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CONGRESSIONAL TESTIMONY

Climate Change, Part I: The History of a Consensus and the Causes of Inaction

Subcommittee on Environment

Committee on Oversight and Reform

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My name is Nicolas Loris and I am the Herbert & Joyce Morgan Fellow in the Roe Institute for Economic Freedom at The Heritage Foundation. The views I express in this testimony are my own and should not be construed as representing any official position of The Heritage Foundation. Thank you for this opportunity to appear before the subcommittee to discuss the economic, political, and scientific challenges of addressing climate change. I would like to briefly examine all three and offer alternatives to tried-and-failed proposals of more government subsidies, taxes, mandates, and regulation.

Pro-growth policies can be pro-environment, too. To that end they should remove unnecessary barriers to technology innovation, permitting new projects and energy trade. Furthermore, Congress should provide efficient pathways to commercialize research at America's national laboratories, and states should champion competitive electricity market policies that empower consumers to choose what type of energy they want. Improving access to markets in the U.S. and abroad will yield economic and environmental benefits.

Economic challenges: Higher Costs, Meaningless Climate Impact

No matter where one stands on the urgency to combat climate change, proposed federal policies like cap and trade, a carbon tax, or regulations on power plants would be ineffective in combatting climate change. In fact, the U.S. could cut its carbon-dioxide emissions 100 percent and it would not make a difference abating much warming. According to the Model for the Assessment of Greenhouse Gas Induced Climate Change, using a climate sensitivity of 4.5 degrees Celsius (the warming effect of a doubling of carbon-dioxide emissions and an estimate exceeding recent peer reviewed research on the topic), the world would be less than 0.2 degree Celsius cooler by 2100. The rise of sea levels would be reduced by less than 2 centimeters.[1]

Proponents of a carbon tax and the Green New Deal argue that these policies are a form of insurance against a changing climate. The cost of inaction, they purport, is much greater than any policies that drive energy prices higher. However, the reality is these policies do not actually provide any "climate insurance."

The costs, however, are significant, and would leave Americans with fewer resources to combat current and future environmental challenges, whether they are climate related or not. To provide a snapshot of the costs, Heritage Foundation analysts ran an economic simulation of the implementation of a tax on carbon-dioxide emissions. We used the Heritage Energy Model, a clone of the Energy Information Administration's National Energy Modeling System.[2]

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[1]Kevin D. Dayaratna, "Methods and Parameters Used to Establish the Social Cost of Carbon," testimony before the Subcommittee on Environment and Oversight, Committee on Science and Technology, U.S. House of Representatives, February 24, 2017, https://docs.house.gov/meetings/SY/SY18/20170228/105632/HHRG-115-SY18-Wstate-DayaratnaK-20170228.pdf (accessed February April 6, 2019).
[2]U.S. Energy Administration, NEMS Documentation, https://www.eia.gov/outlooks/aeo/nems/documentation/ (accessed April 6, 2019).

Our tax begins in 2020 at $27 per ton of carbon-dioxide emissions, increases to $54 the following year, and subsequently increases annually by 2.5 percent. In our simulations, we rebate the revenue collected from the tax back to consumers.

According to the Heritage Energy Model, as a result of the taxes and carbon-based regulations, by 2040 one can expect:

- A peak employment shortfall of over 1.4 million jobs;
- A total income loss of more than $40,000 for a family of four;
- An aggregate gross domestic product (GDP) loss of over $3.9 trillion; and
- Increases in household electricity expenditures averaging approximately 12 percent to 14 percent.

The explanation behind the high economic burden of carbon taxes is simple. The goal of the policy is to raise energy prices so families and businesses use less energy and, consequently, reduce their emissions. Because 80 percent of America's energy needs and 80 percent of the world's energy needs are met by coal, oil, and natural gas, significantly restricting their use would, in turn, significantly raise the costs of electricity bills and the price at the pump.

