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REVIVING OUR ECONOMY: COVID-19'S
IMPACT ON THE ENERGY SECTOR

TUESDAY, JUNE 16, 2020

House of Representatives,

Subcommittee on Energy,

Committee on Energy and Commerce,

Washington, D.C.

The subcommittee met, pursuant to call, at 12:02 p.m., via Webex, Hon. Bobby L. Rush [chairman of the committee] presiding.

Present: Representatives Rush, Sarbanes, McNerney, Tonko, Loebsack, Butterfield, Welch, Schrader, Kennedy, Veasey, Kuster, Kelly, Barragan, McEachin, O'Halleran, Blunt Rochester, Pallone (ex officio), Upton, Latta, Rodgers, Olson, McKinley, Kinzinger, Griffith, Johnson, Bucshon, Flores, Hudson, Walberg, and Duncan.

Also Present: Representative Burgess.

Staff Present: Jeff Carroll, Staff Director; Adam Fischer, Policy Analyst; Catherine Giljohann, FERC Detailee; Waverly Gordon, Deputy Chief Counsel; Tiffany Guarascio, Deputy Staff Director; Rick Kessler, Senior Advisor and Staff Director, Energy and

Environment; Brendan Larkin, Policy Coordinator; Elysa Montfort, Press Secretary; Joe Orlando, Staff Assistant; Kaitlyn Peel, Digital Director; Tim Robinson, Chief Counsel; Medha Surampudy, Professional Staff Member; Tuley Wright, Energy and Environment Policy Advisor; Mike Bloomquist Minority Staff Director; Jordan Davis, Minority Senior Advisor; Theresa Gambo, Minority Human Resources Office Administrator; Tiffany Haverly, Minority Communications Director; Peter Kielty Minority General Counsel; Ryan Long, Minority Deputy Staff Director; Mary Martin, Minority Chief Counsel, Energy & Environment & Climate Change; Brandon Mooney, Minority Deputy Chief Counsel, Energy; Brannon Rains, Minority Policy Analyst; Peter Spencer, Minority Senior Professional Staff Member, Environment & Climate Change; and Callie Strock, Minority Press Secretary.

Mr. Rush. So good to meet with everybody this morning. Everything is all well in Chicago. I hope that all is well at your home. And we are meeting now, so we will bring the subcommittee hearing to order. I have my gavel here, as you can see. So the Subcommittee on Energy will now come to order.

Today, the subcommittee is holding a hearing entitled, "Reviving our Economy: COVID-19's Impact on the Energy Sector, being COVID-19 public health emergency. Today's hearing is being held, as you and I can see, and you are expressing, it is being held remotely. And all members and witnesses will be participating via video conferencing. As far as our hearing microphone, it will be set on the mute for purposes of eliminating any emergent background noise. Members and witnesses, you will need to unmute your phone each time you wish to speak.

The documents for the record can be sent to Adam Fischer in the email address that we provided to staff. All documents will be entered into the record at the conclusion of this hearing.

And we will begin. The chair now recognizes himself for 5 minutes for the purposes of an opening statement. And again, I want to welcome everybody to the hearing.

Today, the Subcommittee on Energy convenes for a hearing as a continuation of the committee's work to address the impact of COVID-19 on our Nation, our Nation's economy, and most importantly, our Nation's communities. Historically, tragedies encountered by this great Nation of ours have resulted in a deeper understanding of its essential needs. The novel Coronavirus pandemic is no exception to this rule.

As a demonstration, this pandemic has further demonstrated the need to eliminate the injustices suffered by minority, low income, and other vulnerable

communities. That is why I am pleased to join Chairman Tonko for a recent hearing on the unjust impact of pollution and COVID-19 on these very same communities.

Today, it is the Subcommittee on Energy's intent to examine the impact of this pandemic on our Nation's most essential sectors. The effect of COVID-19 on the energy sector is broad and sweeping. At present, the sector has lost a total of 1.3 million jobs, and stay-at-home orders have stunted electricity demand and pending projects.

The clean energy industry, which employs more people than any other industry within the energy sector, continues to stagger, while enduring the sharpness of the pandemic's blows.

At its recent height, the clean energy sector employed over 3.4 million Americans, growing 70 percent faster than the overall economy. According to recent data, this industry, which includes energy efficiency, energy storage, renewable energy, alternative vehicles, and more, have lost over 600,000 jobs since March. Further, without intervention, forecasts suggests that one out of every four clean energy workers may soon lose their jobs as a result of COVID-19. To put this in perspective, that is nearly 1 million hard-working Americans who will be out of work.

As chairman of the Subcommittee on Energy, it is my firm belief that sustaining and strengthening the clean energy industry is essential to the recovery of our economy and our community. The foundation for that belief lies within the successful further investment of $90 billion in this very industry as in the Great Recession.

That is why I am proud to join Chairman Pallone and my colleagues in ongoing efforts to bring clean energy infrastructure legislation to the floor. However, this does not mean that the clean energy industry and the energy sector as a whole should go on without change.

According to U.S. Energy and Employment Report, diverse groups are frequently

underrepresented in the energy workforce. For example, African Americans account for merely 8 percent of energy efficiency working people. Initially, the energy information administration reports one-third of U.S. households, most of whom are minority households, several can afford paying their energy bills, and have little access to energy efficiency and clean energy technology.

We know that there is more work that clearly remains to be done. To be forewarned is to be forearmed. Therefore, if knowing is truly half the battle, then immediate action is now required. I look forward to today's hearing.

[The prepared statement of Mr. Rush follows:]

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Mr. Rush. And with that, I yield to my good friend and colleague from the neighboring State of -- great State of Michigan, the gentleman from Michigan, Ranking Member Upton for 5 minutes for the purposes of an opening statement.

Chairman Upton.

Mr. Upton. I am there.

Mr. Rush. You are there, here, and everywhere.

Mr. Upton. I am in the third floor of the Rayburn Building. You know, the last 3 months have been for all Americans as COVID has taken its toll. It has over 2 million cases and, of course, we have nearly 120,000 lives lost across the country. With the Nation in place, we have been stuck at home, manufacturing plants have been shuttered, and as a result, massive disruptions have rippled throughout every sector of our economy. And for many, goods and services plummeted just as quickly. And markets wield from the shock.

So the economy has not been spared. And with fewer vehicles on the roads and planes in the air, consumption of [inaudible] domestic energy producers, these same American companies were hit with a double whammy. As Russia and Saudi Arabia battled each other in a price war over the necessary production cuts. And unbelievably, oil prices actually went negative for a short period.

The steep decline in domestic energy production has had real negative consequences, not just for our economy which relies on the jobs and investment but certainly for our national security. Thanks to the leadership from the U.S., we were able to put -- agree to historic production cuts. And the worst now, hopefully, is behind us as the economy begins to reopen.

Unfortunately, significant damage has been done to the domestic industry,

especially in small- and medium-sized companies that support many of our local and State -- not only will this threaten our position as the world's leading oil and gas producer, but it is also going to make us more dependent [inaudible] --

Mr. Olson. I can't hear you, Chairman.

Congressman Rush, you are on mute.

Mr. Upton. [Inaudible] we did that inside America.

Okay. Where was I? Okay. Well, we have had real [inaudible] counts in all 50 States. Regulators, utilities have suspended disconnections for nonpayment. While the CARES Act included a big increase in LIHEAP, expands unemployment payments and programs to help individuals and businesses pay their bills. States and utilities have programs that go even further with their mode [inaudible] -- all of this plays a significant burden to our local electric utilities.

Undoubtedly, the span on our utilities will have long lasting impacts on business plans and investments which are a good set of facts as we begin to reopen our economy. We need to stay focused on ways to maximize growth and economic expansion. We need to get Americans back to work, our economy back to historic levels of prosperity. And the next couple of months are going to be critical to stimulate our economy to dig out of that hole.

In particular, let's focus on projects that create jobs right away, and restore U.S. energy sector leadership here and abroad. So we ought to be leveraging the money the government is spending with the private sector looking for the best return on investments for taxpayers.

If there are regulatory obstacles that ought to be removed, we need to hear about them. We need to build on the CARES Act program and make changes. We need to hear about that, too. But as we look to the future, I also want to focus on making our

energy sector more resilient to the shock so we can respond to all hazards and future disruptions, whether caused by a pandemic, qualifiers, severe weather, cyber security threats, or national security emergencies.

With that, I look forward to our witnesses. And I yield back to my good friend and chairman, Bobby Rush from the good State of Illinois. Please be safe over there.

Mr. Rush. Well, thank you ranking member. The chair now recognizes the chairman of the full committee, Chairman Pallone for 5 minutes for the purposes of an opening statement.

The Chairman. Thank you, Chairman Rush. And this is a very important hearing in our committee's effort to address the COVID pandemic by assessing its impact on the energy sector. And we have a great group of witnesses, including former Energy Secretary Moniz, who I was very pleased to have back with us today.

There is no question that COVID-19 has been devastating, killing more than one 115,000 Americans, leading towards more than 44 million Americans losing their jobs over the last 3 months. But the pandemic has affected all energy industries. But I wanted to focus on the renewable energy and energy efficiency industries that I think have been particularly hard hit. Social distancing measures, supply chain disruptions, and stalled financing have placed significant burden on energy efficiency, solar and wind projects, and this is all erasing years of progress in clean energy job creation in efforts to meet our carbon pollution reduction goals.

Prior to the pandemic, the clean energy industry employed 3.4 million Americans, nearly three times as many as fossil fuel industry. But the pandemic has wiped over 600,000 of these jobs. And if these trends continue, some estimates show that 850,000 clean energy workers could file for unemployment by the end of this month.

In my home State of New Jersey, we lost over 8,000 clean energy jobs in April

alone, and nearly -- that is basically a 15 percent decline. And of those losses, two-thirds were in energy efficiency, which is uniquely impacted by social distancing measures. Municipally owned utilities and rural cooperatives have also been adversely affected by this pandemic. Because they are not for profit entities, customers could ultimately be forced to pay much higher rates at a time when many are out of work.

The oil and gas industry is also hurting, and we should be helping those workers along with others in the energy sector. But clean energy workers are crucial to helping our transition to a more sustainable economy. Climate change is an existential crisis.

Congress has to invest in clean energy infrastructure. That will stimulate the economy and put Americans back to work and create new jobs in this critical industry for our Nation's future.

Now, our committee has been working on infrastructure policy, as everyone knows, since the start of this Congress. Last year, we introduced the LIFT America Act. And then in January, we unveiled the Moving Forward infrastructure proposal that includes more than $34 billion in clean energy investments. And these investments will stimulate the economy, keep businesses competitive, and create clean energy jobs during the severe economic downturn. At the same time, these investments will lower consumers' energy bills and reduce carbon pollution.

The majority leader announced recently that the House will vote on an infrastructure bill by the end of this month. And both the LIFT America Act and the Moving Forward framework provide a foundation of the energy provisions that will be included in that overall package. But it is also important to point out that the lack of certainty regarding renewable energy tax credits has hurt the industry. I know that is not in our committee, it is in Ways and Means, but I have to mention it, because while recent action by the Department of Treasury to delay certain in-service data has helped,

the clean energy industry needs certainty in its system.

And I believe that it is critical that any recovery package include an extension of these expiring tax credits. And I have been hearing that from industry representatives.

If we create new jobs in an industry that was steadily growing before the pandemic, we can maintain momentum towards a cleaner future. And it is also critical that we help stimulate the energy sector, that we are mindful of the need to make it more diverse.

Mr. Rush, Chairman Rush has made that a priority on this subcommittee for many years. And the response of the coronavirus pandemic has highlighted significant racial disparities across our country. And the recent tragic murder of George Floyd has catalyzed a national movement that is focusing attention on systematic racism.

So it is long past time for the energy sector to increase diversity in the workforce. And I hope we can begin to see real progress soon.

Chairman, I wanted to mention that I understand at some point today, there is going to be an announcement in our State about a major new development with regard to wind power. I am sort of are looking forward to that, but it hasn't announced yet, so I can't really talk about it. But you know, we feel -- and I have been a very big supporter of wind power in New Jersey. My district is along the shore. We have a lot of offshore wind. So this also plays into my district and my State in a major way.

So thank you again, Chairman Rush, with all you do on this issue. And this is going to be a really interesting hearing. Thank you again. I yield back.

Mr. Rush. The chair now recognizes the gentleman from Ohio, Mr. Latta, who is going to use the time for the ranking Member, Mr. Walden.

Mr. Latta, you are recognized for 5 minutes for the purposes of an opening statement.

Mr. Latta. Well, thank you, Mr. Chairman. It is great to be back in our hearing room today. We are holding this important hearing on how the energy sector has been impacted by the coronavirus health crisis. We would also like to thank our witnesses for agreeing to participate today.

The outbreak of the COVID-19 pandemic has had a devastating impact on our Nation's entire economy, from energy, to construction, to manufacturing, to retail to name a few. We saw businesses go dark, energy demand decline, and everyday interactions, transactions to digital and remote platforms, transition through digital and remote platforms.

Furthermore, this health crisis has also exposed a supply chain vulnerability. Whether it is medical supplies or energy products and materials, we have had to learn the hard way that more attention needs to be focused on maintaining a strong supply chain from going up domestic industries. This is good for national security and good for American jobs.

I have also seen firsthand how Americans innovate to adapt to the new challenges raised by the outbreak. For example, during the visit to the campus, to Bowling Green State University, just a few weeks ago, I saw how unmanned delivery vehicles, robots, are being used to order food and beverages in the community. It is this kind of remarkable innovation that will help our country regain its footing in a global economy.

Finally, we must acknowledge the devastating loss of life this health crisis has inflicted on our country, and around the world. We have lost too many Americans to this virus. And tens of thousands of others have experienced economic hardship due to the shutdowns, including job losses in the energy sector. We need to be doing all we can to help our neighbors get back on their feet and get the economy moving again.

Again, thanks for our witnesses for being here today, and I look forward to your

testimony.

And now I yield the reminder of my time to my good friend, the gentlelady from Washington, Representative McMorris Rodgers.

Mrs. Rodgers. I thank the gentleman for yielding, Mr. Chairman, and to the panel for being with us today. Clearly, like many, the energy sector has been significantly hurt by the economic crisis brought on by the coronavirus pandemic.

For our economy to boom again, and for America to win the future, we must focus on sustainable, efficient, and pragmatic policy solutions that will not only enable our energy sector to survive this immediate crisis, but also thrive in the next era of American leadership. This pandemic has underscored that the world should not be led by the Chinese Communist Party. We have seen it time and time again that the CCP will do whatever it takes to get ahead, lie, steal, cheat their way to global power with no regard for human rights, IP, or the environment. We cannot and should not try to beat them at their own game by picking winners and losers, by subsidizing companies or technologies. Instead, we must foster American ingenuity by unleashing innovation and lifting the regulatory and tax burden.

Our ability for people to take risks, innovate, and make an idea of success has made America the global economic leader for the past century. And this same strategy will help us solve the global climate crisis and ensure abundant, efficient, and reliant energy sources meet the needs of future generation.

The strongest way to make significant process on reducing emissions globally without further harming our own domestic economic production is through tech innovation in clean energy and storage that are efficient and cost-effective enough to export globally to developing nations. Whether it is our ability to extend hydropower capability, explore nuclear technology, like this new advanced reactor to develop more

efficient methods for energy storage, we shouldn't let burdensome, outdated regulations stifle innovation. Doing so will empower Chinese leadership and harm global efforts to reducing emissions for a cleaner environment.

And thank you, and I yield back.

Mr. Rush. The gentlelady yields back.

It is now my privilege and pleasure to welcome our witnesses for today's hearing. The Honorable Ernest J. Moniz, President and CEO of Energy Futures Initiative; Mr. Gregory Wetstone, President and CEO of American Council on Renewable Energy; and Mr. Rich Powell, who serves as the Executive Director of ClearPath. I want to thank each and every one of you for joining us today. And we look forward to your testimony.

Secretary Moniz, welcome back to this subcommittee. It is my distinguished pleasure to welcome you to testify once again to this subcommittee, and we certainly want to thank you and congratulate you on your many years of service. And Secretary Moniz, you are recognized for 5 minutes for purposes of opening statement. Please unmute yourself.

STATEMENTS OF HON. ERNEST J. MONIZ, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ENERGY FUTURES INITIATIVE, FORMER SECRETARY, U.S. DEPARTMENT OF ENERGY; GREGORY WETSTONE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, AMERICAN COUNCIL ON RENEWABLE ENERGY; AND RICH POWELL, EXECUTIVE DIRECTOR, CLEARPATH

STATEMENT OF ERNEST J. MONIZ

Mr. Moniz. Thank you, Chairman Pallone and Rush, and Ranking Member Upton, and members of the committee. Thank you for inviting me here today to discuss the opportunities and challenges in the energy sector for reviving our economy during and after the coronavirus pandemic. I must add that COVID-19 is one of two human tragedies at the forefront of our Nation's consciousness. The other, of course, being the incomplete struggle for equal rights and racial justice.

