GENERATING EQUITY: DEPLOYING A JUST AND CLEAN ENERGY FUTURE

VIRTUAL HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY

OF THE

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C O N T E N T S

WITNESSES

SUBMITTED MATERIAL

[1] The report has been retained in committee files and is available at https://docs.house.gov/meetings/IF/IF03/20210420/112462/HHRG-117-IF03-20210420-SD003.pdf.

[2] The report has been retained in committee files and is available at https://docs.house.gov/meetings/IF/IF03/20210420/112462/HHRG-117-IF03-20210420-SD007.pdf.

GENERATING EQUITY: DEPLOYING A JUST AND CLEAN ENERGY FUTURE

TUESDAY, APRIL 20, 2021

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:34 a.m. via Cisco Webex online video conferencing, Hon. Bobby L. Rush (chairman of the subcommittee) presiding.

Members present: Representatives Rush, Peters, Doyle, McNerney, Tonko, Veasey, Schrier, Butterfield, Matsui, Castor, Welch, Schrader, Kuster, Blunt Rochester, O'Halleran, Pallone (ex officio), Upton (subcommittee ranking member), Burgess, Latta, McKinley, Kinzinger, Griffith, Johnson, Bucshon, Walberg, Duncan, Palmer, Lesko, Pence, Armstrong, Rodgers (ex officio).

Also present: Representative Fletcher.

Staff present: Jeffrey C. Carroll, Staff Director; Waverly Gordon, General Counsel; Tiffany Guarascio, Deputy Staff Director; Perry Hamilton, Clerk; Fabrizio Herrera, Staff Assistant; Mackenzie Kuhl, Digital Assistant; Kaitlyn Peel, Digital Director; Lino Peña-Martinez, Policy Analyst; Tim Robinson, Chief Counsel; Chloe Rodriguez, Clerk; Sarah Burke, Minority Deputy Staff Director; Michael Cameron, Minority Policy Analyst, Consumer Protection and Commerce, Energy, Environment; Nate Hodson, Minority Staff Director; Emily King, Minority Member Services Director; Mary Martin, Minority Chief Counsel, Energy and Environment; and Michael Taggart, Minority Policy Director.

Mr. RUSH. The Subcommittee on Energy will now come to order. Today the subcommittee is holding a hearing that is entitled "Generating Equity: Deploying a Just and Clean Energy Future." Due to the COVID–19 public health emergency, today's hearing is being held remotely. All Members and witnesses will be participating via video conferencing.

As part of our hearing, microphones will be set on mute for purposes of eliminating any background noise. Members and witnesses, you will need to unmute your microphone each time you wish to speak. Documents for the record can be sent to Lino Peña-Martinez at the email address we've provided to the staff. All documents will be entered into the record at the conclusion of the hearing.

The Chair now recognizes himself for 5 minutes for the purposes of an opening statement.

OPENING STATEMENT OF HON. BOBBY L. RUSH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

The Subcommittee on Energy convenes today in continuation of its work to advance a 21st century clean energy system with the guiding principles of equity and justice mainly in mind. Historically, the impacts of climate change and the consumption and production of energy have disproportionately burdened the health and environment of our Nation's most vulnerable communities.

A University of Washington and Stanford University study lays these alarming facts bare for all to see: Black and low-income people have the highest risk of death from pollution linked to energy production. This awful truth is compounded by the fact that these same communities lack adequate access to clean energy solutions.

As an illustration, a Lawrence Berkeley National Laboratory report shows that low-income households represent only 15 percent of the U.S. solar energy adaptations. The vast majority of these low-income households instead rely on environmentally polluting alternatives. In addition to this, DoE's Low-Income Affordability Data (LEAD) Tool shows that the national average energy burden for the percentage of gross income spent on energy costs is three times higher for low-income households than for non-low-income households.

Frankly, the poor pays more for its energy needs even though these very same needs are met with disastrous outcomes. These inequities also affect rural communities, and they face some of the highest energy burdens of any U.S. household group.

With these factors in mind and given that the clean energy transition is already underway, it is incumbent upon this body to advance policies that ensure resilient, reliable, and equitable clean energy systems for all. The CLEAN Future Act includes a series of policy proposals that seem to balance the scales by delivering clean energy solutions to our Nation's underserved and disadvantaged communities.

The CLEAN Energy Future Act also includes my bill, the Energy Equity Act of 2021, which would provide everyone more access to clean energy technologies through the creation of an Energy Equity Office within the Department of Energy.

I applaud the Biden-Harris administration for their work to ensure that underserved and disadvantaged communities receive their fair share of benefits through their Justice40 initiative. I also applaud Secretary Granholm for recruiting Ms. Shalanda H. Baker, a clean energy justice leader, who is working to integrate the Department of Energy's mission around this very work. Therefore, I look forward to working with my colleagues across the aisle toward those ends.

[The prepared statement of Mr. Rush follows:]

PREPARED STATEMENT OF HON. BOBBY L. RUSH

Good morning. The Subcommittee on Energy convenes today as a continuation of its work to advance a 21st century clean energy system with the principles of equity and justice chief in mind. Historically, the impacts of climate change and the consumption and production of energy have disproportionately burdened the health and environments of our Nation's most vulnerable communities. A University of Washington and Stanford University study lays this alarming fact bare: Black and low-

income people face the highest risk for death from pollution linked to energy production.

This truth is compounded by the fact that these same communities lack adequate access to clean energy solutions. As an illustration, a Lawrence Berkeley National Laboratory report shows that low-income households represent only 15 percent of U.S. solar adoptions. The vast majority of these low-income households, instead, rely on polluting alternatives. In addition to this, the Department of Energy's Low-Income Energy Affordability Data (LEAD) Tool shows that the national average energy burden, or the percentage of gross household income spent on energy costs, is three times higher for low-income households than for non-low-income household. Frankly speaking, it really is costly to be poor. These inequities also affect rural families, as they face some of the highest energy burdens of any U.S. household group. With these factors in mind—and given that the clean energy transition is already underway—it is incumbent upon this body to advance policies that ensure a resilient, reliable, and equitable clean energy system for all.

The CLEAN Future Act includes a series of policy proposals that seek to balance the scales by delivering clean energy solutions to our Nation's underserved and disadvantaged communities. These policies—many of which were created with input from my esteemed colleagues from this subcommittee—include efforts to deploy a clean energy standard, distributed energy systems, and community and low-income solar. The CLEAN Future Act also includes my bill, the Energy Equity Act of 2021, which would drive equitable access to clean energy technologies through the creation of an energy equity office within the Department of Energy.

The threat that climate change poses to our communities—especially the most vulnerable among us—requires a whole of government approach. With this in mind, I applaud the Biden-Harris administration for their work to ensure that underserved and disadvantaged communities receive their fair share of benefits through their Justice40 Initiative. I also applaud Secretary Granholm for recruiting Ms. Shalanda H. Baker, a key energy justice thought leader, who is working to further integrate the Department of Energy's mission around this work.

Bipartisanship is equally important to the creation of just and equitable policies. Therefore, I look forward to working with my colleagues across the aisle toward those ends.

And with that, I yield to my friend and colleague, the gentleman from Michigan, Ranking Member Upton.

Mr. RUSH. With that I want to yield to my dear friend, the great gentleman from Michigan, the ranking member, the one and only Mr. Frederick Upton.

OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. UPTON. Well, thank you, Mr. Chairman. It is good to be with you. It is nice to see you down the hallway, I think, right? I want to thank our witnesses as well, and certainly I look forward to today's hearing that is going to explore the opportunities to take full advantage of America's energy abundance, our economic strength, our spirit for innovation.

We're also going to examine what is at stake with the Biden administration's Executive orders attacking American energy production and manufacturing and also the majority's CLEAN Future Act, which would enforce a de facto ban on hydraulic fracturing, pipeline infrastructure, and even plastic manufacturing.

Over the last decade the U.S. has become the world's leading producer of oil and natural gas, and we are proud of that. And as a result we import less from the Middle East, and we're certainly more energy secure today than ever before. And thanks to hydraulic fracturing and the shale revolution in a good number of States, we are all reaping those benefits in the form of good-paying jobs and, yes, affordable and reliable energy at a much reduced cost than otherwise it would have been.

So today we're going to hear from Gillette Mayor Louise Carter-King and Mr. Pérez. Jobs in fossil energy, mining, and manufacturing certainly provide meaningful, family-sustaining work for millions. States and local governments also rely on those revenues to pay for hospitals, schools and roads.

We're not just talking about a few people's livelihoods. We're talking about entire communities who could be harmed by a transition to lower-paying jobs, poorer performing schools and, yes, underfunded local government services under this CLEAN Future Act.

So, as we discuss this so-called just transition that certain friends across the aisle are advocating for, let's review some of the recent history to remind ourselves how we got to where we are today. From the days of the gas lines in the 1970s—and yes, I remember those—to the mid-2000s, America was trapped in an energy scarcity mindset. Energy prices always seemed to be going up. Our domestic production was, in fact, declining, and we faced ever-growing dependence on oil from the Middle East.

In 2008, something remarkable began to happen within the energy industry. In the face of global economic recession, private companies started investing billions of dollars in new technologies to unlock oil and gas from America's shale resources that, in fact, had been overlooked, and thanks to the free market and States with pro-growth regulatory policies, domestic production flourished and we were able to cut our imports from more than 2 million barrels a day to zero. Not bad.

In fact, in 2020, for the first time in our history, we became net energy exporters. Today, as a result of the shale revolution and the rise of natural gas production, we are also leading the world in carbon emission reductions—a good thing—and we didn't need the top-down Federal mandate, a price on carbon, or even the Paris Agreement to get there, either. We owe that to the free market and competition that rewards efficiency and innovation.

So let's recognize that the States and local governments rather than maybe the Federal Government are the primary drivers of the trends that we see today, which is why I believe it is so important to hear from our mayors and the workers who live and work in those communities.

So with that, Mr. Chairman, I look forward to the testimony, engaging with the witnesses, and I yield back.

[The prepared statement of Mr. Upton follows:]

PREPARED STATEMENT OF HON. FRED UPTON

Thank you, Mr. Chairman. And thank you, to our witnesses, for appearing before us today virtually to provide your testimony.

I look forward to today's hearing to explore opportunities to take full advantage of America's energy abundance, our economic strength, and our spirit for innovation. We will also examine what's at stake with the Biden administration's Executive orders attacking American energy production and manufacturing, and also the majority's CLEAN Future Act, which would enforce de facto bans on hydraulic fracturing, pipeline infrastructure, and plastics manufacturing.

Over the last decade, the United States has become the world's leading producer of oil and natural gas. As a result, we import less from the Middle East and we are more energy secure today than ever before. Thanks to hydraulic fracturing and the shale revolution, we are all reaping these benefits in the form of good-paying jobs and affordable and reliable energy.

As we will hear from Gillette Mayor Louise Carter-King and Mr. Pérez, jobs in fossil energy, mining, and manufacturing provide meaningful, family sustaining work for millions of Americans. States and local governments also rely upon the revenues to pay for hospitals, schools, and roads. We are not just talking about a few people's livelihoods. We are talking about entire communities who could be harmed by a "transition" to lower paying jobs, poorer performing schools, and underfunded local government services under the CLEAN Future Act.

As we discuss the so-called "just transition" that my friends across the aisle are advocating for, let us review some recent history to remind ourselves how we got where we are today.

From the days of gas lines in the 1970s until the mid-2000's America was trapped in an energy scarcity mindset—energy prices were going up, our domestic production was declining, and we faced ever-growing dependence on oil from the Middle East.

In 2008, something remarkable began to happen within the energy industry. In the face of the global economic recession, private companies started investing billions of dollars in new technologies to unlock oil and gas from America's shale resources that had been overlooked. Thanks to the free market and States with pro-growth regulatory policies, domestic production flourished, and we were able to cut our imports from more than 2 million barrels a day to zero barrels per day. In 2020, for the first time in our history, we became net energy exporters.

Today, as a result of the shale revolution and the rise of natural gas, we are also leading the world in carbon emissions reductions, and we didn't need a topdown Federal mandate, a price on carbon, or the Paris Agreement to get there either. We owe that to the free market and competition that rewards efficiency and innovation.

Let us also recognize that the States and local governments—rather than the Federal Government—are the primary drivers of the trends we see today, which is why I believe it so important to hear from our mayors and the workers who live and work in the community.

With that, Mr. Chairman, I look forward to the testimony engaging with witnesses. Thank you, I yield back.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the chairman of the full committee, the gentleman from the great State of New Jersey, Mr. Franklin "Frank" Pallone. Chairman Pallone, you are recognized for 5 minutes for the purposes of an opening statement.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Chairman Rush. This is an important hearing. I know that you've been a champion for ensuring inclusion of underserved communities and communities of color in the clean energy transition, including the bill that you recently introduced, the Energy Equity Act of 2021. So I know how important this issue is for you.

And we're going to talk today about how we can improve clean energy access inequity, which is a critical part of our efforts to tackle the climate crisis. The equitable deployment of clean energy technologies is crucial for our energy transition. We have to ensure that all communities have access to the environmental benefits and economic opportunities of clean energy.

The committee has held several hearings on this critical topic. Last Congress, this subcommittee held a hearing on energy burdens faced by low-income communities and communities of color and how the pandemic exacerbated those burdens, and last week the Environment and Climate Change Subcommittee held the hearing on important legislation to address the needs of environmental justice communities, and through these hearings we have heard

about the urgent needs of these communities and we have explored different strategies to address existing and longstanding disparities.

The equitable deployment of clean energy will produce a lot of positive results. It will improve local air quality, help us to meet climate goals, stabilize and lower energy prices, provide access to good jobs, and help stimulate local economies in both urban or rural areas. And for too long underserved communities and communities of color have disproportionately faced the negative effects of fossil fuel generation and climate change. These communities are often the most impacted by the climate crisis and our country's history of reliance on fossil fuels because they are oftentimes located in close proximity to power plants or urban heat islands.

They also frequently endure housing conditions that lack proper weatherization, and by gaining access to clean energy technology such as through community solar subscriptions or energy efficiency upgrades these households can see reduced energy burdens and health risks as well as increased economic opportunity.

So I think we all know that the energy industry is changing, and this is good news for our efforts to tackle the climate crisis and to create good-paying jobs for American workers. According to the 2020 U.S. Energy and Employment Report, solar and wind jobs paid higher wages than those in the fossil fuel sector, and the clean energy sector employed roughly three times more workers than the fossil fuel sector in 2019.

And despite these promising trends I believe the Federal Government needs to do more to speed up and incentivize the clean energy transition, and that is exactly what we accomplish with the CLEAN Future Act, a plan to combat the climate crisis and achieve net zero greenhouse gas pollution by no later than 2050. And our bill includes several provisions that support clean energy development and deployment, including in underserved areas. It also includes a robust set of provisions on workforce development in transition.

This is the kind of comprehensive approach that we have to take. I outright reject the notion that we must choose between addressing climate change and the communities that currently rely on fossil fuel jobs. That is a false choice, because that transition is already happening. For example, market forces are already driving down coal revenue. Coal generation fell 10 percent from 29 percent in 2017 to 19 percent in 2020.

And clean energy is the future, and it is time that we worked together to ensure that these communities don't get left behind. Yesterday the Nation's largest mining union put out a document about this transition. And they said, and I quote, "Change is coming whether we seek it or not." And the president of the mining union said, and I quote, "We're on the side of job creation, of a future for our people." And I just want to say emphatically, so are we.

Make no mistake. The rest of the word is already embarking on a major transition to clean technology. We simply can't stand idly by as the world moves on without us and American workers and industries get left behind. I don't want that to happen. So it is time we come together to ensure everyone regardless of who they are or where they live has access to cleaner, cheaper energy and the jobs

that come with growth in the clean energy sector. That is what this hearing is about.

And I want to thank you again, Chairman Rush, because this has always been at the forefront of your concerns, and that is why you're having this hearing today. Thanks again. I yield back.

[The prepared statement of Mr. Pallone follows:]

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

Thank you, Chairman Rush, for holding this important hearing on deploying a just and clean energy future. Chairman Rush has been a champion for ensuring inclusion of underserved communities and communities of color in the clean energy transition, including through his recently introduced bill, the Energy Equity Act of 2021.

Today we will discuss how we can improve clean energy access and equity, which is a critical part of our efforts to tackle the climate crisis. The equitable deployment of clean energy technologies is crucial for our energy transition. We must ensure that all communities have access to the environmental benefits and economic opportunities of clean energy.

The committee has held several hearings on this critical topic. Last Congress, this subcommittee held a hearing on energy burdens faced by low-income communities and communities of color and how the pandemic exacerbated these burdens. And last week the Environment and Climate Change Subcommittee held a hearing on important legislation to address the needs of environmental justice communities. Through these hearings, we have heard about the urgent needs of these communities and we have explored different strategies to address existing and long-standing disparities.

The equitable deployment of clean energy will produce a lot of positive results. It will improve local air quality, help us meet climate goals, stabilize and lower energy prices, provide access to good jobs, and help stimulate local economies in both urban or rural areas.

For too long, underserved communities and communities of color have disproportionately faced the negative effects of fossil fuel generation and climate change. These communities are often the most impacted by the climate crisis and our country's history of reliance on fossil fuels because they are oftentimes located in close proximity to power plants or urban heat islands. They also frequently endure housing conditions that lack proper weatherization. By gaining access to clean energy technology, such as through community solar subscriptions or energy efficiency upgrades, these households can see reduced energy burdens and health risks, as well as increased economic opportunity.

The energy industry is changing and this is good news for our efforts to tackle the climate crisis and to create good-paying jobs for American workers. According to the 2020 U.S. Energy and Employment Report solar and wind jobs paid higher wages than those in the fossil fuel sector. And, the clean energy sector employed roughly three times more workers than the fossil fuel sector in 2019.

Despite these promising trends, I believe the Federal Government needs to do more to speed up and incentivize the clean energy transition. And that is exactly what we accomplish with the CLEAN Future Act, a plan to combat the climate crisis and achieve net zero greenhouse gas pollution by no later than 2050. Our bill includes several provisions that support clean energy development and deployment, including in underserved areas. It also includes a robust set of provisions on workforce development and transition.

This is the kind of comprehensive approach that we must take. I outright reject claims that we must choose between addressing climate change and the communities that currently rely on fossil fuel jobs. That's a false choice because this transition is already happening. Market forces are already driving down coal revenue. Coal generation fell 10 percent from 29 percent in 2017 to 19 percent in 2020. Clean energy is the future and it is time that we work together to ensure these communities don't get left behind.

Yesterday, the Nation's largest mining union put out a document about the transition, saying "Change is coming, whether we seek it or not." Its president said: "We're on the side of job creation, of a future for our people." So are we.

Make no mistake—the rest of the world is already embarking on a major transition to clean technology. We simply cannot stand idly by as the world moves on without us and American workers and industries get left behind.

It is time we come together to ensure everyone—regardless of who they are or where they live—has access to cleaner, cheaper energy and the jobs that come with growth in the clean energy sector.

Mr. PALLONE. I think he is—do you hear him, guys? I don't. Bobby, I think you're muted.

Mr. RUSH. Thank you, Mr. Chairman. I was muted.

The Chair now recognizes the gentlelady from the great State of Washington, Ms. McMorris Rodgers, the ranking member of the full committee, for 5 minutes for the purposes of an opening statement.

OPENING STATEMENT OF HON. CATHY MCMORRIS RODGERS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mrs. RODGERS. Good morning, Mr. Chairman, and everyone.

Mr. RUSH. Good morning.

Mrs. RODGERS. Good morning. And to the chairman of the full committee I just want to say on behalf of the Republicans that we, too, support clean energy, but it doesn't just mean wind and solar. It is hydro. It is nuclear. It is natural gas. America is leading the way on all kinds of clean energy sources.

It is great to be with all of you today. Making sure people have access to affordable, reliable energy must remain a priority of this committee's work on energy. Americans have led the world in lifting people out of poverty, raising the standard of living, and we must recognize the tremendous value of our existing energy system. It is central for expanding economic growth and spreading opportunity. The evidence is in plain sight. The shale revolution has brought tremendous opportunities, an American energy renaissance. It has revitalized communities with hundreds of billions of dollars in economic activity, thousands of new jobs. It has meant the equivalent of about $2,500 extra in the average family's annual budget, with low-income households benefiting the most from reduced energy burdens.

It has raised the promise of a better quality of life for families along the Ohio River Valley, in Pennsylvania, Ohio, West Virginia. It has increased opportunity through Texas, New Mexico and from Wyoming to California, helping people of all incomes. To continue to address energy poverty and climate risks Republicans. seek to build on these current achievements in energy and economic opportunity.

We also want to keep electricity rates low. I have noted in several recent hearings the Department of Energy data on energy poverty and how new regulatory regimes will raise electricity rates and stretch the family's budget's last dollar. Instead we should focus on innovative energy technologies that will reduce emissions while using all of our resources, including hydro, natural gas, nuclear as outlined by the E&C Republicans' Securing Cleaner American Energy agenda. Many of the Securing Cleaner American Energy bills are included in the Energy Innovation Agenda launched this week by House Republicans.

We are committed. The Energy Innovation Agenda focuses on innovation, clean energy, conservation policies for tackling climate change risk, building energy infrastructure and developing new

technologies, because to win the future we should be about building not dismantling American opportunity.

Unfortunately, dismantling is a feature of the CLEAN Future Act and the administration's job-crushing agenda. The rush to green undermines many of the goals we all share to address energy poverty. For example, the CLEAN Future Act will restrict permitting of the kind of projects that provide good jobs and raise community prosperity. They would restrict natural gas development and supply for jobs, low energy rates, and even the expansion of renewable energy.

Provisions in the CLEAN Future Act would force top-down Federal requirements on State regulation of hydraulic fracturing, dismantling the proven innovation and this approach that has helped drive the shale revolution.

Two witnesses this morning, José Pérez of Hispanics In Energy, and Louise Carter-King, Mayor of Gillette, Wyoming, will talk about the trillions of dollars of new economic opportunity in the oil and gas development and how this American resource fits into a cleaner energy future that benefits everyone. The pace of transformation in the majority bill makes no time for the practical reality of ensuring the lights stay on when people need it most.

California is a case study for what can go wrong. Its unrealistic policies have driven the growth of weather-dependent, unreliable solar and wind and shuttered natural gas, nuclear, and other traditional generators while all the time driving up electricity rates. California's policies have dismantled large amounts of base load and generation when the wind isn't blowing and the sun isn't shining. A review of the National Regulatory Research Institute shows California's dreams have created a huge gap in reliable, affordable energy.

When the sun goes down and the energy demand goes up, all those homes that enjoyed inexpensive power during the day—now the grid has a huge spike in demand. We see this happen every summer. My friends in California are having to buy generators. This is resulting in unreliable and expensive energy.

I'm proud of the work of this committee. America is energy independent. It was a goal that we had for decades. We're leading the way in bringing down carbon emission. Let us avoid the California experiment and make sure that America continues to lead with affordable and reliable energy.

[The prepared statement of Mrs. Rodgers follows:]

PREPARED STATEMENT OF HON. CATHY MCMORRIS RODGERS

Making sure people have access to affordable, reliable energy must remain a priority in this committee's work on energy policy.

We must recognize the tremendous value of our existing energy system, its central role for expanding economic growth and spreading opportunity. The evidence is in plain sight.

The shale revolution has brought tremendous opportunities and America's energy renaissance. This has revitalized communities, with hundreds of billions in economic activity, thousands of new jobs.

It's meant the equivalent of about $2,500 extra in the average family's annual budget—with low-income households benefiting the most from reduced energy burdens. It's raised the promise of a better quality of life for families along the Ohio River Valley—in Pennsylvania, Ohio, West Virginia.

It's increased opportunity through Texas, New Mexico and from Wyoming to California—helping people of all incomes. To continue to address energy poverty and climate risks, Republicans seek to **build** on these current achievements in energy and economic opportunity. We also want to keep electricity rates low.

I've noted in several recent hearings the Department of Energy data on energy poverty, and how new regulatory regimes will raise electricity rates and stretch a family budget's last dollar. Instead, we should foster the innovative energy technologies that will reduce emissions while using all our resources including hydro power, natural gas, nuclear—as outlined in E&C Republicans' Securing Cleaner American Energy agenda. Many of the Securing Cleaner American Energy bills are included in the Energy Innovation Agenda launched just this week by House Republicans.

The Energy Innovation Agenda focuses on innovation, clean energy, and conservation policies for tackling climate change risks, building energy infrastructure, and developing new technologies. Because to win the future, we should be about building, not dismantling American opportunity.

Unfortunately, dismantling is a feature of the Democrats' CLEAN Future Act and the administration's job-crushing agenda. The rush-to-green undermines many of the goals we all share to address energy poverty.

For example, the CLEAN Future Act would restrict permitting for the kind of projects that provide good jobs and raise community prosperity. They would restrict natural gas development and supply essential to jobs, low electricity rates, and even the expansion of renewable energy.

Provisions in the CLEAN Future Act also would force top-down Federal requirements on State regulation of hydraulic fracturing—dismantling the pro-innovation regulatory approach that helped drive the shale revolution. Two witnesses this morning—José Pérez of Hispanics In Energy and Louise Carter-King, Mayor of Gillette, Wyoming—will talk about the **trillions** of dollars of new economic opportunity in our oil and gas development and how this American resource fits into a cleaner energy future that benefits everyone.

The pace of "transformation" in the majority's bills makes no time for the practical reality of ensuring the lights stay on when people most need it.

California's downfall remains the case study for what can go wrong here. Its unrealistic decarbonization policies have driven the growth of weather-dependent solar and wind resources, and shuttered natural gas, nuclear, and other traditional generators all while driving electricity rates up.

California State policies essentially dismantled large amounts of the baseload and dispatchable generation needed when wind and solar come up short. A recent review by the National Regulatory Research Institute shows California's green dreams have created a huge resource gap that undermines reliable delivery of energy.

Much of the solar resources encouraged by State policies are outside the control of system operators, sitting behind the meter on customer rooftops. When the sun goes down and energy demand goes up, all those homes that enjoyed inexpensive power during the day, come onto the California grid in a huge demand spike.

We saw this summer what happens when the resources are not available to meet the spike. California's experiment shows the relentless rush to accommodate decarbonization goals can backfire.

