Testimony of Richard J. Powell
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Good afternoon Chairman Upton, Ranking Member Rush and other members of the committee. My name is Rich Powell, and I am the Executive Director of the ClearPath Foundation. 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 baseload clean energy technologies - including next-generation nuclear, hydropower, cleaner fossil fuel technologies and grid-scale storage solutions that improve grid efficiency, including the integration of additional renewable sources such as wind and solar. 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.

Staying Ahead of the Curve

I commend Chairman Upton for kicking off the first of a series of hearings focused on Department of Energy (DOE) reforms that ensure the effective execution of its core national, economic and energy security missions. Reauthorizing and modernizing key research, development, and demonstration (RD&D) programs is essential to securing our nation's role as a global technology innovation leader while facilitating a cleaner, more reliable, and affordable domestic electricity supply for the American public.

As Secretary Perry noted to the Subcommittee last October: "America is at the beginning of an energy renaissance." Domestic oil, natural gas and solar energy production are at record highs, while improvements in efficiency allow us to do more with less energy. As a result, North American energy prices are historically low and may stay that way for the foreseeable future. This era of abundance must not make us complacent. Staying ahead of the curve and reinventing energy systems is slower than turning a supertanker, requiring a decade or more of lead time for cutting-edge technologies to mature. Hydraulic fracturing, as well as today's solar and wind technologies, took several decades and significant investment from both private and public sources before widespread commercial deployment. It is essential that our nation capitalize on this era of abundance and invest in the technologies needed to meet the electricity needs of tomorrow.

America is rapidly approaching a crossroads. While coal makes up a third of American power production, the average plant will reach retirement age by 2030. Replacing or refurbishing these

plants presents a once-in-a-century opportunity to deploy advanced energy technologies and build new domestic supply chains.

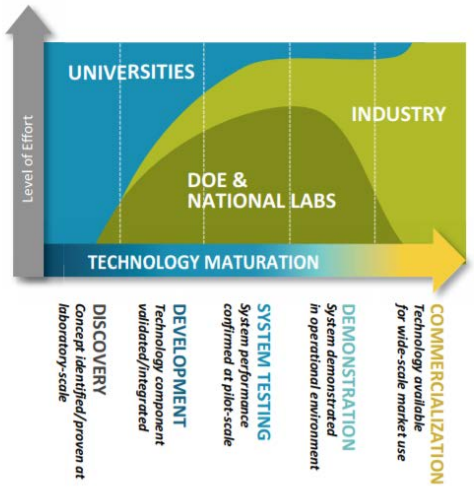
Global energy demand is expected to grow 28% by 2040. This market in India alone is valued at $2.7 trillion by 2040. A homegrown U.S. advanced energy economy can shape and even lead such a market, furthering our energy security, geopolitical influence and economic opportunities abroad. If our nation does not rise to that challenge, we run the risk of falling behind. In fact, we already are.

China is seizing the opportunity and outflanking us. It's attracting advanced nuclear talent, bringing two high temperature gas reactors online early this year, at least half a decade before even our most ambitious plans. China is already the global leader in solar manufacturing, a technology American entrepreneurs invented in partnership with the Department of Energy. China is deploying the most efficient coal plants in the world. And the future bounty under development and early deployment in China is of even greater significance, including ultra-cheap good scale batteries and cutting edge nuclear reactors.

DOE's Critical Role In America's Innovation Engine

The Department of Energy and its 17 national laboratories, partnered with the nation's premiere research universities and facilities, constitute the most comprehensive energy research and development network in the world. As the largest funder of physical sciences research in the United States, it has spurred many technological advances of the modern energy era - engineering, materials science, computing, physics, health sciences and more. The Department, labs and their predecessors pioneered civilian nuclear energy, funded many of the core technologies used in fracking, and produced the first solar cell. The Department is a critical link between university research and commercial products. The private sector alone is often unwilling to assume the risk of pioneering new and capital-intensive technologies, especially in the heavily regulated and risk-averse power sector. Many power companies are regulated and most are structurally discouraged from buying first-of-a-kind technologies.

Figure 2-2: DOE National Laboratories' Relationship to Universities and Industry in the Energy Innovation System



Source: Annual Report on the Status of the National Labs

It is our belief at ClearPath that the Department must modernize if our nation is to export technologies of the future to meet the world's rapidly growing energy appetite. America's specialty is in cutting-edge technology development and manufacturing, not in mass-production of commodity goods.

To that end, the best way for the United States to play a role in meeting future energy demand is to develop increasingly advanced technologies that can outcompete rival nations. We may not be able to beat China with cranes and concrete, but we can in building printable solar panels, modular nuclear plants, carbon capturing fuel cells and other energy tools of tomorrow.

Therefore, a strong commitment to energy innovation and a modern DOE is essential for: (1) improving the nation's geopolitical position as foreign competitors, such as China and Russia, invest in advanced energy research, development and demonstration (RD&D) concepts; (2) enhancing American energy independence with more clean, reliable and affordable generation technologies; and (3) seizing a multi-trillion dollar economic development opportunity that will revitalize domestic manufacturing and create thousands of high-paying jobs.

We can and should aim for clean, reliable and affordable U.S. energy dominance.

But simply spending more taxpayer dollars with a "business as usual" approach will not achieve these goals. While funding is a critical component, collaboration with the private sector must be improved to make innovations more readily transferable to industry and able to thrive in international markets.