EFI fully endorses the emphasis on the Green New Deal resolution on addressing climate change and social justice together. We then put together a framework called the Green Real Deal that translates this principle into practice, and guides our portfolio of activities. At the heart of the Green Real Deal is an emphasis on an all-of-the-above approach to reducing greenhouse gas emissions as rapid action on climate change must be born of practicality, not ideology or wishful thinking. A just and equitable low carbon future must accommodate regional differences, and coalition building is essential to success of the clean energy transition.

In this spirit, I am especially pleased with the AFL-CIO and EFI to form the Labor Energy Partnership, slide No. 2, a joint effort to develop a framework of the 21st century energy system that creates and preserves jobs while addressing the climate crisis. Our

focus will be specifically in development and commercialization of advanced energy technologies and associated job creation.

Before looking at COVID impacts, it is important to look back at energy jobs pre-COVID. EFI has partnered with NASEO, and with the BW Research Partnership, to produce the 2020 U.S. Energy Employment Report covering 2019, at slide 3. This is the fifth annual installment. It fuels power generation, transmission distribution and storage, energy efficiency in motor vehicle sectors, employ 8.3 million Americans. Over the 5 years, 2015 to 2019, these sectors generated 915,000 new jobs, outperforming overall U.S. employment growth 2 to 1, 12.4 to 6 percent. Energy efficiency, which employed 2.4 million Americans, in 2019 alone, generated over 400,000 new jobs.

Diversity is a challenge. According to BW research, women who represent 25 percent of the energy workforce, versus 47 percent in the overall U.S. workforce; African Americans, 9 percent versus 12 percent; Hispanics, Latinos, 16 percent versus 18 percent. On a positive note, veterans make up 8 to 10 percent of the energy workforce versus 6 percent overall. There is obviously much work to do. And I believe greater outreach to women and minorities who are just preparing to enter the workforce could be very important.

Needless to say, COVID-19 has impacted the energy sector hard. Direct impacts on energy arise mostly from the social changes needed to contain the COVID-19 virus and from the associated demand reductions. The energy sector lost about 1.3 million jobs as of a month ago, considerably more than 5 percent of gains, and almost half of those were in clean energy. Table 2 in submitted testimony, slide 4, shows the pattern of energy jobs in States, as well as overall unemployment filings. While California or Texas top the rankings in absolute numbers across the board, the rankings as a percentage of workforce show the national scope of the challenge. Georgia and Kentucky have the highest

normalized unemployment filings. While Wyoming, Vermont, Kansas, Nevada, and North Dakota have the highest fraction of jobs in the five energy categories shown.

We will need millions of new jobs in order to climb out of the COVID-19-induced economic hole, and most likely, additional extraordinary actions by the Federal Government.

Given the demonstrated track record of the energy sector as having considerable leverage with job creation, major investments now in the clean energy transition, and any further stimulus actions and in appropriations, should have a high priority.

We have proposed, under the umbrella of energy jobs coalition, 22 specific clean energy measures under six priorities, slide 5. Rather than discuss each of these priorities, we outline in broad terms how we see the energy transition evolving. First, we know that continuing energy efficiency gains and buildings, transportation, and industry make both environmental economic sense.

Second, it is clear that the electricity sector is leading, and will continue to lead the low carbon transition. To achieve carbon net zero by mid-century across the economy, the electricity sector will need to reach that point earlier, by 2040, ideally, maybe 2035. Because success is some of the harder to decarbonize sectors, like transportation, buildings, and industry depend on expanded electrification. Natural gas will continue to play an important role throughout the transition, including as enabler for rapid expansion of wind and solar deployment.

I appreciate that none of this will be easy. We will certainly need to build a coalition to support an equitable coordinated approach. To get there will require an enormous all-of-the-above push starting now. Expanded renewable deployment needs to be accompanied by advances in, and then deployment and scaling of clean energy, energy industries of the future for all sectors. Electricity storage, at all-time scales,

including weekly, monthly, and seasonal; offshore wind; CCS and its associated infrastructure; advanced nuclear, including small modular reactors and micro reactors, as well as novel fusion technology; hydrogen; new infrastructures, including CO2 pipelines; hydrogen storage and transportation and more; secure domestic supply chains, including environmentally sound mining of critical minerals and metals; advanced manufacturing; big data analytics and other platform technologies applied to energy; and the carbon dioxide removal from the atmosphere and from the ocean.

With breakthroughs, other low carbon fuel technologies, such as advanced cellulosic biofuels and renewable natural gas can also play critical roles.

The Federal innovation budget for research, development, and demonstration will need to double or triple over this decade. We need a supercharged decade of across-the-board clean energy innovation with no time to spare.

Again, thank you for the opportunity to appear before you today, to discuss these important and timely issues. I look forward to your comments and questions.

[The prepared statement of Mr. Moniz follows:]

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Mr. Rush. It is my pleasure to recognize Mr. Wetstone for 5 minutes for the purposes of an opening statement.

Mr. Wetstone, please unmute yourself, and you are recognized for 5 minutes.

STATEMENT OF GREGORY WETSTONE

Mr. Wetstone. Chairman Rush, Ranking Member Upton, Chairman Pallone, and members of the subcommittee, thank you for the opportunity to testify this afternoon. While my comments will focus on the impact of COVID-19 on the energy sector, I do want to recognize Chairman Rush's comments on diversity and commit myself and ACORE to doing what we can to help address that issue.

My name is Greg Wetstone. I am CEO of the American Council on Renewable Energy, a national nonprofit organization that works to accelerate the transition to a renewable energy economy.

I am honored to join Secretary Moniz and Rich Powell in speaking to such an important topic for the renewable energy industry. And I am especially grateful for the chance to appear before this committee, as I was privileged to serve on the Energy and Commerce staff as counsel for a dozen years. It was some time ago, but long-serving committee members may recall that when I started with the committee, I had a full head of hair, less so when I left.

In my 5 minutes today, I will speak to the economic importance of the renewable energy sector, describe how we have been impacted by the pandemic, and suggest ways Congress can help.

To start, let me emphasize that renewable energy is now a hugely important

driver for American economic growth, with more than 430 billion in private sector investment since 2009, including over $56 billion in American investment last year alone. Today, the sector employs nearly 550,000 Americans from every State in the country. This growth has been driven by three important factors: steep cost declines, increasing demand from American consumers and businesses, and supportive State and Federal policy.

There was every reason to expect this trend would continue, and even accelerate in 2020, but COVID-19 has been a game changer. Shelter-in-place requirements, supply chain disruptions, delays in permitting, and a constrained tax equity market have combined to exact the sobering toll. An analysis of Federal unemployment data by BW Research released yesterday by ACORE, E2, and E4TheFuture found that clean energy job losses continued in May, although at a slower rate than April. 27,000 additional clean energy workers filed unemployment claims in May, including 4,300 renewable energy workers. These hard data findings are consistent with estimates from the American Wind Energy Association and the Solar Energy Industries Association. The analysis of unemployment data shows that the clean energy sector, and this includes energy efficiency and clean transportation, as well as renewable power, lost more than 620,000 jobs over the months of March, April, and May, which translate to a clean energy unemployment rate of nearly 18 percent.

Nearly 100,000 of those unemployed are renewable energy workers, meaning in our renewable sector, the unemployment rate is even higher, just shy of 20 percent. We ask Congress to help by providing commonsense emergency relief that allows the renewable sector to continue to access the policy tools Congress has already provided. Treasury Secretary Mnuchin's recent decision to provide an extra year of safe harbor continuity for many renewable projects is a very helpful start. We asked Congress to

build on the new Treasury guidance by one, providing temporary refundability for renewable tax credits facing an increasingly constrained tax equity market; and two, delaying the scheduled phase-down of the production and investment tax credits in recognition of COVID-19's widespread impact on renewable development this year.

Beyond the need for emergency relief, there are lessons to be learned from Congress' last policy response during the Great Recession in 2009. The policy commitments made then lay the groundwork for the tremendous progress we have seen in the decades since, which includes hundreds of billions of dollars in American renewable energy investment.

Part of the appendix to my testimony, I have included more detailed descriptions and specific policy options we would urge the subcommittee and the Congress to consider when it turns to longer-term stimulus legislation. With the right policy support, renewable energy can help drive recovery from the current downturn, as we did in 2009, and lead the way to an effective climate solution over the long haul.

Thank you for the opportunity to testify today. I look forward to your questions.

[The prepared statement of Mr. Wetstone follows:]

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Mr. Rush. All right. Thank you, Mr. Wetstone.

And I just want to comment, the scenery background is absolutely gorgeous and so appropriate. Thank you so very much.

The chair now recognizes Mr. Powell for 5 minutes for the purposes of an opening statement.

STATEMENT OF RICH POWELL

Mr. Powell. Good afternoon, Chairman Rush and Pallone, Ranking Member Upton, and members of the committee. I am with ClearPath. We advance conservative policy that accelerate clean energy innovation across all zero emission resources. An important note, we receive no industry funding. ClearPath grieves with the families who have lost loved ones to COVID and appreciate the sacrifice of frontline workers tirelessly combating the pandemic, and the decisive leadership of this committee.

As you consider economic recovery measures to the energy sector, your solution should be ambitious, but also pragmatic. Too often, energy policies oversimplify. Renewables versus fossils, economy versus environment, 100 percent reductions globally versus inaction here at home.

These are false choices. The reality is this: Solutions for recovery in energy must follow a technology-inclusive agenda. All energy workers deserve a fair shot. Policy should make the global clean energy transition faster and cheaper. Clean investments will provide both immediate aid and long-term economic benefit.

Today, I plan to cover the impacts of the pandemic, the likely evolution, and

possible policy responses. First, the impacts of the pandemic. Globally, carbon dioxide emissions fell a massive 6 percent due to the virus. That is nearly half of annual U.S. emissions. But hearing that news is falling into the climate trap. It resulted from a global economic crash. Less energy used is not the key to sustainable clean air.

According to the International Energy Agency, a perfectly healthy global economy can simultaneously use more energy, and emit little CO2. While energy use is fallen due to closures and quarantines, reliable electricity has never been more essential. Sheltering at home needs more Netflix streaming and AC running. Our hospitals need uninterrupted power for ventilators. Factories aren't making PPE in the dark or by hand. Affordable reliable power is right up there with hand soap as essential for fighting COVID.

So what should we expect ahead? Imagine if our hospitals were attempting to rely on 100 percent variable energy with slim options when the sun isn't shining, when the wind isn't blowing. It should make us all appreciate the value of uninterrupted power. Those who have long called for degrowth, or limited capitalism, as essential to solving the climate challenge, have been disproven. Clearly, the solution to this global challenge is not less economic activity, it is even more growth, more development, more prosperity, globally, in ways that emit no CO2.

Meanwhile, as we debate how much clean energy support to enact during our economy, China authorized 8 gigawatts of new build coal without carbon capture in March. China's climate problem is our climate problem. Just like their virus problem became our virus problem. This is precisely why we don't like the false choice that if China and the rest of the developing world aren't doing anything to slow their CO2 emissions, then the U.S. shouldn't either.

The rest of the world is purchasing high-emitting Chinese technology like their coal plants in Pakistan, because they can't yet afford the green premium required for most

clean energy. Further, China's stronghold on many international markets for energy increases their soft power. China's government clearly sees competitive advantage in their early reemergence from COVID. We must move quickly.

Lastly, our recent arrest over tragic racial and economic disparity reminds us that many communities of color, some in generational poverty, would struggle to pay a green premium as well. Yet, they would benefit enormously for better options for affordable clean energy, for projects that support communities sustainably for generations.

There are policy solutions. Scaling up a new technology follows the S curve. Congress can help restart the U.S. economy and reinvigorate American exports, while reducing CO2 in the coming decades with four key steps. And these are outlined in a chart embedded in our testimony.

First, we must innovate. A major program of technology demonstrations would put tens of thousand of American innovators and energy workers back to work with nearly immediate effect.

Second, unnecessary regulatory hurdles needlessly slow down projects. We can only put energy workers of all stripes back on the job as fast as we can permit the project, which performs NEPA and New Source Review, as Representative Griffith has recommended.

Third, we must deploy technology to prove it at scale and bring down costs. Smart incentives will help innovators learn by doing, while putting people back to work, delivering the technologies in the 2020s that utilities will need in the 2030s and 2040s, to reach their net zero goals by 2050.

Fourth, we must export the proven technologies to new clean energy markets. American energy manufacturing jobs will reappear when we have products and export support ready for rapidly growing countries, like Nigeria.

In conclusion, when you are promoting economic recovery, solutions must work with market, not against them. Falling into the false-choices trap means we missed the politically and technically realistic debate we need. Done right, we can advance stronger policies that commercialize the cutting-edge, clean technologies needed to create new markets, new jobs, and lower emissions. And when the next pandemic comes, it will face a healthier, stronger world ready to confront it.

Thank you again for this opportunity, and I look forward to the discussion.

[The prepared statement of Mr. Powell follows:]

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Mr. Rush. We have now concluded opening statements, and we will now move to members questioning.

Each member will have 5 minutes to ask questions of our witnesses. And I will start by recognizing myself for 5 minutes.

And, Mr. Secretary, energy investments have played a significant role in Federal efforts to address economic downturns. And this was demonstrated during the Great Recession, and also during the Great Depression. My question is, how do you perceive energy investment and energy jobs as solutions to the cumulative impacts from the climate and the coronavirus crises?

Mr. Moniz. Thank you, Chairman Rush, for the question. First of all, I can just reinforce your statement about the actions taken during the Depression and the Great Recession. In both cases, of course, as you said, a major energy focus. But, also, I would like to emphasize the Depression, of course, with rural electrification and reaching out to all homes in America.

So fast forwarding to today, I think we need -- and Chairman Pallone's LIFT bill, of course, has, in parallel, universal broadband access, together with energy infrastructure and clean energy infrastructure development.

As I noted in my testimony, there is a track record. The energy sector, in the early stages of energy transition, outpaced the economy 2 to 1 in job creation. So this is our chance to pull those threads together and leverage great job creation, together with moving in the direction that we all agree we are going in, which is a lower carbon economy.

Mr. Rush. Mr. Secretary, recent reports suggests that clean energy policy benefits and job opportunities are not disseminated equally. This is alarming as

minorities are both underrepresented in the energy sector and several from pervasive economic disparities throughout our overall economy. That is why I introduced my Blue Collar to Green Collar Jobs Development Act.

In your written statement, Mr. Secretary, you know that a strong economy and clean energy transition and social justice are inextricably linked. In your opinion, how do we ensure the equal distribution of energy-related benefits and opportunity?

Mr. Moniz. Well, first of all, as I did write and just stated it in a different way, if we do not address our social equity needs. And, of course, unfortunately, many of those are on display in these last weeks in parallel with the COVID virus. But if we do not address that, we will just have headwinds in trying to -- in seeking the energy transition. So we need to, I think, not only work, you might say, top down in terms of policy, but we also need to work bottom up from the community level and the worker level to see that it is not just a question of stranded assets that a utility can recover, but it is stranded workers. We can't have that.

And one example I will give of how good planning, I think, can really accomplish a smooth transition for our workers and communities is, look, take the extreme stress that obviously the oil sector is under, and they will continue to be seeing stresses from the secular change in the carbon contents of the economy.

But I believe firmly, all of the above, if we are, right now, developing strongly a carbon capture and sequestration industry in the United States, the skill set is very much the same as those in the oil industry. A lot of the locations are the same.

In other words, we have the opportunity to take care of our workers in our communities. We need to do that across the board for all parts of our energy sector.

And, finally, I will just say, and this goes back to a discussion that we held, Mr. Chairman, in a committee hearing a few years back, that we need to really focus on

women and on minorities in clean energy. I gave the statistics. We are lagging behind, as we are in so many other parts of our society. We can do this with a big push, and everybody should be behind this. It will give tailwinds to where we want to go and really serve our communities, both urban and rural, quite well.

Mr. Rush. Well, thank you, Mr. Chairman. The chair yields back.

The chair now recognizes Mr. Upton, the subcommittee ranking member, for 5 minutes for the purposes of an opening statement.

Mr. Upton, please unmute yourself.

Mr. Upton. I will ask my colleagues, if I get muted again, to raise your hands so I can see you.

Mr. Moniz, it is great to see you again. And, obviously, we are going to the same barber. So I look forward to seeing you in person in the future as well.

But let me say just a couple of things. With stay-at-home orders in place across the country, COVID pandemic really does underscore the need for affordable and reliable electricity. One of my Michigan utilities consumers has a very good track record when it comes to preparing for emergencies, but it has been so challenging to plan for safe operations during the pandemic. On top of all the other hazards like severe weather, cyber, things you have to be ready for, and by all accounts every one of your electric companies have performed exceptionally well during the pandemic.

So Secretary Moniz, based on your experience as a Secretary of Energy, what are some of the biggest challenges to maintain that good reliability during this pandemic, which, for all of us here, we have never seen anything like it before?