Republican policies led to an American energy renaissance that created jobs, decreased emissions, and increased our security. Following California and the CLEAN Future Act will take us back to the dark ages.

We must avoid following California's path and instead focus our policy efforts on ensuring affordable and reliable energy the resources and innovations to accomplish that and the American energy workers who keep the lights on.

Mrs. RODGERS. And with that I'll yield back, Mr. Chairman. Thank you.

Mr. RUSH. The gentlelady yields back. The Chair would like to remind all Members that, pursuant to committee rules, all Members' written opening statements shall remain part of the record.

Now it is my fervent and distinct honor to welcome our esteemed witnesses for today's hearing. I would like to thank each and every one of them for taking time out from their precious days to come before this committee. I'm going to introduce them to you now, and I hope that I am pronouncing their names correctly.

The first witness is Mr. Subin DeVar, who is the director of the Initiative For Energy Justice; Ms. Chandra Farley, Just Energy director for the Partnership for Southern Equity; Mr. Donnel Baird, chief executive officer of BlocPower; Mr. José L. Pérez, president and chief executive officer of Hispanics In Energy; and Ms. Louise Carter-King, the mayor of the City of Gillette.

I want to thank each and every one of our witnesses again for joining us for today's hearing, and we look forward to your testimony.

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

STATEMENTS OF SUBIN DEVAR, DIRECTOR, INITIATIVE FOR ENERGY JUSTICE; KIRAN BHATRAJU, CHIEF EXECUTIVE OFFICER, ARCADIA; CHANDRA FARLEY, JUST ENERGY DIRECTOR, PARTNERSHIP FOR SOUTHERN EQUITY; DONNEL BAIRD, CHIEF EXECUTIVE OFFICER, BLOCPOWER; JOSÉ L. PERÉZ, PRESIDENT AND CHIEF EXECUTIVE OFFICER, HISPANICS IN ENERGY; AND LOUISE CARTER-KING, MAYOR, CITY OF GILLETTE, WYOMING

STATEMENT OF SUBIN DEVAR

Mr. DEVAR. Thank you, Mr. Chairman Rush, Mr. Ranking Member Upton, and members of the committee. My name is Subin DeVar, director of the Initiative For Energy Justice, and I am honored to testify on equity in the deployment of clean energy.

The COVID–19 vaccine deployment provides a useful point of comparison for our conversation today. Experts knew we needed to have a phased deployment of the vaccine given the time necessary to vaccinate millions of Americans. There was a recent debate about the priority groups, and in the end efficiency used logical and ethical parameters to set phases of vaccine deployment focusing first on vaccinating frontline workers and vulnerable populations.

Equity in the energy system is not that different. You can't transition the whole system all at once, so how do you do it in the most fair and broadly impactful way? That is energy equity, the just distribution of the holistic benefits of the energy system, including nonenergy benefits such as economic and health benefits. It particularly focuses on remediating the harms of the existing pollution-heavy energy system centering frontline communities and vulnerable populations.

A simple way to think about energy equity is in terms of who benefits from the energy system and how much people benefit from the energy system. I will discuss both of these topics in turn in the context of obstacles to the equitable deployment of clean energy.

First, there are two key obstacles regarding equity and who benefits from clean energy. One, most energy regulatory jurisdictions do not have comprehensive definitions and strategies for target customer groups to pay special attention to in the transition. Without such definitions it is impossible to accurately assess the state of equity in clean energy deployment or to implement effective solutions.

Therefore, my first recommendation is to identify priority groups or, in other words, marginalized or underserved communities. This should include mapping geographically defined groups based on cu-

mulative health impacts and demographic data as well as other volatile populations such as low-income households, customers who rely on home electricity to power medical equipment, fossil fuel workers, rural and Tribal communities.

The second obstacle to ensuring that marginalized communities benefit from the energy system is the absence of their voice, insight, and perspective at the stage of energy system design and policymaking. In response to this obstacle, my second recommendation is to invest in robust outreach, inclusive practices for soliciting feedback and providing resources, including financial compensation, for community participation in rulemaking.

Next is the question of how much do various groups benefit from clean energy. There are two primary obstacles regarding equity in this sense. One, the absence of equity goals and metrics is a fundamental barrier to people benefiting from the whole suite of potential clean energy benefits. Accordingly, my third recommendation is to require the equitable distribution of clean energy benefits, including a minimum of 40 percent of benefits targeted to marginalized and underserved communities. Enforceable accountability mechanisms should track and report on metrics of benefits every few years or every decade alongside decarbonization targets.

A final obstacle is that overly broad clean energy requirements combined with the profit incentive of investor-owned utilities could fail to prioritize specific approaches to clean energy that maximize public benefits across different sectors. So my fourth recommendation is to focus on renewable distributed and community-led energy resources.

A Federal clean electricity standard, for example, should allow only energy that meets international definitions of renewable energy, require that at least two-thirds of electricity come from distributed energy resources and that at least 25 percent of energy generation is community-led through nonprofits, cooperatives, or public entities.

To close, I'd like to reiterate my main points. Equity can be understood in terms of who benefits and how much people benefit from the energy system. Second, inequities regarding who benefits from clean energy can be mitigated by, one, identifying priority groups including through mapping and, two, investing in meaningful community participation.

Third and finally, inequities regarding how much Americans benefit from clean energy can be addressed by requiring the accounting of benefits and advancing renewable distributed and community-led energy resources

Thank you. Look forward to your questions.

[The prepared statement of Mr. DeVar follows:]

Written Testimony of Subin DeVar
Director, Initiative for Energy Justice

Before the Committee on Energy and Commerce, Subcommittee on Energy,
United States House of Representatives
Hearing entitled "Generating Equity: Deploying a Just and Clean Energy Future."

April 20, 2021

Chairman Rush, Ranking Member Upton, and members of the Committee:

My name is Subin DeVar, and I am honored to appear before you today to testify on obstacles and recommendations regarding equity in the deployment of clean energy.

My testimony will focus on three questions, specifically in regards to the electric utility sector:
1. What is equity in clean energy deployment?
2. Who benefits from clean energy?
3. How much do various groups benefit from clean energy?

I am the director of the Initiative for Energy Justice, a national research center housed at Northeastern University, that develops resources for practitioners and decisionmakers advancing an equitable transition to renewable energy.

What is equity in clean energy deployment?

Energy equity refers to the fair and just distribution of the holistic benefits of the energy system, including non-energy benefits such as social, economic, and health benefits. An equitable deployment of energy system benefits includes remediating social, economic, and health burdens on those disproportionately harmed by the existing and past energy system.[1]

The COVID-19 vaccine deployment provides a useful point of comparison to frame our conversation about clean energy deployment. Health professionals and elected officials knew early on that we needed to have a phased deployment of the vaccine, given the time necessary to vaccinate millions of Americans. There was reasoned debate about what that order should be, but experts agreed that we needed to prioritize people because we couldn't vaccinate everyone at once. In the end, federal and state leaders used logical and ethical parameters to set those phases, focusing first on vaccinating frontline workers and vulnerable populations.

Equity in the energy system is not that different, and the common-sense application of logical and ethical parameters can guide us on how to prioritize who benefits from the transition to renewable energy, which will not happen all at once. The transition will take time, and the method of our deployment has serious moral consequences.

[1] For an in-depth discussion of energy justice and energy equity, see "The Energy Justice Workbook," (Initiative for Energy Justice) https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019-web.pdf.

A simple way to think about energy equity is in terms of *who benefits* from the energy system and *how much* do people benefit from energy system. I will discuss both of these topics in turn.

Who benefits from clean energy deployment?

Energy equity centers the concerns of marginalized and vulnerable groups – particularly pollution-burdened environmental justice communities, which predominately include people of color and low-income households.[2] Furthermore, energy equity focuses on communities on the frontline of climate change impacts, fossil fuel industry workers, women, and others historically disenfranchised by social inequity, especially Black, Indigenous, Latinx, and rural communities.

There are a couple of key obstacles regarding equity in who benefits from clean energy: 1) a lack of defined priority groups in energy regulatory matters, and 2) an absence of meaningful participation from priority groups in system design.

Obstacle #1: Lack of definitions for energy deployment priority groups
The first barrier to equitable clean energy deployment is the lack of comprehensive definitions for target customer groups in most energy regulatory jurisdictions. Without such definitions at the outset, there are limited ways to accurately assess that state of equity in deployment or to implement effective solutions.

- **Recommendation #1: Identify priority groups, including through mapping geographically-defined groups** based on cumulative health impacts and demographic data, **as well as other vulnerable populations** such as low-income households or customers reliant on electricity to power medical equipment.[3] Develop special programs and prioritization of deployment associated with defined priority groups.

Obstacle #2: Absence of meaningful participation from priority groups in rulemaking
The second obstacle in ensuring that marginalized communities benefit from the energy system is the absence of their voice, insight, and perspective at the stage of system design and policymaking. Well-intentioned decisionmakers who are not adequately informed by the unique lived experiences, needs, and challenges faced by marginalized communities will inevitably have blind spots that lead to ineffective regulations.

- **Recommendation #2: Invest in robust outreach, inclusive practices for soliciting feedback, and providing resources**, including financial compensation for contributions

[2] Tessum et. al. "Inequity in consumption of goods and services adds to racial–ethnic disparities in air pollution exposure." March 2019 (PNAS) https://www.pnas.org/content/pnas/116/13/6001.full.pdf.
[3] Different jurisdictions should involve communities in selecting terms and crafting their definitions, based on the principle of prioritizing, restoring, and benefiting communities that have faced, and continue to face, injustice. For more guidance on the process of creating definitions for marginalized communities, see "Justice in 100 Scorecard," (Initiative for Energy Justice), page 28, https://iejusa.org/wp-content/uploads/2021/04/Justice-in-100-Scorecard-Interactive-PDF.pdf. For more examples of environmental justice mapping tools, see "Justice in 100 Metrics," (Initiative for Energy Justice), page 34, https://iejusa.org/wp-content/uploads/2021/03/Justice-in-100-Metrics-2021.pdf.

to rulemaking.[4] To overcome the second obstacle, we must center the most-impacted and most-vulnerable communities in the design of solutions upfront. To adequately meet the needs of marginalized groups, these communities must be at the decision-making table identifying systemic problems, practical challenges in implementation, and proposed solutions. Federal, state, and local lawmaking and rulemaking should include direct outreach and meaningful participation for the public and marginalized communities, including accessible meetings. Energy policymaking should also provide relevant information and other resources to the public and marginalized communities to sufficiently evaluate the proposed policies.[5]

How much do various groups benefit from clean energy?

Energy equity aims to advance three levels of benefits: 1) the human right to energy, 2) non-energy benefits, and 3) energy democracy.

It is useful to categorize types of benefit from clean energy to evaluate if clean energy deployment is fair and just. Clean energy system benefits can be conceptualized as a three-part pyramid of benefits with 1) the base of the pyramid being the human right to access affordable electricity, 2) the middle level of the pyramid being non-energy social, health, and economic benefits, and 3) the top of the pyramid being energy democracy: the democratic management of the energy system by the people using that energy.

There are two primary obstacles regarding equity in how much various groups benefit from clean energy: 1) the failure to set clear goals and metrics regarding the distribution of holistic benefits to marginalized communities, and 2) a myopic view of clean energy regulation that fails to prioritize specific approaches to clean energy that maximize benefits across different sectors.

Obstacle #3: Failure to set clear goals and equity accountability mechanisms
A fundamental barrier to people benefitting from the whole suite of potential benefits from the deployment of clean energy is the absence of clear goals, metrics, and utility accountability mechanisms to drive these outcomes.

- **Recommendation #3: Create metrics and require that at least 40% of holistic benefits from energy resources are distributed to marginalized communities.** Combining the best practices of states such as Washington and New York, federal and state policy should require the equitable distribution of clean energy benefits, including a minimum of 40% of benefits targeted to marginalized communities.[6] Enforceable accountability mechanisms would include adequate reporting of equitable benefit metrics,

[4] For an example of financial compensation for rulemaking engagement, see "Intervenor Compensation Program" (California Public Utilities Commission) https://www.cpuc.ca.gov/icomp/.
[5] See "Justice in 100 Scorecard," (Initiative for Energy Justice), page 19-20, https://iejusa.org/wp-content/uploads/2021/04/Justice-in-100-Scorecard-Interactive-PDF.pdf.
[6] See Washington's Clean Energy Transformation Act (CETA) (E2SSB 5116, 2019) and New York's Climate Leadership and Community Protection Act (CLPCA) (S6599, 2019).

as well meaningful participation in the development of metrics, measurement, and evaluation.[7]

Figure 1: Example elements of an energy equity measurement logic model[8]

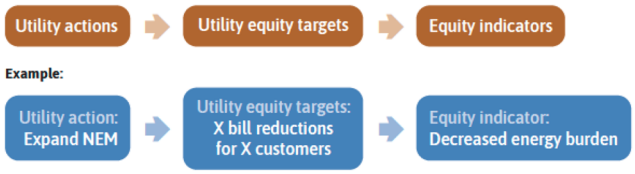
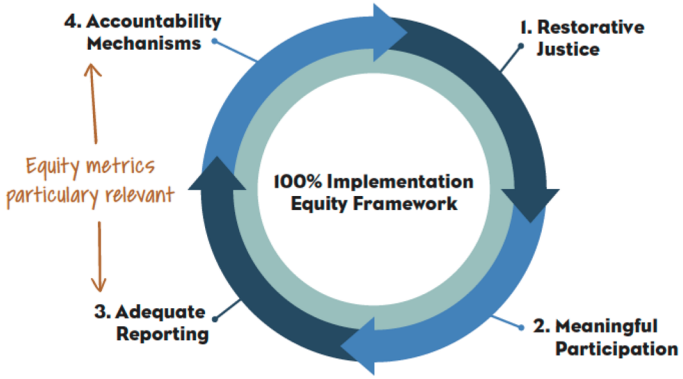


Figure 2: Equity framework in the implementation of 100% clean energy standards[9]



Obstacle #4: Overly broad definitions of clean energy paired with profit incentive
A myopic view of clean energy regulation combined with the profit incentive of investor-owned utilities[10] fails to prioritize specific approaches to clean energy that maximize benefits across different sectors. Regulatory structures such as clean energy standards are a critical tool for a renewables transition; however, if defined too broadly, they may fail to advance equity if they do not properly consider the environmental impacts of different types of generation sources; the

[7] See "Justice in 100 Metrics," (Initiative for Energy Justice) https://iejusa.org/wp-content/uploads/2021/03/Justice-in-100-Metrics-2021.pdf.
[8] "Justice in 100 Metrics," (Initiative for Energy Justice), page 8, https://iejusa.org/wp-content/uploads/2021/03/Justice-in-100-Metrics-2021.pdf.
[9] "Justice in 100 Metrics," (Initiative for Energy Justice), page 9, https://iejusa.org/wp-content/uploads/2021/03/Justice-in-100-Metrics-2021.pdf.
[10] John Farrell, "How Market Power Gives Electric Utilities Political Power" (Institute for Local Self-Reliance) November 11, 2019, https://ilsr.org/how-market-power-gives-electric-utilities-political-power/.

advantages and disadvantages of centralized transmission grid-connected generation versus distribution grid-connected generation, and the benefits of community-led projects.

- **Recommendation #4: Focus on renewable, distributed, and community-led energy resources.** A federal clean electricity standard should allow only "renewable" energy, building on state, national, and international definitions that focus on pollution-free, natural, and regenerative sources of generation, such as solar and wind. Furthermore, federal policy should seek to maximize the use of distributed energy resources and energy efficiency,[11] such as a minimum of one-third of clean energy being small scale on-site distributed generation, and one-third medium scale distribution-connected community energy. The United States should set a goal of ensuring 30 million households gain access to rooftop solar or community solar in five years, with a focus of at least 60% of new generation serving marginalized communities.[12] Moreover, policymakers should focus on energy generation that is governed or owned by nonprofits, cooperatives, and public entities to maximize social, health, and economic benefits.

Conclusion

To close and reiterate:

1. **Energy equity refers to the fair and just distribution of the holistic benefits of the energy system**, including non-energy benefits such as social, economic, and health benefits.
2. **Clean energy deployment should center the concerns of marginalized and vulnerable groups** – particularly pollution-burdened environmental justice communities, which predominately include people of color and low-income households. Specific recommendations include:
    a. **Mapping** – Identify priority groups, including through mapping
    b. **Process** – Invest in outreach, inclusion, and compensation for community participation
3. **Clean energy deployment should advance three levels of benefits: 1) the human right to energy, 2) non-energy benefits, and 3) energy democracy.** Specific recommendations include:
    a. **Metrics** – Require minimum 40% of benefits to marginalized communities
    b. **Democracy** – Advance renewable, distributed, and democratically-managed grid

[11] For addressing barriers to participation in energy efficiency programs, see Tony Reames, "A community-based approach to low-income residential energy efficiency participation barriers" (Local Environment: The International Journal of Justice and Sustainability, 2016) https://www.tandfonline.com/doi/abs/10.1080/13549839.2015.1136995?needAccess=true&journalCode=cloe20.
[12] See "30 Million Solar Homes" (Institute for Local Self-Reliance, Solar United Neighbors, and Initiative for Energy Justice) https://www.30millionsolarhomes.org/.

Mr. RUSH. Thanks. The gentleman yields back. The Chair failed to introduce one of the witnesses for today's panel. I want to introduce right now Mr. Kiran Bhatraju, and Mr. Bhatraju is the chief executive officer of Arcadia Power. Mr. Bhatraju, please forgive me. It was a failure of the head and not the heart. So welcome to our subcommittee hearing.

STATEMENT OF KIRAN BHATRAJU

Mr. BHATRAJU. Good morning. First I'd like to thank you, Chairman Rush—and no offense taken—and Ranking Member Upton for inviting me and acknowledge Chairman Pallone and Ranking Member McMorris Rodgers as well.

I'm glad to be here today to talk about how we can combat climate change, spur economic growth, and also lower consumer power bills with community solar. I'm Kiran Bhatraju. I'm the founder and CEO of Arcadia. We're a software company making it easy for customers anywhere to choose clean energy in all 50 States no matter where you live, whether you rent or own, and no matter how much you make. Our software platform has enabled over a billion dollars in Energy investments in communities across the country.

Before I talk a bit more about community solar and my company's work, I want to talk a bit about why this topic is so important to me. I was raised in Pike County, Kentucky, in the heart of coal country. In elementary school we took a field trip into a coal mine, and my father, who is a physician, treated black lung patients. Today I run a company that serves customers in all 50 States, and I can tell you that people everywhere are extremely interested in solar energy, Republicans and Democrats all over the country.

In Kentucky, they want to talk about solar because they want to hear about economic development resilience and job opportunities in light of a transition away from coal. In cities, they want to hear about solar because of the threat of climate change. People everywhere want to save money, and in both places people think solar is hard. They think you have the wrong roof, you have no roof. or that you can never afford it, and that is when I like to tell then that the answer is community solar.

Simply put, this is the best way for everyone to access the benefits of solar energy no matter your income, whether you rent or own, or how much sun hits your particular roof. By joining a community solar project, customers get guaranteed savings, and that is important. It is guaranteed savings against the traditional utility rate. There is no long-term commitment, no upfront cost, and if you move, your solar can move with you. And all of that is from a new resilient distributed solar project nearby, not one on their roof.

It is hands down the best energy product in America, and I'm not just saying that because my company works in community solar. It is the reason I started this company. Literally everyone would be better off if they joined a resilient community solar project.

Today our software is delivering savings to customers in eight States, including a lot of places represented by folks on this subcommittee. For some examples, we manage a project in Kankakee County, Illinois, saving customers close to 10 percent on their

power bills. We managed the first project in New York incorporating battery storage in Yorktown Heights, and we manage a project in Logan County, Colorado, where the proceeds from the leased land benefit the State's school trust.

These are just a handful of our projects. We have got 185 projects across the country. Community solar is particularly important, and I know it is new, so I want to make this point very clear, is that it is the only way for the majority of Americans to actually share in the benefits of solar. Only a third of American households can put a power plant on their roof. The families who are excluded from rooftop solar because they rent, because they have a low credit score—these are disproportionately people of color, women-led households, or people without college degrees.

Community solar, on the other hand, is available to everyone who can pay a power bill. It doesn't matter if you have a roof or can put a power plant on your roof. And so these are so unique because they are offsite.

A lot of our projects are actually found on farmland. If you're a farmer struggling with prices and you have got some land that isn't great for farming, getting a lease payment from a solar project might just be your lifeline. In fact, in Pennsylvania the Farm Bureau is actually promoting community solar because farmers can get thousands of dollars a year in lease payments, basically a lifeline for their families.

Our projects are also often located in economically distressed areas. Close to 22 percent of our projects are in what are called opportunity zones representing millions of dollars of investment in places that need it the most. So what I'm describing to you is just one of the most exciting competitive energy trends happening in America today. It is happening everywhere—red States, blue States, deregulated and regulated markets—and it can work everywhere.

The problem is other States need to catch up. The best way to do that is to pass a law that would require public utility commissions to consider a community solar program. The proposal was introduced in the last Congress as the Community Solar Consumer Choice Act, and the same language is in Section 225 of the CLEAN Future Act. And to be clear, this legislation only asks States to consider. They can do what they want and embrace community solar when they learn more about the equity and the benefits.

I'll just close by saying my job as CEO of this company is to make it easy for people to use clean energy and to help them save money. I've been doing this since 2014, and hands down community solar is the only way to make that mission a reality. I'm incredibly excited to be here and talk to you about this new segment of solar today. Thanks for having me, and I look forward to answering any questions you have.

[The prepared statement of Mr. Bhatraju follows:]

Prepared testimony of Kiran Bhatraju, Founder and CEO, Arcadia

Subcommittee on Energy of the Committee on Energy and Commerce

“Generating Equity: Deploying a Just and Clean Energy Future.”

April 20, 2021

My name is Kiran Bhatraju, I'm an entrepreneur and environmentalist from eastern Kentucky coal country. I'm the Founder and CEO of Arcadia, the nation's largest community solar platform with customers in all 50 states. Previously, I founded another venture-backed climate tech company, American Efficient, that aggregated energy efficiency in wholesale power markets. I started my career on Capitol Hill as a legislative aide to Congressman John Yarmuth (KY-3) and I'm thankful for the opportunity to share my thoughts with Congress about what I see as the most important segment of the energy transition that will help us decarbonize, create jobs, and promote equity.

Arcadia gives customers a simple, easy, and affordable way to choose renewable energy, connecting their homes and community to the highest standards of clean energy. Founded in 2014, Arcadia's software technology connects with utilities in every state, manages 4.5 terawatt-hours of residential energy demand, and is the largest manager of residential community solar subscribers in the US. Learn more about how we are achieving our vision of a 100% renewable energy future at www.arcadia.com.

We are bringing solar to the ⅔ of Americans for whom rooftop solar is not an option

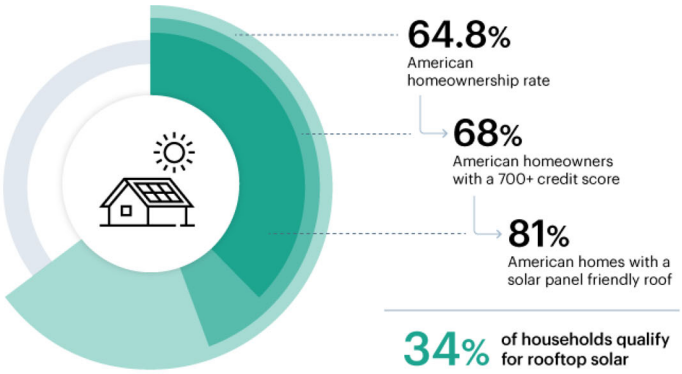
Arcadia is the largest direct-to-consumer provider of community solar in the country. Community solar is the way for anyone - no matter their income, their credit score, their housing type, or whether they rent or own - to directly benefit from solar energy. By joining a community solar project, consumers save money on their energy bills and know they are directly contributing to more solar power on their local energy grid.

Without community solar, most people would not otherwise be able to directly participate in solar energy, which usually requires an investment or other financial commitment to put solar panels on their rooftop. In fact our research at Arcadia shows that rooftop solar is a reasonable choice for only ⅓ of American families.

There are three big reasons why a household would not be a good candidate for rooftop solar. First, the family has to own their house. Rooftop solar is a large capital investment that no renter should realistically make. Second, the family has to be able to either pay for the solar system upfront, which costs tens of thousands of dollars, or finance the system, which often requires a credit score above 700. Finally, the actual roof itself can be an impediment. The ideal roof has to get sufficient sunlight and be strong enough to support solar panels.

These barriers are real. As shown in the graphic below, 64.8% of Americans own their home, 68% of those homeowners have a credit score above 700, and 81% of single-family homes have a solar-friendly roof. Adding that all together, just 34% of households qualify for rooftop solar.[1]

[1] https://blog.arcadia.com/why-community-solar-solves-solar-s-biggest-problem/



This is particularly concerning because the criteria that makes someone a good candidate for rooftop solar are not evenly distributed across the population. Homeownership and high credit score requirements disproportionately exclude low-income families, women-led households, people of color, and people without college degrees. Community solar is the best way - and in many cases the only way - to bring the benefits of solar to these Americans.

Community solar exists today in leading states

State legislatures across the country recognize the value of community solar. Arcadia is offering community solar to our customers in eight states: Maine, Massachusetts, Rhode Island, New York, Maryland, Illinois, Colorado, and the District of Columbia. These states have embraced community solar to give everyone access to clean energy and have active community solar programs with robust participation from market-driven companies like Arcadia. Most recently, New Mexico and Virginia's legislatures have passed laws and the executive branches in those states are writing rules for how the programs will operate. A handful of other states, like Pennsylvania, are actively considering community solar today.

Each of these states' community solar programs are unique, but they all have common elements. First, electricity consumers are able to subscribe to a solar project that is not located on their property. Second, the community solar project has multiple subscribers - I have seen projects with anywhere from a half dozen subscribers to more than a thousand - and the project's output is allocated across the subscribers. Typically, subscribers who use more energy have larger allocations. Third, as the project generates power, the power flows to the local utility grid. In exchange for receiving power from the project, the local utility creates bill credits. Fourth, the utility applies those bill credits to the subscribers' bills based on their allocation, so that subscribers with larger allocations receive more credits, and vice versa. Finally, in exchange for receiving bill credits, the subscribers owe a fee to the community solar project. In

our programs, customers receive a 5 to 10 percent guaranteed savings for as long as they are signed up.

