

CLEARPATH

Testimony of Richard J. Powell
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House Appropriations Subcommittee on Energy and Water Hearing
“The Department of Energy’s Role in Addressing Climate Change”
Wednesday, November 20, 2019

Good morning Chairwoman Kaptur, Ranking Member Simpson and Members of the committee. My name is Rich Powell, and I am the Executive Director of ClearPath.

ClearPath is a 501(c)3 organization focused on conservative policies that accelerate clean energy deployment in the power sector. We support solutions that advance the wide array of clean energy technologies, including next-generation nuclear, hydropower, cleaner fossil fuel technologies and grid-scale storage solutions that improve grid efficiency, in part by integrating additional renewable sources. Our core mission advocates markets over mandates and bolstering technological innovation rather than implementing stifling regulation. ClearPath provides education and analysis to policymakers, collaborates with relevant industry partners to inform our independent research and policy development, and supports mission-aligned grantees. An important note: we receive zero funding from industry.

I would like to start by thanking the Members of this Committee for your work, and congratulating you on your remarkable, bipartisan track record in clean energy innovation over the past two fiscal years. The significant resources this Committee has injected into the world's most advanced peacetime research and development engine -- the Department of Energy and its 17 world class national laboratories, alongside American institutions of higher education and private-sector entrepreneurs -- is catalyzing a new generation of zero emission technologies.

The House and Senate’s fiscal year 2020 bills continue the momentum of the past two fiscal years, and we look forward to seeing the outcome of the appropriations process. The annual appropriations efforts do not garner the attention they merit. We realize the innovation this vital process enables is essential to tackling this global problem as quickly and affordably as possible.

As we look at the Department’s vital role in America’s response to the global climate challenge, I will underscore three key points:

1. The significant threat to the U.S. economy posed by climate change is global in nature, which requires continued and aggressive focus at driving down the cost of clean technologies as quickly as possible.
2. Turbo-charging the American innovation engine means more than just spending additional resources. Given national budget constraints, any successful strategy must have targeted goals that bring real breakthroughs to market and produce tangible economic and environmental benefits for the globe.
3. Modernizing the innovation engine around the energy and environmental challenges facing the globe today -- rather than specific technology stove pipes -- would yield a more impactful technology incubator.

America's Role as a Global Clean Technology Provider:

It's always important to address the elephant in the room first. Climate change is real and industrial activity around the globe is the dominant contributor to it. The impacts of a changing climate are clear. From the harmful algae blooms in Lake Erie to the pine beetle infestations in Idaho, the increasingly tangible costs make clear that the challenge climate change poses to society merits significant action at every level of government and in the private sector.

These consequences are just in the U.S., but climate change is obviously a global problem. A molecule of CO₂ emitted on the other side of the world has the same impact as one released here. For example, the projected emissions growth from developing Asian countries alone would offset a complete decarbonization of the U.S. economy by mid-century.¹

I do not make this point to minimize the American role in the global solution or argue aggressive domestic action is unnecessary -- actually just the opposite.

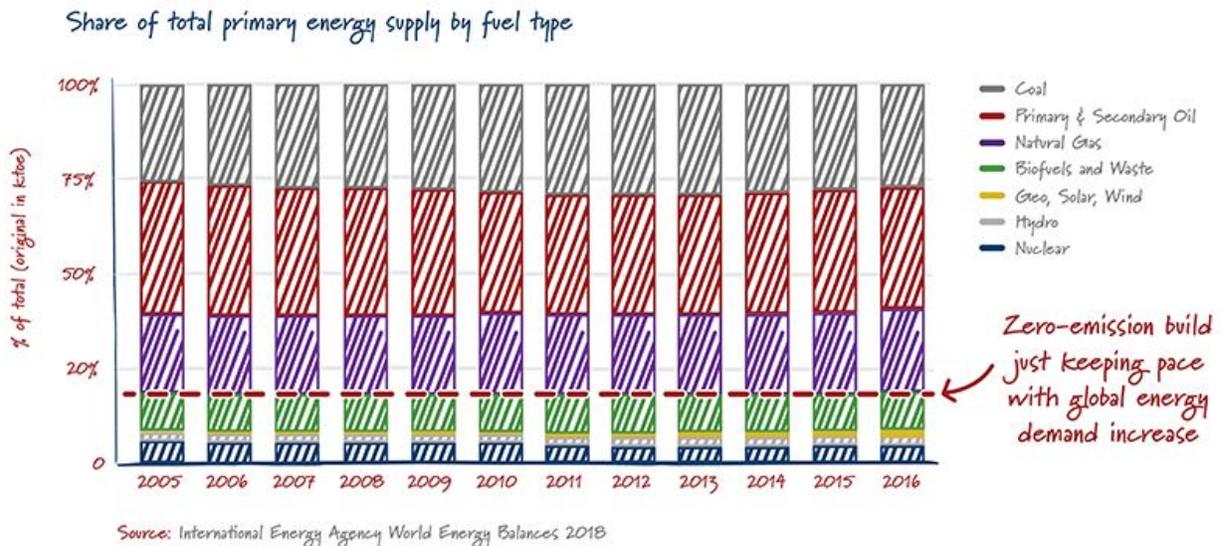
While the U.S. represents roughly 16 percent of global greenhouse emissions today, in cumulative terms (i.e. historical terms), the United States also owns this problem more than any other country. Given that such is the case, it is imperative that we tackle American emission reductions as quickly as possible and help find a solution that will allow developing nations to easily choose clean energy. To do this, it is essential to prioritize investments that accelerate the U.S. as a clean technology provider. Just as we were the great arsenal of Democracy in the second world war, we must become the workshop and driver of the global clean energy transition. The American innovation engine can lead the world, which is precisely why the U.S. Department of Energy is so important.

