

Subcommittee on Energy
Hearing on
“Reviving our Economy: COVID-19’s Impact on the Energy Sector”
June 16, 2020

The Honorable Ernest J. Moniz
President and Chief Executive Officer
Energy Futures Initiative

The Honorable Tom O’Halloran (D-AZ)

1. As I’m sure you know, the number of coal plant retirements nationwide has continued to accelerate in recent years. This trend has left countless workers either facing early retirement or suddenly looking for new forms of employment.
 - a. In your view, how could the Public Utilities Regulatory Policies Act (or other relevant statutes) be updated so that communities that will be economically distressed and significantly impacted by a coal-fired generating station’s closure be better able to begin the economic and energy transition process?

RESPONSE: At the Energy Futures Initiative and previously at the U.S. Department of Energy, we have long been concerned about the impact on jobs and communities associated with coal plant closures. With U.S. coal-fired electricity generation in 2019 falling to a 42-year low, primarily due to the low price of natural gas and renewable generation, the impact on jobs and communities associated with coal plant closures merits special attention.

We clearly need new and modernized policies to revitalize these impacted communities and employment opportunities. As I mentioned in my testimony, the Energy Futures Initiative has a strategic partnership with the AFL-CIO: the Labor Energy Partnership. The LEP is focused on developing policies and programs designed to create more jobs and new jobs across the energy sector and recognizes the opportunities and challenges associated with the clean energy transition.

One example of the type of initiatives that Congress may consider is an expansion of the e Partnerships for Opportunity and Workforce and Economic Revitalization (POWER+) Plan initiated in the last Administration. POWER+ was a government-wide initiative involving ten federal agencies that specifically targeted a range of federal economic and workforce development programs and resources to assist communities and workers affected by coal mining, coal plant and related supply chain industries. Between 2015 and early 2017 these programs funded approximately \$116 million in economic development, job training and other grant projects targeting coal communities in more than 20 states. In addition to the current stimulus efforts, we need to revisit the POWER+ plan in the context of the post-COVID economy and new clean energy infrastructure opportunities.

The Honorable Tim Walberg (R-MI)

1. In my home state of Michigan, DTE Energy and CMS have bold visions for reducing their emissions while also utilizing affordable and cleaner energy sources - including natural gas. I would like to get your perspectives on the role utility companies play in enabling these future investments. Specifically:
 - a. As many utilities pursue their net zero emission targets, can these goals be met with variable energy resources alone?

RESPONSE: In our May 2019 report, [*Optionality, Flexibility & Innovation: Pathways for Deep Decarbonization in California*](#), the Energy Futures Initiative examined the role of variable generation in the context of California's economy-wide 2030 greenhouse gas emissions goals and found that there are operational issues arising from high penetrations of intermittent generation that will need to be addressed and that natural gas generation will be needed for grid operational flexibility and system reliability while enabling the growth and integration of intermittent renewables. We believe this applies to other states with significant commitments to intermittent generation. Specifically, we found that:

California can meet its 60 percent RPS target by 2030 with continued expansion of wind (both onshore and offshore) and solar resources; some geothermal and increased imports of clean electricity will play a role as well. California will, however, have to manage the significant operational issues that arise from high penetration of intermittent renewables to ensure reliability, manage costs, and minimize system emissions. The Western Energy Imbalance Market, demand response, and increased deployment of energy storage technology including battery storage, pumped hydro, and other technologies will be critical to balancing electricity from intermittent renewables. These options are, however, currently limited in size, and by duration or geography.

Natural gas generation will continue to play a key role in providing California's electric grid with operational flexibility and system reliability, while enabling the growth and integration of intermittent renewables. Natural gas-fired generation provides key load-following services. It has short- and long-duration applications, including the management of seasonal shifts in demand. As renewable generation has increased, natural gas units, in their balancing role, are being operated for shorter intervals and higher heat rates; this suboptimal operation is increasing their emissions intensity. Battery storage systems can be leveraged with

natural gas combined cycle (NGCC) units to smooth their ramping operation, measurably reducing their emissions profile.¹

- b. What technological advancements need to take place for these companies to achieve their zero emissions goals given the reliability issues associated with variable energy resources?

