Written Testimony of Anne L. Kelly
Vice President for Government Relations, Ceres

Prepared for the U.S. House of Representatives, Committee on Natural Resources, Subcommittee on Energy and Mineral Resources

"The Case for Climate Optimism: Realistic Pathways to Achieving Net-Zero Emissions."

October 17, 2019

Chairman Lowenthal, Ranking Member Gosar, and members of the Subcommittee:

Thank you for the invitation to appear before you today. My name is Anne Kelly, Vice President for Government Relations at Ceres, a nonprofit organization working with many of the most influential investors and companies to build sustainability leadership within their own enterprises and to drive policy solutions throughout the economy. Our work with private sector leaders to tackle the world's major sustainability challenges includes a focus on climate change, water scarcity and pollution, and deforestation. We believe today's hearing is timely and necessary, and appreciate its focus on the need to achieve net-zero greenhouse gas emissions.

Ceres was founded 30 years ago. It was clear even then that the costs of environmental degradation to our economy were monumental - with implications for every sector, every company, and every community.

Today, Ceres works with hundreds of the largest companies worldwide to improve operational leadership (incorporating sustainability into their business models), reporting, and disclosure of risks in financial filings. Specifically, Ceres works with its Company Network members, a group of 50+ US based companies, nearly 75 percent of them Fortune 500 firms, on direct stakeholder engagement, standard-setting and regular benchmarking. Through our global collaboration — We Mean Business — we engage with hundreds of global companies to address climate issues in a similar manner.

Ceres also runs the Investor Network on Climate Risk and Sustainability, a group of 165 U.S. institutional investors with over $26 trillion in assets under management. These investors see discrete and systemic risks associated with climate change and are increasingly taking action to shield their portfolios (and their beneficiaries) from those risks by changing investment strategies and encouraging their companies to account for these risks within their operations.

I direct the Ceres Business for Innovative Climate and Energy Policy (BICEP) network — a group of over 57 major companies committed to actively advocating for ambitious and achievable climate and clean energy policies in the United States. BICEP has been active since 2009 and has brought hundreds of companies to Capitol Hill to make the business case for a science-based policy response to the challenge of climate change.

Introduction

Climate change is the single-most significant threat to the U.S. economy. A warming world brings with it many challenges, including increased frequency and severity of storms, extended droughts, extreme heat, wildfires, and flooding. These changes are already having an impact. In places like Houston, Puerto Rico, and California, companies are facing weather events and chronic conditions that destroy or damage their property and infrastructure, interrupt day-to-day business operations, and make it impossible for their employees to get to work, all of which requires companies to reallocate capital away from more productive investments — creating a drag on economic output.

Going forward, in some areas of the country, outdoor worker productivity will decline significantly, crops of all sorts will face serious yield declines, and sea level rise will continue to encroach upon the massive amount of coastal real estate in our country — especially in places like Florida.

The scientific consensus tells us we must limit global average temperature increases to 1.5 degrees Celsius over the pre-industrial era average to avoid the worst impacts of climate change.[1] To date, human activities have caused approximately 1.0°C of global warming above pre-industrial levels. If emissions continue to increase at the current rate, global warming is likely to reach 1.5°C between 2030 and 2052, and increase rapidly thereafter.[2] The difference in impacts between a 1.5 degree increase and the previously agreed upon target of 2 degrees of warming is profound (see Appendix A), and the consequences of overshooting 2 degrees (which we are currently on track to do) are even more so.

In order to stay below a 1.5 degree temperature rise, the world must reach net-zero greenhouse gas emissions by 2050, with major decreases in emissions over the next ten years. We are already locked into further temperature increases in parts of the world such as the Arctic,[3] but it is still possible to get the U.S. and world economy to net-zero emissions by 2050 and limit warming to a global average of 1.5 degrees, if we have the political will to act.

Globally, ambition to take on the challenge is significant. All countries in the world are currently parties to the Paris Climate Agreement,[4] which aims to limit temperature increases to well-below 2 degrees Celsius. The Paris Agreement is not perfect, but it is a critical structure that allows countries to come to the table with commitments to reduce emissions, provides for transparency and accountability between all nations, and is structured in a manner that allows countries to increase their commitments over time.