Mr. Moniz. Well, I think your reference, Mr. Upton, to keeping the lights on all the time tells us that why we, of course, have enormous respect for our medical workers at this time and other essential workers, we maybe should remember that electricity is

really, you might call it, the lifeline infrastructure for everything that we do. There is no day off for those workers.

And so, I think that they have been doing a fantastic job in terms of maintaining good practices like the social distancing, and, yet, handling all of the emergencies that arise. For example, in the South, the spate of violent storms that occurred about a few weeks ago.

So, I think not going forward, utilities also have a challenge -- and I know, frankly, in parts of Michigan, Detroit, for example, there are challenges with concern over those who have lost their jobs, not being able to pay their bills. The utilities, I think, are taking on the responsibility of making sure no one is cut off. But then, there are going to be liquidity issues that they are concerned about in going forward.

So I think in the Congress, there also has to be kind of a comprehensive look at how we maintain service to all of those unemployed workers, ways in which the utilities can continue to serve them, and stay whole in terms of liquidity. Make no mistake about it, this is the key infrastructure on which other key infrastructures depend.

Mr. Upton. That is one of the reasons why the additional funds for lighting were so important for the States and utilities to use to make sure that it went down to the consumer level.

Mr. Powell, you raised the issue of electric liability in your testimony. And, of course, we all want cleaner energy. But what are some of the factors that we have to consider when looking at the electricity from affordability to reliability to the environmental impacts that we confront.

Mr. Powell. First, thank you so much, Ranking Member Upton, for your leadership on these issues, and continuing to find ways to affordably drive clean energy transition. We hope to balance all of these issues in priorities. In a crisis like this, or

even during a normal economic activity, we need to have a steady, reliable on-demand supply of electricity to power economies. That is a luxury here in the United States that much of the developing world does not have. And ask someone who is attempting to run a factory in Bangladesh, what happens if the lights are continuously turning on and off in a setting like that, we need that reliable electricity in order to supply everything else. As Secretary Moniz said, it is the back of our backbone. It is the core infrastructure for everything else.

And that is why I have been so impressed by elements of our electric industry going through this crisis. If you look at the nuclear industry, for example, they had their spring refueling cycle where 30 nuclear reactors had to be refueled, which is something that they don't have to do all that often, only once every year and a half or so, but they are doing it in a coordinated way across the industry.

My understanding in talking with folks from the industry is that 29 of those 30 reactors were successfully refueled. That is an incredibly exacting and careful process which requires thousands of workers to come into each of the plants, extremely high-skilled labor. And they were able to do that and get them back up and running. These are the most reliable power-generating units in our country. A lot of them generate more than 97 percent. So it is finding assets like that that are extremely reliable and can back up our economy.

Mr. Moniz. Could I add one footnote?

Mr. Upton. Sure.

Mr. Moniz. Sir, thank you. As Mr. Powell mentioned in developing countries, the COVID -- the pandemics, as were said earlier, really have no solution until there is a solution everywhere.

Now, if we think of in Africa, big parts of Africa, without reliable electricity, how

can they support the health system that will defeat the pandemic? So we would need to think about electricity everywhere in the world as well, for our own benefits.

Mr. Upton. Thank you. With that, my time has expired.

Mr. Rush. The gentleman's time has expired.

Now the chair will recognize Mr. Pallone, the full committee chairman, for 5 minutes for purposes an opening statement.

Mr. Pallone, please unmute yourself.

The Chairman. Thank you, Chairman Rush. I know that Fred Upton mentioned haircuts, and I want you to know that in New Jersey, the barbershops reopen next Monday, and I can't wait.

I wanted to drill down on the clean energy sector, and basically divide my 5 minutes in half. So I was going to ask Secretary Moniz to talk about investments in clean energy and how crucial they are to economic recovery in moving forward. And then I was going to ask Mr. Wetstone about the reduction tax credits and the investment tax credits in the same vein. Of course, the idea is that whether these industries are going to survive and prosper without Federal help.

So my question of both of you -- so Secretary Moniz, my question is, how important is Federal help in terms of investment in clean energy infrastructure, how crucial is that to sort of get out of this rut and move forward?

Mr. Moniz. Well, thank you, Mr. Chairman. I will not touch your question about barbershop reopening. But with regard to support for, especially for renewables, clearly very important, it was alluded to by, I think, Mr. Powell. Let me just reinforce that if you took, for example, the 2009 Great Recession and the ARRA program, it had many, many stimuli for clean energy. For example, it allowed, in the end, the Department of Energy loan program to support the first five utility scale solar farms more

than 100 megawatts each. We now have 80 or so -- Greg would know better -- but a huge number with private funding. That is the kind of thing we need to do.

And right now, in, for example, wind, we need to build, really build, invent really, an offshore wind industry for the United States, an offshore wind industry with its supply chain from everything like being able to make the enormous blades required for a 10-megawatt turbine, being able to move those, being able to have the docking facilities to stage that. That is the kind of thing that we should be looking at, building industries of future. And that is in the clean energy space, the offshore wind being just one, one very clear example of that.

I might on another one, by the way, which I believe is referenced obliquely at least in the LIFT America bill, and that is right now, even with COVID virus, we should be looking for opportunities in efficiency, say, public buildings, in community solar activities, especially serving disadvantaged communities. We could be doing those right now with proper social distancing, get people to work right now doing important clean energy work.

RPTR PANGBURN

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[1:03 p.m.]

The Chairman. Well, Secretary, I think that -- I don't want to prejudge it because it hasn't happened yet, but I think that is one of the things announced today in New Jersey is a major port facility for wind turbines. So that is an example of what you mentioned.

But Mr. Wetstone, in the time that we have left, same thing, how important are these Federal tax credits, production tax credit, investment tax credit, in terms of moving forward and getting out of this loss of jobs, you know, for the future?

Mr. Wetstone. Thank you for asking, Chairman Pallone. The renewable tax credits have proven an extremely effective way to leverage the marketplace and promote economic growth. Since 2009, over $430 billion in investment. What we are facing today with COVID-19 to help the sector, we need to make those credits so they can be used by people in the center even as the tax equity marketplace that is relied upon to monetize credits is constrained.

So we need to make those credits refundable for a few years, and we need to recognize that 2020 is not the year we hoped it would be, the year it should be for renewable power, and extend the phase-out deadlines by year, recognizing the cost of the pandemic.

And I would add that we should look for ways to expand what we are doing to incentivize use of advanced grid technologies, like energy sorts, that should have a tax credit too. We should be incentivizing better planning, transmission. The CLEAN Futures Act had great transmission planning features. Those provisions should be

enacted and built on. We welcome a chance to work with the committee.

We are launching tomorrow an initiative promoting a macro grid. This is really to modernize, upgrade the Nation's grid, better connect the seams between the electricity markets and better connect the population centers with the parts of the country that are rich in renewable resources.

Doing that, we not only get more efficient and cleaner power, we save a ton of money. NREL's Seams Study says we can save consumers $47 billion with that initiative, and we would love the chance to work with the committee to move forward in that direction.

The Chairman. Thank you, both.

Thank you, Mr. Chairman.

Mr. Rush. Thank you, Chairman Pallone. The chair yields back his time.

The chair now recognizes Mr. Latta of Ohio for 5 minutes for the purpose of an opening statement.

Mr. Latta. Well, thank you, Mr. Chairman.

And, again, thanks to our witnesses for appearing today. Mr. Powell, one part of ClearPath mission is to look at ways the United States energy sector can innovate to meet these challenges. Would you describe some of the supply chain issues that have resulted from the outbreak of COVID-19, and how the energy sector has had to innovate to meet these challenges. And also, any specific supply chain issues on the nuclear sector?

Mr. Powell. Well, first, thank you so much, Representative Latta, for your long leadership, especially on nuclear issues, right now, the most important clean generating technology in the United States. I do think that the current crisis has forced us all to re-evaluate the idea of highly globalized supply chains around the world, especially supply

chains, many of which end in China.

The increasing tensions with China, the increasing uncertainty over their public health regime, I think, has us all thinking that ought to be far more diversified than we currently are, and less reliant on any individual state.

And even before the crisis, I think there was justifiable concern about our heavy reliance on China for critical minerals. Many of the materials that are required for battery technologies, and advanced renewable technologies, really many, many clean energy generating technologies are these relatively rare earth materials.

China has worked hard to develop, clearly, a monopoly in the supply of a number. So I think that as a huge innovation priority for all clean energy technologies, many folks are thinking about finding more earth-abundant materials, as they are called. Things that can be found or mined virtually anywhere, or at least in far more countries and expending our supply chains in technology to focus on those.

Nuclear, which you mentioned, I think it is very relevant to point out that the administration has just finalized the result of its nuclear fuel working group. The administration heard a request from the uranium producers of America to look at ways to ensure that we had a sustainable supply of uranium coming into the United States, and that our uranium fuel supply wasn't overly reliant on mucha (ph) and certain other unstable central Asian republics that we couldn't necessarily rely on for that nuclear fuel.

And I think the recommendations of that nuclear working group were really insightful. They both pointed to the need to further diversify our nuclear fuel supply, including much heavier reliance on American uranium and to establish a uranium reserve in the United States in the same way that we have a strategic petroleum reserve. And they also looked more holistically at the situation and said, If we want a sustainable nuclear fuel industry in the United States, we need a sustainable nuclear industry in the

United States who are the customers for that fuel.

If an industry is not growing, fine. And so it was holistic growth at nuclear fuel, they also looked at the priority of innovative new nuclear technology designs, and they suggested that the United States should take on kind of a nuclear Moon shot, or advanced reactor designs. And so I am pleased to say the Department of Energy has just accepted its first round of submissions for this nuclear Moon shot, appropriated this Congress, funded in last year's fiscal year 2020 appropriations bill, which would really get the United States back into the nuclear innovation game, and demonstrate two advanced nuclear technologies here in the United States by 2025.

Mr. Latta. Let me follow-up. How is our global competitiveness in emerging energy technologies that have been impacted by COVID-19?

Mr. Powell. That is a great question. So one area where we remain quite competitive globally is obviously the export of liquefied natural gas. That is a place that is the result of the incredible energy innovation in our fossil energy industry, and the incredible story of public-private partnership between the Federal Government and the, particularly, shale and unconventional gas industry, which is really scaled up. And that is an area that is continuing to go well. Although, obviously, China was a primary customer for U.S. LNG. And our current trade tensions with China will mean that that is a more difficult export market for us. Although, I think other export markets, particularly eastern Europe, may well take up that supply.

Other areas I have to say particularly ones compared to Chinese exports, I think we are at significant risk of falling behind. I think for the manufacturer of traditional renewable technologies, photovoltaics, we are so far behind it is hard to imagine the United States catching up. We are in a better position, at least by value, in the winds technology space. Greg could say much more about this.

In the nuclear space, I think that is really a place where we are still neck and neck. China's actually exporting more than we are now, but I think we could move more quickly by developing advanced technologies, small modular reactors and micro reactors, which could be a really appealing competitive offering to a lot of the developing world, and still have a chance to get ahead of the Chinese competition.

Mr. Latta. Thank you very much.

And Mr. Chairman, I yield back. My time has expired.

Mr. Rush. The gentleman yields back.

The chair now recognizes the gentleman from the great State of Maryland, Mr. Sarbanes, for 5 minutes for questioning the witnesses.

Mr. Sarbanes. Thank you very much, Mr. Chairman. Can you hear me?

Mr. Rush. Can hear you quite well.

Mr. Sarbanes. Excellent. Well, thank you for holding the hearing today on a very important issue. I appreciate the witnesses' testimony. Obviously, the pandemic has had profound impact on our economy. And as we look to the other side of this in getting our economy back on track, obviously promoting a cleaner and healthier future for all communities is a critical priority.

Secretary Moniz, in your testimony, you mentioned the value of investing in energy infrastructure, particularly grid modernization. I appreciate that. I certainly agree that investments in the grid are important for grid security and resiliency as well as integrating these new renewable technologies that can help us meet our climate goals.

Could you just elaborate for a moment on how grid modernization can be crucial to meeting the carbon reduction goals and how it can also help stimulate the economy as we recover from the pandemic?

Mr. Moniz. Certainly. Thank you, Mr. Sarbanes. Let me just note two

examples: one, in terms of the very high voltage transmission grid, we need to really be able to build what you might call continental scale grid, because, frankly, many of our renewable resources aren't that close to some of the major demand centers. And we need to be able to move that over large distances, and that will require a big build-out, as well as, to be perfectly honest, managing, of course, some of the policy regulatory issues that arise in crossing various State boundaries. But that is one example at the high voltage grid level.

But now, if we come, especially to the distribution system, we are just scratching the surface about integrating all of the IT opportunities into that system. When we do that, we will be able to manage a very, very different grid architecture, including a lot more distributed generation, for example.

And secondly, I think it will unleash a lot of entrepreneurial activity, as that will provide the opportunity for genuinely new services when one has that integration. Again, I think we are only scratching the surface.

On the latter, by the way, I might say that -- and this is related to COVID, maybe. I think with the impacts of COVID on our social structures, our work structures, remains unclear. We don't know how much additional work at a distance will become, say, permanent in our society. We don't know if cityscapes will change dramatically as less commercial space is required, and maybe it is converted to more residential space. We don't know how our ruralscapes will change, especially if we have work at a distance in broadband. All of this can be enabled by this integration of electricity IT.

Mr. Sarbanes. I appreciate that. Thank you. Let me ask you quickly on energy efficiency. We know that increasing energy efficiency is a win-win. It lowers energy costs. It reduced carbon emissions. We have had the opportunity to work on some of those projects together in Maryland, and in Baltimore, in the past, as you know.

So it can be a way to reverse severe job loss in the energy efficiency sector, and it can involve funding to State energy offices. They could leverage private funding through performance contracting, resilience projects at hospitals, fire stations, schools, public buildings. Funding for DOE, DOD, and GSA could also help leverage the performance contracting opportunities and increased resilience at Federal facilities.

Would that be impactful on creating jobs in the short and medium term? And maybe speak to how the American Recovery and Reinvestment Act, investments in Federal buildings, modernization, green buildings, et cetera, help the economy, and could reduce Federal spending on utility bills? So if you could speak to that opportunity as well?

Mr. Moniz. Sure. You are spot on in terms of this being a job engine that we could turn on right now. And clearly, residential efficiency upgrades are very important, must go forward. They may be constrained while COVID restrictions are in place. That is why we emphasize an in addition. We should really look at small- and medium-sized businesses. We should look at the 850,000 public buildings across our country, urban and rural, places where those restrictions would be far less consequential. We can do those jobs now, and we should move on that.

In terms of ARA, you are absolutely right. The Federal building structures are another enormous opportunity. But I would just note more broadly, frankly, if we go back to the Obama administration, the efficiency standards put in place at the Department of Energy will result by 2030, cumulatively, in over half a trillion dollars of consumer cost savings, and in about 2-1/2 billion tons of CO2 avoided.

Finally, I would just add, and you mentioned it, that we could accomplish these efficiency projects using existing mechanisms. Many governments already have those energy savings performance contracts in place, but another is, utilities across the country

have efficiency programs.

We could go right now through our utilities and use those established programs for residences, but also, for small and medium business. So we have opportunities laying in front of us which would have tremendous impact economically, environmentally, and for jobs.

Mr. Sarbanes. Thank you very much.

Mr. Rush. The gentleman's time has expired.

The chair now recognizes the gentlelady from the great State of Washington, Ms. McMorris Rodgers, for 5 minutes.

Mrs. Rodgers. All right. Good morning, everyone, and good to see you from sunny Spokane.

Anyway, I wanted to ask Mr. Powell. Certainly, the regulatory uncertainty is a big issue right now, and I just wanted to ask if you would speak to the uncertainty that the regulations are putting on our energy industry, whether it is to address the current crisis, and to innovate in America for this era of a new clean energy future?

So, I wanted you to speak to that and the specific question was, can Federal subsidies, investments, or other financial incentives make up the loss in private investment due to the regulatory uncertainty, or the regulatory barriers?

Mr. Powell. Thank you so much for that question, Congresswoman. It is wonderful to see you, and thank you for your long leadership on hydropower, for your co-sponsorship of the LEADING bill, the gas with CCS technology and innovation Moon shot. Really appreciate your work and attention to all of these issues.

We cannot underestimate the importance of this regulatory issue. I will take hydropower, an issue I know is near and dear to your heart. The re-licensing of dams is an enormous issue. In many cases, it can take a facility a decade or more to re-license

that facility. My understanding is up to a third of all of the hydro powered capacity in this country, 16 gigawatts of hydropower is up for re-licensing by the end of this decade, by 2030.

And a lot of those are the smaller dams. And so especially for a smaller facility, they may just look at that incredibly intimidating re-licensing process, and say, not worth it. I am not going to put it in the annual requests for a 1-year re-licensing, or I am not going to spend the decades and millions of dollars in attorneys' fees to make this re-licensing happen. That is 16 gigawatts of clean energy, and it is flexible clean energy. It is clean energy that can come on and off on demand or serve as a giant battery for the grid in many cases.

It would be a tragedy if we lost some large portion of that 16 gigawatts of clean hydropower, and that is just one example of the regulatory uncertainty.