Importantly, more expensive energy adversely affects low-income households disproportionately because they spend a higher percentage of their budget on energy costs. Americans with after-tax incomes of less than $30,000 spend 23 percent of their budgets on energy, compared to just 7 percent for those earning more than $50,000.[3]

According to the 2011 National Energy Assistance Survey, a poll of low-income families, 24 percent went without food for a day, and 37 percent decided to forego medical and dental coverage, in order to pay higher energy bills. Nearly one in five had a family member who became sick due to the home being too cold.[4]

Even more concerning, the direct impact from higher energy costs is just a small part of the story. Energy is a necessary input for nearly all goods and services. Consequently, Americans would pay more for food, health care, education, clothes—and every other good or service that requires energy to make and transport. Any policy that combines taxes, regulation, and subsidies is going to carry a massive cost to the economy. Even if policymakers protect low- and middle-income households with rebate checks or other safeguards, on net they will be worse off because of the higher prices they will pay for all the goods and services they consume.

Political Challenges to Addressing Climate Change

A number of political obstacles stand in the way for action on climate change. They include the general public's policy priorities, unwillingness to pay, the fear of more energy cronyism, and

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[3]American Coalition for Clean Coal Electricity, "Energy Cost Impacts on American Families," June 2015, http://www.americaspower.org/sites/default/files/Trisko-National-Family-Energy-Costs-June-2015-FINAL.PDF (accessed April 6, 2019).

[4]National Energy Assistance Directors' Association, "2011 National Energy Assistance Survey Summary Report," October 2011, http://neada.org/wp-content/uploads/2013/10/final-neada-2011-summary-eport.pdf (accessed April 6, 2019).

corporate welfare and rent seeking. Globally, given the immediate, known risk of energy poverty, developing countries are pursuing energy projects that would make stringent global greenhouse gas emission reduction targets unattainable.

1.) **The public's policy priorities.** According to polls, a slightly growing number of Americans acknowledge climate change is real and have concerns. A December 2018 poll from George Mason University and Yale University show that 69 percent of Americans are "somewhat worried" and only 29 percent are "very worried."[5] Compared to other issues, however, climate change is typically near the bottom on a list of the public's policy priorities. A January 2019 Pew Research Poll asked what should be the top priority for the Trump Administration and Congress this year. The percentage of respondents who answered climate change finished 17th out of 18 issue areas.[6] A March 2019 nationwide survey conducted by MWR Strategies found that "[o]nly 3% identified 'environment' in total as the most pressing issue facing the United States, and less than 1% specifically mentioned climate change."[7]

2.) **Unwillingness to pay.** Even if action on climate change were a top priority for Americans, they have not demonstrated much willingness to pay for it. A January 2019 poll conducted by the Energy Policy Institute at the University of Chicago (EPIC) and The Associated Press-NORC Center for Public Affairs Research found that 68 percent of Americans oppose paying an additional $10 per month to fight climate change.[8] Forty-three percent of respondents were not even willing to pay an additional dollar on their electricity bill to combat climate change.[9] Importantly, the poll fails to include how much abated warming Americans would receive from paying an additional $1, $20, or $50 per month. In every scenario, the answer is next to nothing, which would decrease the willingness to pay even further.

3.) **Fear of energy cronyism and corporate welfare.** Americans distrust the federal government intervening in decisions that are better left for producers and consumers to

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[5]Anthony Leiserowitz et al., "Climate Change in the American Mind: December 2018," Yale University and George Mason University, December 2018, http://climatecommunication.yale.edu/wp-content/uploads/2019/01/Climate-Change-American-Mind-December-2018.pdf (accessed April 6, 2019).
[6]Pew Research Center, "Public's Policy Priorities for 2019," February 4, 2019, https://www.pewresearch.org/fact-tank/2019/02/04/state-of-the-union-2019-how-americans-see-major-national-issues/pp_2019-01-24_political-priorities_0-02/ (accessed April 6, 2019).
[7]News release, "New Survey Finds Voters Skeptical of Government Action on Climate Change," American Energy Alliance, March 20, 2019, https://www.americanenergyalliance.org/2019/03/new-survey-finds-voters-skeptical-of-government-action-on-climate-change/ (accessed April 6, 2019).
[8]News release, "New Poll: Nearly Half of Americans Are More Convinced than They Were Five Years Ago that Climate Change Is Happening, With Extreme Weather Driving Their Views," The Associated Press-NORC Center for Public Affairs Research with funding from The Energy Policy Institute at the University of Chicago (EPIC), January 22, 2019, https://epic.uchicago.edu/sites/default/files/Full%20poll%20AP-NORC%202019.pdf (accessed April 6, 2019).
[9]Ibid.