The private sector — in the U.S. and abroad — is doing much the same thing as countries — bringing forward emissions commitments, but at a much greater pace and scale. A major trend

[1] https://www.nytimes.com/interactive/2018/10/07/climate/ipcc-report-half-degree.html
[2] A.1. https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf
[3] https://www.unenvironment.org/news-and-stories/press-release/temperature-rise-locked-coming-decades-arctic
[4] The United States has signalled its intent to withdraw as early as next year.

in corporate America over the last several years has been the proliferation of companies making public commitments to procure renewable energy, increase energy productivity, switch to clean transportation, and reduce greenhouse gas emissions across their operations and supply chains. Increasingly, corporations are setting emissions goals aligned with long term temperature targets, which now means net-zero by 2050 or earlier.

Even within one company, it takes hard work to make progress towards these goals. Tackling emissions from diffuse supply chains is perhaps the biggest challenge. Some companies who have publicly set ambitious goals will admit they don't know yet how they will achieve them, but they know that existing clean energy technologies are effective and cost-competitive with traditional energy sources, and they can make significant investments now to reduce emissions, even if they don't yet have all the answers.

At Ceres, we applaud and encourage private sector efforts to drive down emissions. Such efforts are critical to achieving net-zero emissions across our economy, but they are also not sufficient. We need strong, comprehensive, policies from Congress.

Given the threats facing the U.S. economy from a warming world, we believe that Congress has an obligation to pursue policies that will rapidly and responsibly decarbonize our economy, and in a way that ensures continued economic growth and respect for fossil fuel communities, low-and middle income Americans, and minority communities, who have already been and will continue to be hit hardest by climate change. This is an audacious task - but with the private sector and Congress working hand in hand, we can get there.

A new conversation on climate change in Washington

The BICEP Network believes that bipartisan cooperation is critical to achieving durable legislation on climate change, and ultimately transitioning to a net-zero carbon economy. Our corporate members are encouraged to see so many members of Congress on both sides of the aisle re-engaging in substantive policy discussions on this topic.

From bipartisan legislation such as Ranking Member Gosar's Public Lands Renewable Energy Development Act (PLREDA) - which BICEP supports - to Representative Graves' leadership on the Select Committee panel, to a renewed focus on the need for innovation and technological advancement, Republicans and Democrats are finding more common ground on climate change now than at anytime in the past 10 years.

In this Congress, The BICEP network is grateful for the bipartisan support for expanded funding for critical Department of Energy clean energy programs in the House Appropriations bill, and has voiced support for the numerous Republican sponsored and bipartisan carbon pricing bills. All these developments are encouraging, but of course more is needed.

The high economic costs of inaction on climate change

The economic costs of unchecked warming are massive, and the longer we wait to start reducing emissions, the more those costs will rise. It's not a question of whether we can afford to take action, it's a question of how we take action. A 2019 World Economic Forum report ranked extreme weather, natural disasters, and failure of government policies for climate mitigation and adaptation as three of the five greatest risks to business.[5] By the end of the century, the Fourth National Climate Assessment predicts, the U.S. economy will shrink by as much as 10 percent if global warming continues apace.[6] Businesses are looking at these economic costs and feeling the pressure to act.

Extreme Heat and Outdoor Worker Productivity

A 2019 analysis from the Union of Concerned Scientists found that without action to reduce carbon emissions, warming temperatures would cause parts of Florida and Texas to experience at least five months per year, on average, where the heat index exceeds 100 degrees Fahrenheit. By mid-century, over 250 U.S. cities will experience a month or more per year with a heat index of over 100 degrees Fahrenheit - compared to 29 cities that currently face such extreme heat.

Unchecked emissions will likely lead to lost labor hours, particularly from extreme heat, preventing farm, construction and other outdoor workers from safely working, and costing an estimated $160 billion per year in lost wages. According to the Fourth National Climate Assessment, aggressive climate action can nearly halve these economy-wide losses.[7]

While no sector is immune from the impacts of rising temperatures, agriculture, mining and quarrying, manufacturing, and construction are the economic sectors most vulnerable to heat exposure.[8] Productivity is already being impacted. A new study published in *Scientific Reports* found that In 2017, 153 billion hours of labor were lost worldwide as a result of heat exposure, which represents an increase of 62 billion hours lost relative to the year 2000.[9]

Agriculture: Yields Decline and Subsidies Increase

Declines in agriculture yields and extreme weather events not only affect farmers and farming communities, they affect taxpayers that are on the hook for subsidizing crop insurance and other agricultural safety net programs.

