demand.

Further, the state is in the midst of a debate regarding whether Gov. Wolf can and should have Pennsylvania join the Regional Greenhouse Gas Initiative, a cap-and-trade program for power generators. The PA Chamber has, while noting the merits of market-based approaches to reduce emissions and the challenges that climate change presents, repeatedly raised concerns over the potential costs of doing so. Meeting energy and environmental challenges will require continued innovation, and innovation is much more likely to come through market-based systems that send investment signals, rather than command-and-control regulatory structures that mandate the use of certain energy resources and the ban (in practice or in the plain definition of the term) other resources. To this end, we have advocated that should Pennsylvania join RGGI, it must be a workable program that encourages the continued development of combined heat and power projects at manufacturers and that does not sacrifice, through leakage (the displacement of generation to non-RGGI states within PIM) Pennsylvania's role as a net-energy exporter and largest generating state in PJM. Beyond RGGI, the Republican state legislature and Democratic governor's administration continue to engage on long-term energy policy conversations related to climate change, net metering, tax policy, regulatory reform, electric vehicles and land use policy. Any durable energy policy established through legislation under the current political dynamics in Pennsylvania will be the product of bipartisan compromise and collaboration; we remain greatly concerned that federal energy and infrastructure policy established solely through executive action or partisan reconciliation will erode the value of such a give-and-take at the state level and eclipse the policy choices our state has made.

To cite one example, the state legislature is contemplating policy to address deployment of electric vehicle charging stations in a manner that is equitable with respect to the various ratepayer classes – residential, commercial and industrial – and that respects that many counties are rural and whose populations lack interest in purchasing an electric vehicle. The legislature, the governor and various stakeholders, including the PA Chamber, are also in dialogue regarding sustainable transportation funding given the increased use of more efficient and alternative fuel vehicles. Federal policy that mandates deployment of electric vehicles is, in our view, extremely unlikely to respect these dynamics and any compromise policy outcome reached by stakeholders at the state level.

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

²¹ Consumer Price Index – March 2021. U.S. Department of Labor Bureau of Labor Statistics, April 13, 2021. https://www.bls.gov/news.release/pdf/cpi.pdf

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 season.²² 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."23 Infamously, several winters ago a ship carrying LNG from Russia 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.²⁴

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.

Siting and permitting reforms for interstate infrastructure, broadly speaking, would also be a boon to investment into electric transmission projects specifically in a way that additional socialization of costs for these projects through investment tax credits would not. Given the return on equity rates approved by state and federal commissions as well as the identified need to increase supply and reduce congestion in certain regions of the country, the barriers to construction of interstate projects have not been from

²² 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.

²³ Natural Gas Infrastructure Constrains. ISO-NE. https://www.iso-ne.com/about/what-we-do/in-depth/natural-gas-infrastructure-constraints

²⁴ 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

a lack of financing but from a dysfunctional permitting process, obstruction by states and litigation by disaffected NGO's. Further, socialization of costs through federal investment tax credits for electric infrastructure may only exacerbate the on-going controversy regarding equitable cost allocation of certain transmission project costs between and among states and their ratepayer classes.

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.

Finally, 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. Continued investment into the operation and expansion of domestic petrochemical and plastics manufacturing capacity is necessary, given that recent supply chain disruptions, leading to a shortage of semiconductor chips and plastics components, have caused automakers to halt production in several states. An energy-focused economic development strategy for Pennsylvania, as outlined in an economy analysis dubbed 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.

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

- A former underground mine now houses a secure, world-class data center and documents storage facility
- 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 multibillion 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 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 if the goal of federal energy and infrastructure policy is to encourage accommodates the rapid and efficient buildout of new and expanded energy and manufacturing facilities and related infrastructure, financing is only one aspect of the process. Permitting reform must come hand-in-hand with any federal policy, and 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. The PA Chamber also urges adequate funding and resources be provided to states commensurate with any federal partnership in funding key infrastructure projects. The regulatory schema established by EPA and USDOT, among other federal agencies, are in large part passed down to state and local resource agencies for implementation. This may come in the form of state environmental agencies incorporating federal air or water permitting requirements into state approvals of projects. Broadly speaking, in many years the practical extent of EPA's involvement in the permit

review process is to hand down substantial regulatory obligations to the states without commensurate funding and then delay projects approvals by second-guessing the state regulators' work.