To your second question, you know, can we sort of subsidize our way out of this kind of regulatory burden we have put on a lot of the companies. While I will absolutely acknowledge there is a real valid role for incentives, particularly for urban stage technologies, it doesn't matter how strong the incentives are if there is no permission to innovate, and to go and deploy that technology out of the grid.

Just two quick examples: Duke Energy in the Carolinas, a place near and dear to ClearPath's heart, recently released its annual climate report. It actually charted out how it plans to reach a 2050 clean energy future.

As a footnote there, they note that over the next three decades, a transition to clean energy is going to require them to build twice as fast as they have built in the last three decades.

If you look at California where they are working under SB 100, a rule that they have to get to 60 percent renewable energy by 2030, that is going to require 2 to

4 percent of the land mass of California to be used for renewable energy, not to mention all of the transmission that is going to have to go into that. If you can imagine all of that happening under the current company apparatus, it is just very hard to imagine us moving as fast as we would need to move with the current permitting.

And I am not suggesting that we, you know, sacrifice our clean air or our clean water standards, I am simply saying that we have got to have the same protections and do it faster in a more streamlined way.

Mrs. Rodgers. Absolutely. Another area where the Pacific Northwest is leading is in energy storage and the PNNL, the Pacific Northwest National Lab, is at the cutting-edge of battery storage and the R&D around that, but China's threatening to overtake us. In 2019, China installed 520 megawatts of Electra chemical energy storage, and their current energy storage capacity is 18 percent of the global total.

What can we do to reclaim our global leadership, and just if you could speak to that in the time remaining?

Mr. Powell. Absolutely. Thank you for that question as well. PNNL is a remarkable facility, and their work on energy storage is absolutely world leading. I would say the two things that we need to do are: First, build on the amazing breakthroughs happening at PNNL, and actually support them all the way into the market.

There was an amazing new technology for grid scale storage. Canadian flow batteries (ph) developed at PNNL, an early stage company spun out of that called UET, which got some really support from DOE, but because we didn't have a soup-to-nuts innovation apparatus, which actually helped them get all the way into the market, the company struggled to sort of break through that valley of death. And then, what do you know, it was scooped up by Chinese investors who promised to build the first demonstration projects in China and suddenly, we are at risk of that technology and IT

being transferred over as Chinese innovators as opposed to those here in the United States.

The wildest thing I can say is, I think we are falling behind in some of these things like lithium ion battery manufacturing. I do think we have got an opportunity to catch up, especially with advanced manufacturing, both in lithium ion and in these next generation battery technology.

Mrs. Rodgers. Yes. Oh, thank you. So we need to innovate, manufacture, and deploy here in the United States. Thank you.

Mr. Powell. And deploy. Thank you.

Mr. Rush. The gentlelady yields back.

The chair now recognizes the vice chair of the subcommittee, the gentleman from the fine State of California, Mr. McNerney. Mr. McNerney, you are recognized for 5 minutes.

Mr. McNerney. I thank the chairman, and I thank the witnesses. Especially good to see you, Secretary Moniz. I am glad to see you are using your considerable intellectual firepower to advance the clean energy sector, so thank you for that.

The good news I am hearing this morning is that investing in clean energy can not only lead growth out of the pandemic, but it will also put us in a position to decarbonize the economy, and while generating good return on investment. This is all good news.

So Secretary Moniz, you talked a little bit about offshore and the potential there. Anchored offshore wind is pretty well-developed technology. It is cost competitive now, but offshore in deepwater is still kind of a new industry not totally developed. What do you think the potential is for that to become economically viable?

And the reason I ask is because the West Coast, there is plenty of wind offshore, but it is all deepwater. We can't really rely on anchored wind turbines and I want to see

the West Coast become a leader in wind energy technology, offshore deepwater wind energy technology.

Mr. Moniz. Right. Good to see you, again, Mr. McNerney. I think it is often not recognized that much of the offshore deployment in Europe, which is often pointed to, does not have the same challenges that we have in the United States in terms of getting into deepwater pretty fast, and certainly, as you said, the West Coast has that in spades.

So we need to -- obviously, we need to innovate there in terms of floating platforms. We have had a number of interesting, I think, technologies put forward. But, frankly, it has been very hard to get them to the stage of getting licensed and demonstrated, you know, the way they should be.

We are seeing some progress. And, by the way, it is not only on the East Coast and the West Coast, but also on the so-called North Coast in terms of the Great Lakes. So I think this is a -- as I said, I think it is one of the -- not just technologies, but it is one of the industries of the future that we need to advance. And in trying to create an industry, that means we need a much more coherent approach, as I said earlier, all the way from demonstrating, piloting those technologies, in this case, especially the floating 10-megawatt wind turbines, but the entire supply chain for doing that.

There are highly nontrivial challenges there. But we should just get on with it, just the way we should with so many of these other interesting possibilities.

Mr. McNerney. Well, I think it is interesting the way you discuss creating new industries and not just new technologies. Would you expand that, especially with regard to electricity storage and advanced nuclear?

Mr. Moniz. Yeah. On the storage, we have an awful lot of focus on batteries, and that is, of course, important. Although I would note that I think we need to really

have a focus on the different requirements of batteries for mobile applications versus for stationary, grid applications. Because we have many, many possibilities to the latter and that is what we should be doing.

But, for example, in California we did a study, our EFI did a study last year. We published a study that just with the data in California and the fact is that there were 10 days in a row with no wind in California. The solar resource not very complicated, called Latitude, was twice as much in the summer as in the winter.

So if we are going to build a big economy around these, we need to have storage at weeks, at months, and at seasons, to go there. Now, one example of that, as I emphasize, could be hydrogen and maybe in California we should be right now prototyping, like a big hydrogen hub that serves multiple parts of the energy economy.

Turning to nuclear, which was discussed a little bit earlier, I have to say that, you know, it is fine to have this uranium reserve, but uranium is not the problem with nuclear. We have other, deeper problems in not having some of the manufacturing capacity that we need for nuclear. We need to have that. We need to get the small modular reactors and micro reactors that can be made in factories and, frankly, we have a national security problem.

Today, other than using the reserves of enriched uranium that the Department of Energy has, we do not have the capability today to make the fuel of the future for nuclear submarines and aircraft carriers. We do not have the capability right now to make the tritium needed for the stockpile.

We need to take this very, very seriously from multiple perspectives, including the national security perspective, for re-establishing the nuclear supply chain.

Mr. McNerney. Okay. Thank you. That was a plug for a bill that Mr. Flores and I are promoting on high-assay nuclear fuels, so thank you for that testimony.

Mr. Moniz. Didn't know that.

Mr. McNerney. I yield back.

Mr. Rush. The gentleman's time is up.

The chair now recognizes the gentleman from the State of Texas, Mr. Olson, for 5 minutes.

Mr. Olson. Thank you, Chairman Rush. And guys, I am at home in Sugar Land, Texas, so the proper greeting for witnesses is, howdy, y'all. Welcome.

The past few months have been very rough here in Texas 22. We have lost a lot of jobs, good-paying jobs. Oil prices dropped like a rock in late March, early April, because a supply war between Saudi Arabia and Russia. It actually had negative prices. Oil dropped to negative almost $5 per barrel for a couple of hours last month, and so we lost a lot of jobs. And then we got hit by the pandemic crisis, the COVID-19. Lost a lot of more jobs. So that means a lot of people back home here right now are worried.

Can they keep their power up? Can they pay for it? Will they be shut off if they don't pay for it? Will there will be some sort of hurricane that hits that takes out their power. And as was mentioned earlier, we had three named storms already hit the East Coast. And more are coming, for darn sure.

Ten years ago, this picture back home would have been very bleak, but as Mr. Moniz has stated, Texas adopted an all-of-the-above policy. We used to just be black gold, Texas tea, all oil. Now we are number one in wind production for the entire country by far. We have an installed capacity for wind of two 25 megawatts that will power 6 billion homes.

Solar is growing rapidly as well. Right here in my home county of Fort Bend last year, they opened up a solar power farm that will power 40,000 homes. Two more solar farms are coming online in the next 2 years, and these are state-of-the-art, like the space

station, they actually follow the sun. Not like residence, which is fixed. So we embrace all of the above in renewables.

My first question is for you, Mr. Powell. My home State is kind of unique in the country, in terms of electricity market. It is completely deregulated. We have no capacity market whatsoever. We have the power providers separate from the power distributors. It has worked very well.

There has been some rumors about a moratorium coming from D.C. that in a few years, with our rights to disconnect people, whatever. And this has always been a State rule in the past. I am concerned about D.C. overreaching one size fits all because, as I mentioned, we don't fit all here in Texas.

So, Mr. Powell, do you share those concerns about D.C. having a one size fits all to recover for this COVID crisis and impact on our energy sector?

Mr. Powell. Well, thank you very much, Representative Olson, for your leadership on all of these clean energy technologies. Your long championing carbon capture technologies, your support for energy storage. I do think this is a really significant issue. Clearly, in the midst and the depth of the COVID epidemic, it was important for utilities voluntarily, and for States to take action and to suspend disconnects, just as utilities often suspend disconnects in the depth of winter when it would be really dangerous to leave people without power at their homes.

That said, energy is not free, and if we want large companies to make the really difficult investments to transition over to clean energy over time, we need to make sure that they are thriving, robust companies with strong balance sheets in order to do that.

And so when I think about the appropriate role for Federal and State responses to this, especially given how distinct the COVID crisis impacts public health and the economy are across the States, I think this is much better thought of as an issue that is handled at

the State or the PSC level, as opposed to with a single blanket Federal approach because there are such different circumstances in States.

And I think if there is to be a Federal approach on this, I think as was discussed earlier by Ranking Member Upton, you know, programs that already exist, like LIHEAP, which assist people in paying their bills, are probably a better way to think about a resolution to this than a blanket Federal approach on disconnects.

Mr. Olson. Final question for Secretary Moniz.

First of all, Chairman, I have a letter from a group called PSA. They are Petroleum Suppliers of America based in Mitchum. I would like to put this in the record for the hearing. Is that okay, sir? Without objection?

Mr. Rush. Hearing no objections, so ordered.

[The information follows:]

******** COMMITTEE INSERT ********

Mr. Olson. Thank you, Chairman.

My final question is for Secretary Moniz. This goes back to your days as our Energy Secretary. We will lose a lot of peoples' jobs right here in America. A lot of expertise. Is there a national security risk of these people being sucked up by foreign countries like Russia, like OPEC countries, maybe even Venezuela taking that expertise to their countries from our country, by taking those good-paying jobs overseas? Is that a national security concern, sir?

Mr. Moniz. Well, as I said earlier, I think that, really, the solution is much more to build up, for example, CCS, which you know very, very well in Texas, because that is where the same skill sets are required, and I think we can create very, very good jobs that would be attractive and keep those workers and communities whole.

I think in terms of the international ramifications -- well, first of all, there are clearly some countries that could use some expertise, that is for sure, like Venezuela, for example. But I think the reality is that we have a lot of uncertainty as to where demand is going clearly in oil. We don't know the recovery from COVID. We don't how the secular change, if you like, in the energy industry is going to affect demand.

And so, I think that the -- the better way to approach this is to be thinking about our national security is served by building up these new domestic industries where we can keep those workers and put them to work doing something very, very important, literally building a new industry.

In fact, you know this, but maybe it is worth saying that once we start getting into carbon capture and sequestration at, say, the billion-ton-per-year scale, we are talking about building an industry as big as the oil industry today. So I think that is really our path forward.

Mr. Rush. All right.

Mr. Olson. I am out of time.

I yield back. Thank you all.

Mr. Rush. The gentleman yields back.

The chair now recognizes the chairman of the Environmental Subcommittee, the gentleman from the great State of New York, Mr. Tonko, for 5 minutes.

Mr. Tonko. Thank you, Mr. Chairman. Can you hear me?

Mr. Rush. Hear you quite well.

Mr. Tonko. Okay. Thank you. First, we should recognize utility workers, great operators, and other essential employees that have been keeping our energy systems going during the pandemic. And second, I want to associate myself with previous comments about clean energy projects, grid investments, and building retrofits that have been significantly disrupted as a direct result of the COVID pandemic.

I see a clear need for immediate relief for these sectors, as well as inclusion in long-term economic recovery efforts through tax policy and other mechanisms.

Mr. Powell, I agree with your testimony that we need to think about the policies that will enable us to grow a clean energy economy. And it is worth noting that before the pandemic, we were beginning to think of wind, solar, and energy efficiency as engines for job creation, but obviously that wasn't always the case.

So, Mr. Wetstone, can you help us understand the growth of the solar and wind industries over the past decade, since our last big economic downturn?

Mr. Wetstone. Absolutely. Let me see -- can you hear me?

Mr. Tonko. Yes, we can.

Mr. Wetstone. The wind and solar have both seen dramatic improvements and cost-effectiveness, so they have gotten less expensive. We have seen dramatic

improvements in demand as residential consumers and businesses seek wind and solar energy, and the result has been a tremendous economic boom as we heard from Congressman Olson about wind in Texas is happening. Wind and solar really across the country.

Last year, $55 billion, actually more than that, in investment in wind and solar in this country. Eight years in a row, renewable energy has been the largest source of private sector investment in the United States in infrastructure, and that is -- that is significant. And it was -- the renewable sector played a really key role in helping us through the downturn in 2009 and 2010.

Between those 2 years, we got $57 billion in new investment at a time when the economy was generally shrinking.

So I am grateful for that question, and I think there is really good reason to think that with the right policies, renewables can play a really critical role in helping us grow through and recover from the current downturn.

Mr. Tonko. Thank you, and it is good to see you.

Secretary Moniz, welcome and good to see you. I hope you can help us here connect the dots. I recognize that the 2009 Recovery Act was before your time as Secretary, but do you have any thoughts on how these investments, whether it was R&D, technology demonstration, loan program office financing, tax incentives, or other DOE programs, how they led to cost reductions in technology improvements that made possible this job creation and economic growth that Mr. Wetstone just described?

Mr. Moniz. Sure. And, in fact, if we take two different ends of the innovation chain, if you like, I already mentioned with the boost given to the loan program, it basically kicked off the utility scale solar business in this country and, again, up to COVID at least, a very booming industry indeed.

And as the industry booms, then, of course, the costs come down, and that is what Greg Wetstone described. But if we go back to the early -- earlier parts of the innovation process, ARA kicked off a couple of very substantial programs, such as the Energy Frontier Research Centers, which solved hard science problems mainly at universities and, of course, ARPA-E, which has been, in my view, a fabulous program. Over 80 companies spun out already.

So now, if we fast-forward to that, to today, now we need to capture the fruits of that innovation, like all the ARPA-E inventions, et cetera.

So today, what we would say is, here is the way to move forward and get real stuff happening fast. Let's have follow-on opportunities for ARPA-E, prefeed studies for engineering design. Prototypes. Let's get them to build prototypes.

Let's get new ways of the national labs being potentially a place to help these companies, literally maybe on their territory, build the kinds of pilot plants and prototype plants that get these out into the commercial sphere.

So I think we should be in a further stimulus or in the regular appropriations process, these are the kinds of jump starts that we should have capturing on the last decade's innovation, while we seed the next decades' innovation with what I said earlier, a doubling or tripling of those investments and really having a mind set of inventing new industries.

Mr. Tonko. Thank you.

Mr. Chairman, I have other job creation and economic potential questions for our witnesses that we will get your way, but I thank you for the opportunity and yield back.

Mr. Rush. The gentleman yields back.

The chair now recognizes the gentleman from the great State of West Virginia, Mr. McKinley, for 5 minutes for questioning.

Mr. McKinley. Thank you, Mr. Chairman, and my good friend from Illinois.

Seventy percent of the lost jobs that have been mentioned earlier were in the energy efficiency market, which includes HVAC, lighting, insulation, appliances, on and on. Before COVID, the efficiency market was growing in excess of 10 percent annually. Fortunately, economists are already projecting that these jobs will come back once the crisis subsides, that energy projects were merely postponed, not canceled.

Unlike 2008, the job losses were not the result of a policy failure, but look, if the United States is really serious about moving towards 100 percent renewables, shouldn't Congress ensure that America has a dependable supply chain? Haven't we learned anything from the COVID crisis about the disruptions that we experienced with PPE and pharmaceuticals? America is simply too dependent on foreign sources for critical materials.

Consider the ingredients in a battery for electric vehicle. According to mining news, America is nearly 100 percent dependent on other nations for its cobalt, lithium, and carbon anodes. The same is true for solar panels. Key minerals, like silicon, arsenic, and gallium are primarily sourced from China and Russia.

London University researchers have projected by the year 2060, the availability of minerals for electric car batteries will need to increase 87,000 percent. 87,000 percent. And the wind and solar industry will require similar increases. Can we rely on this level of dependency on China? One option is to start extracting critical minerals domestically, but the environmental left doesn't want us to do that.

Arrogantly, they would rather have rogue companies destroy the land and water qualities of other countries instead of safely developing American mining operations.