A USDA report from July 2019, *Climate Change and Agricultural Risk Management Into the 21st Century*, found that higher temperatures and other climate change impacts could cost federal taxpayers an additional 37 percent in the coming decades in additional crop insurance

---

[5] http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf
[6] https://nca2018.globalchange.gov/
[7] https://nca2018.globalchange.gov/chapter/29/
[8] https://phys.org/news/2019-10-co2-emissions-lost-labor-productivity.html - https://www.nature.com/articles/s41598-019-50047-w
[9] https://www.nature.com/articles/s41598-019-50047-w

subsidies." The report also found that human-caused global warming has already begun to affect agriculture in the United States and globally." All scenarios considered in USDA's report "suggest that climate change would lower domestic production of corn, soybeans, and wheat relative to a future scenario with climate identical to that of the past three decades."[10]

Climate change is already impacting the economy

Climate change is not a problem for the future. It's impacts are already hurting America's (and the world's) economy, costing taxpayers, and increasing our national debt. 2012-2017 were the hottest years on record,[11] creating temperature extremes that have driven many of the events described below.

In 2017, three storms that made landfall during the Atlantic hurricane season — Harvey, Irma and Maria — together cost the United States economy at least $265 billion, according to the National Oceanic and Atmospheric Administration (NOAA). In all, 2017 saw 16 separate weather events that each caused damages in excess of $1 billion.[12] In Houston, Hurricane Harvey produced more than 50 inches of rainfall in 2017, precipitation made 15%[13] to 20%[14] more intense because of global warming, research shows.

And in 2018, a new analysis from NOAA found that the United States was hit by 14 extreme weather events and climate disasters that each caused damages exceeding $1 billion. These events hampered local economies, directly killed a total of 247 people, and cost the U.S. economy $91 billion dollars.[15] 2018 was also the most expensive wildfire season on record.[16]

Over the past three years, the total cost of billion-dollar weather and climate events in the United States exceeded $450 billion—an average of $150 billion per year.[17]

These costs are borne by voters, taxpayers, and congressional districts, blue and red alike, and they are going to increase as emissions and temperatures rise, even with adaptation measures. It is highly likely that these costs of inaction are already creating a drag on our economy,[18] and no doubt they will increase if we do nothing. The economic imperative to decarbonize our economy by 2050 is clear, and the economic opportunity associated with shifting our investments to low and zero carbon energy sources is profound.

---

[10] https://www.ers.usda.gov/webdocs/publications/93547/err266_summary.pdf?v=9932.1

[11] https://news.bloombergenvironment.com/environment-and-energy/federal-scientists-say-climate-change-no-hoax-disputing-trump

[12] https://www.climate.gov/news-features/blogs/beyond-data/2017-us-billion-dollar-weather-and-climate-disasters-historic-year

[13] https://iopscience.iop.org/article/10.1088/1748-9326/aa9ef2

[14] https://iopscience.iop.org/article/10.1088/1748-9326/aabb85

[15] https://www.ncdc.noaa.gov/billions/

[16] https://www.ncdc.noaa.gov/billions/events/US/1980-2019

[17] https://www.ncdc.noaa.gov/billions/time-series

[18] https://phys.org/news/2019-10-co2-emissions-lost-labor-productivity.html - https://www.nature.com/articles/s41598-019-50047-w

Economic benefits of action are investments in our future and our economy

If the downside risk from climate change isn't convincing on its own, the upside opportunities should make the case for climate action compelling. Analysis from a 2018 report from New Climate Economy reveals that global infrastructure investments will total up to $90 trillion over the next 10-15 years. Given that we are spending this money anyway, it makes sense to avoid traditional energy infrastructure and spend it on low and zero carbon technologies and infrastructure, especially given the report's finding that "bold action [to invest in low carbon infrastructure and technologies] could yield a direct economic gain of US$26 trillion through to 2030 compared with business-as-usual" (see chart below).[19]

Figure 2
The Global Benefits of a Decisive Shift to a Low-carbon Economy when Compared with Business-as-usual.