As noted previously in testimony before other Congressional committees, 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. ²⁵ PA Chamber members have reported that the current process is an impediment to investing in the efficiency of their operations and 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 resolution of litigation from third-party groups over the perpetually changing universe of Best Achievable Control Technology (BACT) and Lowest Achievable Emissions Rate (LAER) controls.

Our members have supported reforms to these programs, including greater consideration for the net emissions benefit when a facility is going through the NSR or PSD process for a facility modification. We have also applauded the Trump administration's end of the long-standing "once in, always in" rule for major sources of hazardous air pollutants, the repeal of which encouraged sustainability by no longer requiring facilities who reduce annual emissions below major source thresholds to continue to be permitted and operate as major sources. 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).

Given the challenges presented by NSR and other air and permitting programs, and the fact that there is no scenario in which the United States achieves substantial decarbonization without widespread deployment of carbon capture and underground storage technology (CCUS), policymakers should enact 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

²⁵ Hearing on the CLEAN Future Act: Industrial Climate Policies to Create Jobs and Support Working Communities, March 18, 2021. https://energycommerce.house.gov/committee-activity/hearings/hearing-on-the-clean-future-actindustrial-climate-policies-to-create

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

determinations with state and federal regulators to determine if the project is significant enough to constitute a "major modification" and thus subject to NSR 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 PIM, 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 Laboratory²⁶, 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.

Further, 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 Senate²⁷, 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 gasses 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

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²⁶ 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

²⁷ 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

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. Continued investment into both electric and gas infrastructure is necessary to meeting energy and climate goals. As researchers as Columbia University recently noted in an analysis, "while it may seem counterintuitive, investing more in the domestic natural gas pipeline network could help the US reach net-zero emission goals more quickly and cheaply. Fortifying and upgrading the system could prepare the existing infrastructure to transport zero-carbon fuels as they become available and, in the meantime, reduce harmful methane leaks from natural gas." 28

Pennsylvania also continues to be a leader with respect to nuclear power, having the second-most installed nuclear capacity of any state. These facilities represent nearly 80% of the state's zero-carbon generation and are supported by a strong base of vendors and human capital in the state, augmented by nuclear engineering graduates produced by leading universities such as Penn State and Carnegie Mellon. An economic report sponsored by our organization, the Pennsylvania Building and Construction Trades Council, the Allegheny Conference on Community Development and the Greater Philadelphia Chamber of Commerce found that the nuclear industry contributes approximately \$2 billion to state GDP and supports nearly 16,000 jobs.²⁹ Nuclear jobs are also the highest-paying of all energy jobs, according to a recent report – 105% more than the average median wage.³⁰ Our state was host to the nation's first commercial nuclear facility and we have a resource and knowledge base to support continued innovation and operation of these facilities, and it remains imperative that federal policy recognize emissions reduction goals will not be met without continued contributions from the nuclear energy industry.

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 policy must also continue to support development of strong domestic energy and manufacturing bases, which includes trade policy that does not result in higher costs for vital supply chain components. At the same time, policy should

²⁸ Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets. Blanton, Lott and Smith, Columbia University, April 22, 2021. https://www.energypolicy.columbia.edu/research/report/investing-us-natural-gas-pipeline-system-support-net-zero-targets

²⁹ Pennsylvania Nuclear Power Plants' Contribution to the State Economy. Brattle Group, December 2016. https://www.pachamber.org/assets/pdf/pa_nuclear_report.pdf

³⁰ Wages, Benefits and Change: A Supplemental Report to the Annual US Energy and Employment Report. NASEO and Energy Futures Initiatives, 2020. https://www.usenergyjobs.org/

also continue to encourage research and development, including advances in modular nuclear technology, hydrogen and other emerging energy resources.

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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.