For example, it takes 500,000 gallons of water to obtain one ton of lithium. That is a lot of water. Extracting lithium in Chile consumes 63 percent of all the water

available in the region. Now, consider that the Edison Electric Institute projects by 2030, just the end of this decade, the United States could have nearly 19 million electric cars on the road.

Using the amount of lithium in a Tesla battery, America will need approximately 2.6 billion pounds of lithium. Think about that amount, 2.6 billion pounds. Think about all the water that will be wasted to achieve that. America's about to confront a global shortage of key materials. So if environmental groups are preventing us from mining, and there are critical shortages developing, shouldn't we consider some alternatives?

What about an energy source that is efficient, never needs recharge, has zero emissions, and can operate 24/7? Shouldn't we be considering that? That is hydrogen power, and you just heard Moniz talk about that. It is already being used globally as an alternative energy source. We wouldn't be turning our back on fossil fuels during energy efficiency, but developing energy efficient hydrogen fuel cells could be another tool in our --

We still went carbon capture, 45Q, companies like NET Power and Petra Nova, and advanced nuclear plants -- look, the employment in the energy efficiency market is projected to be just a bump in the road, but the looming problem with the supply chain of critical minerals threatens America's ability to rely on renewable energy.

Wouldn't it be novel for Congress to pursue clean, carbon-free emission energy sources without destroying an all-of-the-above energy approach?

Rich Powell, am I correct on that or have I gone wrong?

Mr. Powell. So first, Representative McKinley, thank you so much for your fearless leadership on carbon capture over these past several years. I think the points you have raised about the desperate importance towards diversifying our supply chain for

these critical and rare earth minerals and materials is very important, both for domestics supply chains here in the United States and also diversifying globally.

Take cobalt alone. We are heavily reliant on the Democratic Republic of Congo because that is where significant rights violations and awful labor practices are rife in the industry in Congo. So we need to find other alternative chemistry for a lot of this stuff. They are using different materials or alternative sources for all these materials.

I certainly agree with you on the hydrogen front. If we could find a way to economically convert our existing fossil abundance, coal and gas in the United States, capture that into hydrogen, capture that carbon sequestered underground, as you said, we would have a virtually unlimited source -- used for multiple applications all around the country. Those are in transportation or for heavy industry, or in our power sector.

Mr. McKinley. Thank you.

Mr. Chairman, I yield back my time.

Mr. Rush. The gentleman yields back.

The chairman now recognizes the gentleman from the great State of Iowa, Mr. Loebsack, for 5 minutes.

Mr. Loebsack. Well, thank you, Chairman Rush, Ranking Member Upton, for holding this hearing today and thank you to the witnesses for joining us as well. It is great to see all of my colleagues today, even if it is only virtually.

As we have seen, the COVID-19 pandemic has affected nearly every industry across our country in countless ways. As we are discussing today, the clean energy sector has been particularly hard-hit, with over 600,000 jobs lost over the past 2 months.

In my home State of Iowa, the clean energy industry supports over 31,000 jobs, many of which are created by small businesses and provide economic opportunity for folks living in our rural communities. I think Iowa is a unique State in some ways for

energy and electricity production, and my district truly represents an all-of-the-above energy approach. And I would like to say my colleague, Mrs. McMorris Rodgers, in August, we are hopefully going to celebrating the opening of a hydroelectric plant in my district. And thanks for working with me on those issues. I really appreciate that. I see the thumbs up there. That is good.

We are the second largest producer of wind energy in the country behind Texas, as Mr. Olson mentioned earlier, and the largest producer of ethanol and other clean-burning biofuels that significantly reduce carbon emissions in our transportation sector. And we have also seen tremendous continued investment in solar energy. These industries have suffered significant losses in a very short period of time, and it is absolutely critical that we provide both immediate emergency assistance where possible, but also look forward to ways that we can broaden our investment in clean and renewable energy to ensure that this industry comes back stronger than ever.

I just have a couple of questions, Mr. Wetstone. First, rural communities, including in my district, have been hit particularly hard by the consequences of this pandemic. Can you elaborate on the unique challenges that the clean energy industry is facing, specifically in rural America? You touched on a number of policy options that Congress could pursue in your testimony, but can you elaborate on what you see as being particularly crucial for the recovery of these jobs in our rural communities, particularly in the wind industry?

Thank you.

Mr. Wetstone. Sure. And thank you for the question, Congressman.

The wind sector is subject to the same shelter-in-place requirements and supply chain disruptions, the difficulty securing, permitting inspections, and constraints in tax equity finance that make it hard to continue to move these major projects forward. The

same thing is really mirrored on the solar side, but wind is seeing that, in particular.

The new Treasury guidance -- we credit Secretary Mnuchin. It is helpful, an additional year to complete projects that were built in 2016 and 2017, but what we are facing now in the wind sector is the difficulty in monetizing credits, particularly looking forward and you need that for the financing to let these projects go forward, and that is the reason that we are asking that the credits be made refundable on a temporary basis.

I would also add that Congress, for the wind sector, created an additional year of a 60 percent value production tax credit for this year, and we are not really seeing the ability to take advantage of that policy that Congress provided to allow for continued growth in this COVID economy. So extending that would be immensely helpful.

Mr. Loebsack. Thank you.

I do have to say I was on Interstate 80 east of Des Moines just recently, and we do have a couple of new wind energy projects there, first time east of Des Moines on Interstate 80. We have another one even further east now under construction, so that is some good news.

I don't have much time left, but Secretary Moniz --

Mr. Rush. The gentleman's time is --

Mr. Loebsack. I think I have about 50 seconds.

Mr. Rush. Okay. Yes, you do. I am sorry.

Mr. Loebsack. Secretary Moniz, the biggest concern that a lot of us have going forward is to make sure that we have a clean energy industry, but also one that provides energy at decent prices for our folks.

How can we reconcile some of those concerns?

Mr. Moniz. Well, first of all, I would like to say in terms of the rural issues and more generally I would like to go back and repeat that I think there is a big opportunity

for public buildings and schools and efficiency and modernization upgrades in addition to the wind and solar issues.

In Iowa, certainly as you mentioned, wind -- actually, you could have taken credit as having more wind than Texas normalized to the size of the State and the energy. And just to note that -- because I think it should be stated that building wind in Iowa has been such a fantastic way to also attract business in terms of corporate sourcing of wind and solar, so I think that is really terrific.

In terms of the cost, clearly the costs, as Greg has said, have come way down, except that we need to talk about the storage implications, which obviously, today, add several cents per kilowatt hour to the costs.

But my real issue -- and everything we have already said in terms of sourcing the elements for the batteries, et cetera, et cetera, but I think, and I think maybe in Iowa, a real focus on looking at the storage technologies that are specifically aimed at large stationary use, which could be alternative chemistries, not subject to the vagaries of the supply chain constraints on rare metals and minerals, I think, could be very important.

Mr. Loebsack. Thank you.

Mr. Moniz. You mentioned a dam and, of course, the extent to which you can use hydro for storage on longer time scales, like a day, would also be another way of integrating the resources in a very economical way.

Mr. Loebsack. Thank you so much.

Thank you, Mr. Chairman. I yield back.

Mr. Rush. The gentleman yields back.

The chair now recognizes the gentleman from the greatest State of all, the great State of Illinois, Mr. Kinzinger, for 5 minutes.

Mr. Kinzinger. Thank you, Mr. Chairman. You are right. It is the greatest

State, and you also are like my only chairman that actually pronounces my last name correctly, so thank you very much. I appreciate that.

Obviously, we have seen, in real disbelief, a virus that we didn't know existed 8 months ago, wipe out many, many years of jobs gains, 110,000 American deaths and counting. But some jobs are coming back online but the extent of the damage broadly to the energy sector still remains unclear. But if there is a lesson that we have learned, it is also we have seen the resiliency and reliability in terms of baseload and peak power generation.

Some have discussed the unusual stresses on the system and the increased workplace safety and health protocols, but in spite of those challenges, we have seen results. Mr. Powell mentioned some of the successes in nuclear spring outages went on as scheduled. Each involved only as much as one or 2,000 added personnel. Today, 29 of 30 reactors are online and running with no blackouts or major disruptions reported.

Mr. Powell, in your testimony, you touched on the need for regulatory reform as part of any approach to break our way through the effects of the pandemic. The pandemic has forced regulatory agencies to think of better, less burdensome ways to interact with and regulate industry. During the nuclear refueling outage, for example, the Nuclear Regulatory Commission took steps to make quicker, more efficient oversight decisions, saving utilities time and enabling more efficient operations.

So Mr. Powell, how can we take advantage of these lessons? And should we encourage agencies to make more efficient procedures permanent?

Mr. Powell. Absolutely. And first, Representative Kinzinger, thank you so much for your leadership -- your sponsorship of the NUKE Act and just your long-time support for this most vital and important industry, both here in the United States and for its implications for our role around the world. I think that is a terrific suggestion to find the

best of the places that we were able to streamline and make more appropriate that regulatory burden combined with permanently institutionalize changes like that as opposed to sort of backsliding to business as usual going forward. Every additional and unnecessary, you know, piece of paperwork or our regulatory burden can have thousands, or even millions of dollars of impact on the operating expenses of an industry, and for a lot of these clean energy technologies, like nuclear, that is very material in keeping plants up and running and active.

Mr. Kinzinger. So what other regulations can be addressed besides NEPA? Or what other guidance or clarity can the Federal Government provide? So, for instance, I support the security-minded goals of the administration's recent bulk power executive order, but I can appreciate concerns about lack of clarity or guidance so far.

So do you agree that more clarity is needed with the executive order, or maybe another issue comes to mind along those lines?

Mr. Powell. I do think some more clarity could be needed there. Obviously, there are significant concerns with the import of some of these components from China. It appears, perhaps, malware was found in some of these components. So certainly there is an issue there, but we don't want that, again, to, you know, overreach, right, and add unnecessary additional regulatory burden to the industry.

The other one I will point to that the administration just took action on, or an independent agency, the International Finance Corporation just took action on was updating its guidelines about what the DFC could finance and export.

As you know, the Development Finance Corporation is a relatively new agency built out of the old OPIC, Overseas Private Investment Corporation, which you all greatly expanded in the BUILD Act of 2018. So it is now a $60 billion authority with the ability to both do financing and direct equity investments in American projects abroad and it

was specifically expanded with the goal of pushing back on the Chinese Belt and Road Initiative, especially in rapidly developing as strategically significant countries. Unfortunately, when it became the Development Finance Corporation, it inherited some of old OPIC restrictions, including a financing nuclear project, even though it had a much larger mandate and more resources to work with.

And so I think it was very appropriate and timely that the administration just took this step of updating that guidance, or proposing to update that guidance, or proposing to update that guidance for a common period right now.

Our exporters, particularly who have small modular reactors or micro reactors, or even full-sized reactors to now use OPIC financing potentially come together to export around the world. I think that is a great --

Mr. Kinzinger. Thank you. And we need a Renaissance here with existing nuclear plants too. It is a national security issue. It is a climate security issue and the Russians and the Chinese have figured that out.

Mr. Chairman, thank you, and I will yield back.

RPTR SINKFIELD

EDTR ROSEN

[2:02 p.m.]

Mr. Rush. The chairman now recognizes the gentleman from the great State of North Carolina, Mr. Butterfield, for 5 minutes.

Mr. Butterfield. Thank you very much, Mr. Chairman, for convening this hearing today. And thank you for all that you do for our committee. You have been on this committee now for a long time, and I have the privilege of serving with you, at least for the last 13 years. And I just thank you for the work that you do. This hearing today has just gone without a glitch. I am very proud of our technology. And I hope that we continue to use it as long as we need to use it.

Mr. Rush. Thank you.

Mr. Butterfield. Greetings to all of my colleagues. All of you look good. I hope all of you are well.

Mr. Chairman, we in North Carolina, just like you in Illinois, we are holding up, but we are still feeling the impact of COVID-19 in our State. As of this morning, 1200 deaths, and that number is climbing every day.

The pandemic has impacted just about every facet of our lives, including those that supply the electricity and natural gas that we use in our homes and our businesses. I represent a rural district, like many of you on this call do. I represent a rural district in my State. The majority of my constituents get their power either from rural co-ops or municipally owned utilities.

And, so, today's hearing may not be the ideal forum for this discussion, but as Mr. Pallone mentioned in his opening remarks, municipal-owned utilities have been adversely

affected in a big way during this pandemic. And I would be remiss not to mention that the municipally owned utilities in my district are no different. As factories and small businesses have shuttered, revenues have drastically reduced. Meanwhile, some costs have increased for municipalities. And high rates and utility bill delinquencies have occurred during this period. Why? Because of extreme job loss. These utilities have been shut out of the coronavirus relief fund. They can't borrow money. They can't borrow the cheap money that is available for operating costs.

I know many of you are hearing this from your guys as well. I hear from mayors, I hear from municipal officials every week with concerns about how they are going to keep providing services as the pandemic continues.

So I want to associate myself with Mr. Pallone's remarks. I encourage this committee to continue working for its helping municipally-owned utilities and the people struggling to pay their bills.

And now, as we have heard today, the energy sector has suffered, along with every other sector of our economy. The study mentioned in Mr. Wetstone's testimony indicates that clean energy jobs in my home State have been hard hit, with over 27,000 jobs lost over the past 3 months. Specifically, the solar industry, the solar industry, in our State and my district, have been hit very hard.

And so, I want to thank you for your testimony today. And, Mr. Wetstone, I want to just ask you very quickly, I am going to go back and look at my time, 2 minutes remaining.

Mr. Wetstone, in your written testimony, you wrote that projections show 32 percent less distributed solar will be installed this year. Can you please talk more about the pandemic's impact on this solar industry and the unique impact on distributed solar?

Mr. Wetstone. Thank you for the question, Congressman. I am happy to do so. It is a difficult situation. There is no question of while the entirely renewable sector has been impacted, distributed solar has been hit particularly hard. shelter-in-place orders, work stoppages have made it very difficult to continue existing work to secure new work. Residential solar, going to people's houses to put new solar on the rooftop is harder to do. Folks are less receptive, and it may not be allowed under shelter-in-place requirements. We have seen a lot of planned installations that have simply halted.

This is really the critical reason we are asking for a delay in the phase-down of the renewable credits. 2020 has really become effectively awash for many providers of distributed solar because of COVID-19. So, the benefit from the 26 percent credit your Congress intended, we are seeking that extra time in order to allow solar to continue to grow the balance of this year, and through next as well.

We are seeing the potential, I do want to mention as well, for wind to come back to pick up as well with an extension. And I just want to mention energy storage which has such tremendous potential for growth if we can get our credit there as well to really match the growth trajectories we have seen at wind and solar. I am happy to work with your office and this committee.

Mr. Butterfield. Thank you very much for your testimony. I yield back, Mr. Chairman.

Mr. Moniz. Mr. Chairman, can I just repeat my earlier comment about community solar, and maybe look at without having the constraints about the residential access. Thank you.

Mr. Rush. So the gentleman yields back.

And the chair now recognizes the gentleman from the great State of Virginia, Mr. Griffith, for 5 minutes.

Mr. Griffith. Thank you very much, Mr. Chairman. I greatly appreciate it. First, I want to thank you, Mr. Powell, for your focus on unnecessary and duplicative regulations that are needlessly slowing down and, in some cases, preventing energy efficiency and pollution control projects that could be putting energy workers back to work in a particular [inaudible] New Source Review legislation that would streamline the NSR permitting process, making it easier to update and retrofit existing facilities to make them cleaner and more efficient. I urge the committee to act on this legislation. It would result in projects that are beneficial, both to our environment, and it would create more jobs.

Mr. Powell, your testimony underscores that China is still moving forward on new coal investments, and emissions in China and India are expected to grow in the future. Unlike coal plants and industry in the U.S. and in many western countries, Chinese industries seems unencumbered by regulatory restrictions. Back in the U.S., facilitate the adoption of new, clean coal and carbon captured technologies around the world.

Mr. Powell. Thank you very much for that question, Representative. And thank you again for your leadership on New Source Review. I think it is so important that we don't let the letter of the law interfere with the spirit of the law. And we don't let the existing regulation stand in the way of upgrades and important efficiency and carbon capture improvements to these facilities that reduce emissions overall. So it is very, very important to address and reform there.

There are a number of things that we need to do to radically reduce the cost and improve the performance of carbon captured technologies. It starts with things like the regulatory reform that you mentioned and had championed so there is, indeed, permission to make those kinds of investments on the plants.

We then need significant additional demonstrations of the technologies. So

while we have, at this point, one very large and successful operating coal plant demonstration in this country, in Representative Olson's district, the Petra Nova project, which was completed on time and on budget, and has now sequestered nearly millions of tons of CO2 into an older tertiary oil field. We need more demonstrations of these technologies in order to bring down the costs.