RESPONSE: The first and most important point I'd like to make on this issue is that successful deep decarbonization pathways require a coordinated and complementary effort by all key stakeholders. Solutions for addressing the climate challenge cut across all portions of the economy and require participation of businesses, labor, financial institutions, religious and military leaders, consumers, governments, and advocacy groups. In particular, the role of the federal government in driving innovation and demonstration of new technologies cannot be underestimated. As we recognized in our February 2019 report, [*Advancing the Landscape of Clean Energy Innovation*](#),² we described today's U.S. ecosystem of clean energy innovation from the perspectives of technological potential, investment patterns, institutional roles, and public policy, and observed "that challenges associated with clean energy technologies can be met by a national commitment to technological research, private sector efforts to develop, apply, and commercialize products incorporating that research, and public policy."³ With respect to the private sector, we found that "the private sector is central to clean energy innovation, providing entrepreneurial vision, channeling financial resources, and connecting innovation to the rest of the energy system and the economy."⁴ And, we identified the following technologies with breakthrough potential:

- Storage and battery technologies;
- Advanced nuclear reactors;
- Technology applications for industry and buildings as sectors that are difficult to decarbonize, including hydrogen, advanced manufacturing technologies, and building energy technologies;
- Modernization of the electricity system;
- Smart City and Smart Community technologies; and
- Deep decarbonization/large scale carbon management, including carbon capture, use and storage at scale, carbon direct removal, sunlight to fuels, and biological sequestration.⁵

¹ See p. xix.

² The report was prepared for Breakthrough Energy by IHS Markit and Energy Futures Initiative.

³ See p. 2.

⁴ See p. 42.

⁵ See p. 16.

Storage, especially long term storage, is essential to the zero carbon energy future. The following excerpt from [*Advancing the Landscape of Clean Energy Innovation*](#) underscores the importance of storage:

Storage, including batteries, can be used to address many challenges facing the power sector today, including integrating variable fuel sources into the grid, deferring capital investment in infrastructure, and improving economic dispatch, efficiency, and power quality. Batteries can also support transmission system balancing and coordination of distributed energy resources on distribution networks. In addition, they can be positioned in local communities or behind the customer meter to contribute to emergency preparedness and resiliency and can be used to reduce peak demand and reduce demand charges.⁶

However, batteries are not the complete answer. They will need to be complemented by other innovative technologies that address longer storage times – days, weeks, seasons. I believe this need will be met primarily by hydrogen of some form of low-carbon fuel.

The Honorable Michael C. Burgess, M.D. (R-TX)

1. Secretary Moniz, during the Energy subcommittee hearing on June 16th pertaining to the impact of COVID-19 on the energy sector, you referenced the impact of COVID-19 on electricity providers and the importance of assisting electricity consumers during this crisis.
 - a. Under the CARES Act, Congress appropriated \$900 million in supplemental funding to the Low Income Housing Energy Assistance Program (LIHEAP). Was this assistance enough and, if not, should Congress appropriate more dollars?

RESPONSE: Relatively stable between 1981 and 1999, LIHEAP funding has varied significantly over the past two decades, peaking during the Great Recession in 2009 at almost \$13 billion and \$8.5 billion in 2010, and hovering between \$3.3 billion and \$3.6 billion from 2012-2018.⁷ For FY 2019, LIHEAP was funded at \$3.64 billion and \$3.74 billion for FY 2020. This past May, 135 Members of Congress signed a letter to Speaker Pelosi and Minority Leader Kevin McCarthy requesting at least \$4.3 billion total in supplemental funding in addition to the FY 2019 block grant of \$3.69 billion.⁸ The letter states that while the \$900 million will help approximately 1.5 million households currently receiving LIHEAP and 1.5 million recently unemployed, as of the end of June, more than 19 million people were receiving unemployment benefits. I would also note that [*Transforming the Nation's Electricity System: The Second Installment of*](#)

⁶ See p. 89.