One point I want to emphasize here is that the revenue for a community solar project - the actual cash flow to the project - comes from the subscribers, and the size of the subscription fee is determined by a contract between the project and the subscriber. The utility's role is to give bill credits to subscribers, not to buy the power. Without subscribers, community solar projects don't exist.

Arcadia's role in community solar is to find subscribers and manage everything related to the subscribers' experience. We market community solar to potential customers, enroll subscribers in projects, determine the appropriate allocation size for each subscriber, communicate allocation sizes to the utility, check that the utility has accurately applied credits to subscribers' bills, collect subscription fees from subscribers, and transmit those fees to the community solar project. We also operate a customer experience team to respond to any questions from subscribers and make sure they understand the impact their community solar subscription has on their energy bills and their community's power system.

As you can see, Arcadia is central to the community solar projects that we help manage. We now perform these functions for 430 megawatts worth of community solar, spread across 185 projects in eight states. Ultimately, these projects will serve about 65,000 subscribers. These projects have saved customers money, made the grid greener, and created hundreds of local jobs.

These projects are in different communities across the country, many of which may be important to members of this committee. We manage the first community solar project in New York to incorporate battery storage, which is located in Yorktown Heights.[2] We have a project in Kankakee County, Illinois, that is reducing power bills for 544 customers across the Chicagoland area. We manage a project in Logan County, Colorado, where the proceeds from the leased land benefit the state School Trust, helping children across Colorado enrich their education.

Clearly, community solar is thriving in some markets. These states are relying on the private sector to drive innovation, which is enabled by supportive policy environments. The remainder of this testimony will describe the customer-friendly innovations that the private sector is leading and how Congress can unlock more community solar across the country.

Arcadia's is leading the way towards the most customer-friendly community solar offering

Our scale has put Arcadia in a unique position to shape the industry, and we have used that position to create what I believe is the best customer-facing product in the energy industry.

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[2] https://www.governor.ny.gov/news/during-climate-week-governor-cuomo-announces-first-completed-community-solar-plus-energy

Arcadia has turned community solar into a way for all families to save money on their energy bills with zero long-term commitment and zero risk.

I can explain more about how each of these innovations work.

First, our customers are guaranteed to save money with community solar. As described above, the financial experience for subscribers is to receive utility bill credits and pay subscription fees. When the subscription fees are lower than the bill credits, the subscriber's total energy spending goes down. Arcadia's innovation is to guarantee that the bill credits will *always* be larger than the subscription fees. We do this by indexing the subscription fee to the utility-provided bill credits, at a specific discount rate. For example, the most common discount rate on projects we manage is ten percent. In that case, if a customer receives bill credits worth $100 in one month, then their subscription fee is $90. Similarly, if generation from the project is lower the next month and the customer only receives $50 in bill credits, then their subscription fees will be $45.

Second, community solar is zero-risk for our customers because they are free to leave the project at any time with no financial penalties. The most common reason someone leaves a community solar project is because they move and are no longer eligible to subscribe to the same project. This is quite common, with ten percent of families moving each year, and it's even more common with renters, who move almost twice as often, or once every five years on average.[3] Arcadia believes it would be unfair to penalize those families and add a community solar penalty on top of their moving expenses. Our customers never sign contracts that include early exit penalties.

Arcadia goes one step further and makes it simple for a customer who moves homes. Indeed, our customers can retain their Arcadia membership when they move, and we actively search for a new community solar project for them when they move, as long as they move to a place where community solar is available.

Finally, we make community solar truly accessible by opening it up to everyone, no matter their credit score. Our data show that payment reliability is high for utility bills and a credit check is an unnecessary burden to place on consumers. Rather than try to estimate if someone is likely to pay their fees, we have decided to open community solar to everyone who wants to participate. Of course, if someone stops paying their subscription fees, they will lose their subscription, but there are no other penalties.

At the same time that Arcadia made these innovations in the customer experience, we had to enable similar innovations with investors. As you know, all things being equal, investors prefer lower risk. We have worked with community solar investors to help them understand that these are strong investments despite the customer-friendly terms. Arcadia is managing 430 MW of community solar projects, representing over a billion dollars of investment, and we have

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[3] https://www.urban.org/sites/default/files/publication/98286/family_residential_instability_what_can_states_and_localities_do_1.pdf

secured investor approval across all of this development to accept customers of all backgrounds, at all income levels. For example, Summit Ridge Energy, a large renewable energy project developer, has invested half a billion dollars in projects managed by Arcadia. Similarly, Aspen Power Partners, an infrastructure investment firm, has invested $180 million in projects managed by Arcadia.

With third-party community solar, the competitive market bears any risks, not the customer

The experience from states with the most active community solar markets is that private companies and the competitive marketplace are the best ways to manage risk in the programs.

Most important, the above description of Arcadia's customer-friendly terms shows that market competition leads to the transfer of risk away from consumers and toward companies that have sophisticated risk management techniques available to them.

Consider the guaranteed savings model, which is innovative not just because it guarantees that the customer will always save money, but also because it shifts all of the risk of a project onto the project developer. The two big risks for a subscriber in a community solar project would be that the project doesn't generate as much power as expected or that the value of the credits changes over time. With the indexed price model that Arcadia uses, the subscriber is protected from both of those risks: they save money no matter how much power the project generates and no matter how big the bill credits are.

Not charging exit fees is another example of transferring risk from the customer to someone who's in a better position to manage the risk. Arcadia has a responsibility to make sure that the community solar project is fully subscribed. When one subscriber moves, we find a new subscriber to take their place on the project.

Yet another example is that by not checking credit scores, the risk of nonpayment has been moved from the subscriber to the project.

Our observation is that companies that are more willing to bear risk offer better customer terms than other companies, including incumbent utilities. There are some utilities that offer programs they call "community solar". Some of these programs are structured as bill credits, similar to the mechanics described above, while others are premium products where customers pay more for the right to say they're contributing to solar power. We do not view these premium offerings as true "community solar". Of the programs that offer bill credits, we have yet to see a utility-run community solar program that offers guaranteed savings from day one with no long-term commitment. Utilities are simply not able to manage this risk, which is why customers are best served by the private market that is completely exposed to the forces of competition.

Community solar is particularly valuable to low-income households

Arcadia also has experience serving low- and moderate-income (LMI) households. First and foremost, our customer-friendly product offering was designed to make community solar a good fit for everyone, particularly LMI households who are more likely to face a high energy cost burden, move more frequently, and have lower credit scores. There is no doubt that a LMI household struggling to make ends meet would be better off if they subscribed to a community solar project managed by Arcadia.

I'm particularly excited about some of the successes Arcadia has had in reaching out directly to LMI customers. For example, we are working with a housing authority in New York, affordable housing properties in Maryland and Rhode Island, and signing up low- to moderate-income customers directly across all our active community solar markets.

One of the challenges we've observed with LMI customers is that many states have a requirement that a portion of projects be dedicated to LMI subscribers, but the process for verifying their income status is overly intrusive. Arcadia does not want to see someone's tax returns or paystubs, and no reasonable customer wants to share that personal information with us. The result is that LMI verification has in some cases actually become a barrier to LMI enrollment. Our strong recommendation is that states should adopt a goal of making it no more burdensome for an LMI customer to subscribe to a community solar project than a market rate customer. Practically speaking, this means that LMI verification should be non-intrusive. The two best examples for how to do this are to base eligibility on information available on the customer's utility bill (for example, the customer is automatically verified as LMI if they are on a special rate for people needing assistance) or a customer's geographic location (for example, the customer is automatically verified as LMI if they live in a census tract where the median household is LMI).

Community solar has many beneficiaries, including rural landowners

State legislators don't create community solar programs solely because it benefits subscribers, even if those subscribers are low-income. State legislators create community solar programs because of the large, diverse set of stakeholders who benefit.

The Pennsylvania Farm Bureau is one of two organizations leading the Pennsylvania Community Solar Economic Alliance, the leading voice trying to pass a community solar law in the state.[4] They're committed to the effort because they see solar energy as a lifeline to struggling farms. For example, dairy farmers are struggling with low milk prices and may have pasture land that isn't valuable for other uses. They can earn as much as $1000 per acre each year by leasing part of their land to a community solar project.[5] This same dynamic exists in other states, where rural landowners are champions of community solar as an economic development tool.

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[4] https://www.pa4communitysolar.com/about-us
[5] https://strategicsolargroup.com/what-is-the-average-solar-farm-lease-rate/

Community solar projects are frequently located in economically distressed areas. For example, of the 185 projects that Arcadia manages, 22% of them are located in Qualified Opportunity Zones. That represents hundreds of millions of dollars of investment in the areas that need it most.

Community solar projects are built and maintained by skilled workers. A 2020 study from Penn State, for example, found that deploying community solar across the state would create more than 11,000 jobs, including almost 6,000 jobs in construction, interconnection, and advertising work. These same projects would employ hundreds of people on an ongoing basis for operations, maintenance, and related work.[6]

Another benefit of more economic development is that the community solar project owner - most commonly a for-profit company - will pay taxes on their new investment. This can be quite large. In one example in Oregon's Jefferson County, unused agricultural land was paying $382.19 per year in property taxes. If the same land hosted a solar project, the county administrator said the project owner would pay $441,000 per year in taxes.[7] Considering that the average teacher in Oregon makes $61,900 per year, that solar farm would fund more than six full-time teacher salaries.[8]

Finally, community solar contributes to grid resilience and helps reduce large grid expansions. These projects are virtually always connected to the distribution grid, which has multiple benefits. First, connecting at the distribution level means that no new transmission is needed, which is particularly important given the added complexity of siting new transmission lines. Second, because the projects are connected to the local grid, they're one of the only sources of power that exists if there are outages on the transmission grid. Recent experiences in California and Texas make clear that the risk of transmission outages is very real. Finally, a recent study found that building a power system with more distributed energy resources like community solar would be $473 billion cheaper than the status quo through 2050.[9]

Corporate America sees the value in community solar

We increasingly see corporate interest in community solar, particularly as a benefit for employees. One of the impacts of the pandemic is that employees' utility bills have gone up while working from home instead of the office. A number of companies have asked Arcadia to help manage this cost, and community solar is the right tool.

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[6] https://aese.psu.edu/research/centers/cecd/publications/economic-impact/economic-impact-of-community-solar_sept-2020_psu-cecd.pdf

[7] https://pamplinmedia.com/msp/129-news/503127-403030-more-solar-farms-sprout-in-county

[8] https://www.oregonlive.com/education/2018/04/oregon_teacher_salaries_averag.html#:~:text=In%202016%2D17%2C%20the%20average,pay%20among%20the%2050%20states.

[9] https://www.localsolarforall.org/roadmap

Some examples of companies we're partnering with include Biogen (a leading biotech firm with 5,000 US-based employees), Just Salad (a New York-based fast casual restaurant chain with 50 employees), and McDonald's (the global restaurant chain with 200,000 US corporate employees). In each of these cases, the company's employees are given the opportunity to become an Arcadia customer. If community solar exists in the state where the employee lives, they are automatically subscribed to a project and receive all of the benefits of community solar, including bill savings.

Federal leadership will unlock the opportunity for more families to participate in community solar

The case for community solar is clear. Today, a handful of states are leading the way forward. Maine, New York, Minnesota, Colorado, Massachusetts, Maryland, Illinois, New Jersey, Rhode Island and the District of Columbia have active community solar programs. These states are bipartisan. Some have fully regulated utility sectors, while others are deregulated. They are geographically diverse. They show that community solar can work in any state.

The biggest challenge the industry faces is that the market opportunity is constrained by state action. Congressional leadership can unlock market growth. In the last Congress, the House passed language in the omnibus energy package that would require every state utility regulator to consider implementing a community solar program. This language was originally introduced by then-Representative Lujan as the Community Solar Consumer Choice Act, HR 5968, in the 116th Congress. In this Congress, the language is included in the CLEAN Future Act as Section 225. We anticipate the language will also be introduced as a standalone bill.

Congress has used this tool before to advance state-level policies across the country. In the Energy Policy Act, Congress required state regulators to consider net metering, fuel diversity, and fossil fuel generation efficiency. Following passage of the 2005 law, the Department of Energy issued a guidebook for how states should "consider" implementing these policies. Crucially, the legislative language and DOE's guidelines make it very clear that a state's consideration does not mean that a state has to adopt any policy.[10] For example, many states have net metering today, but some states decided not to adopt this policy.

The community solar industry has significant experience with sharing best practices across states. While beyond the scope of this testimony, program details determine whether or not community solar truly is accessible to everyone. I would encourage state regulators or anyone who wants to learn more about best practices to read the model state legislation and other resources from the Coalition for Community Solar Access.[11]

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[10] https://www.energy.gov/sites/default/files/Manual%20for%20Implementation%20of%20PURPA%20Standards%20in%20EPACT%202005%20%28March%202006%29.pdf

[11] http://www.communitysolaraccess.org/resources/

Congressman Rush has also introduced a bill that could help advance community solar. The Energy Equity Act of 2021, HR 1375, would create an Office of Energy Equity within the Department of Energy. Section 218(b)(2) of the bill directs the office to advance programs that "reduce or stabilize energy costs within underserved or disadvantaged communities", which clearly includes community solar. As part of this directive, this office should work with states to develop best practices to facilitate low-income participation in community solar, along the lines of the feedback I've given above. This office could also evaluate state responses to the Community Solar Consumer Choice Act to ensure that states are fully considering the equity benefits of community solar.

This simple action - requiring state regulators to consider community solar - would jump-start activity in all of the states that haven't acted to date. I believe that Arcadia can make the case that every state should have community solar should exist. All we need is the forum to make that case, and passing this bill would create that forum.

Conclusion

Arcadia was founded with the mission of making clean energy accessible to everyone. Seven years later, we're using community solar to do just that. We are unlocking the benefits of solar for low-income families, renters, people with older or shaded roofs, apartment-dwellers, families that move frequently, and more, all while leading to economic development in the rural areas that host the solar projects. This is the best energy product available to consumers today.

The only thing standing in our way of delivering community solar nationwide is that not every state has enabled it. It's past time to fix that. Leading states have shown that community solar can work everywhere. The next step is for Congress to encourage states to learn from each other.

Thank you for the opportunity to tell you about community solar, Arcadia, and my passion for bringing clean energy to every American family.

Mr. RUSH. The gentleman yield back. The Chair now recognizes Ms. Farley for 5 minutes for the purposes of an opening statement.

STATEMENT OF CHANDRA FARLEY

Ms. FARLEY. Thank you. Good morning to Honorable Chairman Bobby Rush, Ranking Member Upton and all members of the Subcommittee on Energy. Thank you for the opportunity to provide this testimony today. My name is Chandra Farley, and I am the Just Energy director at the Partnership for Southern Equity, a racial equity organization based in Atlanta, Georgia.

The American South is a region laid bare by racial, economic, and class inequities due to the legacy of slavery. These facile barriers have hampered the opportunity for Black communities, community of color, rural and low-wealth communities to lend their perspective to the shaping of their clean energy future. To combat this we created Just Energy, our framework for advancing energy equity, which we define as the fair distribution of the benefits and burdens of energy production and consumption. We advance Just Energy through relationship-centered strategies like organizing that build civic power with communities across the South.

The data is clear: Historically disinvested communities in the South bear a disproportionate burden of the negative impacts of our climate emergency and carbon-based energy production. The South experiences a higher frequency of billion-dollar climate disaster events than any other region. The Southeast is home to 84 percent of all U.S. counties that experience persistent poverty.

Some of the biggest carbon polluters in the power sector are in the South, and southern States rank at the bottom of lists for energy efficiency policies and programs while also consistently posting the highest rankings for energy burden. Pile on the fact that we now have millions of laid-off and unemployed workers that are losing access to their utilities due to the economic fallout from COVID, you can see why Just Energy is an urgent and pressing matter.

The CLEAN Future Act can deliver on many of the Just Energy policies and community accountability tools that address systematic issues and generate equity through increased deployment of clean distributed and democratic energy by focusing on four main strategies: reducing energy burdens by lowering utility bills and stabilizing energy costs through clean energy investments like weatherization, energy efficiency, rooftop solar, and community microgrids; two, improving household financial stability by providing thriving-wage job opportunities and supporting clean energy entrepreneurship that can lift people out of poverty and advance an economic inclusion agenda; three, reducing harmful carbon emissions that pollute our air and exacerbate disproportionate impact of this pollution on environmental injustice communities through the Environmental Justice for All Act; and four, promoting clean-energy-centric economic development that builds community wealth.

The levels of funding now possible across energy, water, housing, transportation, and broadband sectors presents a transformative opportunity for reparation and restoration of historically disinvested communities that are locked out of the clean energy

transition. This movement moment is meeting critically needed investment mechanisms such as the Clean Energy and Sustainability Accelerator. Combined with the Justice40 initiative that must be frontline community informed, the $100 billion commitment for the Clean Energy and Sustainability Accelerator can transform the underlying systems of racial oppression while building lasting institutional change.

We must also commit to taking care of the fossil fuel and coal country communities that have kept this country growing for the last 150 years. Through proposals such as reforming the Rural Utility Service Hardship Loan Program, we could direct $100 billion to facilitate the retirement of coal plants in exchange for new investment in distributed energy resources, high-speed broadbands, storage, and electric transportation.

When we ask ourselves how deploying a just and clean energy future can generate equity, we must recall the definition of equity itself: just and fair inclusion. An equitable society is one in which all can participate, prosper, and reach their full potential. We also need a racially equitable society, one where society's benefits nor burdens would be skewed by race.

In short, an equitable and just transition creates an antiracist path from hope to change. Together we can flip the systematic inequities imbedded in our social, economic and environmental systems to a forward-thinking, equitable, and regenerative future. Thank you.

[The prepared statement of Ms. Farley follows:]

"Generating Equity: Deploying a Just and Clean Energy Future."

Written Testimony of Chandra Farley, Just Energy Director, Partnership for Southern Equity before the Subcommittee on Energy of the Committee on Energy and Commerce

April 20, 2021

Good morning, to Honorable Chairman Bobby L. Rush and all Members of the of the Subcommittee on Energy, thank you for the opportunity to submit this testimony. My name is Chandra Farley, and I am the Just Energy Director at the Partnership for Southern Equity, a nonprofit advocacy organization based in Atlanta, Georgia. I am honored to provide this testimony with recommendations for "Generating Equity: Deploying a Just and Clean Energy Future".

Partnership for Southern Equity (PSE) exists to advance policies and institutional actions that promote racial equity and shared prosperity for all in the growth of metropolitan Atlanta and the American South - a region riven by racial, economic and class inequities. These societal barriers have hampered the opportunity for marginalized communities to lend their perspective to the shaping of their clean energy future and to fully benefit from rapidly expanding clean energy markets.

Equal rights under the law, or equality, have afforded many opportunities to those previously denied "certain unalienable rights." However, an equity agenda accounts for differences in opportunities and burdens, as well as needs, to propose and pursue just and equitable solutions to achieve systems level change. Utilizing equity as lens, PSE coordinates advocacy across four key issue areas: energy (Just Energy), land use/development (Just Growth), health (Just Health) and economy (Just Opportunity). Our main strategies are community organizing, leadership development, coalition building, authentic community engagement and leveraging data and research. Just Energy is our framework for advancing energy equity which we define as the fair distribution of the benefits and burdens, of energy production and consumption. We advance Just Energy by deploying our main strategies to build civic power with Black communities, communities of color, rural and low-wealth communities across the south.

While unfamiliar to many residents, equity-centered energy, utility, and climate policies can positively impact household economic stability and improve the overall quality of our air, land, and water - natural resources that affect our health and well-being. However, Black communities, communities of color, rural and low-wealth communities across the south remain virtually unrepresented in the energy planning and decision-making processes that drive inequitable outcomes in energy production, distribution, and regulation.

The data is clear, marginalized, and under-resourced communities in the South bear a disproportionate burden of the negative impacts of our changing climate and carbon-based energy production. Three of the top five biggest carbon polluters[1] in the power sector are in the South where investments in equitable clean energy continue to lag due to the lack of consumer-directed investment by utilities. According to the American Council on Energy Efficient Economy's 2020 Energy Efficiency Scorecard[2], five deep south states, South Carolina, Georgia, Alabama, Mississippi, and New Orleans rank at the bottom of lists for

[1] 2017 Greenhouse Gas (GHG) Emissions from Large Facilities. Retrieved from https://ghgdata.epa.gov/ghgp/main.do

[2] Berg, W., S. Vaidyanathan, B. Jennings, E. Cooper, C. Perry, M. DiMascio, and J. Singletary. 2020. *The 2020 State Energy Efficiency Scorecard*. Washington, DC: ACEEE. aceee.org/research-report/u2011.

energy efficiency policies and programs to reduce energy use, such as adopting or advancing energy-saving targets. This is compounded by the fact that four southern cities - Memphis, Birmingham, Atlanta, and New Orleans, continue to post some of the highest rankings for energy burdens[3] - the portion of household income paid toward energy bills. This is directly related to the bottom tier rankings for energy efficiency policies and programs and the many barriers to underfunded weatherization assistance that can reduce these high burdens.

Also, the South experiences a higher frequency of billion-dollar weather and climate disaster events[4] than any other region. And, the Southeast regions serve as home to 84 percent of all U.S. counties that experience persistent poverty[5] (defined as a county in which at least 20 percent of the population experiences poverty for three decades or more). Pile on the fact that we now have hundreds of thousands struggling families and essential workers that are losing access to electricity, water and broadband due to the economic fallout from COVID, and lack of supports for utility shutoff moratoriums, voluntary or mandated, in the midst of a global pandemic. Georgia Power, for example, reported more than 131,000 shutoffs - equivalent to 6% of its customers.[6] You can see why Just Energy is an urgent and pressing matter.

By highlighting the inequities present across the energy sector and connecting the dots between energy, racial injustice, economic disinvestment, health disparities and other associated equity challenges, PSE can organize with community and across stakeholder sectors to channel their civic power for energy equity advocacy. Strengthened by the deep relationships resulting from the community organizing, coalition building, leveraging data and research and leadership development offerings, PSE has built a "Southern Equity Ecosystem" positioned to shape a just and equitable transformation of the energy sector. A sector that no longer depends on the extreme extraction of human, natural and economic resources from distressed communities, but one that supports a regenerative, clean energy economy rooted in shared principles of social, environmental, economic, and racial justice. And to be clear, these are the principles that are required to generate equity and deploy a just and clean energy future.

An equitable society is one in which all can participate, prosper, and reach their full potential. The goals of equity must be to create the conditions that allow all to reach their full potential. So then, national energy policy must also create the conditions, and remove barriers, that allow state and local governments to ensure all residents can benefit from the increased economic development, improved health outcomes and environmental justice that can flow from a just transition to a distributed, democratic, and clean energy ecosystem.

We can generate equity through increased deployment of clean energy, energy efficiency and weatherization by –

- Reducing energy burdens by lowering utility bills and stabilizing energy costs

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[3] Drehobl, A,. Ross, L., and Ayala, R. 2020. *How High are Household Energy Burdens?* Washington, DC: American Council for an Energy-Efficient Economy.

[4] Billion-Dollar Weather and Climate Disasters: Mapping. Retrieved from https://www.ncdc.noaa.gov/billions/mapping.

[5] 2009. *Exposed Social vulnerability and climate change in the US Southeast*. Available at: <https://s3.amazonaws.com/oxfam-us/www/static/media/files/Exposed-Social-Vulnerability-and-Climate-Change-in-the-US-Southeast.pdf> [Accessed 19 April 2021].

[6] Ryan, G., 2021. *Power Crisis: Despite Transparency Failures, Utility Information Reveals Major Home Shutoff Problem*. [online] Available at: <https://www.biologicaldiversity.org/programs/energy-justice/pdfs/Power-Crisis-Report-March-2021.pdf> [Accessed 19 April 2021].

- Improving financial stability by providing entrepreneurship and thriving wage job opportunities
- Reducing harmful carbon emissions that pollute our air
- Promoting economic development and building community wealth

Reduce energy burdens by lowering utility bills and stabilizing energy costs

Energy insecurity is a major systemic problem. Nearly one-third of U.S. households (31%) have reported facing a challenge in paying energy bills or sustaining adequate heating and cooling in their home and about one in five households reported reducing or forgoing basic necessities like food and medicine to pay an energy bill. Fourteen percent reported receiving a disconnection notice for energy service and some 11 percent of households surveyed reported keeping their home at an unhealthy or unsafe temperature due to inability to pay their bill[7].

We know that clean energy investments like weatherization, energy efficiency, rooftop solar and community microgrids work. Investments like weatherization can reduce the low-income energy burden by at least 25 percent[8]. Energy efficiency and solar energy creates healthier home environments and can stabilize energy costs for working families, senior citizens, and low-wealth communities. Weatherization, energy efficiency, rooftop solar and community microgrids are also job creation and small business development strategies. Energy Efficiency employed over two million people in 2019 and Energy Efficiency employers added 54,000 net jobs in 2019[9]. American solar jobs have increased 167% over the past decade and in the five-year period between 2014 and 2019, solar employment increased 44%, five times faster than job growth in the overall U.S. economy[10]. Of course, the importance of energy and racial equity in these critical sectors can be seen in the fact that only eight percent of solar workers in 2019 were African-American[11] and that the deployment of solar technology itself, a report published in the Nature Sustainability journal found that census areas with over 50 percent African-American or Hispanic populations have close to 40 percent less solar panel installations than white-majority census tracts, even when controlling for household income.[12] And now, the impacts of COVID that are disproportionately affecting Black, Hispanic, and Native American communities are resulting in a 38% decline that is taking the solar industry back to 2014 levels[13].