make on their own.[10] Federal and state subsidies and mandates enacted to slow global warming have concentrated benefits for politically preferred energy projects and dispersed the costs to the rest of America. Energy cronyism benefits a select few and creates a vicious loop of politicians, lobbyists, and special interests where the political rates of return are greater than the economic rates. The Department of Energy's (DOE's) loan guarantee program is a good case study. In some instances, the DOE has lent out taxpayer dollars to projects that could not survive even with policies trying to prop up favored technologies, like Solyndra. In other stances, the DOE used taxpayer-backed loans for projects that have the backing of companies with large market capitalizations and substantial private investors. These companies should have no trouble financing a project without government-backed loans if they believe it is worth the investment.[11]

Moreover, the economic pain cuts deeper than wasted taxpayer money because government interventions distort free enterprise, create government dependence, and allow Washington to direct the flow of private-sector investments. Perhaps most perverse is that energy cronyism obstructs the long-term success and viability of the technologies and energy sources they intend to promote. Instead of relying on a process that rewards competition, taxpayer subsidies prevent a company from truly understanding the price point at which the technology will be economically viable. When the government plays favorites, it traps valuable resources in unproductive places.

4.) **Rent seeking behavior and hypocrisy.** Related to concerns over energy cronyism, climate policy proposals have failed in the past because special interests are looking out for themselves rather than enacting climate change policy. For instance, the state of Washington has repeatedly failed to pass a carbon tax because proposals did not simultaneously grow the size of government and benefit specific interests, like environmental organizations or renewable power producers.[12] Another example is an anti-commercial nuclear power bias. If a climate-change-induced existential crisis were, indeed, just around the corner, one would imagine that nuclear energy must be part of the solution. After all, in 2017 nuclear provided more than half (56 percent) of the country's emissions-free electricity—more than triple the amount we get from wind and 18 times more than solar generation. However, many organizations downplay or outright dismiss nuclear power based on unsubstantiated or exaggerated fears.

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[10]News release, "New Survey Finds Voters Skeptical of Government Action on Climate Change," American Energy Alliance, March 20, 2019, https://www.americanenergyalliance.org/2019/03/new-survey-finds-voters-skeptical-of-government-action-on-climate-change/ (accessed April 6, 2019).

[11]Nicolas Loris, "Examining the Department of Energy's Loan Portfolio," testimony before the Subcommittee on Energy and Subcommittee on Oversight, Committee on Science, Space and Technology, U.S. House of Representatives, March 3, 2016, https://www.heritage.org/testimony/examining-the-department-energys-loan-portfolio (accessed April 6, 2019).

[12]Todd Myers, "After WA Carbon Tax Failure Will Greens Look for Success or Stick with Dogmatism?" Washington Policy Center, November 8, 2018, https://www.washingtonpolicy.org/publications/detail/after-wa-carbon-tax-failure-will-greens-look-for-success-or-stick-with-dogmatism (accessed April 6, 2019).

5.) **The collective action issue.** Affordable, reliable, and widely available energy is essential to lifting people out of poverty and improving the life, health, and comfort of people trying to reach a better standard of living. As the International Energy Agency reports, "Global energy consumption in 2018 increased at nearly twice the average rate of growth since 2010, driven by a robust global economy and higher heating and cooling needs in some parts of the world."[13] To meet those energy needs, global coal use has increased over the past two years and natural gas use is experiencing strong demand.[14] Forecasts indicate that coal, oil, and natural gas will represent the overwhelming majority of the world's energy needs well into the future.[15] Because the United States represents only a portion of global greenhouse gas emissions, the entire world would have to fundamentally change how it consumes energy to make any impact on the climate. However, assuming developing countries will forego cheap abundant carbon-dioxide–emitting energy for more expensive intermittent sources is pure fantasy. Developing countries are expanding their use of renewable power sources, but not to the extent it will have any meaningful impact on global temperatures. While some countries are shuttering their coal-fired plants, others in both developed and developing countries are building new plants and expanding the life of existing generators.

Understanding Certainties and Uncertainties in Climate Science

Climate change is real and it is clear that man-made emissions are having an impact. The Intergovernmental Panel on Climate Change 5th Assessment (IPCC AR5) attributes at least half of the warming from 1951–2010 to human activities.[16] Sea levels have been rising since the planet gradually warmed after the Little Ice Age (1300–1850). However, the IPCC does not conclude that the world has until 2030 to avoid catastrophic global warming.[17] Distinguishing what climatologists know, what they do not know, and what they might know is necessary so that objective, transparent science can guide public policy.