¹<https://www.eia.gov/outlooks/aeo/data/browser/#/?id=10-IEO2017®ion=0-0&cases=Reference&start=2010&end=2050&f=A&linechart=Reference-d082317.3-10-IEO2017~~~~~Reference-d082317.17-10-IEO2017&map=&ctype=linechart&sourcekey=0>

As the Committee looks towards “the Department of Energy’s role in addressing climate change,” we must look at how we make programs and policies effective at making clean energy cheaper.

Why? By and large, the share of global energy supplied by clean sources has not increased over the past decades. Despite significant renewables deployment globally, emissions continue to rise. Renewables are an important part of the solution, and no doubt we need more of them. But the math is simple -- clean energy deployment is only just keeping up with economic development. Clean energy is not gaining ground, and the technologies available today are simply not up to the task of global decarbonization.

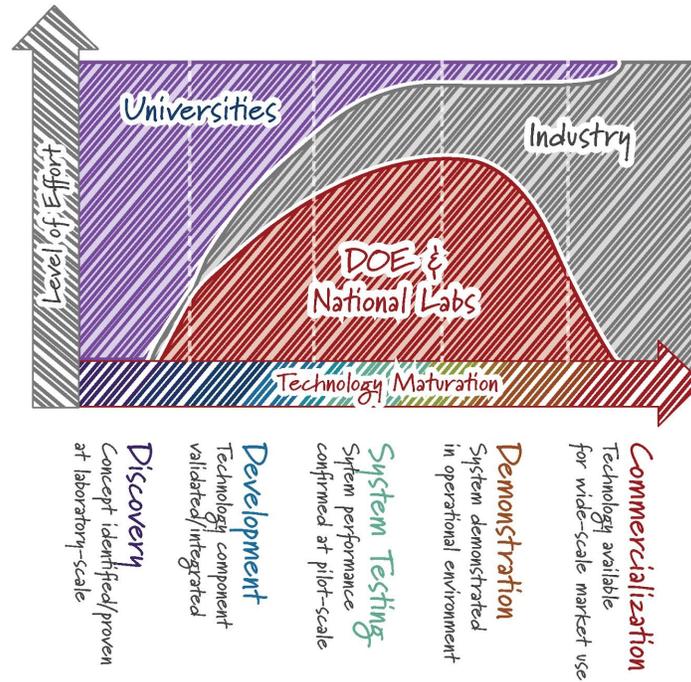
Humanity is not yet transitioning to a zero-emission energy system



Our clean technology offerings must represent a better, affordable alternative so developing nations will consistently choose them over higher-emitting options. The United States is uniquely suited to seize this immense economic opportunity while leading on global climate action.

Our Department of Energy and national lab system is the leading technology incubator of the world. It has catalyzed such life-altering creations such as nuclear power, the internal combustion engine, and sequencing the human genome; and is uniquely suited to bring the technological solutions needed to tackle climate change to the global marketplace. So how can best capitalize on this immense economic opportunity?

DOE National Laboratories Relationship to Universities and Industry in the Energy Innovation System



Source: [Annual Report on the Status of the National Labs](#)

Investment Goals Need Clear Outcomes:

Too often, we think of the DOE's role in terms of dollars spent on priority topics. We too rarely ask "to what end?" President John F. Kennedy's original MoonShot concept, proven more than half a century ago, has withstood the test of time. The DOE has found success emulating the MoonShot model by clearly articulating goals and aligning management and funding of those goals all the way from the Secretary's desk to the scientist's bench.