COVID is not only impacting clean energy delivery industries but is also putting energy insecure Americans at risk. Mounting utility bills exert a crippling financial burden for many, especially workers earning low wages and seniors living on fixed incomes. Approximately 4.8 million households were unable to pay at least one energy bill during the past year and a similar number received a notice from their utility that they faced the threat of disconnection from energy service. Of those that received a

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[7] Eia.gov. 2015. *RECS: One in three U.S. households faced challenges in paying energy bills in 2015*. [online] Available at: <https://www.eia.gov/consumption/residential/reports/2015/energybills/> [Accessed 19 April 2021].
[8] Drehobl, A,. Ross, L., and Ayala, R. 2020. *How High are Household Energy Burdens?* Washington, DC: American Council for an Energy-Efficient Economy.
[9] 2020. *2020 U.S. Energy & Employment Report A Joint Project of NASEO & EFI*. [online] Available at: <https://www.usenergyjobs.org/s/USEER-2020-0615.pdf> [Accessed 19 April 2021].
[10] 2020. The Solar Foundation, National Solar Jobs Census 2019. [online] Available at: <http://www.SolarJobsCensus.org> [Accessed 19 April 2021].
[11] 2020. *The Solar Foundation, National Solar Jobs Census 2019*. [online] Available at: <http://www.SolarJobsCensus.org> [Accessed 19 April 2021].
[12] Sunter, D., Castellanos, S., & Kammen, D. (2019). Disparities in rooftop photovoltaics deployment in the United States by race and ethnicity. *Nature Sustainability, 2*(1). doi: 10.1038/s41893-018-0204-z
[13] SEIA. 2021. *COVID-19 Impacts on the U.S. Solar Industry | SEIA*. [online] Available at: <https://www.seia.org/research-resources/covid-19-impacts-us-solar-industry> [Accessed 19 April 2021].

notice, more than two in five families had their energy shut off.[14] These numbers equate to tens of millions of Americans. We now have an entire new population of people depending on emergency assistance like the Low Income Home Energy Assistance Program (LIHEAP). The National Energy Assistance Directors Association (NEADA) representing the state directors of LIHEAP called on House Energy and Commerce Committee Chairman Frank Pallone, Jr. in an October 2020 letter. Referencing the *Generating Equity: Improving Clean Energy Access and Affordability* hearing, Mark Wolfe, NEADA Executive Director, noted the vast gap between the mounting utility bill arrearages and assistance that would not be able to keep up with the need[15]. Particularly considering the expiring shutoff moratoria that allowed COVID-impacted residential and small business customers to defer utility payments without the threat of losing service. While the patchwork of voluntary and seasonal shutoff protections have been invaluable to millions, Mark Wolfe stated that residential and small business customers could owe $35 billion to $40 billion dollars to their utilities by March 2021. Mark goes on to state that NEADA's new arrearage data shows that by then, individual unpaid bills may be as high as $1,500 to $2,000, which is as much as some customers pay for electricity in a year.

The resulting utility burdens on Black, Hispanic, Native American communities and low-wealth people of color are being amplified by this crisis. While we push for the clean energy investments like weatherization, energy efficiency and rooftop solar that we know can reduce the energy burden and provide long-term benefits, we must remain steadfast in our push for a utility shutoff moratorium that can provide short-term relief for the chronic issue of utility shutoffs.

These examples further demonstrate the impact of societal barriers on the ability of marginalized Americans to access clean energy benefits such as lower bills, better jobs, and cleaner air.

Improve financial stability by providing entrepreneurship and thriving wage job opportunities

Generating equity through clean energy deployment must include a strategy for lifting people out of poverty and advancing an economic inclusion agenda that increases equity in the distribution of income, wealth building, employment, and entrepreneurship among marginalized populations. Tens of millions of jobs have been lost due to COVID, and the historic inequities plaguing Black communities and communities of color are being exacerbated by the ongoing economic fallout. A Pew Research Center survey finds that about half of U.S. adults who are currently unemployed, furloughed or temporarily laid off and are looking for a job are pessimistic about their prospects for future employment, and most say they have seriously considered changing fields or occupations since they have been unemployed[16]. President Biden's American Jobs Plan, and the promise of higher-paying, unionized clean energy jobs with family-sustaining benefits can meet this movement moment through equity – creating a path from despair, to hope to change.

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[14] Memmott, T., Carley, S., Graff, M. *et al.* Sociodemographic disparities in energy insecurity among low-income households before and during the COVID-19 pandemic. *Nat Energy* **6,** 186–193 (2021). https://doi.org/10.1038/s41560-020-00763-9

[15] Wolfe, M., 2020. [online] Congress.gov. Available at: <https://www.congress.gov/116/meeting/house/111070/documents/HHRG-116-IF03-20201001-SD003.pdf> [Accessed 19 April 2021].

[16] PARKER, K., IGIELNIK, R., & KOCHHAR, R. (2021). Unemployed Americans are feeling the emotional strain of job loss; most have considered changing occupations. Retrieved 19 April 2021, from https://www.pewresearch.org/fact-tank/2021/02/10/unemployed-americans-are-feeling-the-emotional-strain-of-job-loss-most-have-considered-changing-occupations/

With President Biden's American Jobs Plan specifically naming energy efficiency, we have a great opportunity to seize this historic investment for improved financial stability for struggling families and the creation of thriving wage job opportunities, entrepreneurship, and small business development. When the housing market crashed and the Financial Crisis of 2008 ensued, my housing sector career disappeared almost overnight. Thanks to the American Recovery & Reinvestment Act (ARRA), I found a new career direction in a southeast based nonprofit whose groundings in building science boomed with training and technical assistance in energy efficiency and weatherization. The Southeast Energy Efficiency & Weatherization Training Center was created and approximately 2,000 workers were trained in Georgia. This was a tremendous success that proves training programs work. But today, we ask ourselves - Where are those workers now? What happened to them when the money dried up? Why don't we know? Especially now when one of the top issues for the energy efficiency and solar industry is finding qualified and skilled workers? We have much to learn from ARRA successes and failures as we embark on an economy recovery and infrastructure investment centered in addressing the climate crisis.

Paula Glover, president of the Alliance to Save Energy, a nonprofit that promotes energy efficiency is right - as we look to create greater economic opportunity for all communities, energy efficiency also offers an enormous opportunity for job creation. Already, the energy efficiency sector is one of the largest energy workforces in America with more than two million employees - 12 times the size of the coal industry and nearly seven times that of wind and solar combined. And 80 percent of efficiency companies are small businesses with fewer than 20 employees[17].

For every $1 million invested in building retrofits, almost 12 jobs are created[18]. Clean energy jobs paid 25% more than the national median wage in 2019 and were more likely to include health care and retirement benefits[19]. These benefits can be realized with investments like those called for in a February 2021 letter to The Honorable Frank Pallone, Chairman and Committee Members of the Committee on Energy and Commerce regarding "Support for Inclusion of Energy Resilient Communities Act (H.R. 448), Low-Income Solar Energy Act (H.R. 4291 (116th Congress)), and New Rural Just Energy Financing Programs in the Next Infrastructure Bill." The Low-Income Solar Act (H.R. 4291) (116th Congress) could provide $10 billion in funds for community solar infrastructure and project development in low-wealth communities. Like the Energy Resilient Communities Act, Section 4 of H.R. 4291 prioritizes workforce development with the expectation that these jobs must adhere to high-roads labor standards and incentivize unionized labor.

Also, this letter specifically references the opportunities present in our rural communities. The Rural Power Coalition and over 100 organizations that support the seven policies being called for by the #RuralPower campaign represent an opportunity to simultaneously provide urgent relief to the most vulnerable ratepayers in rural areas while also preparing rural electric cooperatives for a 21st century clean energy economy. These investments can improve financial stability by providing entrepreneurship and thriving wage job opportunities measures that will directly benefit the rural electric cooperatives that

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[17] Glover, P. (2021). Opinion | Want Environmental Justice? Look to Energy Efficiency. Retrieved 19 April 2021, from https://www.politico.com/news/agenda/2021/02/01/you-want-environmental-justice-look-to-energy-efficiency-463839

[18] Sen, B., Bird, G. and Bottger, C., 2018. *Energy Efficiency with Justice How State Energy Efficiency Policy Can Mitigate Climate Change, Create Jobs, and Address Racial and Economic Inequality.* [online] Available at: <https://ips-dc.org/report-energy-efficiency-with-justice/> [Accessed 19 April 2021].

[19] Ludt, B., 2021. *Clean energy job wages 25% higher than national median, report finds.* [online] Solar Power World. Available at: <https://www.solarpowerworldonline.com/2020/10/clean-energy-job-wages-higher-than-national-median-report-finds/> [Accessed 19 April 2021].

are struggling to finance their transition to clean energy *and* the millions of cooperative member-owners who are currently struggling to pay their bills and believe in the opportunity to make their rural communities thrive again.

Reduce harmful carbon emissions that pollute our air

Last Thursday, the Subcommittee on Environment and Climate Change of the Committee on Energy and Commerce held a legislative hearing entitled, "The CLEAN Future Act and Environmental Justice: Protecting Frontline Communities." Dr. Mildred McClain, Executive Director of the Harambee House/Citizens for Environmental Justice was a witness and focused her testimony on H.R. 2021 - the "Environmental Justice for All Act" or the EJ4ALL Act, as the community has termed it. Dr. McClain stated that EJ4ALL is a promising start to long overdue legislation aimed at addressing systemic environmental injustices resulting from federal actions and decisions.

Black people, Hispanic populations, Asian American Pacific Islander communities and Native Americans are all groups that we know are disproportionately impacted by injustices in our environment like unhealthy levels of air pollution. We can also link these unhealthy levels to fossil-fuel based energy production, siting of toxic facilities and proximity to transportation infrastructure. According to researchers at the SUNY College of Environmental Science and Forestry 15% of COVID-19 mortality is specifically attributable to fossil fuel-related air pollution, showing that fossil fuel-related air pollution contributes significantly to overall U.S. air emissions[20]. In another study, researchers from the Harvard T.H. Chan School of Public Health and the Dana-Farber Cancer Institute also looked at the impact of long-term exposure to fine particle pollution on COVID-19 death rates[21]. Adding to the evidence on the connection between racial disparities, air pollution and COVID-19, the researchers found a 49% increase in the COVID-19 death rate in counties with elevated fine particle pollution and that had a higher Black population[22]. These findings continue to underscore the critical need to ensure healthy air for all.

There are many guidelines, frameworks and community engagement models that call out, require and account for Public Participation. The Clean Air Act itself recognizes that stakeholders and the public play critical roles in developing standards and implementation of the Clean Air Act. So, they have the Clean Air Act Advisory Committee[23] that includes members from EPA; state, local, tribal governments; academic institutions; unions; environmental and public interest groups; trade associations; utilities; and industries.

The make-up of the Clean Air Act Advisory Committee reminds me of my work at Partnership for Southern Equity and our Equity Circles. All our key issue areas - energy, health, opportunity, growth host a circle. These spaces, like our Just Energy Circle[24], are used to mobilize advocacy around energy equity issues. The Circle includes individuals, businesses and organizations representing frontline communities, subject-matter experts, houses of worship, youth groups and academia all working together and

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[20] Michael Petroni *et al* 2020 *Environ. Res. Lett.* **15** 0940a9

[21] Wu, X., Nethery, R. C., Sabath, M. B., Braun, D. and Dominici, F., 2020. Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis. *Science advances,* 6(45), p.eabd4049.

[22] Wu, X., Nethery, R. C., Sabath, M. B., Braun, D. and Dominici, F., 2020. Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis. *Science advances,* 6(45), p.eabd4049.

[23] Clean Air Act Advisory Committee (CAAAC) | US EPA. (2021). Retrieved 19 April 2021, from https://www.epa.gov/caaac

[24] Just Energy Circle. Retrieved 19 April 2021, from https://sites.google.com/view/pse-just-energy-circle/home

organizing to forge collective action towards a more equitable, inclusive, clean energy future for all. The equity circles are built to create safe space for the often difficult conversations we must have to address the root causes of environmental injustice. And, to connect the various business sectors, community groups and residents that must work together to create more just and equitable solutions. One of the things I most value about our Just Energy Circle is that this is where those of us who are used to the privilege of having the mic first, being called on first, or being asked to speak first learn to step back. We learn to make space for the people who have the lived experience to shape the just and equitable solutions that we are all striving to realize.

We must learn from the work of the Just Energy Circle, the leadership of Dr. Mildred McClain, leaders of the environmental justice movement like those recently appointed to the White House Environmental Justice Advisory Council[25] and frontline organizations like Harambee House and the fenceline communities they organize with. This is where the fruitful lessons of what is really required to reduce harmful carbon emissions that pollute our air are practiced - reaching out to the communities that are first and most impacted by legacy pollution and equipping them with the capacity and tools to meaningfully engage in, and lead, the full spectrum of decision making, and accountability setting, that impacts their economic stability, community health and well-being.

Related, H.R. 2021, the EJ4ALL Act very specifically references NEPA, the National Environmental Policy Act[26] which clearly lays out engagement protocols when there is a proposed federal action that may affect an environmental justice community. NEPA requires the federal government to consider all potential direct, indirect, and cumulative impacts caused by the action. NEPA requires the federal government to provide early and meaningful community involvement opportunities, providing notice of any step or action in the process. This "fair treatment" and "meaningful involvement" is environmental justice. It is through the environmental justice principals that we can reverse the current realities and redress the legacy of environmental racism to achieve equity and realize a just and equitable clean energy future.

Promote economic development and build community wealth

When considered together, promoting economic development, and building community wealth can put us on a path to a just clean energy future that centers racial equity and shared prosperity. Community wealth building (CWB) is a system-changing approach to community economic development that works to produce broadly shared economic prosperity, racial equity, and ecological sustainability through the reconfiguration of institutions and local economies on the basis of greater democratic ownership, participation, and control.[27] These aspirations for a more just and equitable economic system have strong signals in the Biden-Harris American Jobs Plan (AJP) that centers environmental justice as necessary to address the climate crisis.

AJP goals such as clean energy block grants that can be used to expand clean energy, increase worker empowerment, and advance environmental justice are the right priorities for this moment. However, these goals must be financed at a level of investment that can build the operations infrastructure to sustain the capacity needed to deliver the benefits. One such strategy is Justice 40 established by President Joe

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[25] White House Announces Environmental Justice Advisory Council Members | The White House. (2021). Retrieved 19 April 2021, from https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/29/white-house-announces-environmental-justice-advisory-council-members/

[26] National Environmental Policy Act. (2020). Retrieved 19 April 2021, from https://www.epa.gov/nepa

[27] Defining Community Wealth Building. (2020). Retrieved 19 April 2021, from https://community-wealth.org/content/defining-community-wealth-building

Biden's January 27 executive order 14008 on climate change[28]. The order, and the infrastructure within the executive branch to implement it, creates a government-wide Justice40 Initiative with the goal of delivering 40 percent of the overall benefits of relevant federal investments to disadvantaged communities and tracks performance toward that goal through the establishment of an Environmental Justice Scorecard.

The Department of Energy's (DOE) Office of Economic Impact and Diversity will lead this effort through a new role committed to implementing Justice40. This is a massive undertaking with far-reaching implications and potential equitable outcomes such as federal funding for community-led projects that get built, a stronger ecosystem of businesses owned by leaders from Black and historically disinvested communities of color, enabling these businesses to compete for opportunities more effectively, and offers greater actionable awareness among decision makers of structural biases inherent in resourcing systems towards reparation and restoration.

As Justice40 is housed within DOE, H.R.1375 - the Energy Equity Act of 2021[29] introduced by Congressman Bobby Rush is the kind of capacity investment we need in the DOE delivery infrastructure. The Energy Equity Act of 2021 would establish an Office of Energy Equity within DOE. Under this act, the Director of the Office of Energy Equity is directed to operate in accordance with Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. And that the purposes of this Act, shall provide, direct, foster, coordinate, and implement energy planning, education, management, conservation, and delivery programs of the Department that –

- promote an agency-wide environmental justice strategy and interagency collaboration;
- reduce or stabilize energy costs within underserved or disadvantaged communities; and
- increase the availability of energy conservation measures within underserved or disadvantaged communities.

The Energy Equity Act of 2021 will be critical to inform equitable research, development, and deployment within the DOE and outside the agency in the frontline communities that must be include in the full spectrum of decision-making. It is these communities that must be positioned to benefit the most from the shared accountability embedded in this act and Executive Order 12898.

The levels of funding possible across energy, water, housing, and transportation represent a transformative opportunity for reparation and restoration of historically disinvested communities that are being left out of the clean energy transition. This includes rural communities served by rural electric cooperatives that power 56 percent of the nation's landmass and serve 42 million Americans. Proposals such as reforming the Rural Utility Service Hardship Loan Program could direct $100 billion to facilitate the retirement of all coal plants currently in operation and potentially all outstanding electric cooperative

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[28] The White House. 2021. *FACT SHEET: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity Across Federal Government | The White House.* [online] Available at: <https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/> [Accessed 19 April 2021].

[29] *H.R.1375 - Energy Equity Act of 2021.*

debt in exchange for new investment in clean energy, distributed energy resources, energy efficiency, high-speed broadband, storage, and electric transportation with new loans at U.S. Treasury rates[30].

Closing

The Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act introduced by Energy and Commerce Committee Chairman Frank Pallone, Jr. (D-NJ), Environment and Climate Change Subcommittee Chairman Paul Tonko (D-NY) and Energy Subcommittee Chairman Bobby L. Rush (D-IL) can deliver on many of the policies that generate equity through increased deployment of clean energy, energy efficiency and weatherization by –

- Reducing energy burdens by lowering utility bills and stabilizing energy costs
- Improving financial stability by providing entrepreneurship and thriving wage job opportunities
- Reducing harmful carbon emissions that pollute our air
- Promoting economic development and building community wealth

Each section of the CLEAN Future Act can "Generate Equity" as we deploy a just and clean energy future with the "whole of government" and "environmental justice for ALL" approach. From the power sector to the building sector, to the transportation sector and industrial sector. The explicit naming of reducing air pollution that disproportionately harms frontline communities; requiring that workers be paid prevailing wages and retain the right to organize; ensuring that states have ample guidance and funded support, the CLEAN Future Act presents a strategy backed up by the infrastructure and capacity investment needed to advance a "CLEAN Future" strategy. Yet, equity is about more than strategy.

As we work to ensure our strategies are aligned with a vision, we must always return to and lead with the comprehensive environmental justice provisions that can advance "environmental justice for ALL". We must understand how important it is that the capital communities need can be found through mechanisms such as the Clean Energy and Sustainability Accelerator. Combined with a frontline community informed Justice40 initiative, the $100 billion dollar commitment for the Clean Energy and Sustainability Accelerator can transform the underlying systems of racial oppression while building lasting, institutionalizing change. We must be clear that as we leverage the purchasing power of the federal government to drive this energy efficiency and clean energy deployment, we not only reduce electricity bills, but we also address the legacy pollution that is still ravaging our Black communities, Tribal communities, and communities of color because of environmental racism. And, we must commit to the establishment of an interagency framework as called for in the Worker and Community Transition section of the CLEAN Future Act to make sure we are taking care of the fossil fuel workers and coal country communities that have kept this country growing for the last 150 years.

When we ask ourselves how deploying a just and clean energy future can generate equity, we must recall the definition of equity itself - Just and fair inclusion. An equitable society is one in which all can participate, prosper, and reach their full potential. More specifically, as this testimony clearly points out, we also need a racially equitable society, one where society's benefits, nor burdens, would be skewed by race. I see this opportunity in the just transition that is at once a principle, a process, and a practice. The Just Transition Alliance defines just transition as "a vision-led, unifying and place-based set of principles, processes, and practices that build economic and political power to shift from an extractive economy to a regenerative economy. This means approaching production and consumption cycles holistically and waste-free. The transition itself must be just and equitable, redressing past harms (reparations) and

[30] #RURALPOWER. 2021. *#RURALPOWER.* [online] Available at: <https://www.ruralpower.us/> [Accessed 19 April 2021].

creating new relationships of power for the future through reparations. If the process of transition is not just, the outcome will never be. Just Transition describes both where we are going and how we get there."[31] In short, an equitable and just transition creates the path from hope to change.

The time is now to act. The time is now to direct investment. The time is now to flip the systemic inequities in our social, economic, and environmental systems to a forward thinking, regenerative future.

Thank you.

[31] What is Just Transition? | Just Transition Alliance. Retrieved 19 April 2021, from http://jtalliance.org/what-is-just-transition/

Mr. RUSH. I thank the gentlelady. The Chair now recognizes Mr. Baird for 5 minutes for the purposes of an opening statement. Mr. Baird, you're recognized.

STATEMENT OF DONNEL BAIRD

Mr. BAIRD. Good morning, and thank you, Mr. Chair. I'm delighted to be here and have the chance to virtually meet the Honorable Bobby Rush, who is the only human being who ever defeated Barack Obama in an election head to head—and whipped him good, is what I understand. My name is Donnel Baird, and I run a climate tech startup called BlocPower. We focus on analyzing, financing, and installing efficient and all-electric equipment in low-income buildings.

Clean energy in low-income buildings across America is central to economic recovery in all of our communities and central to the survival of our species as human beings on this planet. I am on the board of the Climate Reality Project with Vice President Al Gore, Columbia University's Entrepreneurship Committee, the Sierra Club Foundation, the Sunrise Movement, Better Markets, the New York City Workforce Development Board, the New York City Tech Alliance, and the New York Federal Reserve Bank Advisory Board. All of these organizations must work together in order to ensure clean energy investments in low-income communities because it is complicated and it is hard.

Community ownership of clean energy, energy efficiency and internet connectivity infrastructure must, in my view, be owned and controlled by low-income communities across America. Low-income communities need ownership and equity, not just ownership in the sense of morality of ownership and equity in the sense of justice and equality but literal economic ownership, an equity ownership of stock, of shares of special purpose corporations that house infrastructure assets.

In low-income communities, I know that we all see lots of waste. We see wasted fossil fuel energy in the buildings where we burn oil to overheat these buildings, and we see a waste of human potential due to high rates of unemployment, incarceration, poor education, and opioid addiction. I started my tech company to fix that waste both of fossil fuels and the waste of human potential.

This is 2021, and this is America. This is not ancient Mesopotamia. We do not need to heat buildings across our country by burning dead dinosaurs in our basements and causing high asthma rates amongst our children. We can turn millions of buildings across America into Teslas, all-electric, healthy, using cutting-edge software and creating up to 25 million American jobs.

Electrifying millions of American buildings will require sensors, smart grid, solar batteries, carbon capture and storage, the Internet of Things, cloud computing, mobile computing, edge computing. These are new industries that we can and will launch and own and manufacture right here in America, including in West Virginia. We believe that as many as 5 million permanent jobs will be created.

To date BlocPower has focused on learning how to finance and analyze and reduce fossil fuel waste and health disparities in New York City buildings in partnership with the New York State government, the New York City government, and Goldman Sachs.

We've greened 1,100 apartment and community buildings in New York City and low-income communities. We've raised over $70 million of private capital, including a $50 million loan from Goldman Sachs.

We've designed a community-owned clean energy solar microgrid in part with New York State because community ownership of clean energy assets and internet broadband assets, again, is critical. We've launched a community-owned WiFi network to help low-income families in the Bronx who have no broadband access to have internet access, and in a few weeks that mesh system will serve millions of New Yorkers with free internet [audio malfunction].

Mr. RUSH. We've lost the sound, the audio. We've lost audio.

Mr. BAIRD [continuing]. Caucasian 55-year-old white dudes, immigrants, students, Americans of all kinds to work in our company, and we've done this—in closing, we've learned a few quick things that I believe are useful to this committee. We believe that pay for performance public/private partnerships are critical because they combine the best thinking and learning from community groups, workers, finance, Wall Street, Silicon Valley, and the best and brightest in government policy and ensure that each and every taxpayer dollar that is spent is wisely invested and that performance is assured. We believe that we can leverage each dollar of taxpayer subsidy with $5 to $10 of private capital, which we have demonstrated in our partnership with Goldman Sachs to invest in clean energy and low-income communities.

And in closing, clean energy must include low cost-internet connectivity at scale. All of the clean energy devices that we install require internet, and we must provide community internet in low-income communities, and that community internet must be owned by low-income communities, which is a core part of the White House plan. America has a unique opportunity in front of all of us right now——

Mr. RUSH. Mr. Baird, pardon me. You started out with such a bang, but your time has expired——

Mr. BAIRD. Thank you, Mr. Chairman.

Mr. RUSH [continuing]. And will you bring your comments to a close.

Mr. BAIRD. Yes, sir. We have opportunity to launch several new industries, and we should not waste it. Thank you, Mr. Chair.

[The prepared statement of Mr. Baird follows:]

4.19.2021

US House Committee Hearing on The Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act.

My name is Donnel Baird. I run a climate tech startup named BlocPower, that focuses on analyzing, financing, and installing efficient and all electric energy equipment in low-income buildings. Clean energy in low-income communities across America is central to recovery, and to the survival of our species. I am on the Boards of the Climate Reality Project, Columbia University's Entrepreneurship Committee, the Sierra Club Foundation, the Sunrise Movement, Better Markets, the NYC Workforce Development Board, the NYC Tech Alliance, and the New York Federal Reserve Bank Advisory Board.

We believe that community ownership of clean energy, energy efficiency, and internet connectivity infrastructure must be owned and controlled by low-income communities across America. Low-income communities need ownership and equity. Not just ownership, in the sense of moral ownership, and equity, in the sense of justice and equality, but literal economic ownership, and equity ownership of stock in Special Purpose Entities that house infrastructure assets.

I grew up low income, in Brooklyn, New York, in the 1980's, and became a community organizer right after I left college at Duke University. I spent another 3 years as a liaison between the US Dept of Energy and the Obama Biden administrations US Dept of Energy, focusing on $6.5bn of ARRA funding to low-income communities. A coalition of labor unions, Change To Win, assembled $90bn of private sector capital to coinvest with the Obama Biden Dept of Energy to create green construction jobs and introduce clean energy at scale to buildings across America.

After learning from that role for several years, I enrolled in Columbia Business School, to learn enough about business and finance to be able to create jobs for the low-income communities I care about. In my determination, the young families in Brownsville and the Bronx didn't necessarily need more programs, or even grants. They needed jobs, so they could take care of their young families, and have dignity, and independence.

I won a global competition for startup capital from the Echoing Green Foundation, and once I received permission from my fiancée (since she'd be the one paying off my enormous student loans while I launched a startup), I started BlocPower to connect Wall Street, Silicon Valley, government, workers, and community leaders in a network to bring clean energy to low-income buildings.