Source: The results cited for the US$26 trillion in direct economic benefits are cumulative for the 2018–2030 period, whereas the other data points reported are for the year 2030. Source: Garrido, L., et al., 2018.[73]

There is near-boundless opportunity inherent in the transition to a new clean energy economy. Tens of trillions of dollars of opportunity awaits. That's why some leaders have described solving climate change as the greatest economic opportunity the world has ever seen.

What's more, nearly every company and investor can be a 'winner'. That includes renewable energy, electric vehicles, and energy storage, as well as electric power companies and even

[19] https://newclimateeconomy.report/2018/wp-content/uploads/sites/6/2019/04/NCE_2018Report_Full_FINAL.pdf

large oil companies — If they plan and pivot into clean, low-and zero-carbon approaches and products without delay.

We've already seen stunning growth in renewable energy sources like wind and solar, which no longer represent 'alternative' energy sources—they have gone mainstream, eclipsing all other forms of newly installed electric generation globally each year (i.e. more than new natural gas, coal and nuclear power combined). Going forward:

- We expect massive growth in these clean energy sources, especially as they increasingly out-compete other forms of power generation based on cost alone.
- Energy storage is on a similar trajectory in terms of cost-competitiveness, and increasingly is deployed with wind and solar to 'smooth' out power supply.
- While at an earlier phase as of yet, electric vehicles are a huge growth opportunity. Electric vehicles have rapidly gone from 1 million to 3 million on the road globally. The demand for electric vehicles will only accelerate as more countries (like India, China & Norway) establish deadlines for ending all sales of internal combustion engines.

Pathways to net-zero emissions are achievable

The last two years have crystallized the need for the United States and the world to move decisively in the direction of net-zero emissions, and to show other countries that it is possible. The International Panel on Climate Change (IPCC) is the leading scientific authority on human-caused climate change. Comprised of 195 countries and the world's leading climate scientists, its purpose is to provide governments at all levels with scientific information that they can use to develop climate policies.[20]

In its 2018 Special Report - *Global Warming of 1.5 Degrees Celsius* - the IPCC found that in order to avoid the worst impacts of climate change, the world must keep global average temperature increases below 1.5 degrees Celsius relative to the pre-industrial era. "Limiting warming to 1.5°C is not impossible but will require unprecedented transitions in all aspects of society."

The IPCC also found that in order to hit this temperature limit, the world must achieve net-zero greenhouse gas emissions by 2050. But it can't be a linear decline - because temperature increases are a function of cumulative emissions into the atmosphere. The U.S., and the world, needs to make a serious dent in our emissions over the next eleven years. Specifically, we must cut global emissions by about 45 percent by 2030 compared with 2010 levels. Because of its economic and technological firepower and the challenges some smaller countries may face in reducing emissions, the U.S. should strive for emissions reductions at least that ambitious.

[20] https://www.ipcc.ch/about/

As stated above, achieving this goal in the United States is possible, even if we don't have all the answers to the question of how we will get there.[21] Nor should we. The ingenuity of the private sector and the American people, when given a task, will come up with solutions and new ways of reducing emissions we may not even envision at this time. What we need now is to leverage the suite of highly effective existing clean energy technologies, clear, long-term policy signals to get us started, and the political will to keep us going.

Trends in corporate commitments to reduce emissions

The private sector, and the largest companies in particular, are increasingly assuming leadership on climate and clean energy. They have several motivations. First and foremost, they are moved to act by the economic risks, both to their operations and to the economy as a whole, that are inherent to the unpredictability and consequences of a warming world. Secondly, companies are finding that by investing in clean energy, including efficiency, they can save money and reduce their exposure to fuel-price volatility. Third, they are increasingly feeling pressure from their employees and customers to shift to more sustainable business models. And fourth, they are responding to concerns raised by their investors that existing ways of doing business are too risky. This leadership manifests in two ways: companies are reducing operational and supply chain emissions, and they are becoming advocates for strong state level and national climate policies.

Greenhouse Gas Targets

Fifteen percent of the planet's 500 largest companies have emissions targets aligned with the Paris Agreement goals, and every week more companies set ambitious commitments to reduce greenhouse gas emissions, source all of their electricity from renewable energy, invest in energy efficiency, reduce energy use and intensity, and reduce transportation emissions.