For instance, uncertainty exists with regard to the accuracy of climate models (running too hot), how a doubling of carbon-dioxide emissions impacts global temperatures and which trajectory greenhouse gas concentrations most accurately reflects the future. Furthermore, the Integrated Assessment Models used to justify the social cost of carbon dioxide and other greenhouse gas emissions are not credible for policymaking. The outputs change significantly with reasonable changes to the inputs. Subjecting the models to reasonable inputs for climate sensitivity and

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[13]International Energy Agency, "Global Energy & CO2 Status Report 2018: The Latest Trends in Energy and Emissions in 2018," March 2019, https://webstore.iea.org/global-energy-co2-status-report-2018 (accessed April 6, 2019).
[14]Ibid.
[15]Mark P. Mills, "The 'New Energy Economy': An Exercise in Magical Thinking," The Manhattan Institute, March 2019, https://media4.manhattan-institute.org/sites/default/files/R-0319-MM.pdf (accessed April 6, 2019).
[16]Intergovernmental Panel on Climate Change, "Climate Change 2014 Synthesis Report Summary for Policymakers," https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf (accessed April 7, 2019).
[17]Patrick Brown, "Does the IPCC Say We Have until 2030 to Avoid Catastrophic Global Warming?" January 4, 2019, https://patricktbrown.org/2019/01/04/does-the-ipcc-say-we-have-until-2030-to-avoid-catastrophic-global-warming/ (accessed April 6, 2019).

discount rates dramatically lowers the figure for the SCC. Furthermore, attempts to forecast economic damages centuries into the future as the integrated assessment models do strains credibility when moving to the real world of policy implementation.

With regard to extreme weather events, the IPCC report and other mainstream science confirms the lack of trends for frequency and intensity of natural disasters. Tropical cyclone activity is not becoming more frequent. The IPCC notes in its most recent scientific assessment that "[n]o robust trends in annual numbers of tropical storms, hurricanes and major hurricanes counts have been identified over the past 100 years in the North Atlantic basin," and that there are "no significant observed trends in global tropical cyclone frequency." Further, "confidence in large scale changes in the intensity of extreme extratropical cyclones [such as "Superstorm" Sandy] since 1900 is low."[18] A recently published article in the *American Meteorological Society* further shows that there has been no increase in trends for frequency or intensity of land-falling hurricanes in the continental U.S. since 1900.[19]

Warming could impact future tropical cyclone intensity and rainfall rates, but the National Oceanic and Atmospheric Administration clearly states, "In terms of detection and attribution, much less is known about hurricane/tropical cyclone activity changes, compared to global temperature. In the northwest Pacific basin, there is emerging evidence for a detectable poleward shift in the latitude of maximum intensity of tropical cyclones, with a tentative link to anthropogenic warming. In the Atlantic, it is premature to conclude with high confidence that human activities—and particularly greenhouse gas emissions that cause global warming—have already had a detectable impact on hurricane activity."[20]

Moreover, the IPCC found evidence for increases, decreases, and no trend at all in flood activity or severity.[21] As the U.S. National Climate Assessment (NCA) summarized,

> The IPCC AR5 did not attribute changes in flooding to anthropogenic influence nor report detectable changes in flooding magnitude, duration, or frequency. Trends in extreme high values of streamflow are mixed across the United States. Analysis of 200 U.S. stream gauges indicates areas of both increasing and decreasing flooding magnitude but does not provide robust evidence that these trends are attributable to human influences.[22]

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[18]D. L. Hartmann et al., "Observations: Atmosphere and Surface," in *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, p. 216, http://www.climatechange2013.org/images/report/WG1AR5_Chapter02_FINAL.pdf (accessed April 7, 2019).

[19]Philip J. Klotzbach et al., "Continental U.S. Hurricane Landfall Frequency and Associated Damage: Observations and Future Risks," American Meteorological Society, July 2018, https://science2017.globalchange.gov/chapter/8/ (accessed April 7, 2019).

[20]National Oceanic and Atmospheric Administration, "Global Warming and Hurricanes," An Overview of Current Research Results," Geophysical Fluid Dynamics Laboratory, February 8, 2019, https://www.gfdl.noaa.gov/global-warming-and-hurricanes/ (accessed April 7, 2019).

[21]Hartmann et al., "Observations: Atmosphere and Surface," p. 216.