The technology now exists in Japan that would allow BlocPower to reach our goal, which is to turn buildings into Teslas, and create 20 mm American jobs, with bi partisan support.

It's Not a moonshot! The technology currently exists to move 120mm American buildings entirely off of fossil fuels.

BlocPower works in the hardest hit communities: communities ravaged by poverty, the sub-prime mortgage crises, gentrification, the opioid and COVID-19 crises.

For example, the neighborhood Brownsville, Brooklyn, where I was a community organizer, is the poorest census tract in NYC. 30% of adults have been incarcerated, real unemployment rates are above 50%, with the highest rates of child homelessness, lack of access to broadband, and domestic violence of any census tract in NYC.

During my time in Brownsville, I saw a lot of WASTED energy in the buildings, burning oil to overheat buildings, having windows open during freezing winter weather due to overheating, and I also saw a WASTE of human potential, due to high rates of unemployment, and incarceration. The community of

Brownsville had a juvenile justice center, but no high school. That's where they expected the teenagers and children to end up.

I started my tech company to fix that waste, of fossil fuels, and waste of human potential.

One of the first buildings we worked in was private school in NYC. The school burned oil for heat, and for hot water. The school was near a highway, and not too far away from an industrial location where lots of trucks would make deliveries and idle their engines all day. Lots of air pollution and emissions.

There was chronic asthma in 50% of the school's kids, and the school nurses had 90 inhalers, with the NAMES of the children TAPED on the sides of the Ziploc bag holding each individual inhaler.

One unfortunate day, a 4-year-old had an asthma attack. His PARENTS were CALLED to take him to the ER. Later that evening, HE DIED. We installed air quality and temperature systems in the building, and learned that the school's ventilation system was taking all of the air pollution from the oil heating system in the basement, and sucking in all of the air pollution from the highway nearby and funneling it into the school's cafeteria, where lots of kids would have asthma attacks each day.

This is 2021, and this is 2021 America. This isn't ancient Mesopotamia. We don't need to heat our buildings by burning dead dinosaurs in the basements. We can turn millions of buildings into Teslas, all electric, healthy, using cutting edge software, and create millions and millions of permanent jobs.

Electrifying millions of American buildings will need sensors, smart grid, solar, batteries, carbon capture and storage, IoT, Cloud, mobile, and edge computing. These are new industries, that we can launch and own and manufacture right here in America. We believe that as many as many as 5mm permanent jobs will be created, with 25 mm temporary jobs created.

To date, BlocPower has focused on testing out different approached to financing, analyzing, and reducing fossil fuel waste and health disparities in NYC buildings, and buildings in rural New York. We've:

- Greened 1100+ apartment and community buildings in NYC, using data, private sector capital.
- Raised $63mm of capital to expand to 20+ cities.
- Designed a community owned clean energy solar microgrid in partnership with NY State. Community ownership of clean energy assets is a
- Launched a Community owned Wi-Fi mesh network, during the pandemic, which rural and urban and communities can use at a fraction of the monthly rates that Big Telecom and cable companies charge low-income Americans.
- On Thursday, Lt Gov of New York is joining us to kick off a Houses of Worship clean energy strategy, since Houses of Worship are central to all communities. We've analyzed over 300 churches, synagogues, mosques, and non-profits to reduce their monthly payments to utility companies.
- We take pride in workforce development: we've employed a visually impaired sales associate, homeless young people that we are training in green tech, immigrants, 55-year-old Caucasian construction manager, veterans who led the fight during three tours in Iraq and Afghanistan.

We've done all this while focusing in on Clean Energy in Low Income communities. Here's what we've learned.

- Public Private Partnerships are critical, combining community groups, workers, finance, tech, Silicon Valley, Wall Street, + the best and the brightest from government.
- We need to leverage each dollar of taxpayer subsidy with 5 to 10 dollars of private capital, to make our government infrastructure investments stretch farther.
- We need to utilize cutting edge software emerging from Silicon Valley to continue to lower the costs of connecting regular Americans to low-cost smart, healthy, green equipment for their homes.
- The Hardware exists to create 25mm jobs transitioning our economy to 100% electric buildings and cars.
- We Need community support and trust.
- We Need a new generation of skilled and tech enabled construction labor to refresh our nation's capacity to build in the physical world.
- We Need Performance. At BlocPower, we believe in Pay For Performance, even in, and especially in low-income communities. These communities deserve the highest level of service, and if a service provider isn't willing to stand behind their work and participate in a Pay for Success model, we shouldn't use government capital to reward those who don't have confidence in their work to guarantee success.
- Clean energy at scale MUST include low-cost internet connectivity at scale. All of the data and finance necessary to deploy clean energy at scale requires internet connectivity. To that end, it is paramount that the Congress protect President Biden's recommendation that community owned internet remain a pillar of any infrastructure plan.

We Americans have a unique opportunity in front of us right now—the opportunity to launch several new clean energy industries that will save this planet, and employ millions of Americans, for generations. These industries will restore global American leadership. We must do everything we can to secure an American-led clean energy future. We cannot take it for granted.

BlocPower's lead investor, Mitch Kapor, co-founder of the Electronic Frontier Foundation, and founding Chair of the Mozilla Foundation, was an early pioneer in the technology industry. He built Lotus, an early tech powerhouse that made him a contemporary of Steve Jobs and Bill Gates. I asked Mitch how he thought about the way the internet developed, vs the way they hoped it would develop. His answer is relevant not only to the internet industry, but to the emerging clean energy industry as well.

"Those of who helped the Internet come of age in the 1990s saw hope in a decentralized architecture, one in which infrastructure and services genuinely reflected the interests of its participants, not the agenda of corporate monopolies and oligopolies.

Again, today there is an opportunity to renew that promise through locally based, highly affordable, cooperatively owned and operated mesh Wi-Fi systems".

That promise is available to us to build equity for low-income people into ALL of the smart, clean, green healthy infrastructure that we will discuss here today—the solar, the EVs, the charging, the electric heat pumps, the community owned mesh internet networks. This technology will form the foundation of our society for future generations to come, and it must have equity at its center. This bill is strong start towards doing that.

Thank you,

Donnel

Mr. RUSH. The gentleman yields. The Chair now recognizes Mr. Pérez for 5 minutes for the purposes of an opening statement.

Mr. Pérez, you are recognized for 5 minutes.

STATEMENT OF JOSÉ L. PÉREZ

Mr. PÉREZ. My apologies. I didn't have the unmute button on. It is on now. Good morning. My name is José Pérez, and I'm the president and CEO of Hispanics In Energy, and I want to make a few remarks before I get into my statement. And that is I want to personally thank you, Congressman Rush and Congressman Upton, for speaking at our former events, one in Chicago and one in Washington, DC. We really have followed your career and thank you very much for your service to this country.

Let me begin by saying that Hispanics In Energy, a nonprofit, strongly supports the goal of a clean and healthy environment, and we are eager to contribute towards that goal. We must all fight carbon emission-induced climate change. Providing a healthy future for our families is a core value for our community, and we support practical and well-thought-out efforts for clean energy development.

However, this proposed new direction of clean energy needs much more thought and analysis before such a radical approach is adopted. We do not think it demonstrates enough appreciation or concern for the Hispanic energy workers community or other communities, including our African-American and indigenous brothers and sisters. There is no evidence that Hispanics will benefit economically and prosper from the emerging clean energy economy.

With 18 percent of the American people, Hispanics are America's largest minority group, over 60 million people. We have the highest labor force participation rate as compared to any other group. We like to work. We quickly pick up our roots and move to follow the jobs. We don't complain about having to get up early in the morning to go to work.

Many in our community have chosen to work in the oil and gas fields in Texas, California, New Mexico, Colorado, and other critical oil-producing States. In California, 30 percent of the 385,000 oil and gas workers are Hispanic. That is 115,000 jobs with an average salary of $100,000. So that is an $18 billion infusion into Hispanic households and families every year. Of all the oil and gas jobs available to Hispanics, none beats the job opportunities as in the 86,000-square-mile Permian Basin, a land many times bigger than Delaware where the locals are 65 percent Hispanic.

The Permian Basin is gigantic, and it sits between the Southeastern part of New Mexico and the Western part of Texas. In this particular area, the development has a potential of $3 trillion with over 400,000 new jobs. Clearly, Hispanics are already a large part of the workforce in the shale plates of Texas, Colorado, Utah, North Dakota, and Oklahoma. The same can be said about oil exploration and leasing along the Gulf of Mexico. This proposal would take away those jobs and the economic infusion going into California's Hispanic community and those in Texas, New Mexico, Oklahoma, North Dakota. Is that what we want? We don't think so.

America's energy policy should include a complete mix of energy strategies, including the expansion of nuclear energy generation because of its safe technology, inexpensive 24/7 operation and pure,

clean energy as an output. The expansion of natural gas is the primary reason for the lowering of carbon emissions in this country. There is still much more benefit that could be gotten out of natural gas, the development of new technologies to neutralize the harmful effects of carbon emissions in burning fossil fuels, and there is a lot of great developments. It seems like we ought to be putting more resources to make sure that we come up with a solution for that.

And then finally we should encompass principles that do not harm American energy workers, that help to enhance their training and capacity to increase their economic success and security. Taking away from an American worker doesn't make any sense to us. Our country's transition to a low-carbon, clean energy economy must include all communities to be sustainable. The clean energy sector can do way more to diversify and embrace equity and inclusion with our Hispanic community.

Thank you for being asked to provide thoughts about energy strategy and policy. As large as our community is in America, it is too rare for the Government to ask for ideas about energy.

Thank you very much for that, Congressman. I look forward to answering any questions you may have.

[The prepared statement of Mr. Pérez follows:]

Bullet Points for the Energy SubCommittee – April 20, 2021

By Jose L. Perez, President & CEO, Hispanics In Energy

- Thank the Members for inviting Hispanics In Energy to this critical discussion on "Generating Equity: Deploying a Just and Clean Energy Future." Thank Congressmen Bobby Rush and Fred Upton for being speakers in our past policy forums in Chicago and Washington DC.
- Hispanics In Energy – Driving Hispanic inclusion in America's all energy sectors since 2012:
    - America's largest minority group at 18% of the total population of over 60 million people
    - The highest labor force participation rate of any group in America, Hispanics like to work
    - Over a $2.3 trillion consumer purchasing power contribute substantially to America's economic growth and prosperity
    - The population is young compared to all Americans and now represents 25% of America's K-12 students
    - Core objectives are Hispanic inclusion in energy governance, jobs, procurement, language access, environment, policy, and philanthropy
    - Convenes energy legislative forums, policy seminars, and summits related to the core objectives
    - Represents a network of Hispanics who work in the energy industry
- Some principles we believe should be included in this proposed Act are:
    - Laws and regulations designed to encourage and stimulate clean energy must ensure that Hispanic, American Indian, African American, and other disadvantaged communities have access to the opportunities it brings.
    - Policies should avoid adverse consequences or disadvantages, such as job loss or the inability to access the benefits.
        - More than 4.1 million jobs connect to the natural gas industry
        - 83% of natural gas jobs are local
- HIE supports a holistic approach that strives to promote more significant decarbonization through all resource options, and that ensures every person – from small business owner to rural farmer to impoverished inner-city mother - has the chance to take part in the social and economic benefits of a cleaner tomorrow
    - Direct reduction of methane and CO2 emissions through the use of renewable natural gas and hydrogen that utilized current underground infrastructure
- Challenging areas in finding solutions in DEI for Hispanics In Energy include:
    - Corporate governance such as Hispanics on the board of directors and in the C-Suite
    - Contracts with Hispanic-owned businesses with all the energy sectors and with a particular challenge to transition them to clean energy areas
    - Jobs in energy with an emphasis on our Hispanic American Energy STEM Institute

- Hispanics In Energy works to find DEI solutions for:
    - Oil and gas companies
    - Fuel and petrochemical manufacturing plants
    - Utilities
        - Investor-owned
        - Municipal
        - Water companies/hydroelectric
        - Co-ops
    - Nuclear Power Plants
    - Coal
    - Alternative energy
    - Regulators
    - Policy Makers
- Hispanics In Energy supports the goals of a clean, safe and robust environment driven by clean energy generation, distribution, and concern for our climate within the following energy sectors
    - Fossil energy (petroleum, natural gas, by-products)
        - Exploration
        - Extraction
        - Transporation
        - Refining / distribution
            - Gasoline
            - Natural Gas
            - Chemical
    - Renewable energy
        - Generation (solar, wind, nuclear)
        - Distribtuion
    - Nuclear energy
        - Generation
        - Distribtuion
    - Alternative energy
- Hispanics In Energy urges the expansion of nuclear power generation due to its advanced technological safety, cost, and is 100% renewable
    - America leads the world in nuclear safety
    - Creates thousands of good-paying jobs
- Hispanics In Energy welcomes the Biden Administration's commitment to DEI policy formulation and stands as a strategic, knowledgeable resource for the energy regulators and industry. His infrastructure proposal offers hope for current energy workers displaced by policy changes. It allocates some help to find ways to address the hardship such a move could have on thousands if not millions of workers.

- From a Hispanic inclusion perspective, we have a tremendous amount of work to do, and Hispanics In Energy needs to be at the table as these ideas are being formulated and executed in the following:
    - Appointment of Hispanics to responsible positions within the Department of Energy, Federal Energy Regulatory Commission, Nuclear Regulatory Commission
    - Advocating for our Hispanic American Energy STEM Institute to generate thousands of graduates with energy STEM degrees beginning in 2025 by adequately utilizing our 530 Hispanic Serving Institutions and groups like Parents Institute for Quality Education
    - Advocating for more business contract opportunities for our Hispanic owned-businesses with energy companies and transitioning them to the clean energy sector
    - Advocating for Hispanic appointments in energy company board of directors and the C-suite
- State of Hispanics in America's Energy Sector
    - Although Hispanics are 18% of the population, only seven are CEOs in the top 2700 energy companies or 0.3% representation
    - Few, probably less than 2%, are board members of energy companies
    - No Hispanic has ever served on the Federal Energy Regulatory Commission or the Nuclear Energy Regulatory Commission, and few Hispanics work in those organizations
    - Only seven Hispanics are utility commissioners of the 198 in America, with the 50 states
    - Hispanics still lag in jobs, business, and Spanish language access services

- Essential considerations for "Generating Equity: Deploying a Just and Clean Energy Future."
    - Be careful not to expand poverty in the Hispanic or any other community by being too haste and rushing forth policies that may cripple rather than help minority communities.
    - HISPANICS IN THE US AND HISPANICS IN THE OIL AND GAS INDUSTRY (1 MINUTE)
        - As of 2019, the Hispanic population in the United States is over 60.47 million.
        - The the top two states with the highest Hispanic population are:
            - California: 15.57 million
            - Texas: 11.52 million
    - Switching to oil & gas production
    - According to the US Information Administration, the top 5 oil-producing states are Texas, North Dakota, New Mexico, Oklahoma, and California.
    - And in three of these oil-producing states, here is the % of Hispanics compared to their total population
        - New Mexico, 49.26%
        - Texas, 39.75%
        - California, 39.32%
        - These are three of the top 5 oil & gas-producing states in the USA
- And who is the fastest group ethnic group in each of these states - Hispanics
    - What does the oil & gas workforce look like?

- In 2019, in Texas, Hispanics comprised nearly 30% of the oil & gas workforce, in California, also 30%.

- And who is the fastest growing population in Odessa, Texas, you guessed it, Hispanics. Why? Because of jobs.
  - Hispanics are a large part of the oil and gas business. In California, for example, they are 30% of the workers or about 115,000 workers in good-paying jobs. The average earning by these workers is about $100,000 per year plus benefits and overtime. Should these jobs disappear, it would mean an $18 billion hit on Hispanic workers, families, and communities in California alone. That would be devastating. Imagine what similar effect this would have in other states like Texas, Colorado, New Mexico, to name a few. Some ideas to mitigate the potential human disaster include:
    - Complete development of technology and science to resolve the harmful effects of carbon emissions caused by burning fossil fuels
    - Perform a comprehensive and in-depth study to determine how these workers will be re-trained, assured the same compensation and benefits, and protected from job loss and expansion of poverty, such as those experienced by the coal miners and their communities
    - Hispanic oil and gas workers have a significant presence in the oil fields, shale plays, pipelines, and refineries
  - DEI barely exists for Hispanics, African Americans, and Indigenous people in the clean energy space. Congress should require DEI as part of any plan to continue shifting resources and tax breaks to renewable energy and here is why:
    - The renewable energy sector has yet to demonstrate how clean energy jobs can replace the job, security, labor union protection, career ladder, and sustainable careers in the oil and gas sector
    - The renewable energy sector has no track record of building Hispanic ownership of renewable energy companies with strong sustainability for the long haul
  - The Permian Basin (New Mexico and Texas that encompass 82,000 square miles), should be allowed to develop for several reasons, including:
    - It represents a $3 trillion opportunity
    - If fully actualized, it would create an estimated 415,000 jobs on the Texas side alone
    - The local communities exceed 65% Hispanic populations
    - It helps secure America's energy independence
    - It would substantially increase wealth in the Hispanic community
  - Similar oil and gas leading states offer powerful union good-paying jobs in California, Texas, New Mexico, Colorado, Oklahoma, the Gulf of Mexico, and more recently, in North Dakota
  - We already have an example of what happens when you move from fossil fuels to wind & solar – the coal mining industry. Miners lost their jobs and with no thought-out plan

for career transition. Sure they were given small grants, but the labor unions labeled them as inadequate. Let's not repeat that same mistake with oil and gas Hispanic and other minority workers

- Finally, the federal government needs to partner with groups like Hispanics In Energy to create and sustain the education and preparation of thousands of energy STEM graduates within the next three years. This action will help solve the more challenging problems faced by companies and minority communities
- For more information about our Hispanic American Energy STEM Institute, please visit our website at www.hispanicsinenergy.com

The Clean Futures Act is heavy on eradication, eradicating gas-powered vehicles, stopping the use of non-clean energy, and eradicating fossil fuel exploration.

Recommendations:

1. The time for this is not now. There are too many unanswered questions and the potential impact on American energy workers, Hispanics, and others, is too profoundly devastating. In California alone, this policy would be an $18 billion hit on California Hispanic works. We can see a similar impact on Hispanic communities in Texas, New Mexico, Colorado also. Why would we want to expand poverty to Hispanics and other energy workers and their communities?
2. While some of the proposed policies would have devastating effects on perhaps hundreds of thousands of Hispanic oil and gas workers, we believe that the long-term future is clean energy. We appreciate the Biden Administration's intention of creating opportunities to transition fossil fuel workers into the clean energy space, provided the workers have equal pay, benefits, and employee protection.
3. America's energy strategy must include all the above energy mix, including nuclear, oil and gas, the solar, wind, and alternative sources.
4. DEI must be included in every aspect of a clean energy strategy to ensure that no community of people based on ethnicity, race, gender, sexual orientation, or religion is excluded and left out of these opportunities.
5. We request to be invited to any discussion, advisory group, or related efforts to help shape a strategy that achieves the goal without harming so many people.

Thank you for your consideration, and I look forward to answering any questions you may have.

Mr. RUSH. The Chair thanks Mr. Pérez. The Chair now recognizes Ms. Carter-King for 5 minutes. You're recognized for 5 minutes for the purposes of an opening statement.

STATEMENT OF LOUISE CARTER-KING

Ms. CARTER-KING. Thank you and good morning, Chairman Rush, Ranking Member Upton, and members of the committee. Thank you for the opportunity to allow me to speak. I am here today as the nonpartisan elected at-large Mayor of the City of Gillette, Wyoming. On behalf of the community that proudly bills itself as the energy capital of the Nation, I wanted to share a few considerations from our city regarding the transition to a decarbonized power sector.

Located in the heart of the Powder River Basin containing significant deposits of coal, oil, gas, and uranium, our community has a vested interest in the continued responsible use of our region's abundant natural resources. For decades, our residents have quite literally been on the front lines of powering the country. Our municipal revenue and subsequent governmental operations are largely dependent on these industries. The loss of this revenue will have an immediate and direct impact on the public safety of our residents from the officers that we have on the street to the doctors and nurses we have in our hospitals, not to mention what it will do to our public education system, which is already facing steep cuts.

We recognize that the global demand for how energy is produced is changing. We have worked hard to forge partnerships with other local, State, and private entities all dedicated to both expanding and diversifying our local economy. We are also acutely aware that these major changes do not occur overnight or without significant financial resources.

As is true for any other elected body, our primary goal at the City of Gillette is to preserve and improve the quality of life for those that we represent. Aggressive goals for the decreased use of fossil fuels will directly result in the loss of revenue, jobs, and well-being for the citizens of our community and many others like it. While we understand the desire to transition to a carbon-neutral energy matrix, we believe a measured, thoughtful approach is prudent and necessary.

We are actively working with other public and private entities to not only work towards reducing carbon emissions but also to identify new uses for carbon. Partnerships with local utilities, the XPRIZE Foundation, the University of Wyoming School of Energy Resources, and the U.S. Department of Energy have spurred research into uses of the carbon created from energy production as well as finding the value-added products created from our abundant fossil fuel. We will need the continued support of the Federal Government to see these projects come to fruition for the benefit of everyone in our Nation.

Thank you for the opportunity to hear this perspective and for your important work. Thank you.

[The prepared statement of Ms. Carter-King follows:]

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Written Testimony for Mayor Louise Carter-King, City of Gillette, Wyoming

Before the Committee on Energy and Commerce, Subcommittee on Energy
United States House of Representatives
Hearing entitled "Generating Equity: Deploying a Just and Clean Energy Future"

April 20, 2021

Chairman Rush, Ranking Member Upton and Members of the Committee:

Thank you for the opportunity to allow me to speak. I am here today as the non-partisan, elected at-large, Mayor of the City of Gillette, Wyoming. On behalf of a community that proudly bills itself as the "Energy Capital of the Nation", I wanted to share a few considerations from our City regarding the transition to a decarbonized power sector.

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continued support of private entities and government at all levels to see these projects come to fruition for the benefit of everyone in our nation.

Again, thank you for the opportunity to share this perspective and for your important work.

Mr. RUSH. I want to thank all the witnesses for their exemplary testimony, and we have concluded the opening statements for this morning. Now we will move toward Member questions. Each Member will have 5 minutes to ask questions of our witnesses. I want to start by recognizing myself for 5 minutes.

This month Chairman Pallone, Chairman Tonko, and I introduced the CLEAN Future Act to put the Nation on a path toward a clean energy future by no later than 2050. Among these policies is my bill, the Energy Equity Act of 2021, which would drive principles of equity and justice in our energy system by establishing a Federal program office solely dedicated for these purposes.

My first question is to Mr. DeVar. Mr. DeVar, will you briefly describe the importance of Federal policies to advance the equitable distribution of clean energy and why they should be a requirement.

Mr. DEVAR. Yes. Thank you, Chairman Rush. The reason why these policies need to be a requirement in brief stems from many of the points and questions that have been raised by all the Members here and all the witnesses. There is a key question in who will benefit, and in fact there is a lot of agreement here.

I'm astounded to hear the concern about wages, about income, and about jobs and which communities benefit from that. And so the Federal Government has a key role in ensuring equity. The Federal Government has a key role in leadership, and the Office of Energy Equity that you're proposing would be essential for closing the gaps that folks have mentioned where there is evidence that these benefits will actually be realized by the communities and populations that folks have raised.

Mr. RUSH. Thank you, Mr. DeVar. Ms. Farley, as you know, clean energy transmission must be just, must be equitable for all communities, both urban and rural. How will a Federal Energy Equity Office support community-based groups in meeting the energy needs of all communities?

Ms. FARLEY. Thank you, Chairman Rush. It is critically important that any activities with goals to be more just and equitable include direct input from the communities who are first and most impacted by any of the negative impacts that we have discussed today, whether that is the climate emergency overburdened by electricity bills and legacy pollution.

So the opportunity to establish an Energy Equity Office within the Department of Energy is this kind of critical opportunity. It is important that we have the infrastructure that is needed to deliver on these benefits, and an office like Energy Equity would be there to support Shalanda Baker, who we are very excited about. But this is a massive undertaking, and——

Mr. RUSH. Thank you very much. I'm sorry to cut you off, but I only have a few more seconds, and I would like to ask now Mr. Bhatraju and Mr. Baird: How would a Federal Energy Equity Office support public/private partnerships in delivering greater clean energy access to underserved communities?

Mr. BHATRAJU. I'll be quick. The community of solar at its heart is expanding access to communities that haven't had access to rooftop solar. It is a competitive energy trend, but it requires public cooperation to set up the structures to enable private developers and

investors to actually build these projects. So that public/private partnership is incredibly important to expanding access.

Mr. RUSH. Thank you. Mr. Baird, would you contribute to answering the question?

Mr. BAIRD. Mr. Chair, thank you. My company was started by a $2.1 million contract with the U.S. Department of Energy, and I believe the opportunity to create similar companies started by people of color, by women, by our country's veterans would be greatly assisted by having an Office of Equity in the Department of Energy, given our corporate experience and partnership with the Department of Energy. That Office of Equity is very necessary.

Mr. RUSH. Thank you. The Chair yields back the balance of his time. The Chair now recognizes Mr. Upton for 5 minutes for purposes of an opening statement.

Mr. UPTON. Well, I'm going to ask questions, but thank you——

Mr. RUSH. Questioning. I'm sorry.

Mr. UPTON. Thank you, Mr. Chairman. Mr. Pérez, I think that we share similar views on the need to address climate change and certainly the benefits of clean energy. It is something that we know is happening and what we want. With that said, I want to talk a little bit about some of the actual policies that have been proposed and impact that they would have on communities, especially the Hispanic energy workers that you represent.

First of all, let me ask what is the volume of folks, in fact, that you think that you represent with your position? What are some of the numbers?

Mr. PÉREZ. Thank you for that question, Mr. Upton. There's about 10 and a half million people that work just in the oil and gas side, and I would say that the total Hispanic workforce in that sector is about 10 percent, or about a million, and that doesn't include utilities or the clean energy space. It is only the oil and gas side. That includes pipelines, refineries, all the upstream. So it is a very large part of the working population of energy workers.

Mr. UPTON. I appreciate that. As you know, there was some news that was made just in the last week to ban fracking in California. They actually had a vote in the State legislature. As I understand, it was defeated because, in fact, of its impact it would have on the Hispanic community. What kind of impact do you think a nationwide ban on fracking would have on the Hispanic community, and not only there but throughout the country?