We are in the midst of a significant transformation where companies increasingly realize the strong business case for clean energy and how it can improve their bottom line. combined with the dropping prices for renewable energy, energy efficiency, and clean transportation technologies are contributing to the historic corporate adoption of clean energy and greenhouse gas (GHG) emission reduction commitments.

The number of companies committing to a Science Based Target (SBT) in particular has been increasing steadily the past few years - currently 276 companies have set an approved SBT through the Science Based Target Initiative (SBTi) including Coca-Cola, Dell, & Pfizer. Almost 400 more companies are in the process of developing a target. Ceres' research indicates that company executives found that setting an SBT fostered innovation, reduced regulatory risk, and enhanced profitability and investor confidence in their companies.

Almost 100 of 670 companies committed to SBTs have aligned their commitments with 1.5 degrees Celsius, including some of the market's largest and most prominent corporations such

[21] To be clear, we already have many, if not most, of the technologies and solutions needed.

as Amazon, Mars, NRG Energy, Levis, Salesforce, and Seventh Generation, to name a few examples.

For example, Amazon publicly launched its Climate Pledge in September. Amazon is the first signatory (the pledge calls for net zero by 2040), and made the following commitments:

- Go net zero carbon by 2040
- 100 percent renewable energy by 2030
- 100,000 fully-electric delivery vehicles, the largest electric vehicle order ever
- Invest $100 million in reforestation projects to begin removing carbon from the atmosphere now
- Publicly report progress on commitments

Renewable Energy Targets

204 major global companies have publicly committed to sourcing 100 percent of their electricity from renewable sources through the RE100 program.[22] Companies making this commitment include Facebook, Nike, and Target.

2018 was a record year for corporate renewable energy contracts in the United States, with companies signing over 6,500 MW of new wind and solar deals, according to the Renewable Energy Buyers' Alliance, and 2019 is on pace to eclipse 2018. Globally, Bloomberg New Energy Finance found that, at current rates, this year's corporate power purchase agreements for clean energy will easily surpass last year's record of 13.6GW.[23]

Many of the largest and most carbon-intensive electric power companies in the country have recently increased ambition of their GHG emission reduction targets, and we expect that trend to continue. Xcel Energy, AEP, and NRG Energy are now all aiming to eliminate emissions from power generation by mid-century and Xcel has committed to an ambitious 80 percent reduction by 2030.

[22] http://there100.org/companies

[23] https://www.bloomberg.com/news/videos/2019-08-15/bnef-brief-corporate-ppa-market-set-to-reach-new-heights-video

Profile: Duke Energy[24]
• Duke announced in September 2019 a commitment to reduce electricity emissions by at least 50% by 2030, and 100% by 2050. • This is a significant announcement for one of the largest GHG emitting utilities in the country, and a historic laggard on climate & clean energy. • Challenges remain, especially regarding Duke's over-reliance on natural gas and the level of ambition of its 2030 goal, which lags that of some of its peers.

Technology and market innovations are reducing the costs of clean energy (in some markets unsubsidized renewables are already less expensive than fossil fuels) and making these resources more accessible to companies. That said, we still have a long way to go and the private sector cannot do this alone or in a vacuum - we need now more than ever, policy leadership at the Federal and State levels to buttress and accelerate progress in the private sector, where the ambition and commitment to go net zero by 2050 or earlier is growing fast.

Strong national policies are needed to achieve net-zero emissions

"When we look at the individual pledges [by cities, regions, and businesses] the impact isn't that large, so we absolutely need national governments to pull through and do a lot of the heavy lifting," Angel Hsu, Director of Data-Driven Yale.[25]

In 2018, two separate studies assessed the cumulative impact of corporate, city and state emissions pledges. The America's Pledge report found that the United States was almost halfway to its original U.S. target under the Paris Agreement of 26-28 percent below 2005 levels by 2025, although greenhouse gas emissions have increased slightly since then.[26] The analysis found that 2018 era policies (some of which have subsequently been rolled back) and GHG commitments across the real economy, combined with market forces, will drive U.S. emissions to 17 percent below 2005 levels by 2025, roughly two-thirds of the way to the original U.S. target.[27]