The last major overhaul to our national energy strategy was the Energy Policy Act of 2005 and many aspects of power generation have greatly changed since then. Modern market realities such as low-cost natural gas, the declining cost of wind and solar technology and greater competition in clean energy technology from China should prompt a reconsideration of the Department's R&D priorities.

In addition to adapting to the current market environment, DOE can maintain our domestic competitive advantages with long-term research priorities rooted in nonpolitical market and technology projections. Science and research should be nonpartisan enterprises, operating on longer terms than year-to-year appropriation bills or four-year election cycles.

The Need for DOE "MoonShot" Energy Technology Goals

Too often, we think of DOE's role in terms of capabilities, or dollars spent on priority topics. We rarely ask what outcomes DOE is actually working towards. President Kennedy's original MoonShot concept, proven more than half a century ago, has withstood the test of time. DOE has found success at times emulating the MoonShot model, with clearly articulated goals aligning all the management and funding of the Department from the Secretary's desk to the scientists bench. Unfortunately, the concept has only been sparingly used. The last administration provided a noteworthy, but narrowly implemented blueprint with its 2011 SunShot Initiative. It aligned secretary-level, interdisciplinary resources on reducing the cost of solar power by 75% within 10 years. Last year, the Department reached its goal years ahead of schedule. More federal energy innovation goals are needed to maximize the commercial impact of DOE's vast capabilities and resources.

Clearly articulated, long-term research priorities would insulate critical RD&D efforts from changing political whims. Ambitious technology development goals provide a way for the Department to avoid micromanaging the day-to-day operations of national labs and universities while preserving clear guidance. Critical parts of the DOE research portfolio, including nuclear energy and energy storage, lack systematized goals with high level buy in and adequate resources. Establishing more technology-inclusive goals would leverage limited federal dollars and resources to drive down cost and bring breakthrough technologies to the marketplace.

Secretary Perry has recently called for an increased emphasis on the development of advanced reactor technologies, including small modular reactors, stating they should play an important role in the American clean energy portfolio while presenting unique export opportunities. This is just one area that a MoonShot approach could be applied. A public-private advanced nuclear energy research initiative focused on tackling key performance challenges could demonstrate breakthrough reactors and have significant market opportunities.

Co-develop the Goals with Industry
Where applicable, the DOE should work closely with the private sector to meet mutual goals. This includes ensuring no undue regulatory burden on energy technology companies, utilizing funding opportunities for the private sector where appropriate, and partnering with private entities to develop technologies under larger MoonShot goals.

Adopt Private-Sector Management Practices
Relevant funding and management decisions should also be recalibrated around these MoonShot goals. Major "MoonShots" and corresponding subgoals should be used as a yardstick to evaluate the progress within research portfolios. Emulating the private sector, if specific technologies do not realize expected milestones or show progress, support should be reduced or cut and directed to more promising areas. This stands in contrast with the common practice of short-term research initiatives for "flavor of the month" technologies pushed by political appointees, as well as continuing research projects that are not bearing fruit. Additionally, the Department should be empowered to make the necessary human resource decisions for success, such as the ability to offer more competitive wages and terminate employees that do not meet expectations.

Maximize Private-sector Coordination
The DOE should look to prove business models with the private sector. One pragmatic solution is the Innovative Pathways funding program, which optimizes new private-sector financing mechanisms for energy innovation and commercialization. In some cases such as in finance, the private-sector is far better equipped to deliver on the goals of the Department than universities or national labs.

Finally, it is also crucial that the DOE works closely with the private sector to realize the completion of its technology MoonShots. Prematurely ending government support raises the risk that our rivals will commercialize them instead. For example, China has become the global leader in solar and lithium-ion manufacturing, and it is rapidly cementing its leadership role in nuclear plant construction. They have no philosophical objection to funding applied research, and are happy to take the fruits of American basic research and add applied dollars to demonstrate and commercialize them, thus reaping the benefits. A soup-to-nuts approach to energy research is needed - especially for capital intensive projects such as advanced nuclear and carbon capture projects. These sentiments have been echoed by diverse industry stakeholders, including the National Coal Council, the Carbon Utilization Research Council and NuScale Power. Striking a balance of appropriately supporting successful technology demonstration while avoiding market interference is a delicate one, but is necessary to maintain international competitiveness.

Concluding Remarks

The Department needs to be more flexible in operation, without sacrificing accountability. The national laboratories have been prone to 'research drift' without an explicit national energy policy. Goals allow flexibility at the labs while ensuring accountability.

America has an opportunity to lead the global market for clean, safe, affordable and reliable electricity generation. Without a more focused and nimble government partner, American entrepreneurs are likely to lose the clean energy race to other geopolitical powers such as China, squandering an immense economic opportunity. An innovation-centric energy strategy would allow America to cut its own emissions far more cheaply than regulatory hammers, such as the "top down" Obama Administration approach, while creating rather than strangling American entrepreneurs and export opportunities.

Thank you again for the opportunity to provide remarks. ClearPath is eager to assist the Committee in providing ideas for updating the outdated programs and existing authorizations in current law around the new Moonshot energy technology goals outlined above. We applaud the Committee for taking on this important and overdue task to help ensure the Department of Energy has the relevant statutory authorities it needs to modernize and facilitate the research, development, and demonstration of cutting-edge energy technologies.