The Office of Fossil Energy's work on unlocking shale gas, the Energy Efficiency and Renewable Energy Office's work on SunShot to radically decrease the cost of photovoltaic solar, and the Joint Bioenergy Initiative on lignocellulosic biofuels at the Lawrence Berkeley Laboratory are all recent examples. When DOE has clear, well understood and shared goals, combined with a strong focus on innovation that aligns leadership and creates clear organizational accountability, coupled with the steady investments supporting those goals over multiple administrations, the Department produces breakthrough results.

The DOE should set ambitious technology development goals to support private sector commercialization across technologies that touch each sector of the economy. These goals must

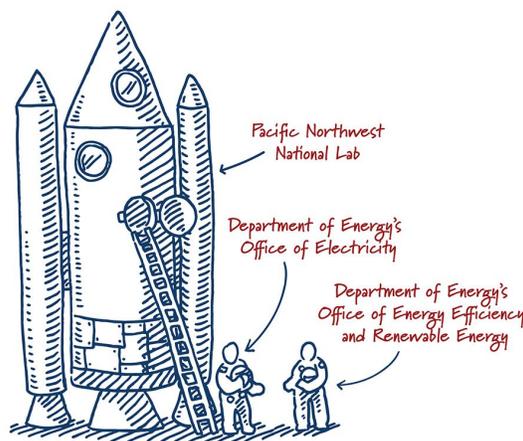
be accompanied by deep private sector engagement to ensure that the research priorities and other DOE activities are well aligned with the needs of the innovators, and most importantly the users of the technologies. These goals need to be properly funded, but flexible enough to empower researchers to take on key scientific and engineering challenges. These goals should also be regularly reviewed to ensure accountability and measurable progress (and reevaluated or discontinued when milestones are not achieved).

There are some more recent examples of this approach, in large part due to the advocacy of this committee and current Department leadership:

- **Advanced Energy Storage Initiative (AESI):** Energy storage technologies have the potential to transform the U.S. electricity system by bolstering grid reliability, reducing electricity market prices, and improving the integration of intermittent renewable energy resources like wind and solar. Until recently, federal energy storage RD&D lacked the organizational accountability usually needed for breakthrough success. These programs are spread across the DOE in four offices: from Electricity to EERE to Science and to the Advanced Research Project Agency-Energy (ARPA-E).

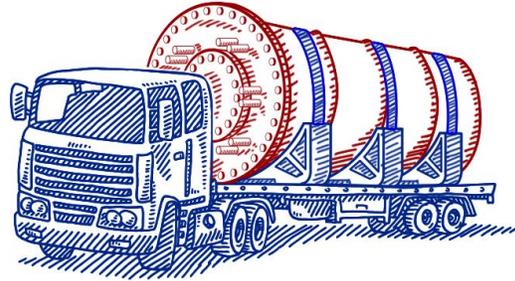
Many of these offices primarily focus on transportation rather than grid-scale storage. This Committee has urged the Department to better coordinate grid-scale technology efforts, and the Administration recently took a major step in the right direction by coalescing these programs around key technology performance and cost objectives, the AESI. Concurrently, they've proposed a

"launchpad" hosted at the Pacific Northwest National Lab (PNNL) focused on developing, testing, and evaluating battery (and potentially other) materials and systems for grid applications. AESI should expand into goals for long-duration storage and seasonal storage solutions, as suggested by this Committee's FY20 bill and bipartisan bicameral legislation, the Better Energy Storage (BEST) Act ([H.R.2986/S.1602](#)).

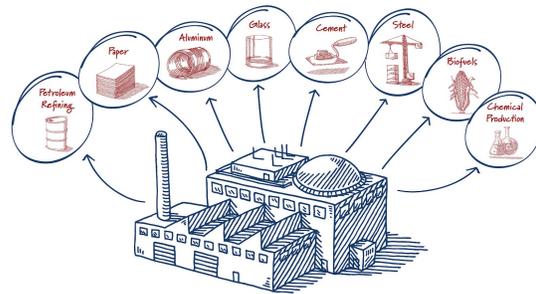


- **Advanced Reactor Demonstration Program:** This year's Senate Committee-reported bill proposes an Advanced Reactor Demonstration Program to accelerate the demonstration of two advanced reactor designs by 2025, and multiple subsequent designs by 2035. This moonshot RD&D initiative mirrors the program laid out in the bicameral bipartisan Nuclear Energy Leadership Act (H.R.3306) and drives federal resources

towards commercializing American reactor designs that have the attributes needed to be cost-competitive (<\$60/MWh levelized cost of electricity) and constructed by the private sector. This is consistent with the direction this Committee provided the Department in FY18 to develop a plan to demonstrate multiple reactor designs within a decade. In addition to the demonstration program, I commend this Committee for including specific direction on hybrid energy systems and the development of advanced materials. These research initiatives benefit the industry as a whole as innovation aims to increase the technologies' economic competitiveness. It is important that these provisions make it in any FY20 bill, because the United States is losing ground. Other countries, specifically China and Russia, are actively building these new reactor designs. These countries know that in order to deploy these technologies both domestically and internationally, they need to be able to actually build them. If the United States does not support the near term deployment of these technologies, then it will lose ground internationally and miss an opportunity to reduce emissions globally.