Assuming broader and deeper commitments from this real economy coalition (which has occurred over the last year), the report found the potential to reduce emissions by more than 24

[24] https://news.duke-energy.com/releases/duke-energy-aims-to-achieve-net-zero-carbon-emissions-by-2050?_ga=2.101425989.572960714.1569469104-503625696.1569469104

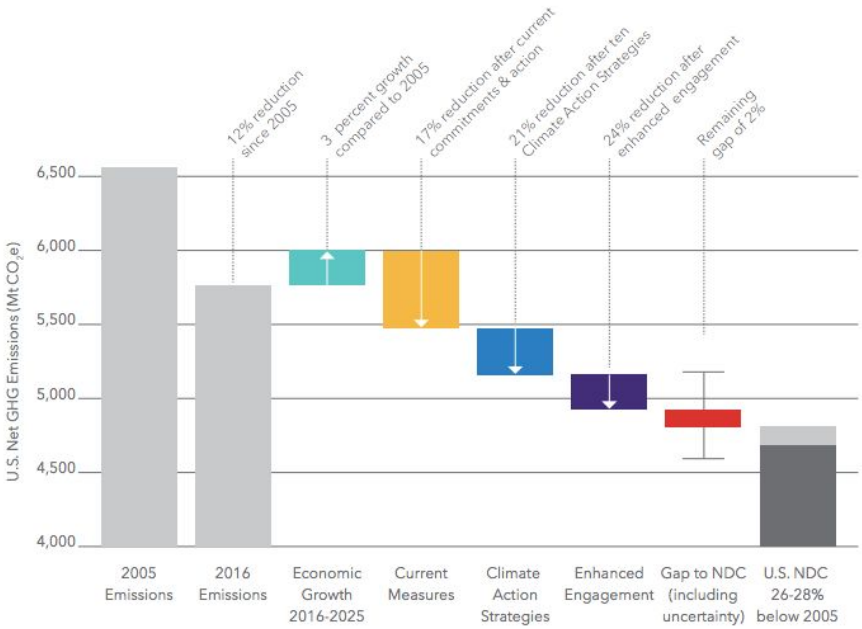
[25] https://www.theguardian.com/environment/2018/aug/29/local-climate-efforts-wont-undo-trump-inaction

[26] "Economy-wide GHG emissions likely rose by between 1.5% and 2.5% last year. That puts US emissions at 10.7% to 11.6% below 2005 levels, leaving a decently large gap to close in the next two years to meet the country's Copenhagen Accord target of a 17% reduction in all GHG emissions by the end of 2020." Rhodium Group, May, 2019 https://rhg.com/research/final-us-emissions-estimates-for-2018/

[27] https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge-2018.pdf

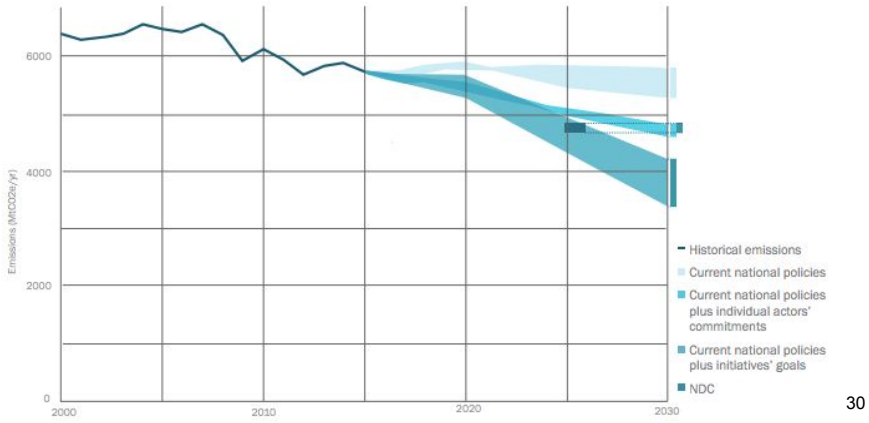
percent below 2005 levels by 2025. That would be within striking distance of the U.S. Paris pledge,[28] but still short. See chart from America's Pledge:

Figure ES-1: State, City, and Business Actions can Significantly Cut U.S. Emissions in 2025 and Accelerate Momentum for Long-term Decarbonization