Mr. PÉREZ. Thank you for that question. We believe that the impact would be devastating because you're talking about in the case of the Permian Basin where it is being developed right now with a $3 trillion potential. That community around there is 65 percent Hispanic. The workers are a higher percentage. So if you can imagine just wiping out all that opportunity and the significant economic impact it has not just to the workers but to their families and their communities.

In other places like California that are more established, the oil and gas business is fairly centralized in southern California and parts of the current county in Bakersfield. Those communities would also be severely impacted. And in Texas with Eagle Ford and some of the development that goes on in Texas, very signifi-

cant impacts. So you are, basically, taking a whole community and throwing it under the bus.

Mr. UPTON. So, as you know, a frequent line that certain many of us in Congress and on this committee have used is "all-of-the-above" strategy. I support all of the above. Always have. Needs to be a strong source of renewables. We need efforts on new technologies, whether they be clean coal or carbon capture. I mean, all those things are very important, but the argument has been made time and time again by some that if, in fact, if you eliminated a number of these jobs, maybe millions, that they would be able to find some alternative line of work at equal pay in some other energy sector. Do you see that as actually holding water that argument?

Mr. PÉREZ. No. That is not our experience. I have been working in this environment for 9 years when we organized forums around the country around jobs and energy, and the people who are, for example, the trainers of clean energy workers, for example, the rooftop solar installers, they average about $13 an hour. There's no benefits. There's no security in their jobs. There's no career ladder. Once a job is complete, they essentially have to go out and—they are on their own. They have to go out and find another job, whereas we find that in at least the oil and gas business, because the union protection that is offered, that there is long-term security.

And a lot of people that, even if they are working at the lower level of the working hierarchy, you know, they still find enough incentive to stay and make it a career and retire from that because there is that sustainability.

So we have not seen any evidence that the clean energy space, at least for the Hispanic community, is a good option, a good alternative, and so it really concerns us that we are drawing a lot of assumptions without really any evidence. So we just think that we need to research this thing very carefully because we are talking about a very significant, very negative economic impact at least to our community. And so we need to have some very sober discussions around this.

Mr. UPTON. Well, I see my time has expired, but I appreciate everybody's testimony and looking forward to participating through the rest of the hearing. With that, Mr. Chairman, I yield back. Thank you.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the gentleman from New Jersey, Mr. Pallone, the chairman of the full committee, for 5 minutes for questioning the witnesses.

Mr. Pallone, you are recognized.

Chairman Pallone, you are recognized.

[Pause.]

The Chair now recognizes Mr. Peters from California for 5 minutes for questioning the witnesses.

Mr. PETERS. Thank you, Mr. Chairman. I was just trying to grab a bite to eat there. I'm happy to be here, and thank you for the hearing. I had a question for Mr. DeVar. Just yesterday, United Mine Workers of America, the largest mine workers union in the race to transition to clean energy jobs, has paired with robust investment in the communities they call home. The union says that "change is coming whether we seek it or not. Coal production in the

electricity sector has been falling for years for market reasons irrespective of any Federal policy, and we can support these communities and these workers by investing in technologies like carbon capture, utilization and storage and by funding reclamation of abandoned mines."

We need to stop acting as if we have to choose between clean energy and fossil energy and instead focus on solutions for workers in the clean energy transition that is clearly already happening. So can you please expand on the types of policies that are needed in order to ensure we maintain and develop strong energy economies in diverse regions of the country?

Mr. DEVAR. Yes. Thank you, Mr. Peters. I would say the first thing that we need to stay true to that hope that this transition is paired with protections for communities is to think about where we need to set goals and metrics to ensure that we deliver on that, and I think that is the key role of this hearing, and I think that is the key role of the Federal Government.

And so there are policies that can ensure that we put in labor protections and that we incentivize those approaches to clean energy that actually do the most to protect workers and do the most to protect particular communities.

Mr. PETERS. Thank you. Another question for you, sir. In your testimony, you highlight the gaps in data collection that can hinder the fair allocation of resources. In particular, you identify the lack of definitions for what you call energy deployment priority groups. Since we're talking about definitions, could you expand on what you mean by "energy deployment priority groups", and what data should the Federal Government be collecting that we aren't?

Mr. DEVAR. Sure. So first, as far as priority groups, I don't have all the answers, but if we look at communities' and States' research, we know that question have moved the needle in understanding at least two ways of thinking about priority group: geographically based priority groups and identity or population groups. Some key places to start would be groups that have higher pollution rating or health impacts, but we also know we need to include low-income communities, communities that are—or households that are reliant on medical equipment. So these are just some examples.

We need two sides of data and evidence to address the issues that everyone here has raised. We need to identify groups, and we need to identify harms or benefits. Some of those example are, to the point that Mr. Pérez has made, what is the evidence that certain communities, particularly Hispanic and Latino communities, are benefiting? We need data both that starts to disaggregate about customer groups as well as what are the harms and benefits. And that way we would have more data and evidence as to whether there is equity in the clean energy transition.

Mr. PETERS. Speaking about the discussion about fracking bans from some of my colleagues, if California didn't do it, it is probably a little bit of a Chicken Little, sky-is-falling kind of discussion. North Dakota is not going to do it. Texas is going to do it. And I think we can have constructive policy discussions assuming that is not going to happen.

I guess, finally, directing to all panelists: The committee has put forth a comprehensive bill under Chairman Pallone's leadership and the leadership of Chairman Rush to support the equitable deployment of clean energy technologies. Do you have any thoughts for us in the last minute I have about what we could do to improve what the committee has introduced? Anybody?

Ms. FARLEY. I'm happy to just increase that support and making sure that any of the recommendations and any of the policies are done in partnership directly with communities and/or in partnership with those who represent communities. The new White House Environmental Justice Advisory Council I think is a great place to start. It seems to be the first mechanism that we have in place across the administration to have that direct input and support.

And I along with a number of other groups have previously submitted a letter to Honorable Chairman Frank Pallone and this committee regarding support for inclusion of the Energy Resilient Communities Act Low-income Solar Energy as well as new rural Just Energy financing programs. So we would really want to make sure that these jobs that we discuss adhere to High Roads labor standards and incentivize unionized labor.

Mr. PETERS. OK. Thank you. My time has expired. Mr. Chairman, I'd also ask if we could add to the record an article from yesterday's New York Times on the coal miners' renewable energy pleas. I yield back.

Mr. RUSH. Hearing no objection so ordered.

[The information appears at the conclusion of the hearing.]

Mr. RUSH. The Chair now recognizes Ms. McMorris Rodgers for 5 minutes for questioning the witnesses.

Mrs. RODGERS. Thank you, Mr. Chairman. Thank you to all the witnesses for being with us today.

I mentioned in my opening statement some of the benefits of the shale revolution not only in jobs but really in leading in resulting in bringing down carbon emissions. America, in fact, is leading the world in bringing down carbon emissions but also in lowering energy spending on average $2,500 per household.

The White House Council of Economic Advisors estimated that most of the benefits of the shale revolution went to low-income households, which spend the highest portion of their budgets on energy, as has been mentioned by others. The flip side to these benefits for low-income households is what happens if policies limit natural gas delivery or shutter natural gas generation and raise electricity rates.

In California we've seen rates increase seven times faster than the rest of the Nation and now are close to double what people in the southeastern States are paying in energy costs. We saw last summer that California wasn't able to maintain reliable operations of its electricity system for the first time in two decades. Wealthy people buy generators to prepare for potential rolling blackouts caused by these policies. Low-income households don't have this luxury, so on top of their prices being higher there is less reliability.

Mr. Pérez, in your testimony you stated that in California the Hispanics are 30 percent of the workers in the oil and gas industry, about 115,000 employees, good-paying jobs. Average of these work-

ers is about $100,000 per year plus benefits and overtime. I wanted to ask you, Mr. Pérez, what role do you see for natural gas resources to ensure low rates and reliable and resistant energy?

[Pause]

Mrs. RODGERS. Mr. Pérez, I think you may be muted.

Mr. PÉREZ. Apologize for that. I was saying that we believe that to assure resiliency and low-cost energy to energy consumers that we clearly need to have an all-energy strategy to deal with our demand and our needs. And the way to do that is to take a look at each sector and see how we can move towards a level where there is zero carbon emissions.

And in the natural gas/oil space really it is technology. I know they are working on carbon sequestration. They are working—we have some generation plants that are now producing very close to zero in carbon emissions, especially in the Houston area, and so there is potential for achieving some of these goals without having such what we consider to be very harsh actions that have severe consequences on workers and, in our case, our Hispanic workers.

And so clearly we think that resiliency for energy, low-cost assurance is guaranteed by natural—I'm sorry, by several strategies, and natural gas is a critical one.

Mrs. RODGERS. Thank you for that. Thank you for highlighting the impact on jobs. It is really exciting, though, to hear about American ingenuity and creativity, technology leading the way. It is definitely worth celebrating, and I believe that that is going to be the way forward.

Ms. Carter-King, I wanted to, well, first of all, applaud Gillette, Wyoming, as the energy capital in the United States of America and your all-of-the-above approach. Would you just speak to the impact on State finances as well as impact on local schools and community services? Department of Interior shows that Federal oil and gas revenues fund between 19 and 30 percent of New Mexico and Wyoming's State budgets.

Ms. CARTER-KING. Yes. Thank you, Ms. Rodgers.

It has been devastating to our State and our economy here with trying to curtail the oil production that we have for so many years had in our community and our State. So it has cost already lots of jobs and a lot of our youth having to leave our State to find employment otherwise. So I plead with the committee and all to please work with us. Work with our community and our State and others that need—that cannot sustain such a quick devastation of our economy. We can work with you. We can work with everyone to make sure that we can research other ways that can help with the energy. We can work with energy.

Mrs. RODGERS. Thank you.

Ms. CARTER-KING. The people of Wyoming, we were environmentalists before it was the in thing to be.

Mrs. RODGERS. Well, I appreciate your leadership and your plea because the technological transformation in fossils is very real, too, and we need to allow that to develop. So thank you, Mr. Chairman. I yield back.

Mr. RUSH. The gentlelady yields back. The Chair now recognizes the gentleman from Pennsylvania, Mr. Doyle, for 5 minutes.

Mr. DOYLE. Mr. Chairman, thank you for holding this hearing, you and Ranking Member Upton.

I've been listening to the testimony, and a couple things that I would like to just reflect on before I ask questions. I'm sympathetic to what I heard from Mr. Pérez and the mayor of the City of Gillette. I live in western Pennsylvania. Pittsburgh is surrounded by Marcellus shale gas, not in the city of Pittsburgh but the counties around the city of Pittsburgh. A lot of people have good jobs there.

And as Mr. Pérez said, the reason they have good jobs is they're unionized, which means they have pensions and they have benefits. So I hope all my Republican colleagues will support the unionization of these new industries that we're going to be bringing online as we address climate change because that is the key to having good-paying jobs that you can support a family with, and I think that point needs to be made.

I would say secondly, too, that as Democrats we have to understand the people who are working in industries that are making good wages and have pensions and healthcare benefits aren't going to just buy into the idea that magically there is going to be something else to replace those jobs. It isn't that these people in oil and gas industry don't care about a clean environment, but they care about eating and they care about supporting their families. And if you show them an alternative way to make a living in the clean energy industry, they're going to flock to that industry, but they're not going to just take our word for it. They want to see these jobs develop.

So that is why I think it is also important as we're building energy storage systems—and I heard the ranking member say, "What do we do when the sun doesn't shine and the wind doesn't blow?" Well, we have technologies for that. I have a tax credit bill which I hope all my Republican colleagues will sign onto which provides a tax incentive for these companies that are developing and scaling up energy storage systems so that we can store renewable energy so that when the sun doesn't shine and the wind doesn't blow that that energy is available to pick up that thing.

And the other thing I would say is we are not shutting down the natural gas and oil industry overnight. This is a transition that is going to take place over a decade or so. Our scientists have told us that we are still going to need carbon capture and sequestration. There is still going to be a role for some fossil in this picture down the road.

But colleagues, this change is coming. It is coming, and if we're going to be successful in achieving our climate change goal to get to net zero carbon by 2050, we are going to have to utilize a lot of technology that doesn't exist today, but we need to fund it and research and development so that we can get where we want. We can get 80 percent of the way there right now. It is that last 20 percent that is going to be the tough part, and we need to invest in that.

So I have used up almost all of my time, but let me just ask Ms. Farley: What do we have to do at the Federal level to ensure the jobs we are creating in the clean energy and manufacturing and installation, that these are good-paying jobs, that they are stable jobs like Mr. Pérez talks about that people can support families on?

Ms. FARLEY. Thank you, Representative Doyle.

I think that we have to make sure that we are in partnership with people. There are strong standards around unionized labor, what we mean by a thriving wage, jobs, what we mean also by supporting clean energy entrepreneurship. So I think that we have to make sure to your point we are all concerned with supporting our families, being strong contributors to healthy communities.

I am a product of the American Recovery and Reinvestment Act. When the housing market crashed, my housing sector job disappeared literally overnight. I was able to regain an opportunity to join the energy efficiency industry through a nonprofit in the southeast that focused on building science that jumped into and exploded with training and opportunity to train the workforce.

Mr. DOYLE. Ms. Farley, thank you. I want to ask Mr. Baird one question, and I only have 30 seconds left.

Mr. Baird, how do we make sure that companies that are installing energy efficiency systems or clean energy systems have a workforce and that people have the skills they need to do this work especially in historically disadvantaged communities? How do we make sure we are giving people the skills they need?

Mr. BAIRD. Congressman, all of the highly skilled construction workforce of America is nearing retirement age, as you know. We must train up a new generation of Americans who are going to use software from day one as they execute and implement clean energy jobs across the country. That can happen in community colleges, local workforce development, nonprofits and of course labor unions training people for the jobs of the future.

Mr. DOYLE. Thank you very much. Mr. Chairman, thank you for your indulgence, and I yield back my time.

Mr. RUSH. The gentleman yields back. The Chair now recognizes Dr. Burgess for 5 minutes. I don't see him on the monitor.

Dr. Burgess, you are recognized for 5 minutes.

Then the Chair recognizes Mr. Latta of Ohio for 5 minutes. Mr. Latta, you are recognized for 5 minutes.

Mr. LATTA. Thank you very much, Mr. Chairman, for holding today's hearing, and thank you very much to our witnesses. I think Dr. Burgess is over in Rules Committee right now.

As this subcommittee continues its hearings on many different aspects of the clean energy policies, I have to say I am still a little baffled that the majority continues to ignore one of the most reliable sources of clean energy in our country, and that is nuclear. The people that work in the industries all along the nuclear fuel cycle, including miners, engineers, operators, machinists and more, are proud of the work that they do and should have our full support.

Unfortunately, government restrictions and regulations impeded the growth of our nuclear sector for decades, and we have fallen behind the rest of the world. We have seen our supply chains become more vulnerable due to our heavy reliance on foreign entities for the resources we need to power our nuclear sector, especially when it comes to uranium.

In order to regain our leadership role in nuclear power, protect ourselves from threats to our national security interests, and reduce carbon emissions, we should be doing all we can to help our

domestic nuclear sector, beginning with our uranium miners. These are some of the many reasons I introduced H.R. 1351, which is the Nuclear Prosperity and Security Act. The bill would direct the Department of Energy to establish and operate a uranium reserve to ensure the availability of the uranium mined in the United States in the event of a market disruption.

I was glad to see this bill was included in the Republican Securing Cleaner American Energy agenda because it will ensure that the United States continues to lead the world in reducing emissions while also keeping the lights on and maintaining lower energy costs.

Mayor Carter-King, if I could start with a few questions with you. The State of Wyoming has been at the forefront of this industry as the United States' leader in uranium mining and production, and also my colleague, your representative, Ms. Cheney, is my colead on H.R. 1351. Would you speak to the importance of maintaining a healthy domestic uranium mining industry from both an energy and a national security aspect?

Ms. CARTER-KING. Yes. Thank you, Congressman Latta.

The uranium industry has really fallen in Wyoming in, I'd say, the last decade because of decreased demand, but lately there has been more interest in it, and that is why the Department of Energy is also in our community now to look at uranium and other rare earth elements that they can find in carbon. So yes, we would be very interested in reviving our uranium industry here around our community as well in the State of Wyoming.

Mr. LATTA. Thank you. I know that our ranking member had asked you some questions about the effect of oil and natural gas on your community. What about uranium? How would that affect your community, especially when you think about the importance in Gillette and also in Wyoming?

Ms. CARTER-KING. Well, I think if we could get into the production once again of uranium it would help our county as well as the State of Wyoming. Right now it is not—it is kind of lower on the scale of the energy resources just because the demand is not there. And, like you said, if we would start looking at nuclear energy, which is one of the cleanest forms of energy, I believe that would be a boost to our State.

Mr. LATTA. You also talked about when you're thinking about the economy and making sure that you keep people in the State and have people coming into the State. If we would have a situation where we would see our uranium mining going down and also those jobs being lost right there in Wyoming, what is going to happen to these workers? Are there other mining jobs out there for them, or are they just going to have to either leave the city, look someplace else? What would you anticipate?

Ms. CARTER-KING. Your question is what would I anticipate if uranium continues to decrease?

Mr. LATTA. Well, right. Where would the workers end up right now? Are there other jobs out there for them, or what would happen?

Ms. CARTER-KING. Not with the current state of what is happening with energy. So no, they would have to leave our State, and

I don't know where they would go with their particular skills as far as uranium mining goes because where else would they go?

Mr. LATTA. Thank you very much, Mr. Chairman. My time has expired, and I yield back.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the gentleman from California, Mr. McNerney, for 5 minutes.

Mr. MCNERNEY. I thank the chairman and the witnesses.

Mr. RUSH. I see the chairman of the full committee has returned.

Mr. MCNERNEY. I'll yield.

Mr. PALLONE. I mean, you can do Jerry first if you want to.

Mr. RUSH. Well, he has just yielded to you, Mr. Chairman. So why don't you go, Mr. Chairman, and then he'll wait to become the next Democratic Member to speak.

Mr. PALLONE. All right. I'm sorry. All right. Thank you, Mr. Chairman.

I wanted to try to ask a couple questions of Mr. DeVar and Mr. Bhatraju. Mr. DeVar, in your testimony, you spoke about the role of outreach and participation. You said that lack of access to State and Federal rulemaking processes prevent marginalized groups from benefiting from the energy system. Would you just expand on this, particularly on how the Federal Government can better ensure that these impacted communities are properly represented in decisionmaking?

Mr. DEVAR. Yes, Ranking Member Pallone. Thank you.

I'd say there are three ideas that come to mind. Let's think about it this way: Who is at a decidingmaking table, and if there is a problem with someone not being there, what do we do? The first thing you do is you reach out to people. So there needs to be a robust outreach. You have to go to community groups and leaders and trusted parties to actually reach people in the first place. So that is one role that the Federal Government can play.

The second would be actually resourcing people to be able to participate meaningfully. So that could look like investor compensation in rulemaking proceedings, and that could be through support at the Federal level and guidelines and encouragement of what is occurring at the State level.

And finally, I would say there has to be followthrough. Take the example of being at a table. That would be like having confirmation that you paid and that someone knew that you had spoken. And so the same is true in rulemaking proceedings. We need to have clarity that those comments were heard and responded to.

Mr. PALLONE. Right. And then you also talked about the role of data in properly identifying these vulnerable groups. What more could we do at the Federal level to identify these communities of need, and what are the ramifications of improperly targeting Federal assistance?

Mr. DEVAR. I'd say first, in terms of improperly identifying groups and targeting assistance, the downside would be if we don't get this right we are going to have wasted resources and we are going to have growing inequity. The issues that everyone here is raising actually is getting to the heart of constituents, of communities, lost jobs either from one sector or to the other.

So what we actually agree on here in this hearing is that we need to get to the bottom of those things, and inevitably it is just

going to be more costly if we don't really have data about these communities and the benefits. But I'll also note that we can have accounting and iteration, and so if we have data, goals, and metrics we can track and in a few years see if we're not reaching certain groups, if we're not achieving the goals of reducing rates for energy customers, particularly low-income communities, and then we iterate our approaches after that.

Mr. PALLONE. Thank you. I wanted to go to Mr. Bhatraju. In your testimony, you detailed your company's business model and how community solar can be used to increase clean energy access, and then you detailed some of the obstacles you face in enrolling customers, especially low- and moderate-income customers. Could you please give us some insight into community solar? In other words, do customers know that it is an option for them, and what are the challenges you face with outreach?

Mr. BHATRAJU. That is a great question, Congressman. When I am sure any of you talk about solar to anyone, they're thinking about a power plant on someone's roof, and community solar is actually just a totally new way of delivering solar because it is offsite. It is somewhere else. And so it is a very new product in the market that has expanded pretty rapidly, and, frankly, customers absolutely love it. You can live in an apartment. You don't necessarily have to have the world's greatest credit score. You don't have to have a roof.

One of the challenges at least our business faces is awareness. The expansion of these programs will inevitably increase awareness because people want energy options. They want to be able to choose how they power their homes and their businesses. I think what is one of the more exciting things about community solar is the investment community loves it. Customers love it. Utilities actually appreciate building large centralized distributed generation sites, not individual rooftop sites everywhere. It is an awareness that I think the legislation and having a national legislation can really help with.

Mr. PALLONE. Well, thank you so much. Thank you,

Mr. Chairman. This has been very helpful in terms of what we want to do with the CLEAN Future Act. Thank you.

Mr. RUSH. The Chair yields back. The Chair now recognizes the gentleman from West Virginia, my good friend Mr. McKinley, for 5 minutes.

You're muted.

Unmute.

Mr. MCKINLEY. I got it now. Mr. Chairman, thank you. You're one of the few Democrats that I think really grasps the impact of what we're talking about here today, because at church on Sunday we had a prayer that asked God to enlighten all who inflict darkness on others—asked God to enlighten all who inflict darkness on others—so, in essence, to educate our political leaders that there are consequences to their policies.

Mr. Chairman, the Democrats control the House, the Senate, and the Presidency. You all can force a restructuring of fossil fuel economies all across America, but I don't believe you fully understand the consequences of your action will result in higher utility bills and lost jobs. How many coal mines, oil wells, refineries, coal-

fired power plants are in cities like New York, Chicago, or San Francisco?

People working in these fossil fuels are not statistics, but they're real people with families. They've maintained their way of life for over a century, but now liberal Democrats are using a political timeline to eliminate the use of fossil fuels in 10 years or less.

Now, I've heard the promise of a just transition. It just won't happen. Look at what has happened over history with the steel, the electronics, and the textile industries. The Government said all the same promises but betrayed the American people. Mr. Chairman, there was an editorial in today's Wall Street Journal. It was their effort, I think, to educate its readers on the consequences of Biden's energy agenda. It begins with, "Beijing is clear that it would ignore any carbon emission commitments that impinge on China's economic growth." It goes on to say, "Chinese leaders don't mind the Paris Accord because they know it doesn't bind them to anything while Western nations will harm their economies with new regulations and misallocated resources."

"The Chinese must be dumfounded," the article goes on. The editorial says they must be dumfounded the United States "administration wants to kill the shale and natural gas boom that has kept energy prices low and made the U.S. less reliant on foreign oil," and then it ends with, "No wonder Beijing thinks America is in decline."

So much for China's commitment to climate change. We can't trust them on trade, South China Sea, Taiwan, Hong Kong, human rights, intellectual property. Why should we think we can trust them on pollution? So let me get this straight: America will have higher utility bills, lost jobs, a less reliable grid, and we're still going to experience extreme weather events all the while China continues to pollute.

If I could, I'd like to turn to the mayor in Gillette. Mayor, wouldn't it make more sense for us in America to perfect carbon capture so that we can continue to use our fossil fuels and maintain a stable economy in the coal fields and natural gas production, for example, in Wyoming?

Ms. CARTER-KING. Absolutely, Congressman McKinley, and thank you for the question.

That is what we have been advocating for for years now. Work with us. We have some of the cleanest coal in the country. We already have perfected some—you know, we have started at least on working on cleaning the carbon out of the coal, and our research that we've done at our integrated test center, which also has the XPRIZE, which awarded a multimillion-dollar prize yesterday for using carbon in construction——

Mr. MCKINLEY. So Mayor, I've got a couple more questions for you.

Ms. CARTER-KING. OK.

Mr. MCKINLEY. How would you recommend—what would you recommend? How do we do this to educate our Members of Congress about the injustices that their policies will inflict on their fellow Americans? How do we educate them?

Ms. CARTER-KING. Well, we would invite people to come and visit us here where we can show them what we have been working on.

We've got the Department of Energy here. We've got universities from across the Nation here working on our research. Work with us. We can do this.

Mr. MCKINLEY. Thank you. Thank you. Mayor, you referenced you are the energy capital of America, and earlier you heard Chairman Pallone say that renewables will create more jobs than are currently in fossil fuels. Now, I'm aware of the number of jobs that the coal-fired power plants and gas-fired power plants, but could you tell me out in Gillette what is the size of the parking lot, employee parking lot outside a wind farm?

Ms. CARTER-KING. You know, I'd have to be truthful and say I have never seen a parking lot outside of a wind farm.

Mr. MCKINLEY. Thank you. Mayor, I don't think we have either. So I think this is disingenuous for us to be thinking we're going to create long-term jobs by switching over. I think we can find a mix that works out and so that we keep our fossil fuels as part of all of the above. So I thank you, and I yield back the balance of my time.

Mr. RUSH. The gentleman yields back the balance of his time. Mr. McNerney. The patient Mr. McNerney is recognized for 5 minutes.

Mr. MCNERNEY. I thank the chairman again and the witnesses again. It is a great hearing.

First, I'd like to respond to the ranking member's opening remarks in which she continued the Republican tradition of bashing California's energy system, but please be careful. The Texan Republican members of this committee used to do the same thing until they had their own big freeze.

For the record, California's energy challenges are largely due to wildfires and other climate-related disasters which are caused by excessive carbon emissions. Let's focus on the real problems at hand and not on phantom issues.

Mr. DeVar, in your testimony you write about the equity benefits of distributed resources and the goal of a demographically managed grid. Would you further explain how the distributed nature of resources like community solar contributes to energy equity?