Secretary Moniz earlier mentioned the importance of these pre-feed studies and these feed studies at the front end of engineering and design, which helps an innovator and a project developer to determine if there is a there there on the project, if it is technically and economically sound under any circumstances. And we have just funded a generation of those in the Department of Energy, nine in total, on six new coal, and three new gas projects. But that is just the beginning of the journey for those projects. They are going to need further support in public private partnership from the Department of Energy to get those projects up and built. And once we have more demonstrations, once we know that it works, and we have brought that down to the level where a direct cost share is no longer as important. But for incentives to take over instead, that is where, I think, the very wise 45Q tax incentive that you all enacted in 2018, stands to come in and then shoulder a lot of the heavy load. So let those projects and industries learn by doing and start to expand.

I was very heartened to see sort of in the first leg of Leader McCarthy's climate package on carbon management, the proposal for a permanent 45Q tax incentive for -- at the same level for existing coal and gas facilities, and actually even at a higher level for direct air capture facilities was an idea put on the table. I think that ought to be an idea that is in strong consideration.

Mr. Griffith. And I appreciate that. Let me switch to Secretary Moniz. Secretary Moniz, you know, I appreciate your concern for what is happening in central

Appalachia, and my district includes part of that and what is happening to the workers there. And you have always been so good to try to look out, both for the future, but also looking out for cleaner energy.

Do you agree with the sentiments that China and India and other developing countries will not abandon fossil fuels as they seek to rebuild their economies, post-COVID? And would you agree that we should not give up on clean coal innovation, and likewise, that we should not cede our technological edge on fossil research to other nations?

Mr. Moniz. Well, I think your question -- and by the way it, is was a pleasure working with you as well in your district. The -- I think you have already raised the key issue which is that we need to get CCS. And I think Rich Powell really said it. And I said it earlier in a different way. We need to build this as an industry, not just as a set of projects, but we need to have the mindset that this is a new industry with a major new infrastructure. Once we do that, we will set the stage for the global introduction of CCS, because that is what we need. And --

Mr. Griffith. And Mr. Secretary, if I might, I am going to point this out. There is a new technology, a mobile technology, panel-bed filtration system technology. It is going to the next step. It is gotten through the first phase. And I think that has got some real potential too. I will just point that out to you. My time is up. So I am going to have to yield back.

Mr. Moniz. I don't know that technology, but we can look at it.

Mr. Griffith. Yes, sir. I know you will. Thank you so much.

Mr. Rush. The gentleman's time is up.

The chair now recognizes the gentleman from the great State of Vermont, Mr. Welch, for 5 minutes.

Mr. Welch. Thank you very much, Mr. Chairman. And I want to thank all the panelists for really excellent presentation. And it is wonderful to be with my colleagues, especially on this issue, because while each of us comes from an area like Mr. Griffin and my good friend, Mr. McKinley, too, where it is cold, others of us come from other parts where we have got in Vermont a lot of solar and a lot of energy efficiency. And the fact is that if we kind of adopt the approach that Secretary Moniz has of all of the above, what is practical, what works here, what is going to give us energy and independence, be efficient, and be affordable and sustainable, there is a lot of room for us to make progress together.

Secretary Moniz, I want to just ask a couple of questions about energy efficiency. You noted in the outset that we lost a lot of energy efficiency in solar jobs. Vermont, in fact, per capita, lost the most. We want to get them back. And Mr. McKinley and I have been working on a bill called the HOMES Act, which would provide rebates to homeowners who employed contractors to do energy efficiency. And, of course, our contractors can't even do it now because they can't get in the homes. And we have modified our legislation to provide an incentive for online training and opportunity for the contractors to rehire their workers. They need the workers, and we need -- they need to be trained. We give a tax incentive -- if the homeowner gets 20 percent reduction through increase in efficiency, they get 2,000, 40 percent, it is 4,000.

Can you comment on your view about the efficacy of that? Mr. McKinley and I see that as good for the homeowner, they save on their energy bill. Good for the local contractors, and that is true in West Virginia, Virginia, as well as Vermont. And obviously, there is the benefit of lower carbon emissions. So I would appreciate you speaking directly to that, if you would.

Mr. Moniz. Certainly. I would be happy to, Congressman Welch. Good to see

you again.

I might just note in terms of the general numbers, the efficiency -- efficiency accounts for 2.4 million jobs in the United States. And, roughly, half of those are in fact in construction doing exactly the kind of work that you are talking about. I think that has not been generally recognized. And Vermont has, in the table -- in one of the slides we showed, Vermont, in fact, has the largest number of efficiency workers normalized to its workforce size in the country.

So, unfortunately, the other side of that coin is that temporarily, at least you have been hit hard. Hopefully, that will come back.

I think the incentives you are talking about, I think, are really important and have all the benefits you say. There is no need to repeat them. I would just add that I would urge that, again, thinking about also broadening the program to be able to include some small businesses, some public buildings, for example, because that may be where if there are lingering constraints on getting into homes, then those are places where there is lots of time during the day without significant occupancy. And so with -- still with appropriate social distancing, I think those jobs could go on now.

So, I certainly agree with the focus on homes, but as long as those remain a little bit constrained, maybe we should open the aperture. The same --

Mr. Welch. Yeah, excellent suggestion. One other question. I saw that BP did a write-down of its assets, anticipating projected lower price of oil. And in their announcement, they really are making the commitment to try to move into a new non-oil-based, or a nonfossil fuel-based economy. What role do you see the major oil companies playing in the energy transformation that we are discussing today?

Mr. Moniz. I don't know the details of that write-down, but I saw that -- I think it was $17 billion. And I might add to that, the announcement a little while ago about

Shell reducing its dividend by two-thirds, that -- both of those say to me, Yeah, they are not looking near term. They are looking at structural change.

So in that context, the way I see it, and I know this is controversial, but the way I see it is, it is all about coalitions, and we need the biggest tent coalition we can find to move as fast as we can. Frankly, the energy companies have to be part of that coalition for us to move as fast as we can.

So Shell and BP, having mentioned those earlier, as well as American companies, Exxon, Chevron, ConocoPhillips, Occidental, they were all part of a Vatican convocation that I was a part of last year. And they were all signatories to a pricing statement, from an emissions pricing statement, and to a corporate transparency in carbon reporting statement.

So I think the issue is, now we have to get beyond crawling the talk to at least walking the talk, and eventually running the talk, so that they can be part of the -- of the solution. I think that is --

Mr. Welch. Thank you, Secretary. I yield back.

Mr. Moniz. Thank you.

Mr. Rush. The gentleman yields back.

The chair now recognizes the gentleman from the great State of Ohio, Mr. Johnson, for 5 minutes.

Mr. Johnson. Well, thank you, Chairman Rush and Ranking Member Upton for holding this important hearing today. And thanks to our witnesses for being with us as well.

Mr. Chairman, I asked for a June 16th, 2020 letter from the American Exploration and Production Council to the chairman and Republican leaders to be entered into the record.

Mr. Rush. Hearing no objections, so ordered.

[The information follows:]

******** COMMITTEE INSERT ********

Mr. Johnson. Thank you, Mr. Chairman. You know, the American Exploration and Production Council represents independent oil and gas producers around the country, including here in eastern and southeastern Ohio. According to their findings, 65 percent of on-land oil drilling rigs have been idle in the U.S. as a result of this unprecedented drop in demand, due to the COVID shutdown, and it was made even worse by the Saudi-Russian-induced price war.

In energy-rich parts of our country, like my district, the Shell revolution has provided an economic lifeline to communities. But according to data from the American Petroleum Institute, Ohio has seen the largest year-to-date drop in natural gas production in over 6 years. However, I am proud that through this crisis, Congress remained responsive.

In fact, many of us on this subcommittee worked together in a bipartisan way to soften the economic blow. We urged the administration to utilize the Strategic Petroleum Reserve, keep PPE and mainstream lending open for oil and gas producers, and we pushed the Trump administration to get the Russians and Saudis to knock it off. Fortunately, we are seeing signs of a rebound.

We can't look backwards now, though, and this is certainly not the time to exploit a crisis to advance extreme Green New Deal-type policies. Our competitors and our adversaries are watching. China, Russia, Iran, and others are looking to chip away at the dominance we have achieved over the past decade, due to the Shell revolution, rising LNG exports, reliable coal reserves, and cutting-edge nuclear generation technology.

Renewable energy and other innovations have their place, and I don't deny that. But we can't lose sight of what will remain the backbone of America's global energy diplomacy strategy going forward.

So let me start with Mr. Powell. Mr. Powell, whether it is LNG being an oil net exporter, or in your area of expertise, taking the lead in cutting-edge nuclear technology and other advances, what are some of the consequences if America were to lose its seat at the head of the table in global energy competition? And provide some examples, if you could.

Mr. Powell. Thanks very much for that question, Representative Johnson. It is very good to see you again.

It is a vital issue. You know, I think when we saw in the midst of this crisis for global oil and gas, the ability now for the United States to go and become a real broker in the global resolution as opposed to a supplicant to countries like Saudi Arabia and Russia, a position that we were in before, we began to get a net ex of these commodities, it is just a completely different position for our country. And it finds a completely different security and geopolitical posture around the world.

Imagine if this had been a crisis on the other side of extremely high oil and gas prices, which would have an impact less on the oil and gas industry, but on consumers and the economy around the country, having that seat at the table when the position is reversed, as it surely will, right? So when we think about these oil and gas prices, in the near term, whatever it looks like, but remember these things will swing back. Having that seat at the table is just so important. Having that seat at the table as well on nuclear energy is extremely -- you should remember that the world will build more nuclear energy.

So it is simply a choice about whether they will build American reactors with all of our safeguards, and with all of the security and long-term economic association and diplomacy benefits that that brings, literally centuries-long relationships with those countries, or whether they are --

Mr. Johnson. Let's dig into that a little bit. You know, one of our chief competitors, China, you just mentioned, continues to invest in developing advanced technologies, including nuclear and energy -- other energy-related areas.

So what can the Department of Energy in Congress do better to partner with American innovators and energy producers to get burdensome regulations out of the way and work to maintain America's global leadership in this space?

Mr. Powell. So, first, we need to think very strategically about the many countries within China has a Belt and Road Initiative relationship that is already building nuclear, and they are interested in nuclear, and see those as kind of target states, like the ones where -- especially we already have existing nuclear agreements, or could soon have nuclear agreements and think strategically about how we can take a whole-of-government approach to combine the resources of State Department and economic diplomacy, with, as I mentioned earlier, the Belt Climate Corporation (ph), the Export/Import Bank, the Department of Energy and all of its resources.

The recent fuel working group report recommended that we ought to reinstall, at a White House level, a senior official responsible for global nuclear trade that would sort of quarterback all of those different resources. So I think that is an excellent suggestion. And I hope the administration moves forward with that expeditiously.

Mr. Johnson. Okay. Well, thank you.

Mr. Chairman, I yield back.

Mr. Rush. The gentleman yields back.

The chair now recognizes the gentleman from the great State of Oregon, Mr. Schrader for 5 minutes.

Mr. Schrader. Thank you very much, Mr. Chair. I really appreciate you having this hearing, and the attendance here of getting everybody once again together, talking

about something other than COVID-19, which is kind of nice. Although, again, I would take advantage of the crisis. There is an opportunity for us to do some things and redirect our efforts, particularly in the energy sector going forward.

Mr. Powell, you talk a little bit about in your testimony, about some concerns with regard to some of the well-meaning activists in the renewable energy sector, and being 100 percent renewable, and the practicality of the that, practical effects of that, you know, when the wind isn't blowing and the sun isn't shining. Can you elaborate a little on that?

Mr. Powell. Thank you very much for that question, Representative. It is an important issue and shouldn't be overlooked.

We want a power sector that needs to run 100 percent of the time. And right now, we have a very limited ability to store electricity over periods of time. This is not a commodity like milk, for example, where we have got refrigeration, and you can consume milk several days after it is produced by a cow. It literally needs to be produced at virtually the same second that it is -- that it is consumed somewhere else.

Energy storage is starting to change that game. But even all of the progress we have made on energy storage in the past decade would store, you know, seconds or minutes at most of all electricity produced in this country. So we would need to go so much further. And that is why we need to have, in addition, to variable intermittent renewable energy, we need to have flexible renewable energy like hydropower and geothermal, and we need to have other flexible zero emission resources, like coal and natural gas, carbon capture, and advanced nuclear technology that can ramp up and down.

Mr. Schrader. We are very big in Oregon and all those renewable areas, we have very vibrant hydro, geothermal, and certainly working like everybody else in the country

on wind and solar. But I want to make sure the light switch goes on at the end of the day. Also being in Congress, I have learned that for a lot of my colleagues around the country, their whole economy is driven by the fossil fuel industry.

And it has made me pause a little bit in my absolute righteousness with regard to renewable energy. And, you know, and you commented, I think, in your testimony a little bit about how if we want to get emissions down, we got to get global emissions down. I hope and pray we do our part in the United States. But we need to get China, India, others.

Do you see them abandoning a coal strategy at all? We have had other testimony before, but there are a lot of coal plants still being built overseas.

Mr. Powell. There sure are. As you take a look at China, as I think I mentioned in my testimony, as part of their stimulus package, they already green-lit 8 gigawatts of new coal plants, which is really substantial. It would be sort of equivalent to 20 percent in the U.S. a day. They have got somewhere between 100 and 200 gigawatts of additional coal plants and pipeline domestically. And globally, as part of the Belt and Road Initiative, they are building about another 100 gigawatts around the world. So about half of our power projects that they are undertaking.

About 10 million people work in the coal value chain in China. So, for perspective, that is about 100 Chinese are, in some way, connected to that industry.

It is sort of hard to imagine them abandoning the coal industry. And I think what we need to be thinking about are what are the ways that we can develop the technologies here that would allow them to keep using that resource, which they are very likely to use. A lot of those coal plants are brand new -- the average age is 11 years old in China -- to keep them using that technology going forward, without abandoning all of those people and workers, but to put it in a way that brings down and eliminates the

emissions.

Mr. Schrader. That is what we are trying to do here, actually. I am working on a bill with Representative McKinley from coal country about what is the future of American energy independence.

And Secretary Moniz, I know you have been very active in the all-of-the-above approach. You have talked about -- I think in your testimony, you talked about coalitions that need to be built. You can't just talk the walk, you got to walk the walk. Well, Rep McKinley and I are trying to do that. We are trying to take an all-of-the-above approach. And the piece of legislation, I think you are familiar with, that the goal is get all of our power plants, the United States of America, down to near zero carbon emissions, reduce those emissions by 95 percent.

David and I are rolling the dice a little bit on our own States and the energy sources we have and trying not to prejudice the discussion by eliminating one energy source. Rather, like you all have talked about, making huge innovations in technology to get carbon sequestration real. I have talked with some members of my committee about capturing carbon from the atmosphere, some game changers here.

Could you comment on some of the outlines a little bit of legislation on that, please?

Mr. Rush. The gentleman's time has expired. The chair now recognizes the gentleman from my neighboring State, the great State of Indiana, Mr. Bucshon, for 5 minutes.

Mr. Bucshon. Thank you, Mr. Chairman. I want to State that I recently attended orthopaedic surgery practices, the opening of their new solar arrays. And they are now energy neutral, so it is good to see healthcare providers lead the way on clean energy generation.

Mr. Powell, I want to pick up on the innovation being raised by you and others today as it applies to the resiliency of our energy systems. This committee has stressed the importance of having a reliable and resilient grid, and perhaps nothing has showcased that importance more than the COVID-19 pandemic.

While every industry wrestled with the unique challenges of working remotely, our energy workers have continued to keep the lights on, and the TV streaming services shows running with no major disruptions. One of key principles to a resilient grid that we have talked about for a number of years has been the need for a diverse fuel source all-of-the-above approach, which we have talked about today for our energy generation.

This is important for addressing all the potential hazards that may impact the reliable affordable delivery of electrical power in the United States.

One of the risks the Nation faces as it turns away from coal generation is the loss of key capabilities to other nations, as we have talked about, as they continue to use coal power to build and grow. And by doing so we risk losing the skills base in jobs and relevant high-end combustion and emissions control technologies such as carbon capture. If we are going to rebuild our manufacturing and technology competitiveness and energy, how do we do that, Mr. Powell, with we continue to allow critical industrial capabilities to literally deplete and die off, with divesting completely in the coal industry as some people have suggested?

Mr. Powell. Well, thank you for that question, Representative Bucshon, and thank you so much for your leadership across these clean energy issues, including our hydro power, another issue that is very near and dear to my heart, and your heart, I think. This issue of skills in workforce is just so important. If you talked to the folks at Southern Company about the difficulty they had in identifying workers with real special expertise, like high-energy welding, to build the two nuclear reactors in Georgia, you get a

sense of what happens when you allow some part of your industrial and construction expertise to atrophy in your workforce.

Fewer people take on that highly skilled labor and invest in years required to get the certification and the expertise to do it. And then soon, you find yourself in a position where either that labor is completely unavailable, or it is so expensive that it actually makes the project very, very difficult to undertake.

So continuously, you know, exercising, frankly building that muscle mass, maintaining that muscle mass by finding a way to develop those projects here in the United States, so that we can then export them around the world is very important. And that is why we support things like demonstration projects for these new advanced coal technologies. We will get a permanent extension of [inaudible] access putting on generations of these technologies.