[22]M. F. Wehner, J. R. Arnold, T. Knutson, K. E. Kunkel, and A. N. LeGrande, "2017: Droughts, Floods, and Wildfires," in D. J. Wuebbles, D. W. Fahey, K. A. Hibbard, D. J. Dokken, B. C. Stewart, and T. K. Maycock, eds., *Climate Science Special Report: Fourth National Climate Assessment*, Vol. 1 (Washington, DC: U.S. Global

Trends in local events like hail and thunderstorms were also inconclusive.[23] Data for tornado activity in the U.S. shows tornadoes occur no more frequently now than in the past and that the number of strong tornadoes (F3 and above) has actually decreased.[24] As for droughts, the IPCC overstated previous conclusions about increasing trends and that "the compelling arguments both for and against a significant increase in the land area experiencing drought has hampered global assessment."[25]

Science should be a guiding principle for Congress; however, the politicization of science jeopardizes sound policymaking.

A Better Path Forward

Skepticism of costly, ineffective climate policies is not an excuse to do nothing. Americans want affordable, reliable energy *and* they want a clean environment. The two are certainly not mutually exclusive. Policies that sustain the four pillars of economic freedom—rule of law, limited government, regulatory efficiency, and open markets—are more successful not only in stimulating economic growth and innovation, but also in using energy more efficiently and yielding better environmental outcomes.[26]

Congress should advance policies that will drive energy and environmental innovation. Breaking down barriers to competition, freeing up innovative pathways for new technologies, and freely trading energy technologies will meet America's and the world's energy needs while reducing emissions. Specifically, Congress and state policymakers should:

Open Access to America's National Laboratories. The DOE's role, through its system of national laboratories and scientific research facilities, should be to conduct the basic research to meet national objectives that the private sector would not undertake. Too often, advocates of government spending on technology-specific activities tout the federal government's involvement in commercial successes, such as the Internet or the Global Positioning System. Yet, the initial intention for these government projects was not any private commercial need. Entrepreneurs saw a *commercial* opportunity in these defense technologies and created commercially viable products.

The Department of Defense can be a good conduit for innovative breakthroughs on energy technologies, but spending on energy use should be mission-driven first. Certainly, alternative technologies provide advantages that enhance mission capabilities. Lighter, more efficient

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Change Research Program, 2017), pp. 231–256, https://science2017.globalchange.gov/chapter/8/ (accessed March 8, 2019).

[23]Hartmann et al., "Observations: Atmosphere and Surface," p. 216.

[24]After accounting for the apparent increase in tornado counts due to improved identifying technology. National Oceanic and Atmospheric Administration, "Historical Records and Trends," U.S. Department of Commerce, http://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology/trends (accessed April 7, 2019).

[25]Ibid., pp. 214–215.

[26]For more information, see Nicolas D. Loris, "Chapter 5: Economic Freedom, Energy, and Development," 2015 Index of Economic Freedom (Washington, DC: The Heritage Foundation and Dow Jones & Company, Inc., 2015), https://www.heritage.org/index/pdf/2015/book/chapter5.pdf.

batteries lengthen the duration of a foot soldier's mission and reduce the weight of a soldier's backpack. Solar photovoltaics can also lighten a soldier's load and extend the travel distance of a drone. More fuel-efficient engines reduce the need for refueling. Developing micro grids and utilizing very small modular nuclear reactors can safely provide reliable power to isolated bases for long periods of time.[27]

Congress should create a pathway that allows the private sector, using private funds, to tap into that research and commercialize it. Congress should also give lab directors more autonomy and allow federal lab employees (when appropriate and without violating conflict of interest rules) to push research into the marketplace if they see an opportunity. While these activities happen to some degree today, giving the labs more autonomy with proper oversight and transparency will encourage more innovation at the national labs.[28]

Fix the Regulatory and Policy Problems Facing Commercial Nuclear Power. Facing a complex and burdensome regulatory system, commercial nuclear power in the U.S. has unnecessarily high construction costs. The regulatory system that licenses and permits nuclear reactors failed to keep up with technological innovations and overregulates existing nuclear technologies. Instead of addressing underlying government-imposed problems, policymakers have focused on mitigating the cost of those policies through subsidies, leading to a predictable path of failure: While such an approach may spur some amount of commercial activity, it is limited only to what is subsidized. Nuclear plants in America today continue to exhibit superior safety performance. Policy and regulations should reflect that track record. Congress should instill regulatory discipline at the Nuclear Regulatory Commission (NRC), encourage the Environmental Protection Agency to right-size radiation-exposure standards, review foreign ownership caps, reform the NRC's cost-recovery structure, and introduce market principles into spent-fuel management.[29]