⁷ https://liheapch.acf.hhs.gov/sites/default/files/webfiles/docs/LHHIST_2018.pdf

⁸ <https://www.eei.org/issuesandpolicy/Documents/5.12%20House%20COVID-19%20LIHEAP%20Letter.pdf>

the Quadrennial Energy Review pointed out that only one in six LIHEAP eligible households received LIHEAP assistance due to the then current (2011) funding⁹ and that currently only one out of five LIHEAP eligible households receive LIHEAP assistance due to funding constraints. Lastly, a typical household receiving LIHEAP assistance has an income of less than \$27,000 – 17% below the federal poverty guideline. I have to agree that Congress should appropriate more funds for LIHEAP.

- b. Some experts are expecting significant consolidations in the energy industry due in large part to the economic downturn caused by COVID-19. Do you consider this situation desirable and why? If undesirable, what can be done to mitigate these consolidations?

RESPONSE: I am familiar with predictions that the oil and gas industry is expected to see consolidation, especially among independents, due to competition for limited growth. And I am aware that as of last year, independent oil and natural gas producers in the United States developed over 90% of U.S. oil and gas wells, accounted for over 80% of U.S. oil production, and according to a 2019 industry report independent producers supported approximately 4.5 million jobs and contributed to almost 3% of U.S. GDP.¹⁰

Unfortunately, the circumstances driving potential consolidation are complex and global and I don't see many opportunities for mitigating them. It is widely recognized that the rapid expansion of domestic oil and gas production particularly from nonconventional resources, was heavily dependent upon debt financing, which has proved to not be a viable financial structure in a volatile market especially related to the global oil crisis and the unprecedented impact of the COVID-19 pandemic. Prices for the oil and gas industry are reaching 30-year lows reflecting an unprecedented demand drop that is not expected to rebound as the previous two price collapses in the last 12 years. I would note, however, that the capabilities of the oil and gas industry can be harnessed to support the transition to a large scale carbon management industry, securing a future for the oil and natural gas industry and for its workers in a low carbon world.

The Honorable Jeff Duncan (R-SC)

1. In March this year, this Subcommittee held a very informative hearing on the state of advanced nuclear technology, and what is needed for this to take root in the United States.

⁹ See p. 2-19.

¹⁰ <https://www.energyindepth.org/report-independent-oil-and-gas-producers-will-continue-to-drive-u-s-energy-markets-through-2025/>

One fact from the hearing was the tremendous employment potential to construct new, small modular reactors. We heard from NuScale how it had contracts with 50 suppliers around 25 states and that each new site for its units would mean more than 1,000 construction jobs per plant and 300 permanent jobs. Given the new siting characteristics of these technologies, the jobs and the related skills to operate these new reactors promises a rebirth of nuclear manufacturing and technological skill in communities that previously would not have access to nuclear technology.

- a. How do we go forward and not foreclose on opportunities to develop this new technology? How do we actually ensure the best way for these opportunities to come to fruition?

RESPONSE: Without question, the U.S. nuclear power industry is critical to U.S. energy security and, in fact, U.S. national security. EFI's first report was [The U.S. Nuclear Energy Enterprise: A Key National Security Enabler](#) (August 2017) which examined the key role played by the U.S. nuclear energy enterprise in meeting three national security imperatives: maintaining U.S. leadership in ensuring nuclear nonproliferation; supporting the U.S. nuclear Navy; and supporting a safe, secure and reliable nuclear weapons stockpile, without nuclear testing. In addition, nuclear power has a meaningful role in climate change risk mitigation and grid operations. The [Nuclear Energy Leadership Act \(NELA\)](#), sponsored by Congresswoman Elaine Luria in the U.S. House of Representatives (H.R. 3306) and Senator Lisa Murkowski in the U.S. Senate (S.903) provides an important and useful framework creating a national strategy for nuclear energy including demonstration of advanced nuclear reactor concepts. The [June 24, 2020 letter](#) to Chairman Jim Inhofe and Ranking Member Jack Reed of the Senate Armed Services Committee highlights the broad and diverse support for NELA and asks for NELA's inclusion in the FY2021 National Defense Authorization Act.