- **Maximizing Carbon Capture Utilization and Storage Potential:** Commercializing low-cost American carbon capture technologies is essential to tackling global emission reductions. In 2018, global demand for all fuels rose, with fossil fuels meeting nearly 70% of the growth for the second year running. Carbon capture and sequestration is one of the few technologies that can address emissions from both power plants like coal and natural gas, and industrial processes like the production of steel, cement, and chemicals. In FY18, the Committee wisely provided the Department resources and guidance which resulted in over \$53 million aimed at building gas or coal carbon capture project in the next 5 to 8 years. This year, both bills aptly direct the Department to bolster a gas centric carbon capture research program and map out industrial technology pathways. It is also important to note that bipartisan bicameral RD&D goals bills for gas capture (the LEADING Act - H.R.3828) and nonpower industrial sector decarbonization (the Clean



Industrial Technology Act - H.R.3978) have also advanced this year in the relevant authorizing Committee.

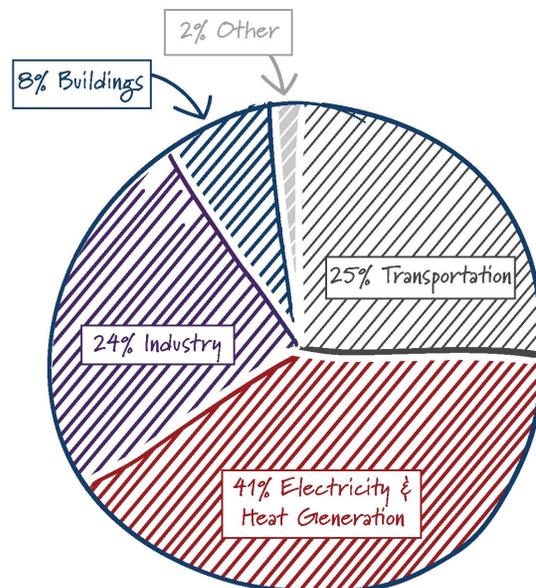
It is important to remember that we cannot spend our way to a solution -- the global energy economy and the demands of rising populations around the world are too much even for the mighty U.S. budget to facilitate these decisions around the world. Rather, we need to invest in a set of better mousetraps - ones that will leverage the scarce dollars of U.S. taxpayers into solutions that the global economy will pick up on their own merits. These kinds of smart investment is the very definition of a market-based solution to climate change, one that makes markets themselves the force for change in distributing clean energy instead of the force we work against.

Big Changes for a Daunting Challenge:

Lastly, I want to share some thoughts for the Committee to consider beyond the fiscal year 2020 appropriations cycle. Remember, the Department of Energy and its laboratories were created in a time of national emergency. During World War II, the Manhattan project was conducted by the first iteration of our national laboratories. Over the decades that followed, the labs were reimagined to help solve our national energy scarcity challenges. Thanks to their work and the innovations that resulted, the U.S. moved from a position of energy scarcity to one of abundance. Daunting challenges are part of the Department's DNA.

We now confront a very different and daunting challenge -- how to make all of the abundant energy options clean. In order to meet this challenge, I urge you to think seriously about reimagining the structure and function of the Department to reorient its programs toward the goal of making energy clean. Traditionally, calls to reorganize the Department have come from those concerned with the "stove-pipe" structure which artificially separates different fuel sources in the power sector. A more modern Department would take on that challenge, and more. First, that approach would much better align the Department's focus and resources with the various emitting sectors of the economy. We've made enormous strides on reducing power sector emissions, but lag far behind on transportation,

CO₂ Emissions from Fuel Combustion (2017)



industrial, and direct emissions from buildings. A future Department might have dedicated structures to deal with each of those challenges.

Beyond the structure of the organization, we have learned a great deal about how to attract, retain, organize, and motivate the world class talent at the labs from our experiences at ARPA-E. A future DOE might also seek to use tools from the innovative ARPA-E people model.

There is no question that these structural changes are extremely difficult to achieve, but the challenge we face requires that we explore every possible option and take bold action.

Thank you again for the opportunity to provide remarks. ClearPath is eager to assist the Committee in developing innovative policies, identifying opportunities for investing, tracking successful outcomes around the new moonshot energy technology goals outlined above, and building on the recent bipartisan success. We applaud the Committee for taking on this important task to help ensure the appropriate investments can be made to modernize and facilitate the research, development, and demonstration of cutting-edge energy technologies in the service of a stable global climate.