Fix the Regulatory and Policy Problems Facing Renewable Energy. Like most other energy projects, renewable power projects face excessive and duplicative regulations that increase costs and cause delays. Siting and permitting issues can be particularly problematic for wind and solar because the most advantageous locations for generations are in more remote areas. Therefore, additional transmission lines are necessary to take the power to densely populated places. Complex regulatory processes mean a company has to hire more lawyers and compliance officers to navigate complex, unclear regulatory schemes and fend off legal challenges to development.

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[27]Dorothy Robyn and Jeffrey Marqusee, "The Clean Energy Dividend: Military Investment in Energy Technology and What It Means for Civilian Energy Innovation," Information Technology and Innovation Foundation, March 2018, http://www2.itif.org/2019-clean-energy-dividend.pdf?_ga=2.133613257.674204463.1551967655-1212308.1551734962 (accessed April 6, 2019).

[28]Nicolas Loris, "INNOVATES Act Creates a More Effective National Lab System," Heritage Foundation *Issue Brief* No. 4141, January 24, 2014, http://thf_media.s3.amazonaws.com/2014/pdf/IB4141.pdf.

[29]Katie Tubb, Nicolas D. Loris, and Rachel Zissimos, "Taking the Long View: How to Empower the Coal and Nuclear Industries to Compete and Innovate," Heritage Foundation *Backgrounder* No. 3341, September 5, 2018, https://www.heritage.org/energy-economics/report/taking-the-long-view-how-empower-the-coal-and-nuclear-industries-compete.

Two of the biggest hindrances to energy project development are the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA). Congress should repeal NEPA and reform ESA laws by removing redundancies and transitioning authority to the states, when applicable. Congress should also allow renewable energy companies to form Master Limited Partnerships (MLPs). Under an MLP, businesses have the tax structure of a partnership or a limited liability company, but ownership equity trades publicly on a securities exchange. The combination of the partnership tax status and the liquidity of a publicly traded company make MLPs an attractive investment vehicle.

Yet another policy that senselessly drives up the cost of renewable energy is the Trump Administration's stance on tariffs. Section 201 tariffs hurt the growth of the solar industry,[30] and steel and aluminum tariffs increase construction costs of wind turbines.[31] Most important, these tariffs hurt consumers. The Administration should pursue a zero-tariff policy.

Expand Technological Innovation Internationally. In addition to removing the tariffs, Congress and the Trump Administration should work with other countries to open up their energy markets. For instance, the shale revolution in the U.S. is largely responsible for providing families and businesses with cheap energy while also lowering emissions. Investment and innovation have the power to unlock an abundance of shale resources in developing countries like China. Currently, China has the world's largest shale gas reserve.[32]

Commercial nuclear energy trade is another avenue that can meet the world's energy needs while reducing emissions. For instance, Saudi Arabia is an important new market in the nuclear industry from both nonproliferation and commercial standpoints. Completing such an agreement would also allow the U.S. industry to compete in Saudi Arabia. Even where an American company fails to win a bid to build a reactor, U.S. companies can supply technical expertise and supply components for new nuclear power plants. Expanded commercial nuclear trade would incentivize both cooperation and competition—and help bring new nuclear technologies to the market.

Encourage Choice in Electricity Markets. Competitive electricity markets have served customers well. Some states have accomplished transition from monopolies to competition more successfully than others, and additional free-market reforms are necessary to spur more entrepreneurial activity in electricity markets. However, when the underlying structure of competition is sound, the benefits to energy consumers are unambiguously positive.