Ultimately, public-private partnership will likely be needed to deploy a first set of small modular and micro nuclear reactors in order to demonstrate the economics of manufacturing in a production line environment.

- b. Related to the first question, a lot has to do with the regulatory infrastructure for new nuclear and its related supply chains. If there's a project that [is implicated by NEPA](#), for example, does it make sense to wait 4.5 years on average to complete the reviews?

RESPONSE: There are a number of regulatory requirements faced by new projects as recognized by [Executive Order 13604: Improving Performance of Federal Permitting and Review of Infrastructure Projects](#). For new nuclear infrastructure, however, I would first focus on the need for a new licensing framework at the Nuclear Regulatory Commission (NRC) that reflects the different characteristics of advanced nuclear relative to current LWR reactor technology. Section 103(b) of the Nuclear Energy Innovation and Modernization

Act (NEIMA) which was enacted on January 14, 2019, requires the NRC to prepare “two reports to Congress regarding (1) expediting and establishing stages in the licensing process for commercial advanced nuclear reactors; and (2) increasing, where appropriate, the use of risk-informed and performance-based evaluation techniques and regulatory guidance in licensing commercial advanced nuclear reactors within the existing regulatory framework. These reports were sent to Congress on July 12, 2019. In addition, consistent with Section 103 of NEIMA, staff has begun efforts to establish a "Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" for optional use by applicants for new commercial advanced nuclear reactor licenses by December 31, 2027. The staff presented its proposed plan for this rulemaking to the Commission for approval in SECY-20-0032 dated April 13, 2020.”¹¹ These new regulations aim to be flexible and practical for application to a variety of advanced reactor technologies.

- c. To follow up-the lengthy and duplicative federal permit process hamstrings the United States. Long overdue reforms are necessary to maintain our competitive edge while preserving our nation’s environmental leadership. What can we do to ensure permit and siting decisions are made timely so we can have the benefits of these technologies for our communities as soon as practicable? Should Congress look at lessons from the recent shutdown to identify more efficiencies in regulatory decisions?

RESPONSE: I believe there is bipartisan consensus on the need to modernize and reform permitting for energy infrastructure, particularly infrastructure that supports interstate movement of clean energy. For example, new long distance high voltage transmission projects can open new opportunities to bring clean renewable energy to additional markets and do so in a manner that better balances the intermittent nature of renewable generation,

As I testified at the Hearing, siting and permitting for new electricity transmission is one of the ten analytical focus areas of the Labor Energy Partnership, a joint effort by the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) and EFI to develop a framework for the 21st century energy system that creates and preserves jobs while addressing the climate crisis.

While I do not support using modernization of permitting as an excuse to reduce or shortcut compliance with environmental regulations, I do note that inefficiencies and redundancies can be an impediment to energy infrastructure development. In *Energy Transmission, Storage, and Distribution Infrastructure*, which was the first installment of the Quadrennial Energy Review in April 2015, Chapter IX: Siting and Permitting of TS&D Infrastructure, discussed at length the issues surrounding siting and permitting, including recognition that:

¹¹ <https://www.nrc.gov/reactors/new-reactors/advanced.html>

The complexity and pace of the Federal permitting and review processes for proposed infrastructure projects has been identified as a key challenge to building U.S. infrastructure for transporting, transmitting, and delivering energy. The Obama Administration has taken steps within and across Federal agencies to modernize the Federal permitting and review process for major infrastructure projects to reduce uncertainty for project applicants, to reduce the aggregate time it takes to conduct reviews and make permitting decisions by half, and to produce measurably better environmental and community outcomes.¹²

¹² See p. 9-2.