

Innovation: A Key to Climate Action

Science makes clear that to avoid the worst impacts of climate change, the world economy must achieve dramatic reductions in greenhouse gas emissions by mid-century. In the U.S., there are signs of progress. Utilities are steadily closing their old, dirty coal-fired power plants; in many parts of the country, new solar- and wind-generated electricity is cheaper than existing coal or new natural gas generation. State and local governments across the country are enacting ambitious climate policies and targets. Perhaps most heartening, voters and Members of Congress from both parties are recognizing that the threat posed by climate change is real and growing.

Even so, the change we need is transformational and the challenges are daunting. Waiting to act only increases the cost and pace of needed reductions.

Market-based policies that limit greenhouse gas pollution and account for its real costs are the most effective and efficient way to drive emissions reductions across the economy and deployment of energy-saving innovations.

But to tackle the climate challenge at the scale needed, we also need to make significant investments in the clean energy technologies we will need to deploy in the immediate future and beyond. Doing so will enable us to cut more pollution faster and at lower cost.

In short, innovation will be a critical tool in the fight against climate change. That's also where America can lead. Our nation has a history of tackling big challenges and leveraging the ingenuity of American entrepreneurs, scientists and engineers to develop solutions that have changed the world. Climate change presents us with that challenge and opportunity once again. To succeed, we must bring every bit of our nation's entrepreneurial creativity and scientific excellence to bear.

The Challenge

While the share of clean energy in our economy is growing, high-emitting fossil fuels continue to supply most of our energy. We emitted more carbon pollution in 2018 than in 2017 and projections show that absent new policy, emissions stay flat and do not decline over the coming decades.

We must accelerate the transition of our energy system to one that makes far greater use of renewables, efficiency, and clean energy technologies. We will also need significant deployment of emerging “negative emissions” technologies that remove pollution from the air.



The Opportunity

Breakthrough technologies would not only help cut pollution, they can also boost our economy and put America at the forefront of the next technological and industrial revolution. That would position American businesses and innovators as global leaders, fostering increased investments and jobs, as other countries look to us to assist in their transition to cleaner energy sources. Communities of all kinds, in states and districts across the country, stand to gain from better health

and a safer world. We're already seeing these kinds of energy innovation success stories: for instance, the fastest job growth in the U.S. is occurring in the solar and wind industries. Evidence of that success is everywhere: wind farms have proliferated across the country, with new offshore installations moving forward. Solar installations on rooftops and in collector "farms" are also burgeoning – and not just in sunny regions.

The Solution

National policy setting enforceable declining emissions limits linked to a price on carbon pollution is an essential component of any successful long-term strategy to meet our climate goals. At the same time, we must increase our commitment to the research and development needed to bring to market the next generation of innovative low and zero carbon technologies. This includes:

- Further improving and lowering the cost of technologies that are reducing emissions today, like electric vehicles, energy efficiency, and renewable power like wind and solar;
- Developing and deploying technologies on the cusp of significant market impacts, such as utility-scale energy storage that can help integrate much higher levels of renewable electricity, and technologies that capture carbon at industrial facilities or power plants and either store them underground or recycle them into fuel, fertilizer or concrete; and
- Investing in research and development of breakthrough solutions like negative emissions technologies such as direct air capture, which can suck carbon emissions out of the air.

The combination of government investments in critical research, strong climate policies, and the power of American ingenuity can spark the development of new solutions that will be ready for deployment in time to help avert the most dangerous consequences of climate change.

The Role for Congress

Congress controls not only legislation but also the purse strings that fund programs across government agencies. Using these combined powers could unleash rapid investment and innovation in the clean energy space.

The most critical action Congress should take is to put strong declining limits on pollution that compel energy providers and emitters to commit to, and invest in, cleaner energy sources. Additional common sense actions that would stimulate innovation include:

- Increasing funding for the Department of Energy's applied energy offices, like the Office of Energy Efficiency and Renewable Energy, and for proven and successful programs such as the Advanced Research Projects Agency-Energy (ARPA-E), which seek to identify and support breakthrough energy technologies;
- Creating new R&D programs targeting low-carbon solutions in difficult-to-decarbonize sectors of the economy such as industry, agriculture, and critical parts of the transportation sector;
- Funding programs at the Department of Energy, National Labs and elsewhere that help scientists, engineers, entrepreneurs and small businesses move their products from the lab to the marketplace and take promising technologies from pilot to commercial scale;
- Putting in place incentives that support a wide range of technologies and target tons of emissions reduced through tax policies and other means of stimulating entrepreneurial interest and venture capital.