29

A separate report from Yale University found similar results: In the U.S., the impact of city, regional, and state pledges could be substantial, potentially reducing emissions at least halfway to the U.S.'s original target under the Paris Agreement, and additional commitments from these entities could help our economy approach our 2025 emissions target. See chart from Data Driven Yale project:



30

[28] Ibid.
[29] P 13. https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge-2018.pdf
[30] P 59. https://datadrivenlab.org/wp-content/uploads/2018/08/YALE-NCI-PBL_Global_climate_action.pdf

Since these studies were conducted, a number of new corporate and state-level commitments and state-level policies have been put in place (referenced above), likely increasing the emissions reductions from the private sector. At the same time, the administration has continued to not enforce and to roll back common-sense efficiency and emissions standards, which have increased emissions. The net result is still to be determined, but both studies make clear that federal policy is critical to meeting short and long-term emissions targets.

Federal policy is fundamental to achieving net-zero emissions imperative

The science is clear: we must reduce our greenhouse gas emissions to net zero by 2050 in order to keep global average temperature rise under 1.5 degrees Celsius. In order to set us on that path, and keep us on track, Congress must pursue a **science-based policy agenda.**

Targets and Timelines

A science-based policy agenda for reducing greenhouse gas emissions begins with setting a binding emissions target and timeline and giving the private sector the incentives it needs to shift investments towards clean energy and low carbon practices. If we find ourselves off track from our emissions targets, policies and policymakers should have the flexibility to adjust accordingly, while also prioritizing transparency, predictability, and cost-effectiveness.

Pricing Carbon

Fundamental to a science-based policy agenda is a **price on carbon** that puts all energy sources on a more level playing field. A price on carbon is a technology neutral, market-based system to drive rapid and broad emissions reductions throughout the economy. It has widespread support as a critical policy tool from economists, corporations, and investors. Consider the following:

This winter, over 3500 economists, including four former chairs of the federal reserve (Janet Yellen, Ben Bernanke, Alan Greenspan, and Paul Volcker), Fifteen former chairs of the White House Council of Economic Advisors, and two former Secretaries of the Treasury released a statement saying that a price on carbon "offers the most cost-effective lever to reduce carbon emissions at the scale and speed that is necessary."[31]

And in the spring over 75 major companies, including 9 corporate CEOs and high level executives, met with over 80 Congressional offices to make the business case for a price on carbon.[32] Finally, in September, 515 institutional investors from around the world with a combined $35 trillion in assets under management called on global leaders to "put a meaningful price on carbon."[33]

[31] https://www.clcouncil.org/economists-statement/
[32] https://www.leadoncarbonpricing.com/
[33] http://theinvestoragenda.org/wp-content/uploads/2019/09/190916-GISGCC-for-UNCAS.pdf

Here in the U.S., we already have evidence that economic growth and emissions reductions can go hand in hand. California and the Northeast & Mid-Atlantic have implemented carbon pricing, and both regions have some of the strongest economies in the country and the world.

Around the world, "regional, national and subnational jurisdictions continue to adopt carbon pricing as a key policy to meet their climate targets, with 11 new initiatives implemented in 2018 and 2019 so far. This increases the total carbon pricing initiatives implemented and scheduled for implementation to 57. This consists of 28 emission trading systems (ETSs) in regional, national and subnational jurisdictions, and 29 carbon taxes, primarily applied on a national level. In total, these carbon pricing initiatives cover about 20 percent of global GHG emissions."[34]

No Silver Bullets

There is no one silver bullet when it comes to the technologies or policies we will need to achieve net-zero emissions across the economy. A price on carbon is necessary but not sufficient, even though a strong price signal will drive major emissions in a short period of time.[35] Congress and the administration should supplement a cross-sectoral price on carbon with a portfolio approach of federal standards, R&D investments, targeted regulations, incentives, and other policies. This approach should tailor complementary policies to target the five sectors of the economy responsible for the majority of our emissions: **Power, Transportation, Buildings, Industry, and Land Use.**[36]

Reengage Internationally

Climate change is a global problem that requires a global solution. The U.S. must re-engage in international climate negotiations and lead by example. The first step is to remain in the Paris Climate Agreement in order to drive accountability and emissions commitments that are needed from countries around the world. One argument against international engagement leadership - that the U.S. shouldn't do anything until China takes action - is perhaps the most compelling argument *for* international engagement. The only way to ensure continued international ambition from our economic and geopolitical rivals is to maintain a seat at the table and exercise leadership in the form of bold policy ambition.