Mr. DEVAR. Yes. Thank you, Representative.

There are a few ways, and I think to get to the heart of unpacking the difference between the current energy system and the options in front of us and the clean energy system. So one of the benefits that has come up many times here is the question of rates and the income and expense ratio of families, of households.

Distributed energy generation has the most potential to really reduce someone's energy bill anywhere from 15 to 50 percent, and that is one area in which distributed resources are really meaningful. Another metric or benefit that sort of relates to what you just addressed is the question of resilience. It's really only distributed generation of solar care with storage that could really allow the flexibility of keeping the lights on on a particular home or a microgrid for a particular community in the face of disasters.

And third, for the issue of how distributed generation would also allow us to target where we want to really reduce pollution and wind down peaking power plants: There are plans, for example in New York City, to think through pairing solar and storage with the

reduction of pollution and the use of these plants that we don't need very often, and they both are expensive and cost a lot of money.

Mr. MCNERNEY. Thank you. Mr. Bhatraju, in California, we've seen the value of locally sited distributed resources. Can recourses like community solar contribute to grid resilience, especially in underserved communities?

Mr. BHATRAJU. Absolutely. To hammer this point home—and thank you, Congressman, for the question—is community solar allows people who move, people who rent, people who don't have the right roof to access the benefits of the cheapest energy source out there. We often get asked the question is community solar—how does it compete, and who can benefit?

In reality, building larger-scale solar projects is cost efficient. It builds resiliency to build these distributed generation assets. These are all things that I think have been talked about at the hearing, especially highlighting California. A community solar program there would benefit the grid, it would benefit resiliency, but it would also share the benefits broadly with folks who just have been traditionally left out of the solar revolution that we have seen in the last few years.

Mr. MCNERNEY. Thank you. Mr. Baird, I cochair the Artificial Intelligence Caucus, and I care deeply about reducing carbon emissions and increasing the use of clean energy and renewables. How can AI help accomplish these goals, especially in underserved communities? And do you have examples that you can share for the work that BlocPower is doing?

Mr. BAIRD. Congressman, thank you.

We do use artificial intelligence and machine learning to help us analyze and size the correct size of solar batteries or all-electric heating and cooling systems on a house-by-house basis. As the committee knows, each American home is an individual home that needs its own specific mix of energy-efficient and renewable energy equipment. Artificial intelligence and machine learning will allow us to recommend the appropriate clean energy equipment, the appropriate healthy equipment on a building-by-building basis for over 120 million American homes.

We can either do that by manually going house to house and doing an assessment, or we can use the tools of Silicon Valley to help us reduce the soft costs of clean energy so that we can unlock more and more green construction and installation jobs.

Mr. MCNERNEY. Thank you. If you could submit policy recommendations on using AI. And I want to say by finishing that I sympathize with Mr. McKinley. He emphasizes the consequences of a transition, but what about the consequences of continuing carbon emissions? We need to make the transition. That is exactly what we're attempting to do, and we really prefer Republican participation in this process. I yield back.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the gentleman from the greatest State in the Union. Mr. Kinzinger from the great State of Illinois, you are recognized.

Mr. KINZINGER. Well, thank you, Mr. Chairman. Appreciate you holding this.

I agree that there is a disparity in energy costs that we should debate and address in a responsible manner. I have consistently supported a true all-of-the-above energy approach, and I understand the fundamental importance of preserving our resources and natural heritage and agree that the consideration of environmental impacts is essential to energy policymaking.

I have a record demonstrating support for renewable energy technologies and expect their use to expand over time, but the United States cannot simply afford to continue pushing a renewables-only energy strategy to the detriment of abundant and reliable sources, including nuclear and natural gas.

My colleagues and I sent a letter to President Biden in February stating as much and asked him to work with us to calibrate our national energy strategy, and I'll ask unanimous consent to include that into the record.

Mr. RUSH. Without objection so ordered.

[The information appears at the conclusion of the hearing.]

Mr. KINZINGER. Thank you.

According to the Nuclear Energy Institute, nuclear power generates 20 percent of America's electricity, and in 2018 it prevented the emission of 528 million metric tons of carbon dioxide. In Illinois, six nuclear power stations, including four in my district, provide 88 percent of the State's emission-free electricity. Unfortunately, due to nonmarket governmental forces giving preferential treatment to certain renewables, two of these plants, Byron and Dresden, are now slated for closure.

When I visited schools in Byron or I talked to control room operators and engineers in Dresden, I am able to see the incredible impacts and legacy of this technology. These two plants represent 1,500 direct jobs and millions of dollars in municipal revenues. If these plants shut, the lost revenue would devastate my communities and make it extremely difficult to pay for high-quality schools, hospitals, emergency personnel and other critical services. All this not to mention the prospect of blackouts, unreliable electricity costs, increased carbon emissions, and job losses.

Reserving the existing nuclear fleet will take a concerted national approach, but I am doing what I can on my part. In December my colleague Mike Doyle and I introduced the Preserving Existing Nuclear Energy Generation Act, which would help save nuclear plants that are on the chopping block, including Byron and Dresden, by providing financial credits through an emissions avoidance program. The bill would also soften the blow to local communities by providing resources to help shore up municipal budgetary shortfalls, preserve critical services, and promote economic development. And last week I reintroduced the Nuclear Licensing Efficiency Act, which builds upon the recent efforts by Congress to modernize nuclear licensing fees and procedures.

So to bring this home: Yes, there are disparities in utility costs for households across the Nation. These disparities can be seen across racial and ethnic lines in geographical terms and in the rural/urban divide, but the answer is not to simply put solar panels on the rooftops of lower-income households, wipe our hands, and walk away, and the answer cannot be heavy-handed intervention to artificially reduce utility prices without regard to market forces.

So question to Mayor Carter-King. Your testimony mentions the municipal revenues associated with the energy industry. Can you elaborate? Specifically what financial effect would your community suffer if these energy extraction and power generation jobs were to disappear?

Mayor, you might be muted.

Ms. CARTER-KING. Thank you, Congressman Kinzinger.

It will be—it is devastating for our community. Was that your question?

Mr. KINZINGER. Yes. If you could just kind of elaborate on those impacts.

Ms. CARTER-KING. OK. Well, just the city alone we had to cut a million dollars from our budget, and then you have the school district, the hospital, everybody. It is a domino effect on our community. We have got to cut people. We have got to cut safety people on the streets, our teachers. It is devastating for a community like ours, especially when we can help the situation just given the chance.

Mr. KINZINGER. Well, thank you. So, as my colleagues and I said in our letter to the President, it is long past time that elected officials, finance and business organizations and environmental lobbyists put down pitchforks and come to the table and have honest discussions about the future of our energy. Many have done so, but a handful of influential partisans have become the loudest voices stoking fear and talking past one another as each perpetuates a my-way-or-the-highway approach.

The issues at their core require thoughtful debate and compromise. I hope this committee can again be that voice of reason and a beacon of congressional bipartisanship when it comes to finding the appropriate balance of solutions, just as we have in the past.

Thank you, Mr. Chairman, and with that I'll yield back the balance of my time.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the chairman of the Subcommittee on Environment, the gentleman from New York, Mr. Tonko, for 5 minutes.

Mr. Tonko is recognized for 5 minutes. All right.

The Chair now recognizes the gentleman from Texas,

Mr. Veasey, for 5 minutes. The gentleman from Texas,

Mr. Veasey, you are recognized for 5 minutes. I don't see him on the screen.

Ms. Schrier from Washington State, you are recognized for 5 minutes.

Ms. SCHRIER. Thank you, Mr. Chairman.

Well, I am proud to say that I come from Washington State, a leader in carbon-free electricity and conservation, and most of the electricity in Washington comes from carbon-free resources like hydropower, wind, and solar. We've also made significant investments on the public and private side to ensure equity and energy efficiency investments, and this is by providing grants or low- or no-cost loans for families to conserve literally tens of millions of kilowatt hours of electricity while keeping their homes warmer and safer, particularly during the winter months.

Through conservation our State has sort of acquired new affordable carbon-free resources without having to build anything but just by saving, and those saved electrons can be used to reduce emissions in other sectors, and it is really a win/win. Yet there are still thousands of homes, especially rental homes and multifamily buildings, that need upgraded heating systems, added installation, double-paned windows that could save energy long term for low-income customers, and we need to encourage rental property owners that energy efficiency is good for everyone's bottom line.

Now, the CLEAN Future Act would reauthorize the Energy Efficiency and Conservation Block Grant program for 10 years, providing another valuable tool for electric customers to lower their bills and perhaps deal with some of these more complex challenges all while creating jobs.

Mr. Baird, can you tell me what suggestions you would have for the committee to ensure that those dollars are distributed in an equitable way to underserved communities?

Mr. BAIRD. Congresswoman, is that question for me?

Ms. SCHRIER. Mr. Baird, yes.

Mr. BAIRD. We recommend that a map be built that houses census tracks with low-income communities all across this country and that budget distributions through this bill and other infrastructure investments be mapped onto that map in order to help all employees of the Federal Government understand the social and environmental benefits of the investments and grants that are being made and to track and analyze those investments post-disbursement. We think that a centralized visualization of low-income communities is a critical part of supporting this plan.

Ms. SCHRIER. Thank you very much. Now I have another question. I am just going to change gears slightly to talk about solar energy and low-income community solar deployment. We've talked about the community solar projects, but Mr. DeVar, I have a question for you that is a little bit different, and I am listening to other questions like my colleague, Ms. Rodgers, also from Washington State, pointed out, lack of equity in terms of having a generator for outages or looking at Texas, and sometimes these communities are the last to have power restored.

And so my question is not so much community solar, but is there any role here for solar roofing or solar panels and then connecting that to something like a power wall, a Tesla power wall or something else that could store enough energy for a few days and to do this on the individual home level for low-income homes? Any comments about that, Mr. DeVar?

Mr. DEVAR. Yes. Congresswoman, this is an important issue not just for the sake of keeping lights on, but keeping power on, particularly for low-income communities, has more relevance than many other Americans may realize in California or Texas.

I grew up in Houston, so I knew a lot of family and friends who went through those issues there, spent time in California, but folks with limited means spend a sizeable portion of their income on every grocery bill. And so, when the power goes out and your refrigerator stops working, that's your livelihood.

I appreciate this question because the role of solar and storage at a local household level is crucial, and without distributed energy

resources, which starts with solar but compare that with household storage or without storage at the community level to have shelters or the local grocery store somehow having backup power through storage or on a microgrid—these are all ways in which we would have safer, stronger communities if we deployed resilient storage technologies.

Ms. SCHRIER. Thank you for that answer. I really appreciate it, and I yield back.

Mr. RUSH. The gentlelady yields back. The Chair sees that Dr. Burgess has returned. Dr. Burgess, you are recognized for 5 minutes.

Mr. BURGESS. Thank you, Chairman Rush. My apologies that I'm having to toggle between several hearings today, but that's not atypical. But, of course, with all of the disparaging remarks being offered about the State of Texas, I thought it was important that I be back and at least be prepared to defend the Lone Star State.

I have a couple questions for Mr. Pérez. Mr. Pérez, in particular—well, first off, thank you for being part of the hearing today. The CLEAN Future Act that is the subject of this hearing does, in fact, include some significant burdens on the traditional energy sector, and there's the risk that energy producers would raise prices, cut jobs, or just go out of business.

So let me just ask you if traditional energy jobs promote economic stability in diverse and minority communities.

You may be on mute.

Mr. PÉREZ. The answer to your question is absolutely. Aside from Hispanics In Energy, I've served in a lot of leadership roles with trade associations, in particular the Hispanic Chambers of Commerce, president of the Sacramento Hispanic chamber and vice chair of the California Hispanic chamber. So yes, economic stability is definitely part of the equation as it relates to energy and in particular that portion of energy in California. But all energy includes—for us includes the utility companies and all the emerging companies that are in the clean energy space.

Mr. BURGESS. I thank you for that answer. Of course, being from Texas you are familiar with—and it is not the area that I represent, that is up in the Midland Odessa area—but the Permian Basin certainly seems to have benefited the local minority and disadvantaged communities because of the jobs boom in the Permian Basin. Would you agree with that?

Mr. PÉREZ. Absolutely.

Mr. BURGESS. And again, then, as a natural consequence of that, anything that restricted the energy production in that sector would likely have a deleterious effect on those jobs, would it not?

Mr. PÉREZ. Absolutely. And not just the jobs, but the cascading effect on families and communities is just incredible.

Mr. BURGESS. Right. So if those energy jobs disappeared, would workers in those jobs be able to just quickly transition to one of these other technologies that we're hearing about today?

Mr. PÉREZ. I don't see how, Congressman Burgess, because that area, as you well know, is really almost—it is very plain landscaping out there, mostly desert and cactus. So the answer is no. There is no alternative. If those folks moved to metropolitan areas,

it would be a very huge stretch of reality to see that population do that.

Mr. BURGESS. Thank you. I thank you for your prior answers. I thank you for your participation today.

I wonder if I could ask Mayor Carter-King just briefly as I wrap up. Earlier this week it was announced that there was a power plant in Gillette that will be carbon capture technologies to produce concrete. That's a fairly novel approach. Can you tell us a little bit about that?

Ms. CARTER-KING. Yes. Thank you, Congressman Burgess.

That did just happen yesterday that a team up here at the XPRIZE was awarded a multimillion-dollar prize for that: technologies of extracting an element that they can use in concrete for building purposes. So it was quite innovative and something that can happen from the research that is going on with carbon. They were just one of many teams that are looking at other ways to use carbon. So it is a valuable resource in more ways than just burning it for energy.

Mr. BURGESS. Right. Well, I appreciate you bringing that up. I had an opportunity to visit with the good folks at Occidental Petroleum, and one of the projects that they are working on is removing carbon from ambient air—not just from an emission stack but from ambient air—and using that as a feedstock to be able to produce ethylene and then a variety of plastic products. So it is fascinating technology that people are working on. I am glad we have such smart people in our country that are working on innovative solutions to problems that have perplexed generations.

Thank you, Chairman Rush. I will yield back.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the chairman of the Environmental Subcommittee, the gentleman from New York, Mr. Tonko, for 5 minutes.

The Chair now recognizes the gentlelady from California, Ms. Matsui, for 5 minutes.

Ms. MATSUI. Thank you very much, Mr. Chairman. I want to thank the witnesses who are here today for this very, very important hearing.

Mr. Chairman and witnesses, in addition to decreasing carbon emissions, clean energy deployment also improves public health and lowers energy prices. Despite this, many of these benefits are not available to low-income customers and communities of color who are disproportionately affected by high and severe energy burdens, heat islands, and pollution from fossil fuel energy production.

The COVID–19 pandemic has only exacerbated these disparities. With more parents and children staying at home and increased household electricity demand, energy affordability and home electrification are now more crucial than ever. To tackle some of these issues I led efforts to lower energy bills through residential tree planting, and in my district energy equity organizations such as the Community Resource Project are focused on home retrofits, energy efficient appliances, and solar panel installations in low-income homes and multifamily units.

Earlier this year I led a letter to the administration encouraging the establishment of a Federal program to upgrade HVAC units and improve energy efficiency in our Nation's schools. This effort

would enhance indoor air quality in schools disproportionately affected by air pollution and also create jobs and electrification and energy efficiency.

Mr. Baird and Ms. Farley, what initiatives can Congress support to ensure that local vulnerable populations have access to energy efficiency jobs and training? Mr. Baird first.

Mr. BAIRD. Congresswoman Matsui, thank you for the question.

We believe that low-income communities should own the microgrids, the solar, the electric wires that serve their communities, and keep their low-income communities from being vulnerable to the ravages of climate change and the deteriorating electricity grid. Once we start from a framework of low-income communities owning these new emerging clean energy assets, of course we will train and hire community residents to maintain those systems.

Of course we will develop the skills to maintain those systems, because we will be the owners of those systems. And of course we will embrace the jobs, the living wages, the increased health benefits that come from embracing this equipment. And so the traditional distrust that prevents a lot of these technologies from being embraced from our communities will be removed through ownership. Thank you.

Ms. MATSUI. Thank you very much. And Ms. Farley, would you like to make a comment on that also?

Ms. FARLEY. Yes. I think it is critically important to marry the technologies and those job opportunities with programs such as the National Institute of Environmental Health Science Environmental Career Working Training Program. This provides job safety and training for disadvantaged members of communities of color and low-income communities to secure jobs in these skills and technologies that we are talking about.

There is also the Environmental Workforce Development and Job Training Program, and I think when you marry the training with the technology you begin to generate a greater buy-in and support that we need to advance——

Ms. MATSUI. Thank you very much. I want to move on to another topic. Mr. Bhatraju, in your testimony you mentioned that community solar contributes to grid resilience and helps reduce large grid expansion. How can community solar help with wildfire resiliency?

Mr. BHATRAJU. Thank you so much, Congresswoman, for the question.

So community solar projects, they are acres-large solar products distributed that don't require new transmission build. So, first of all, they are cheaper to put on the grid because you can build large-scale projects that are part of the distribution grid. So to the question earlier, it certainly helps with resilience and making sure the power stays on if transmission wires go down like what happened in Texas.

But on the second point, these projects can also—they don't catch on fire. Solar generally will use the sun to create power and just don't have the same combustion as traditional fossil fuel. So it is simpler in that respect.

Ms. MATSUI. OK. Well, thank you. I have already run out of time here, so I yield back. Thank you.

Mr. RUSH. The gentlelady yields back. I don't see Mr. Griffith on the screen. Mr. Griffith, you are recognized for 5 minutes.

I don't see him.

We will move on to Mr. Johnson, the gentleman from Ohio. You are recognized for 5 minutes.

Mr. JOHNSON. Well, thank you, Mr. Chairman.

As our Nation recovers from a once-in-a-lifetime pandemic and economic downturn, it is evident that working-class Americans have suffered greatly, and many are still struggling to get back on their feet, pay the bills, and care for their families. But in listening to some of my Democratic colleagues and their witnesses today, their message to these hard-working Americans seems to be, "Hey, don't worry, here is a government-subsidized solar panel for your roof." I mean, are you serious? How can we be that out of touch?

Unemployed Americans don't need wasteful green energy projects and top-down mandates. They need jobs, the kind of good-paying jobs that come with energy dominance. What we see in proposals like the CLEAN Future Act is a two-pronged attack on working Americans. The first attack includes provisions that will increase their energy prices and decrease reliability. This will hurt lower-income earners the most. The other attack goes after fossil fuel jobs, which threatens the livelihoods of millions of Americans.

So Mayor Carter-King, from your testimony today it is clear that you represent a town that obviously punches above its weight. I'd like to think my district in Appalachian, eastern and southeastern Ohio is similar. We might be in an isolated, sometimes forgotten corner of our State, but the folks I represent take pride in keeping the economy moving by producing the coal, oil, and gas that our region is blessed with.

So can you talk to this committee today about what it means to your constituents and to our Nation's security for such a small dot on the map to have such a significance, as you noted in your testimony, not only with fossil fuel resources but also rare earth minerals and uranium?

Ms. CARTER-KING. Absolutely. Thank you, Congressman Johnson.

It is very important here with—especially since you said rare earth elements—that we get all of that. We depend on China for all of those, and we have plenty here in the United States and especially here in Wyoming that would help us with United States security and defense. So that is a great point.

Also, we do have hard-working people here who for 30, 40 years have supplied the country with energy, with goods, low economical energy, and to just kick us to the side without even trying to help us and even see what we can offer with our new research and everything, it is going to be devastating for communities like ours and I'm sure yours as well.

Mr. JOHNSON. OK. Well, thanks. And Mr. Pérez, the message from our Democratic colleagues and from the mainstream media is the idea that, if someone is part of a minority group, the American dream is somehow now out of reach and hard work just won't get you ahead. I know that you represent many immigrants and the children of immigrants from very poor backgrounds who work in the oil and gas industry. It is not easy work, of course, but as we've examined in this committee, it pays well.

So, in your opinion, does the oil and gas industry, a great American industry, still provide a path to achieve the American dream and with it a better future for the next generation?

Mr. PÉREZ. For the Hispanic community, Congressman Johnson, the answer is yes. And there is no stronger evidence of that as we see Mexico recommitting itself to the oil and gas industry with the current president, and the reason he is doing that is exactly for that one reason, is jobs, good-paying jobs in an industry that offers family security and family economic growth. And so we just need to realize that it is not going to be an easy transition. There's some very hard human impact issues that we have got to seriously consider as we move in this direction.

And we believe that technology is a great answer, nuclear power expansion and natural gas and all the technology. We have got a lot of innovation. We have got a lot of smart people in America. We ought to put them to work.

Mr. JOHNSON. All right. Well, thanks, Mr. Pérez.

Mr. Chairman, I yield back a total of 8 seconds.

Mr. RUSH. The Chair certainly appreciates the gentleman for yielding back. I see that the chairman of the Committee on Environment has returned. The Chair now recognizes the gentleman from New York, Mr. Tonko, for 5 minutes.

Mr. TONKO. Thank you, Mr. Chairman, and thank you for the great work you are doing as subcommittee chair on Energy, and thank you to our witnesses.

Before I ask my questions I just wanted to make something abundantly clear because there has been a lot of talk about nuclear energy today, and the CLEAN Future Act, which both you and I have helped author along with Chairman Pallone and others on the committee, would indeed support nuclear generators. So I wanted to get that on the record.

One challenge we see is that landlords are rarely incentivized to make investments that will reduce the energy bills of their renters. This has definitely been the case of energy efficiency and weatherization. So, Mr. Bhatraju, can you discuss how community solar can help overcome this barrier if a landlord doesn't want to invest in rooftop solar on his or her building?

[Pause.]

Mr. RUSH. Are you muted?

Mr. BAIRD. That was Mr. Bhatraju, or Mr. Baird?

Mr. TONKO. Mr. Bhatraju.

Mr. BHATRAJU. I'm sorry, Congressman. I just had an issue with my audio. Could you just repeat the question quickly?

Mr. TONKO. Kindly will do. Can you discuss how community solar can help overcome the barrier of landlords who are rarely incentivized to make investments that will reduce the energy bills of their renters? What about rooftop solar on their buildings?

Mr. BHATRAJU. Yes. Absolutely. It is a great question, Congressman. And apologies for that.

As you know, you can't really put panels on everyone's roof, and some landlords who even can won't allow—there may be residents in their building that want to get it, but they make it hard to actually install even though it will save everyone money. The beauty of community solar is you can actually build a project distributed

elsewhere. Like I was saying earlier in my testimony, on farmland oftentimes we find farmers who have unused land who are on the same distribution grid as maybe a multidwelling unit and can build a project that can then serve that multifamily housing unit and any customer inside that actually wants the benefits and savings to solar energy.

And that is really the beauty of this product. Again, you know, we tend to think of solar as something that has to be on the perfectly southern-facing roof that a customer owns, and the reality is a lot of Americans don't own their home, don't have the perfect roof, and don't have the right credit score for that. So this is what I love about community solar. Everyone can access it even if you live in an apartment.

Mr. TONKO. Right. Thank you. We want to make certain that this energy transition is affordable, that we are not impacting especially our poorer neighborhoods. Can you give us a sense of how community solar can result in reduced electricity bills for people?

Mr. BHATRAJU. Yes. Absolutely. It is a given now, but I think this still is a thing people don't know. Solar is the cheapest form of energy in the market. Every single project we manage at Arcadia is at a 5 or 10 percent savings to the traditional local utility rate, and that is indexed to the utility rate over a 20-, 25-year period. So the savings are effectively guaranteed to the customer.

Now, the question you may ask, as any business owner, like, nothing is free, so who takes on the risk? Well, it is developers. It is investors. It is big investment banks, tax equity investors. They are the ones who also realize—this transition, they realize it is an amazing economic opportunity, and they realize they can sell cheaper power by investing in these projects. So it is an amazing customer value prop because they can choose cleaner energy and save money.

But to that broader point, it is the larger investment in financial community that also loves this because you are delivering a great customer value prop. It is a steady asset that can produce returns over a long period of time.

Mr. TONKO. So are there any State regulatory barriers that might make it difficult to deploy community solar or utilize the business model that you have established?

Mr. BHATRAJU. So we are a software business. We make it so that we can manage hundreds of megawatts of projects and deliver the credits and actually size it properly. You may have large homes. Someone in an apartment can use different sizes. There are barriers, right. Today there is only a handful of States that have these programs. They are regulated and deregulated energy markets, as I mentioned earlier. It can happen everywhere.

And part of what we are hoping to pass this Congress with your support is the ability to do a national program and somewhere every State realize that you can do community solar, create a resilient grid, give people cheaper energy bills, and produce jobs, right, that can be everywhere. A lot of fossil fuel jobs tend to be in very specific locations. You can put community solar everywhere in this country, in all 50 States.

Mr. TONKO. Well, our legislation would empower States, so this is good—or compacts of States—so this is good to know, and we

thank all of you for providing witness testimony today. And with that, Mr. Chair, I yield back.

Mr. RUSH. The gentleman yields back. The Chair now sees Mr. Griffith has returned. The Chair now recognizes the gentleman from Virginia, Mr. Griffith, for 5 minutes.

Mr. GRIFFITH. Thank you very much, Mr. Chairman. I apologize. I had to step out for a couple of minutes to go make a presentation at the Rules Committee.

Earlier in the testimony as we were discussing all of this we had Mr. Doyle, who indicated that we weren't going to get rid of fossil fuels immediately, that we would have a decade or so. I don't think we have to get rid of fossil fuels at all, particularly if we work on new carbon capture technologies like is being worked on in my district by Mova Technologies for panel filtration, and I think it is important that we continue to use base fuels whether it be nuclear or fossil and that we do an all of the above.

One of the things I thought was interesting, though, and I think it shows a weakness in some of the legislation that is being discussed ,is that one of the witnesses in a prior hearing who was a Democrat witness, Allison Silverstein, when I asked her would it take more than 20 to 30 years to build the high-voltage power lines that she thinks are necessary in order to have a completely renewable energy system, her response was yes. And the bottom line is that somebody has got to have these high-voltage power lines to come through the areas to make sure that we are wheeling the electricity to the areas that need it, wherever the sun may not be shining because of weather conditions or where the wind hasn't blown, but they've got solar in the area, but it isn't working. They have to wheel it from other areas that have an abundance.