Mr. Bucshon. Yeah, I think the risk of losing high-skilled workers, particularly in the coal industry or fossil fuel industry, is real. And if we want to be competitive, you know, it is clear that the world will continue to demand coal for the foreseeable future. So to ensure it is the cleanest burning technology, shouldn't the U.S. be competing there and taking advantage of carbon capture and sequestration and other tools to actually build the newest, cleanest most innovative projects? I guess my question is, we should be leading, correct, in developing these type of technologies and not allowing our workforce to deplete to the point where we really can't compete.

Mr. Powell. Of course. We think that the -- you know, while it is very important for the United States to reduce its own emissions, with the climate mass is daunting, and globally, we need to bring down those global emissions, we are in the highest and best use of the U.S. powered grid is almost as test set for all of these different resources so that we can be innovating the technology, so that we can be maintaining the

work forces, and the experts who can then go, fly around, and provide technical assistance around the world in making these retrofits and developing their own clean energy grids and retrofitting their own existing grids.

Mr. Bucshon. Thank you very much.

Mr. Chairman, I will yield back.

Mr. Rush. Thank you, gentleman.

The chair now recognizes the gentlelady from New Hampshire, Ms. Kuster, for 5 minutes. Unmute your mike.

Ms. Kuster. Again, I am sorry. I did want -- thank you, Mr. Chairman, for convening this important hearing on the COVID-19 impact on the energy sector.

Clean energy jobs are good for our local communities, our economy, and our planet. And more than 17,000 granted Staters are employed in clean energy jobs that can't be outsourced, and many of them are in our rural community. I am particularly proud that 13 percent of our clean energy workforce is combined of veterans. It is not surprising that after serving their country, veterans are drawn to a field where they can continue to make a difference.

But, unfortunately, we know that COVID-19 has had a tremendous impact on clean energy jobs. At the 3rd of the month, I held a conversation with my colleague, Chris Pappas, with more than 30 clean energy groups. We were distressed to hear that nearly 2,000 grantees have lost their jobs in this industry because of COVID-19. And while this is a challenging time, I also believe it could be a moment of opportunity to double-down on our efforts to create clean jobs and cut greenhouse emissions.

Earlier this year, I unveiled a clean energy agenda which highlights a number of bills, most of them bipartisan, that Congress can address this year to promote clean energy in America. It is imperative that we continue to focus on these solutions as we

move forward.

Secretary Moniz, in your testimony, you described clean energy jobs as an economic powerhouse. Can you describe why these jobs have such an impact on local economies and global emissions?

Mr. Moniz. Well, thank you, Ms. Kuster. Well, the first fact again, I will just repeat, we saw for 5 years that the energy sector generated jobs at twice the pace, actually, a bit more than twice the pace of the economy as a whole. So they were, you know, this high leverage here in terms of job creation.

Secondly, as you said, many of the jobs, particularly -- certainly efficiency issues, efficiency upgrades around buildings, et cetera, a lot of the solar jobs, et cetera, these are, by definition, local jobs supporting typically some small- to medium-sized businesses. So, I think they are great engines, again, for kind of the fabric of the State's economy there. So I think those are all very, very important. But going -- I am sorry, please. Go ahead.

Ms. Kuster. Go ahead. Maybe we will get to it. In your April 3 op ed in The Hill, you touched on the need for a stimulus program built on an energy jobs coalition to focus on energy infrastructure modernization and job creation. In one facet, and you have referenced this today, updating energy efficiency in public buildings, like schools and courthouses. How would this type of stimulus help, and how would it make a difference as we recover from COVID-19?

Mr. Moniz. Well, again, the work itself would help in a healthy environment. With less energy use, help the -- help the economy, help the bills, who is paying those bills, in that case, the public, paying those bills, and generate jobs. Now, the advantage of the public buildings, as I emphasize, is also that they do tend to have, large times of the day, without heavy occupancy.

So that even if we remain constrained with COVID, as we are in many of the residential situations, that we still have the opportunity to move out strongly with these jobs. So this is a big opportunity. And we are going to need, as we emphasize, we will need a lot of new jobs.

Earlier, there was some discussion that, well, all the energy jobs will come back. Well, I wish that were the case. I am not convinced that it is going to be the case in energy any more than it is throughout the economy, because, frankly, a lot of smaller enterprises is going to have a hard time coming out the other side.

So we got to get those jobs back as best we can. But we need to create millions of new jobs, and that is where, in that op ed, we emphasize, boy, you have got great leverage in the energy sector to do that.

Ms. Kuster. Well, thank you. And I will submit for the record a question about the impact on marginalized communities, but my time is coming to an end. Thank you.

And thank you, Mr. Chairman, for holding this important hearing.

[The information follows:]

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Mr. Rush. The chair thanks the gentlelady.

The chair now recognized the gentleman from the great State of Texas, Mr. Flores, for 5 minutes.

Mr. Flores. Thank you, Mr. Chairman. I want to thank the witnesses for appearing today.

Clearly, COVID-19 has severely impacted all of the energy sector, but in particular, the oil and gas industry. The impact has been variously described as historic, resulting in all-time lows. In March and April, for instance, a record 52 percent -- prime and throughput utilization had their largest decline in revenue since 1985. A strong rebound in the energy sector is essential to the overall economic recovery and revitalization of the job market [inaudible]. We have already seen some minor improvement. That is the industry's plan.

But as much as we need the oil and gas market to be back to drive overall economic activity, we must not reduce efforts to create sustainable growth from other sectors. Specifically, we must aggressively support innovation and private sector partnership to regain U.S. dominance in the nuclear energy industry, the only green baseline energy source, based on energy source in this country.

In 2017, we passed and funded the Nuclear Energy Innovation and Modernization Act. Among other things, the Act mentioned the Nuclear Regulatory Commission to prepare bringing pre-structure to support new safety attributes to these advanced technology fuel. There is a quick urgency to get these technologies to the market.

H.R. 1760, the Advanced Nuclear Fuel Availability Act which passed the House twice, probably [inaudible], it created a public private consortium to facilitate fundamentals of a market to advance fuels, thus ensuring the diverse support as

well-spent.

Mr. Powell, I have a couple of questions for you. First of all, can you speak to how a public private consortium can ensure access [inaudible] or advanced reactors can support the development for a market for advanced fuels?

Mr. Powell. Absolutely. Thank you very much for the question, Representative Flores. It is good to see you. It is good to see you doing your part to reinvigorate demand for oil and gas in this country at the moment. And thank you so much for your long support for advanced nuclear fuel, or HALU, as we call it.

Secretary Moniz mentioned earlier, this is a vital issue. If we have a next generation of advanced nuclear reactors that require a higher test fuel, but we don't have any of that higher test fuel available, because we don't have a domestic capacity to produce it, we could have a whole generation of these new companies, entrepreneurs and technology that don't have anywhere to go to actually run their technologies in the United States.

And so, I absolutely support the idea of creating a public, private consortium to develop a sustainable supply of HALU. I think that that can start by creating a reserve of HALU using the capacities already at the Department of Energy, down lending fuel that was used in nuclear Navy, or perhaps even weapons grade materials to something that could be used for civilian reactors, but is still significantly more powerful that is currently used by civilian reactors. I think that that would make a lot of sense.

Without that sort of pump priming for the market, it is difficult to see how this will emerge, because it is kind of a chicken-and-the-egg problem. No company is wanting to invest in very large resources required to create that enrichment capacity.

And then without that enrichment capacity and that fuel available, the companies might want to come along and actually want to have reactors to use it.

So government working with the private sector, taking the first step in setting up that market seems appropriate and important in this case.

Mr. Flores. Thanks, Mr. Powell. I have two questions in the 20 seconds I have left. The second question is if our objective is to build new nuclear power infrastructure [inaudible]

Mr. Rush. Mr. Flores, you are breaking up.

Mr. Flores. [Inaudible] later with these advanced technologies fuel structure fields the [inaudible]

Mr. Rush. Mr. Flores, you are moving up -- we are going to yield back the balance of his time.

And now the chair will now recognizes the gentleman from the great State of Massachusetts, Mr. Kennedy, for 5 minutes.

Mr. Kennedy. Mr. Chairman, thank you, and thank you very much for the --

Mr. Flores. With the limited time I have and the poor cellular signal I have, I will submit questions for the record --

Mr. Rush. Mr. Flores, Mr. Flores, you yield back, I will give you 30 seconds at the end of the hearing if you so desire.

The chair now recognizes Mr. Kennedy for 5 minutes.

Mr. Kennedy. Thank you, Mr. Chairman. I want to give a special welcome to my friend, and my former neighbor, Secretary Moniz.

Without question, COVID has upended nearly every facet of our lives. Last week, we had the opportunity to discuss the devastating impacts of this pandemic that it has had on the frontline, our frontline community, and environmental justice communities. Particularly, high policy choices that have left certain communities, predominantly low income and minority, far more vulnerable to the effects of COVID.

COVID didn't create the racial disparities that we see today. It shined a bright light and exposed the underlying inequities of our system that many have known to be true for a very long time.

First off, I want to echo many of the comments from our Chairman Rush. He spent years working on expanding diversity and opportunity with people of all backgrounds into the energy field. I stand with him on that effort.

Getting back to COVID-19, on the clean air industry is significant. According to E2, the clean energy job losses for the last 3 months amount to 620,000 jobs national. In Massachusetts, that is nearly 20,000 jobs, more than a 17 percent decline. We must focus on policy that support the clean energy industry, and provide opportunity for all communities and workers of different backgrounds.

President Trump had signed a -- recently signed an executive order allowing agencies to invoke their emergency powers, to expedite environmental reviews for infrastructure projects. Unsurprisingly, the President's focus isn't only on fossil fuel projects related to energy.

I think we can all agree about robust environmental reviews are important. Perhaps even more so, on projects that impact solution and carbon industry, leveled in the middle of a pandemic that attacks the respiratory system.

Last week, the administration finally released a long-awaited environmental impact statement for the proposed Vineyard Wind Project. Vineyard Wind Supplement highlights the recent report by the American Wind Energy Association that describes recent developments in the offshore wind industry that analyzes the potential future economic impacts of the issue. The report was over 1.3 billion and announced domestic investments in wind energy and manufacturing facilities for its construction in the Atlantic States.

The report also analyzes two scenarios. A base scenario and a high scenario. The economic impact associated with wind energy development through 2030. These scenarios, we estimate the jobs, the output, and the valumatic associated with product development, onsite labor impacts, turbine and supply chain impacts, and these impacts. The actual wind energy, excuse me, the optional wind energy economic environmental employment impacts will be concentrated in Atlantic coastal states. It would also generate impact on other parts of the United States as well.

Under the bay scenario, offshore wind energy development would support $14.2 billion in output, $7 billion in value added, and approximately 45,500 jobs by 2030.

And so, I wanted to ask Mr. Secretary to begin. Do you believe that COVID will affect these numbers, and if so, how?

Mr. Moniz. I actually believe that if we put our minds to it, that we can overcome COVID and build this new industry of offshore, and offshore and the entire supply chain. By the way, as you know very well, in New Bedford would be an example of a city that is looking very, very much to build that infrastructure supplying the offshore.

So, I think that this is an area where we do not have to be hostage to COVID. But we should be investing right now in the innovation and supply chain buildup that we will need for this new industry.

Mr. Kennedy. So building on that key, sir, what specifically then would you suggest, the impacts for southeastern Massachusetts for communities like Fall River and New Bedford, and all the southeast in New England could be monumental, what needs to be done to actually get ready for this, now given the delays and the impacts that we have seen?

Mr. Moniz. Well, I think, first of all, we need to build a supply chain for the turbines themselves. We should remember that these are going to be very, very large,

eight, 10 megawatt individual turbines, and as was discussed earlier with very, very special needs. For example, one of those turbines could require, or will require, a ton of a specific rare earth element. We have to think about the whole supply chain to get that done. We have to build a supply chain. And there are companies, also, in Rhode Island, for example, experienced in building large wind blades, because those present huge logistical challenges that building in that area could be a real leg up. Building a port and maintenance facility, maintaining these requires a major seaborne activity.

And so, all of this has to be viewed, I think, with a comprehensive action plan for this decade that we come out of this decade with a robust industry and a robust supply chain and a robust workforce.

Mr. Kennedy. Mr. Secretary, it is great to see you. I think this is an enormous opportunity to revitalize parts of our country to strengthen union labor and to get good jobs that provide a pathway.

Chairman, I yield back.

Mr. Rush. The gentleman yields back.

The chair now recognizes the gentleman from the great State of North Carolina, Mr. Hudson, for 5 minutes.

Mr. Hudson. Thank you, Mr. Chairman. And thank you to all of our witnesses for joining us today for what I believe has been an excellent discussion. Rich Powell, it is good to see you, albeit it is virtually today.

As you know, all sections of our economy have been impacted by the coronavirus, and the energy sector has been hit especially hard. With millions of Americans on unemployment, it is imperative that we get our economy open and people back to work in a safe way.

I thank Chairman Rush and Ranking Member Upton for holding this very important

hearing. It is critical that we understand the impact of jobs as we develop policies and we get Americans back to work and grow our economy.

According to the estimates, we lost over 1.3 million energy sector jobs due to the coronavirus. Now is the time to come together in a bipartisan way to produce solutions that actually help our energy sector, and not just pick winners and losers.

For instance, my friend, Chairman Rush and I, have a bill together, H.R. 4061, the Blue Collar and Green Collar Jobs Development Act. This legislation is an all-of-the-above energy jobs creator. It is bipartisan ideas like that that will get our constituents and Americans back to work.

Rich, the COVID pandemic has wreaked havoc on our energy industry. And there are many other challenges we need to address in order to get back to where we were as the global leader in energy, and with historically low unemployment. For example, back in April, an activist Montana district court judge issued a terribly misguided decision on the nationwide permit 12 under the Clean Water Act because one agency supposedly didn't, quote, "consult," end quote, with another agency.

As this case continues to be considered, infrastructure projects across the Nation will be slowed by additional red tape. This is just one recent example, but it illustrates the severe kind of challenges facing infrastructure and construction projects.

In your testimony, you said, quote, "We can only put energy workers of all stripes back on the job as fast as we can permit the projects," end quote.

I can't agree more. Rich, what are some ideas you have on how we can best reform our permitting laws?

Mr. Powell. Well, thanks very much for addressing that real important issue. Representative Hudson, it is great to see you. Thank you as well for your long support on these clean energy issues, particularly your championing of the small kind of Hydro

Permitting Reform Act of last Congress. I think that is the kind of issue that we need to look at and find other opportunities like small conduit hydro, like the permit 12 issue.

You know, the case of conduit hydro we basically had a hugely overworked regulatory apparatus for projects that were really small and occurring mostly on private land with private resources often and, you know, not in an open waterway, but literally, in a private pipe or conduit somewhere. And putting the full authority and timeline of the typical per regulatory procedure on something like that, which is clearly, you know, totally misplaced.

In this issue, in permit 12, something that someone with pipelines around the country rely on, we haven't been letting, you know, a single process error in one permit application.

So when a country tries to shut down the entire permitting regime for the entire country, I think folks need to remember in this that, you know -- let's say you don't like oil and gas pipelines, although, I heard gas pipelines have been extremely influential in bringing down the emissions from our power sector the last decade, but let's say you don't like those. If you support the clean energy future, you are going to need pipelines of some sort, and they are going to carry hydrogen around the country, and they are going to carry carbon dioxide that has been captured away from power plants around the country, or renewable natural gas around the country.

We need this infrastructure. So finding ways to streamline that and offer the same level of environmental protections, but in a smarter way.

You know, the idea that we have something in the Defense Department like an arbitration panel that routinely resolved even very significant disputes of very fairly and objectively on a 60-day timeline, and we can't take that same kind of a fair, fast-moving arbitration mechanism and apply it to moving disputes over some of these environmental

permitting challenges, it just seems like we need to be looking for best practices like that, or opportunities to leverage technology and do semi-automated permitting when it is a lower priority, or less risky permitting application that couldn't just greatly speed up all of those processes; again, without sacrificing any of the clean air or clean waterbeds.

Mr. Hudson. Well, I appreciate that answer. And I think you are right. We can do both; we need to do both. And I appreciate your testimony today.

Mr. Hudson. I appreciate your testimony today.

Mr. Chairman, I see I am under 30 seconds. I will yield back the balance of my time. Thank you.

Mr. Rush. Thank you. The gentleman yields back his time.

The chair now recognizes the gentlelady from the greatest State of all, the great State of Illinois. Ms. Kelly, you are recognized for 5 minutes.

Ms. Kelly. It won't take 5 minutes because I have a meeting in a few minutes, but thank you, Mr. Chair, for having this meeting, and to the ranking member, and thank you to the witnesses.

Like was mentioned, the chair is very interested in diversifying this industry. And I want to know what ideas that all of you have about diversifying the industry.

Secretary, you talked about the low numbers, but what ideas do you have? We talk about it, but we need to see how we can implement changes so we can increase those numbers. So I want to know what your industry is doing -- Mr. Wetstone and Mr. Powell, you can answer also -- and any ideas of what we can do to push this issue along?