Conclusion

The threat of climate change to our economy, human health, our nation, and our way of life is enormous, undeniable and profound. We take an enormous risk by not acting with urgency. Fortunately, we know where we need to go and when we need to get there. We don't have all the answers, but we have most of them. And we have a private sector that is increasingly taking action on its own and pushing lawmakers to supercharge that action with new and ambitious policies. In the U.S., and globally, net-zero emissions by 2050 is achievable. Now is the time for Congress to act. Thank you, I'll be happy to take your questions.

---

[34] https://openknowledge.worldbank.org/handle/10986/31755
[35] https://www.rff.org/cpc/
[36] https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

Appendix A[37]

Selected Differential Impacts between 1.5C and 2C Degrees of Warming

1.5 Degrees of Warming	2 Degrees of Warming
Extreme Heat *percentage of population exposed to extreme heat waves at least once every five years*	
14% of world population	37% of world population
Water Scarcity *Increase in urban population exposed to extreme drought*	
+350 million	+411 million
Coral Reefs *1 billion people rely on coral reefs for income of food*	
Very frequent mass reef mortalities	Coral reefs “mostly disappear”
Crops	
Global crop yields will be lower at 2 degrees of warming compared to 1.5 degrees, especially in sub-Saharan Africa, Southeast Asia, and Central and South America, but also in the United States.	
Arctic	
Sea ice remains during most summers	Ice-free summers are 10 times more likely

[37] https://www.nytimes.com/interactive/2018/10/07/climate/ipcc-report-half-degree.html

Appendix B

Emissions Reduction Case Study: Levi Strauss & Co.

- Levi's Launched its Climate Action Strategy in July 2018 as one of the first apparel companies, one of only two companies in the U.S., and one of 28 companies globally to set science-based emissions targets based on a 1.5-degree temperature rise scenario. Other companies are starting to catch up, and Levi's is now one of 93 companies to align with the 1.5-degree scenario.
- Levi's Climate Action Strategy includes SBTi[38]-approved GHG emissions reduction targets, which cover not only owned-and-operated facilities but also their global supply chain. Specifically, Levi's. intends to achieve the following by 2025; a ninety-percent absolute reduction in GHG emissions in all owned-and-operated facilities, 100-percent renewable electricity in all owned-and-operated facilities, and a forty-percent absolute reduction in GHG emissions across their global supply chain.
- Levi's recognizes the business case for setting these aggressive targets, and excels at demonstrating leadership in their industry with both their Climate Action Strategy and their Water Action Strategy. These strategies disrupt the business as usual narrative, and Levi's regularly highlights how their strategies create value for all stakeholders and help to strengthen their business over the long term. This past Spring, Levi's Chief Financial Officer (CFO) Harmit Singh became a founding member of Accounting for Sustainability (A4S) U.S. chapter, further solidifying Levi's stance on the need to bring CFOs and finance teams together to incorporate sustainability and environment, social, and governance (ESG) factors into investment decisions.
- The majority — 63 percent — of emissions across Levi's entire value chain (from cotton cultivation through consumer use and disposal) occur in the supply chain. Like most apparel companies, LS&Co. does not own most factories in its supply chain, and suppliers typically produce for multiple brands at the same time, which presents challenges for lowering emissions through the supply chain.
- Levi's faces challenges in meeting the goals set forth in their Climate Action strategy, specifically in working across regions of operation to increase renewable energy access for their supply chain. Local policy regulations, grid stabilization, public perception, and financing will be obstacles to overcome in the countries outside of the US where Levi's operates. Through a partnership with PaCT[39], Levi's has created a program that gives opportunities for suppliers to lower operating costs through energy efficiency upgrades, renewable energy assessments and access to competitively priced financing for suppliers that perform well against Levi's supplier code of conduct.
- Levi Strauss & Co has been doing business for 166 years and is committed to running its business for the long-term - a major reason why they are responding so aggressively to the threat of climate change.

[38] Science-Based Target Initiative
[39] https://wearpact.com/about