Competition in electricity services allows greater customer choice through the power of the consumers' own dollars rather than through the disconnected votes of a small panel of public

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[30]Solar Energy Industries Association, "Section 201 Solar Tariffs," https://www.seia.org/research-resources/section-201-solar-tariffs (accessed April 6, 2019).
[31]American Wind Energy Association, "U.S. China Tariffs Hurt Wind Industry Jobs in Your State," https://www.awea.org/Awea/media/About-AWEA/US-China-Tariffs-Wind_10-12-2018.pdf (accessed April 6, 2019)
[32]"China Sits on the World's Biggest Shale Gas Prize. Pumping It Out Is the Hard Part," Bloomberg News, July 19, 2018, https://www.bloomberg.com/news/features/2018-07-19/petrochina-sinopec-are-chasing-an-elusive-shale-boom (accessed April 6, 2019).

utility commissioners. Consumer choice comes not only in the form of resource choice (renewables, conventional fuels, or a mix) but also in financial choices (e.g., fixed rates, risk preferences, indexed rates, or short-term or long-term contracts). In the end, because electricity providers have to work for their customers, prices are competitive and quality improves.[33] States should fix anti-competitive energy policies like renewable energy mandates, which have wreaked havoc in the electricity sector by putting politics and special interests over customers.

Eliminate All Subsidies for All Forms of Energy. Favoritism in the energy sector takes many forms. Over the years, Congress has implemented numerous policies that use the political process to support the production or consumption of one good over another, including direct cash grants, special tax treatment, taxpayer-backed loans and loan guarantees, socialized risk through insurance programs, mandates to produce biofuels, tariffs, and energy sales at below-market costs.

Whatever shape the favoritism takes, the results are the always the same: The government delivers benefits to a small, select group and spreads the costs across families and consumers. Eliminating cronyism and corporate welfare has bipartisan support. If Congress removes all of the policies that pick winners and losers, the most innovative and cost-competitive fuels and technologies will flourish.

Ensure Access to Affordable Energy and Build Resilient Infrastructure. Literally, higher energy bills can be the difference between life and death. Empirical data and academic literature show that mortality rates rise in colder months.[34] A March 2019 National Bureau of Economic Research working paper emphasizes that "[e]xposure to cold is one reason that mortality peaks in winter, and a higher heating price increases exposure to cold by reducing heating use. It also raises energy bills, which could affect health by decreasing other health-promoting spending."[35]

Conversely, affordable, reliable energy saves lives. The same paper concludes "that the drop in natural gas prices in the late 2000s, induced largely by the boom in shale gas production, averted 11,000 winter deaths per year in the US."[36] In the United States and around the world, access to affordable reliable energy will protect people from climate-related vulnerabilities, no matter what

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[33]For example, Texas has been a model for how competition benefits consumers. See Chuck DeVore, "California Government Mandates Send Electricity Prices Skyrocketing, But Texas Free Market Policies Keep Prices Low," Fox News, November 16, 2017, http://www.foxnews.com/opinion/2017/11/16/california-government-mandates-send-electricity-prices-skyrocketing-but-texas-free-market-policies-keeps-prices-low.html (accessed April 6, 2019).
[34]Olivier Deschênes and Enrico Moretti, "Extreme Weather Events, Mortality, and Migration," *Review of Economics and Statistics*, Vol. 91, No. 4 (2009), pp. 659–681, and Indur Goklany, "Wealth and Safety: The Amazing Decline in Deaths from Extreme Weather in an Era of Global Warming, 1900–2010," The Reason Foundation, September 2011, https://reason.org/wp-content/uploads/files/deaths_from_extreme_weather_1900_2010.pdf (accessed April 5, 2019).
[35]Janjala Chirakijja, Seema Jayachandran, and Pinchuan Ong, "Inexpensive Heating Reduces Winter Mortality," National Bureau of Economic Research *Working Paper Series*, March 2019, https://www.nber.org/papers/w25681.pdf (accessed April 5, 2019).
[36]Ibid.

the cause of a changing climate is. The access to affordable, reliable energy is a major reason why global climate-related deaths have decreased significantly over the past century.[37]

Whether a challenge occurs slowly over time like sea-level rise or occurs without much warning like a hurricane, adaptation to extreme weather is critical to increasing resilience of America's infrastructure. Learning lessons from previous storms and using the best scientific and technical information available will improve the ability to reduce dangers from future climate-related challenges. Flood visualization tools and hurricane and tornado tracking help detect when storms are coming and where they will likely inflict the most damage. Establishing thorough readiness plans in coordination with the private sector, local communities, and first responders, and identifying future vulnerabilities is simply commonsense policy and will save lives.

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[37]The International Disaster Database, The Centre for Research on the Epidemiology of Disasters (CRED), https://www.emdat.be/ (accessed April 7, 2019).