Mr. Moniz. Well, as I said earlier, I certainly, I think, this is a very important issue for us to address. I would just offer a couple of areas. One, I did mention, briefly earlier, and that is that I believe that we can do a lot more -- and by the way, it is women and minorities in the energy business.

Ms. Kelly. Right.

Mr. Moniz. We need to -- we have a problem across the board, frankly. The only thing we are doing well on is veterans. But with women and minorities, I think we need to really catch young people as they are about to transition into the workforce, bring them into energy, as a great opportunity. Because, again, as we have seen, this is an area that outperforms the economy. So it is a great chance to build -- to build careers, build families, and the like.

So I think that is one of the things that -- I come from the university, so it kind of is in my blood to draft people at the early stages of their careers.

At my own organization, we are a small organization, but we will be looking very hard at how we can do that, connect with maybe with some of the HBCUs, for example, in terms of opportunities.

But the second thing I would note is that if we look at the labor unions, they have incredible apprenticeship programs. That is one of the reasons why we are partnering with the AFL-CIO.

Rich Trumka, president of the AFL-CIO likes to say that the unions are second to the military in training people for jobs, and training them well and paying them while they are being trained.

So this is a case where, I think, we can also work with them in terms of trying to increase the women minorities. I know they work hard at it, but maybe we can, maybe we can even redouble those efforts.

Ms. Kelly. Thank you.

Mr. Wetstone.

Mr. Wetstone. Yes, thank you for the question. It is a focus right now in the sector in how we do better here. Certainly connecting, recruiting more from historically

black colleges and universities is a big part of that. But as the Secretary mentioned, training, looking for ways to bring more folks into the sector, we are looking at establishing at ACORE specifically some internship programs that will help do that also. We put on events that are relevant, educational events that will help people understand the business dynamics in this sector. And we are looking at scholarships for those events that help facilitate training. There is more we can do, and we welcome suggestions and recognize the scenario. We need to make progress.

Ms. Kelly. Mr. Powell, do you have anything?

Mr. Powell. Absolutely. Thank you for the question. It is extremely important. In our work and in our philanthropy, we have supported a number of efforts in this vein. We supported, for example, a delegation from the historically black colleges and universities looking at -- particularly the nuclear engineering space to come to D.C. and to be exposed to the industry and the policy portion of the industry by the Millennial Nuclear Caucus. So we are very proud in support of that.

We are also founding sponsors to a terrific institution called the Joseph Rainey Center. Congressman Rainey, as you may well know, is the first African American Member of the House of Representatives and a former slave. And the Center was founded with the goal of elevating the voices of minorities and women and mavericks in the public policy discussion, particularly State policymakers.

So it spends a lot of time helping educators bring resources to those State policymakers around the country. So we are a proud sponsor of the Rainey Center as well.

Ms. Kelly. Thank you. I know --

Mr. Moniz. Madam, could I add one more thought, going back to my DOE days, and that is that the National Nuclear Security Administration of the DOE, we formed a

program with HBCUs on training cyber experts. So choosing a part of the economy that clearly is going to need lots and lots of people, and again, grabbing young people to capture that. And the second program was not with minorities directly, but maybe there is a lesson here. We worked with the military, and the military allowed those who were within 6 months of leaving the military to start what was in effect an apprenticeship program, a training program, so that when they came out, they were ready to install solar

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[3:03 p.m.]

Ms. Kelly. My time is up, so thank you so much.

Mr. Rush. The chair now recognizes the gentlelady from California, Ms. Barragan, for 5 minutes.

Ms. Barragan. Thank you, Mr. Chairman. Thank you for holding this very important hearing.

The disruption of the clean energy industry by the pandemic has led to hundreds of thousands of job losses. California has been the hardest hit. And in May, Los Angeles County loss nearly two-and-a-half times as many clean energy jobs as any other county in the United States. And yet, a transition to 100 percent clean energy must remain a priority for our country.

Our Congress must act to provide relief by making clean energy tax credits refundable, so that eligible projects can receive direct cash grants, and by investing in energy efficiency retrofits for small businesses and critical infrastructure. As we work to help the clean energy industry rebound from the pandemic, we must invest in an economic recovery that addresses both the job crisis, and climate crisis our country faces.

I believe this will take a transformational investment in the clean energy economy so that we build back better by creating millions of jobs and reducing pollution in our black and brown communities that have been hit the hardest by the pandemic.

I want to thank you, Mr. Secretary and Mr. Wetstone, for addressing the issue of minorities. Latinos make up 14 percent of workers in the clean energy industry, but have experienced 23 percent of job losses. So I think it is critical that Congress looks at

policies to recover job losses, and thank you both for commenting on that.

Mr. Secretary, as extreme weather from the climate crisis worsens, communities of color will continue to be hit first and worst. What can Congress do to further encourage investments in clean energy micro grids for critical facilities in vulnerable communities in order to maintain basic services?

Mr. Moniz. Yes, I think that is extremely important. And, by the way, of course, it goes without saying that the environmental impacts and the COVID impacts hit those communities, as you say, first and worst.

In going forward, I strongly endorse the idea of building, at the community level, these kinds of micro grids coupled with distributed generation and the like.

I will give one example: When I was Secretary, I joined Mayor Duggan in Detroit, in dedicating a solar field that was placed in the middle of a disadvantaged community, and what was great about -- the utility help support it, to build it, but, also, drew upon local residents, essentially for apprenticeships, so that they were trained on the job as well to learn how to install the solar.

So I think it is really taking this kind of comprehensive view, this integrated view of community building together with the energy bill that makes sense. And I think, quite frankly, I think giving substantial incentives for that I think would be helpful, and I might say that might go through some of the established programs that, for example, the utilities have, because the utilities are, you know, they are close to the ground on this.

And I know usually we go through other mechanisms, including State energy offices. I am not arguing against that, but I do think that those who execute the projects, like the utilities, could easily be incented to do this kind of integrated planning.

Ms. Barragan. Well, thank you for that.

I am working on legislation to ensure environmental justice communities receive

greater funding support for micro grids. We need to be intentional about our investments in frontline communities to achieve greater equity to achieve clean energy deployment.

Mr. Secretary, I want to ask you about something else I have seen. There is a recent study from the University of California Berkeley. It found that the United States could achieve 90 percent clean electricity nationwide at 2035, at no extra cost to consumers. Do you believe this is feasible, and what are the main changes to our energy policy needed in 2020 to set us up on this path?

Mr. Moniz. I don't know the study specifically, but let me say that in my testimony, I noted that if we are to get to net-zero this century economy-wide, we have to get there in electricity faster. 2040, I think, is a date, but I said maybe we should move that up to 2035. Net-zero by 2035 in the electricity sector. To do it, I believe we need -- we cannot do it just with wind and solar. We need wind and solar, but we need this, what I call, all-of-the-above approach.

So right now, we need to go out hard on wind and solar, getting the storage at different time scales, getting CCS where appropriate, small nuclear could come in there and we will certainly need, in my view, carbon dioxide removal from the atmosphere and ocean in order to get to the net-zero, but we need this decade to be, as I said, the decade of innovation.

We need to build these things up so that by 2030 we can start deploying them so that by ideally 2035, at a minimum by 2040, we can reach that net-zero electricity and do it with all the social justice concerns that you have raised earlier.

Ms. Barragan. All right. Thank you, Mr. Secretary.

My time is expired.

I yield back.

Mr. Rush. The gentlelady yields back.

The chair now recognizes the gentleman from the great State of Arizona, Mr. O'Halleran, for 5 minutes.

Mr. O'Halleran. Thank you, Chairman Rush and Ranking Member Upton, for hosting today's important hearing. As the COVID-19 pandemic has devastated the entire United States' economy, and to the extent, the world, it is important that Congress continue to conduct its oversight and legislative duties to provide economic relief to all Americans nationwide.

Before the pandemic, Arizona ranked third in the Nation for total amount of solar capacity installed. While also being the home to over 470 solar companies that have invested over $12 billion into the State's economy. Since the pandemic, Arizona's clean energy sector has lost nearly 10,000 jobs.

Overall, this job loss is in addition to the increasing amount of coal plant retirements throughout the southwest, including in my district, where the Navajo generating station in Kayenta Mine lost nearly 900 jobs late last year.

As the country continues to battle this tragic pandemic and offer proposals for reinventing the economy, Congress must provide the energy sector with some public policy guidance.

Secretary Moniz, in your testimony, you emphasized the importance of building diverse coalitions of energy stakeholders to ensure the clean energy transformation benefits all energy workers and their families. I am sure you know the number of coal plant retirements nationwide has continued to accelerate in recent years, which has left countless workers, either facing early retirement or suddenly looking for new forms of employment.

How can the clean energy sectors' economy recovery also be inclusive of coal

workers who have recently been impacted, or soon will be by more plant closures nationwide?

Thank you.

Mr. Moniz. Well, certainly, I just reinforce what you, of course, said, Congressman, that obviously in the coal business, that is the place where pre-COVID we were already seeing lots of job reductions in the supply chain. Now, I think there are -- I have also emphasized that solutions tend to be very regional or community-focused, and so, there is not one size fits all.

For example, in West Virginia, the decrease in coal has seen an increase in natural gas somewhat compensating and with some of the same workers carried there. Of course, when you mentioned the Navajo station, that is a very, very different kind of a situation. And there, by the way, I think that we need -- I will be honest.

I tried, and we made some progress in getting a credit loan subsidy passed for Indian land, energy projects, which could leverage about $100 million of projects, but that is, frankly, orders of magnitude too small. And I think that we need to have a very, very serious initiative now to get Native American, indigenous people lands really as part of the energy revolution, and have them be part of the jobs to create that industry.

Otherwise, I mean, besides those two specific locations, it comes down to the issue of, I think, looking at community assets, and I might say that we are doing a project right now with my MIT hat on that will include looking at coal country, a coal country county, and looking specifically at what are all the assets that they have in terms of having a bright future in a future low-carbon economy.

But I think that is the way it works. I think it is not a one-size-fits-all; I think it is really a place-by-place hard look at the assets and making sure that we minimize any kind of stranded workers, including, of course, the coal workers.

Mr. O'Halleran. I thank you, Secretary. Appreciate that. And I look forward to having a discussion with you on your thoughts on the entire process.

Mr. Moniz. Would be pleased with that discussion.

Mr. O'Halleran. Thank you.

Mr. Wetstone, in your testimony, you discussed the certain supply chain disruptions as one of the many impacts felt by the renewable energy sector through the COVID-19 pandemic. Given the uncertain future --

Mr. Rush. The gentleman's time has expired.

Mr. O'Halleran. Okay. Thank you.

Mr. Rush. The gentleman yields back.

Mr. Wetstone. I will provide a response for the record.

Mr. Rush. Yes. Mr. Flores didn't complete his question due to technical difficulties. I yielded him 5 minutes. I think he had submitted his final question for the record, or final question in written form. And so, Mr. Flores, if you are not present, we will accept your final question in written form and ask that witnesses respond in a manner of 10 days to your final question if there are no objections.

Hearing no objections, so ordered. The chair now several unanimous consent requests for documents to be included into the record, a letter from the National Rural Electric Cooperative Association; a letter from the American Gas Association; a statement from the International Association of Drilling Contractors; a letter from the American Public Power Association; a letter from the Renewable Fuel Association; a letter from the Biotechnology Innovation Organization; a letter from SMUD; a letter from the Petroleum Equipment and Services Association; a fact sheet from the National Mining Association; a letter from the American Expiration and Conduction Council; a letter from the American Fuel and Petrol Chemical Manufacturers; a letter from the American Association of Blacks

in Energy. And that concludes the list.

Hearing no objection --

Mr. Butterfield. Mr. Chairman.

Mr. Rush. Yes.

Mr. Butterfield. Before I sign off, would you let the record show that on the Democratic side of the aisle, Mr. Veasey and I stayed with you till the end.

Mr. Rush. The record will so reflect.

I want to thank you and congratulate you for an outstanding job.

Mr. Butterfield. Thank you, Mr. Chairman.

Thank you.

Mr. Rush. All right. That concludes the witness questions, and I would like to thank our witnesses for their participation in today's hearing, and I want to remind members that pursuant to committee rules, they have 10 business days to submit additional questions for the record to be answered by the witnesses who have appeared. And I ask each of our witnesses to respond promptly to any such questions that you may receive.

Without objection, I want to, again, my personal thanks and appreciation to all the witnesses. And I see Mr. Veasey is here. Unless he has an objection, I will reopen the hearing for Mr. Veasey.

Mr. Veasey, you have questions for the witnesses?

Mr. Veasey. Yes, I do have questions for the witness. Can you hear me?

Mr. Rush. Yeah. We will reopen the witness questions for 5 minutes.

Mr. Veasey, you are recognized for 5 minutes.

Mr. Veasey. Thank you very much, Mr. Chairman.

And Rob and Kelly asked a question that I wanted to address earlier on

diversification in the energy sector, and so, I am going to skip over to Dr. Moniz and ask him about the potential for the energy sector to revitalize the economy through energy efficiency.

Last year, I had introduced a bill with Congressman Greg Stanton to authorize the energy efficiency and conservation block grant program that would provide grants and technical assistance to various levels of government to support a wide variety of energy efficiency and renewable energy activities. Can you just share briefly with me why making an investment in energy efficiency is important for our public buildings and how that benefits taxpayers?

Mr. Moniz. Well, energy efficiency has so many benefits simultaneously. Good for the environment by less energy use, good for the economy by reducing bills, of course, and good for jobs because as we mentioned earlier there are 2.4 million jobs in energy efficiency, half of those construction jobs, which means, of course, modernizing and retrofitting buildings.

With regard to public buildings, all those benefits accrue, in this case, the bill payer, of course, is the taxpayer, and that is a benefit. But also, we don't know the future of how this COVID virus will work out. We don't know if there will continue to be sensitivities, difficulties in accessing residential homes, which is, of course, a very important part of the energy efficiency. But buildings offers the opportunity, not entirely, but largely independent of the virus to be able to arrange the work in the proper way, and we can do that right now.

So right now a big push, create jobs, now when we need them, and do it in a way that just helps the economy and helps the environment.

Mr. Veasey. Yeah. And Secretary, I want to skip over to mining very quickly, and I want to direct this question to you and if we have time, Rich may want to way in as

well. I think that depending on how much longer we have to be sheltered in place because of COVID-19, that peoples' mindset about trade and trade with certain countries can certainly be altered, and people may be even more adversarial than we saw they were towards trade in the 2016 presidential campaign.

My question to you is, for these rare earth minerals that we need like I think lithium was mentioned earlier, how in the world do you do safe mining? Like, if we are going to say we want to do more of that here because we want to have materials that are sourced in the United States, more to be able to make our cell phones and whatever else we need rare earth minerals for, how in the world do you bring back safe mining to this country?

Do you think that we need to bring back mining to this country in some form of future, and how do you do that with the politics behind mining because mining, as you know, can be very dirty?

Mr. Moniz. Yeah. I think we clearly need to look at, if we are going to -- the extent to which we reconfigurate mining will require managing the environmental issues. Actually, earlier, Rich Powell did mention that in addition to the security and supply chain issues, we should recognize that a lot of these supply chains -- for example, he mentioned cobalt is being produced with very, very despicable labor practices, including child labor and the like.

So we have, I think, many motivations to look at reopening that supply chain for, and doing environmentally sensitive mining. For lithium, there is, for example, work going on right now in the salt and sea looking at a lithium source. There is work in California on rare earths. We have other opportunities for nickel and copper, which will also be very, very much in demand.

So, I think -- and, frankly, my group we are going to look at this issue of what can

we do to improve the security of our supply chains, create domestic supply chains, create domestic jobs, but do it in a way that will pass the environmental tests.

Mr. Veasey. Thank you.

Mr. Moniz. And I might add a different one is, if you talk about LNG, that was mentioned earlier as well. It is not a mineral, but it is an extracted resource.

Mr. Veasey. Yes.

Mr. Moniz. We have large LNG, and now there are interesting maneuvers and I will be honest, I am devising one project in trying to see if we can't do net-zero LNG for export. So, you know, really, really attack the environmental problems in all of these resource commodities.

Mr. Veasey. I definitely want to hear more about that later.

Mr. Moniz. Happy to discuss it.

Mr. Veasey. Thank you.

Thank you, Mr. Chairman.

Mr. Rush. The gentleman yields back.

I just want to reiterate that I had entertained a unanimous consent request to enter into the record various and sundry documents, and I didn't hear any objections. So it is so ordered that those documents will be entered into the record. That is it.

[The information follows:]

******** COMMITTEE INSERT ********

Mr. Rush. Without objection, the subcommittee is adjourned. I want to thank the witnesses, once again. You have been very patient. You have been very informative, exciting even, so I want to thank you for all your testimony. It is so good to see you all, again, and God bless each and every one of you.

Again, now the subcommittee stands adjourned.

[Whereupon, at 3:25 p.m., the subcommittee was adjourned.]