Now, I know we've got some battery technologies, and so forth. The problem is Mr. Doyle and some of the legislation anticipates even in a best-case scenario that we are looking at a decade or so, but quite frankly we can't build the infrastructure necessary to wield that electricity, as your witnesses showed in a prior hearing unless—it is going to take more than 20 to 30 years to do so.

And then I asked this question that I think is an important question because I represent one of the poorest financially—it is a great district, but it has financial issue right across the line from Pike County, Kentucky—in Virginia. So I know that one of our witnesses knows about that. But I represent an area that is pretty poor. So where are we going to put these high-voltage power lines? Because historically what we do is we put those high-voltage power lines where the poor folks live, and that is who I represent, folks who don't have as much money.

And I don't want to see the beautiful mountains of central Appalachia crisscrossed with high-voltage power lines any more so than they already are. And wouldn't the members of this panel agree with me that that is not where it should be, that they should put these new power lines closer to the big cities where they need more of those power lines to draw the power to? Anybody on the panel want to address that?

Mr. BHATRAJU. I'm happy to, Congressman. Look, I don't think—you know, I think there are tons of issues with siting transmission. We will need it. You are absolutely right. We also need hardened

distribution grids. Some of these large community solar projects, they are on the distribution grid. They do not actually require large-scale transmission.

And to the earlier questions about resilience, these projects can create a more resilient grid in tandem with battery storage and other fuels by being on the specific distribution grid not requiring new transmission buildout, which I think a lot of other types of renewables do.

Mr. GRIFFITH. Go ahead.

Mr. BAIRD. Congressman, I'm joining this hearing via my iPhone, my smartphone. Computers used to be great big pieces of equipment that used to take up entire rooms. Now they're small enough to fit in your pocket or to fit in your lapel pin. That is the same thing that is going to happen to our energy equipment and energy infrastructure. It is going to shrink from large, centralized energy production systems to smaller and smaller systems that can fit in each and every American home.

That transition will occur, and it is simply a question of who owns it. Is it going to be us, or is it going to be China? But the technology is here, and the macro trends are clear as to what is going to be happening in terms of the transition of the energy industry.

Mr. GRIFFITH. But do you truly believe that will happen in the next decade? I think it will happen, but not in the next decade.

Mr. BAIRD. I think it will happen within 5 to 7 years. It is already happening across America.

Mr. GRIFFITH. Well, I hope you are right because that is what we are going to be gambling on, apparently, with America's power system and hoping that we have enough power and hoping the technology catches up. I would rather we had that plan already in place. And with that, Mr. Chairman, I yield back.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the gentlelady from New Hampshire, Ms. Kuster, for 5 minutes.

Ms. Kuster, you are recognized for 5 minutes.

You are muted, Ms. Kuster.

Ms. Kuster, you are recognized for 5 minutes.

All right. The Chair now recognizes Ms. Blunt Rochester. Ms. Blunt Rochester, you are recognized for 5 minutes.

Ms. BLUNT ROCHESTER. Thank you, Mr. Chairman. And I would like to thank you also for holding this important hearing, and thank you so much to the witnesses.

This Thursday marks the 51st year we commemorate Earth Day, and for the second year in a row amid social distancing measures, most Earth Day events will be virtual. The ongoing pandemic and the racial and income disparities in COVID–19 deaths and hospitalizations are an important reminder that the health of our planet and the health of our people are inextricably linked.

Transitioning to clean energy is not only necessary to protect human health and the environment, but it is also an enormous opportunity to create a more equitable economy. Generations of inequalities and injustices have placed a disproportionately high energy burden on our low-income, indigenous, and Black and brown communities.

The average low-income family in Delaware spends nearly 10 percent of their income on home energy costs. Too often environmental justice communities are excluded from considerations on clean energy, perpetuating underinvestment in these communities. We need to work together to ensure that environmental justice communities have a seat at the table as we transition to clean energy.

And my first question is for Mr. Butrauju—sorry for that. Bhatraju. We recognize that the transition to clean energy will not be seamless, but we also know clean energy creates good-paying union jobs. Prior to the pandemic there were nearly 14,000 Delaware residents working in clean energy. Can you explain how clean energy investments like community solar provide jobs for Americans while increasing access to energy in high-burdened and low-income communities?

Mr. BHATRAJU. Thank you, Congresswoman. And no worries at all. My name is not phonetic.

So community solar—and I want to go over this point again—it can happen everywhere, and the benefits are broad because it is offsite and requires skilled electricians and tradesmen to actually install these projects. There is a great story out of West Virginia, for example, where a company called Solar Holler where they have retrained coal miners to actually install megawatts now of solar in West Virginia, as an example.

But even in urban areas you are seeing community solar as an amazing benefit to the question earlier, people living in apartments, and creating resilient distribution grids, hardened grids. We know that the climate is getting weirder, and there's more storms, and having these hardened grids is especially beneficial for low-income populations and communities.

So the benefits of community solar are going to be more widespread by virtue of the product itself but by virtue of the fact that it can happen in all 50 States.

Ms. BLUNT ROCHESTER. Great. Thank you. And Ms. Farley, High Road businesses apply a collection of labor policies that take a more sustainable approach to treating workers, the planet, and the local community, which includes racial justice, racial equity hiring practices, prevailing wage standards, unionization, and environmental sustainability. We often hear from critics that clean energy is antilabor, but the two are not mutually exclusive, and we do know that we don't have to choose between our good jobs and the environment.

How can we incorporate the High Road business model into the clean energy industry to stimulate good job growth and create jobs for all Americans?

Ms. FARLEY. Thank you, Congresswoman Rochester. I think that we have strong models for this. There are many equitable High Road job policies and programs that have been developed and create great models and demonstrate great models of this. We know that President Biden's American Jobs Plan specifically speaks to the promise of higher-paying, unionized clean energy jobs with family-sustaining benefits.

And so I think that the clean energy industry has a lot to learn from the labor industry, and I have been encouraged to see more

coordination between traditional unions and the clean energy industry. And I think that both industries have a lot to learn from each other as soon as we begin to see each other as mutually supportive and not mutually exclusive.

Ms. BLUNT ROCHESTER. Thank you so much. And thank you, Mr. Chairman, for your leadership. I yield back.

Mr. RUSH. The gentlelady yields back. The Chair now recognizes the gentleman from Indiana, Mr. Bucshon, for 5 minutes. You are recognized, Mr. Bucshon.

Mr. BUCSHON. Thank you, Mr. Chairman.

First of all, I just want to dispute a little bit the comment made that says the rest of the world are doing what is in the Democrats' proposals. Well, India and China don't seem to be listening, so we don't want to economically disadvantage ourselves.

I'm deeply troubled by the legislation to keep CLEAN Future Act before us. The partisan bill not only jeopardizes America's energy security and affordability, but worse it destroys the livelihoods of hard-working Hoosiers and Americans across the country. I want to make it clear I support an all-the-above energy approach, and I support decreasing CO_2 emissions. Innovation and technology advances such as carbon capture are critical to this goal. We don't need to ruin the economy and our energy leadership to do that.

The legislation proposed before us, I believe, is somewhat out of touch with reality and moves to get rid of the fossil fuel industry with its overreaching provisions. I want to read from the bill itself, in fact, in Section 1002, the Energy and Economic Transition Impact Studies section. The Democrat bill says that "the Secretary shall seek to enter into an agreement with the National Academy of Sciences under which the Academy agrees to conduct studies on matters concerning potential impacts of achieving net zero greenhouse gas emissions on workers and communities dependent on employment related to fossil fuel as follows."

I think I know the answer to the question, but I will read you what the study they are proposing would do: "Identify types of occupations related to fossil fuels that may be impacted by the Nation's transition to achieving net zero greenhouse gas emissions, including occupations involved with the extraction of fossil fuels, the refinement of fossil fuels, the generation of electricity from fossil fuels, the production of energy-intensive industrial products, the manufacturing of light-, medium-, and heavy-duty vehicles that utilize an internal combustion engine and other component parts for such vehicles, and the construction, operation, and maintenance of infrastructure to deliver fossil fuels for domestic use, and for each type of occupation identified under subparagraph (A), estimates of the number of employees serving in each occupation, and the locations of the employees for each type of occupation."

So even in the bill it is recognized that there is going to be a substantial impact. I don't think we need to have the Secretary study that to prove that. In regard to the all-of-the-above approach, I think my record speaks for itself with respect to my support for hydro and nuclear energy as well as other renewable sources of energy, but I represent with great pride a district that is responsible for providing the bulk of energy generation from coal: the whole State of Indiana.

Mr. Chairman, it is personal to me. I grew up in the coal fields in central Illinois. My father was a proud United Mine Worker for his entire career. Over the past 4 years, however, thousands of hard-working Hoosier coal miners in my district have lost their jobs, and we are having more power plant retirements. As more plants are set to retire partially because of stringent regulations like we see in this legislation, there will be an increase in hard-working folks who will be laid off and struggling to find work. Why don't we innovate and implement advanced carbon capture technology before all of these jobs are lost?

Mr. Pérez, this transition will have serious impacts on the fossil fuel industry. What economic opportunity alternatives do energy workers have should their years of experience and valued skill sets no longer be needed or warranted?

Mr. PÉREZ. Well, it is very limited, especially at the scale when you deal with millions of people that would be displaced across the country. I mean, the Hispanic community is only maybe a million of those workers, but when you are dealing with 10 million people it is very difficult because it is essentially taking a worker, retraining them, so it is going to be very expensive to do that, very time consuming. Some folks will filter out because they don't like the new work, and so by the time it all ends up it might be years down the road, and you may only have partial success while at the same time you are increasing economic distress for some of these workers and their families.

And so in our case we are seeing the Hispanic community is coming out of poverty. We definitely are in an upward mobility mode. We are great contributors of the country's economy with $2.3 trillion purchasing power. There is a lot of opportunity there, and so we are very concerned about the shift over. And we are saying let's stop. Let's really take a good look at what we are trying to do and figure this out before we put so many people in harm's way.

Mr. BUCSHON. Thank you for that. I would agree.

Mr. Chairman, I yield back.

Mr. RUSH. The gentleman yields back. The Chair now once again recognizes Ms. Kuster for 5 minutes. The gentlelady from New Hampshire, you are recognized for 5 minutes.

Ms. KUSTER. Thank you very much, Mr. Chairman. I appreciate it.

This is an important hearing, and I am grateful to our panel for being with us today. As Congress works to help the country transition to net zero carbon emissions, we must ensure that low-income Americans and communities of color will benefit from this revolution in our energy sources, and I want to make sure that everyone has the chance.

So, according to the Department of Energy, the average low-income family spends nearly 9 percent of their income on home energy bills, three times more than the national average. These burdens are even more acute in rural communities in New England, where the average low-income family spends nearly 11 percent of their income on energy bills. It is unacceptable that low-income Americans are forced to spend 1 out of every 10 hard-earned dollars keeping the lights on and keeping their family warm. We need to help low-income Americans spend less money on their energy

bills, and one way we can do that is by reducing the cost of electricity itself.

In my district, the Plymouth Area Renewable Energy Initiative has done just that. Partnering with the Common Man restaurant and the New Hampshire Electric Cooperative, they built a community solar project that sells clean energy into the local grid and uses the revenue to subsidize energy bills of local low-income families.

Mr. Bhatraju, what can Congress do to help develop more of these projects that strengthen the grid, reduce carbon emissions, and make the clean energy revolution more equitable?

Mr. BHATRAJU. Thank you, Congresswoman. As a lot of you know, the power grid is not actually competitive in a lot of parts of the U.S. The community solar projects I talked about that we manage are right now across eight States. Again, these are red States, blue States, deregulated, regulated markets. Community solar can happen everywhere, but it is a form of competitive energy that we need to promote everywhere.

And it is part of the legislation that we are discussing here today is to give every public utility commission—and there's 50 States, 50 public utility commissions—the ability to consider creating a community solar program. And they can go through their own deliberations of how to do it—how big, where to put it, et cetera—but that is all we are asking.

And I think, hopefully, it came through today that the benefits of community solar are so much more widespread than traditional rooftop solar that opening up the ability for these policymakers to consider these programs, put them in all 50 States, benefits everyone, the communities and folks that are left out of the transition.

Ms. KUSTER. Great. Thank you very much. Another way to reduce energy bills is by helping families operate their homes more efficiently. Heat pumps cost less to operate than a traditional natural gas or oil furnace. Because heat humps run on electricity instead of carbon-based fuels, they can help us meet our carbon reduction goals as we electrify the grid.

Mr. Baird, what are some of the barriers that you see to broader heat hump utilization, and should Congress consider incentives to help more Americans adopt this technology?

Mr. BAIRD. Thank you for the question, Congresswoman. Heat pumps will be a central technology in the American economy over the next 30 to 50 years. Right now they're being primarily produced in Japan. They are new models of heat pumps that use carbon as refrigerant. So for our friends across the aisle who are interested in carbon capture and storage, heat pumps actually present a multitrillion-dollar use case for capture carbon and using it as refrigerant in heat pumps.

The barriers to deploying heat pumps at scale include a lack of homeowner awareness. Americans are not aware of the benefits of heat pumps as is the case in Europe and Asia, where heat pumps are the top home energy technology. And second, we must train up a new, highly skilled construction workforce that has the ability to do plumbing and electrical work and hazardous materials construction work that is necessary to install heat pumps in 120 million American homes. Thank you.

Ms. KUSTER. Thank you very much. I did have another question about the Low-Income Home Energy Assistance Program, LIHEAP, but I will submit that for the record. Thank you. I yield back.

Mr. RUSH. The gentlelady yields back. The Chair now recognizes my friend from the great State of Michigan, Mr. Walberg, for 5 minutes.

Mr. WALBERG. I thank the Chairman, and thanks to the panel for being here.

This is an important issue that sometimes I think we ought to step back and really, really consider what we are talking about for the future, especially as we are thinking about 20, 30, 50 years. Mayor Carter-King, I'd like to talk to you about carbon capture since I know there is work being done on a storage facility at Dry Fork Station in Gillette, which my staff had the privilege to visit.

I agree with you that there are many good uses for carbon rather than keep it in the ground, which is not practical in my view, not necessary either, I believe. We should invest in carbon capture utilization and storage. This is a bipartisan solution since we need to figure out how to manage carbon across the value chain, but we need to make sure we're not duplicating existing regulations or imposing impractical permitting requirements that may undermine future development of this technology.

The Federal Tax Code can be a tremendous tool, but we can also look at speeding up the infrastructure process for companies to obtain Federal permits needed to inject CO_2 into storage. And so, Mayor King, do you support equipping the EPA for the Federal Government with the ability to process these infrastructure permits at a faster rate and helping other States take the lead like you are doing in Wyoming?

Ms. CARTER-KING. Absolutely. Thank you, Congressman Walberg. That is absolutely what we would appreciate here so that we can fast track more of the research that is going on here. When President Biden was running for election, he said he would work with the red States as well as the blue States. Well, we here are willing to work with him on subjects like this because we do need his help now.

Mr. WALBERG. I think that is called primacy, isn't it? Could you also speak to the importance of new technologies and innovations in carbon capture utilization and storage? And then secondarily, what would that mean for your community of Gillette, and shouldn't we give your State a strong opportunity to lead in this space?

Ms. CARTER-KING. Absolutely. Thank you again. That is a great question. We do need the help to continue this vital research in such an abundant resource that we have here that can help the Nation as well as the world. Other nations do recognize this, and we have other countries here working on the research as well. We need to work more with the rest of the world. This is a global problem that we can help with right here in the Powder Basin. It is vital that we continue this important research into carbon capture.

Mr. WALBERG. Well, I think we forget—so often we forget our primacy itself in all-of-the-above energy opportunities and solutions that we don't necessarily need to throw them all out or throw certain ones out, but we can use them appropriately.

Mr. Pérez, thank you for being here. We keep hearing about the job potential of this so-called just transition and no doubt there is huge potential in clean energy jobs, but I think we need to be realistic. Even former Secretary of Energy Moniz concluded that new replacement green jobs pay significantly less, not to mention impediments to retraining our entire generation of workers.

I just think it is silly to think that a government transition czar and task force are going to take care of all of those workers who lose their jobs. Mr. Pérez, can you speak to your workforce and the need to reserve jobs that folks are training for today?

Mr. PÉREZ. Oh, absolutely. Well, first of all, we found that there is a huge need to develop a workforce in energy STEM, and the reason for that is 25 percent of K–12 students in America today are Hispanics, which means 10, 15 years down the road that is your workforce. So we need to be thinking about how we are going to create the new intellect to innovate and develop the technologies necessary to not only carry our industry forward but our country and, of course, hopefully the world.

So we initiated a program called the Hispanic American Energy STEM Institute 2 years ago. We launched it in Arizona. We have had similar discussion on this with very influential people, including the top leaders of education in California and the CEOs of the utilities there to talk about how the industry and the academia and the community can develop a pathway to create 25,000 Hispanic and other minority group energy STEM graduates by the year 2025. Very ambitious goal, but if we don't throw it out and have some discussion, who knows? Maybe we might be able to pull it off.

But in terms of the comparison to the clean energy space, we have connected with people who train solar installers. They tell us that those jobs don't pay very well. It is about $13 an hour, no benefits, no union, no sustainability, no career ladder. Once a project is over, that person has to go out and find another project.

So on the other hand, in the oil and gas side, we can take assistant welders, for example, right off the street they go through the union training. They put them on the job. It is $23 an hour, $20 an hour for benefits and then $64 a day for per diem, which is how they house themselves and feed themselves when they have to move across the country for these very special jobs.

So there is a big difference in terms of the scale of security, income, opportunity, training, education, and development that is offered in one sector compared to another.

Mr. WALBERG. Great. I yield back.

Mr. RUSH. The gentleman yields back. Now the Chair does not see Mr. O'Halleran on the screen. Mr. O'Halleran, you are next.

So the Chair now will move to Mr. Duncan.

I don't see Mr. Duncan on the screen.

The Chair now recognizes Mr. Palmer from Alabama for 5 minutes. Mr. Palmer, you are recognized.

The Chair now recognizes Mrs. Lesko for 5 minutes. Mrs. Lesko, you are recognized for 5 minutes.

Mrs. LESKO. Thank you, Mr. Chair, although I see Mr. Palmer waving his hand. So I don't know if you want to go back to him first.

Mr. RUSH. Mr. Palmer, you are recognized for 5 minutes.

You are muted, Mr. Palmer.

All right. Mrs. Lesko, why don't we just go with you. You are recognized for 5 minutes.

Mrs. LESKO. Thank you, Mr. Chairman. I appreciate this hearing, and I thank you for being here.

I think it is important that we talk about things like equity, that we have an honest conversation about what equity really means. For my colleagues, many of them on the other side of the aisle, achieving equity requires the creation of an Office of Energy Equity, but I believe the easier way to serve our communities is to have policies that promote affordable and reliable energy and maintain good-paying American jobs.

We can continue innovating and deploying clean technology as well as a lot of traditional forms of energy like natural gas to be a choice for Americans. I represent nearly 180,000 fixed-income senior citizens and 173,000 Hispanics in my congressional district in Arizona, and I want to make sure that these people and this energy policy we consider doesn't lead to higher prices, especially on the seniors who are living off fixed income. I also want to make sure that policies proposed in the name of equity or environmental justice aren't taking away good paying jobs from working class communities.

Mr. Pérez, in this bill—and I would like to read part of this bill, it is on page 953 of the CLEAN Future Act—it identifies types of occupations related to fossil fuels that may be impacted, meaning lost, by the Nation's transition, and it is a fast transition, to achieving zero net greenhouse gas emissions and includes "occupations involved with the extraction of fossil fuels, the refinement of fossil fuels, the generation of electricity from fossil fuels, the production of energy-intensive industrial products, the manufacturing of light-, medium-, and heavy-duty vehicles that utilize an internal combustion engine and other component parts for such vehicles, and the construction, operation, and maintenance of infrastructure to deliver fossil fuels for domestic use."

That is right in the bill, and you have testified in advance, but I want you to repeat again the impact that the loss of these jobs is going to have on the Hispanic community and the 173,000 Hispanics that I have in my congressional district.

Mr. PÉREZ. It will be a very devastating impact economically. It would create a depression made by government, and so we really caution against that. We think that there needs to be a lot of research and a lot of study. Otherwise, I hate to say this but you probably won't want to claim responsibility for that if that happens.

Mrs. LESKO. Thank you, Mr. Pérez. Mayor Carter-King, I am really concerned about the increased cost of electricity and energy if we rush too fast to replace the oil and gas industry and not have an all-the-above energy policy. Do you think that a quick rush—I think in this bill it is 14 years we only have until electric generation plants have to totally be at zero carbon emissions, meaning no natural gas. Do you think that would lead to increased utility prices for these low-income and communities of color?

Ms. CARTER-KING. Thank you, Congresswoman Lesko. Absolutely. I don't think people are even thinking about how expensive

power would be. And who would that hurt? Your lower-income people. It would be so—I can't even manage without having the low cost of these fossil fuel energies in the mix at least. It will be devastating to people that won't be able to afford to turn on lights. We have spoiled our country with low energy prices all these years. So yes, it will have quite an impact on the price of energy across the board.

Mrs. LESKO. Well, and I am concerned for all people and what the impact will be on the cost of utility rates and also the reliability of the utilities of energy. And so with that I yield back, Mr. Chair.

Mr. RUSH. The gentlelady yields back. The Chair now recognizes Mr. Palmer.

Mr. Palmer.

Mr. PALMER. Thank you, Mr. Chairman. Can you hear me now?

Mr. RUSH. Yes, Mr. Palmer.

Mr. PALMER. Perfect. I am going to make a couple statements here about energy justice. It is widely reported that low-income households can spend up to 20 percent of their household income on their energy cost. It is disproportionately a heavy burden on low-income families. I also want to point out that they suffer energy poverty in the sense that they can't afford to adequately heat and cool their homes. And this is especially problematic when the homes are cold for people with respiratory and cardiovascular issues, particularly asthma.

Mr. Pérez, there is a study from IHS Market, one of the most highly respected research groups in the world, and they predicted that by 2035 there would be 1.9 million jobs in oil and natural gas, that 700,000 of those would be African Americans and Latinos. What do you say in regard to how it would impact those communities if those jobs were not available? Would you agree those would be very high-paying jobs?

Mr. PÉREZ. There is no questions about it. We partner very closely with the American Association of Blacks in Energy, AABE. They have been around since 1977. We are a fairly new organization. They actually incubated us for a couple years when we got started 10 years ago. So we have done projects together. One of them is focused on energy jobs.

We toured around the country in 10 different cities to meet with leaders and talk to them about the opportunities in the energy space as it relates to jobs, and it was all inclusive. And I can tell you that the effect from my perspective—I cannot be a spokesperson for them—but I think that it definitely would have an impact on the African-American community almost as dramatically as it would in the Latino community.

Mr. PALMER. The thing about these jobs, they are longer-term jobs as opposed to the jobs in the green industry.

Mr. PÉREZ. Yes.

Mr. PALMER. For instance, Germany in 2011, they reported 300,000 green jobs that had fallen to 150,000 by 2018. And then if you go back and look at the first version of the Green New Deal, which was the 2009 stimulus package the Obama-Biden administration passed, the Democrats passed, in 2009, they were predicting that it would create 5 million new green jobs, but they

could only account for 2.7 million. And according to the Brookings Institute, most of those were bus drivers, sewage workers, and other types of work that didn't fit the green jobs of the future. And the Bureau of Labor Statistics even included jobs like lobbying for green industries.

That makes no sense that there were people in the septic tank and portable toilet servicing industry had 33 times more green jobs than solar electric utilities. This is the kind of stuff that really concerns me, is the misrepresentation of what the Green New Deal will provide for the country, and particularly the cost increases.

In California their energy costs are 60 percent higher than the national average, and that is a tremendous burden on low-income families. Wouldn't you agree, Mr. Pérez?

Mr. PÉREZ. It is higher than other States. Absolutely. I moved from California recently, and I live now in Minnesota, and so big difference in terms of our energy bill, absolutely.

Mr. PALMER. I appreciate the response. I would also like to ask again, and I have done this in two or three hearings in Pembroke Township in Illinois. It is a city of 2,100 people, 80 percent Black population. They have no natural gas. Many of these people heat their homes with wood-burning stoves or more expensive propane, and the Reverend Jesse Jackson is leading an effort to get a gas line in Pembroke Heights to provide these people with lower costs and more reliable fuel for heating their homes.

I just want to know from the witnesses how many of you would support Reverend Jackson's efforts to get a natural gas pipeline into Pembroke Township. How many of the witnesses, period, the Republican or—would you support that, Mr. Pérez?

Mr. PÉREZ. Well, I am a Democrat, and the answer is yes.

Mr. PALMER. How about you, Mayor Carter-King? Any of the Democrats, would you support that? Seeing no takers, I yield back.

Mr. BAIRD. I oppose gas pipelines. Thank you, Congressman.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the gentleman from Arizona, the great State of Arizona, Mr. O'Halleran, for 5 minutes.

Mr. O'Halleran, you are muted.

Mr. O'HALLERAN. Thank you, Mr. Chairman and Ranking Member, and I want to thank the panel also for all their information from today.

Changing energy economies means that rural communities like those in my district with generating stations have lost and will continue to lose jobs as coal becomes less economically viable. With support like that provided by my legislation, the New Promise Act, communities across the country will be able to transition to the next generation of good-paying clean energy jobs. Ensuring that Federal resources are available and communities are driving the direction of those resources will support communities through this transition that is already being driven by market forces.

I believe that we should ask ourselves how Federal investment into clean energy can improve the lives of our constituents and our communities. Asking this question allowed me to develop the New Promise Act to support rural economies and make sure that hard-working Americans continue to have opportunities to pursue good jobs.

Mr. DeVar, how will Federal transition assistance to both local governments and workers promote rural equality in an energy transition?

Mr. DEVAR. Thank you, Congressman.

Well, first of all, the focus on local governments and workers has to be built into recognizing where there will be shifts in workforces. Actually, I think this question really connects to issues that have been raised. Where are there going to be job losses? Where will there be local governments that have different shifts in revenue streams?

And approaching this overall transition not as one that is simply an energy transition but approaching it as one that focuses on American families and jobs would elevate. If we set the goal of this transition equally to look at American families and how they benefit and if we set metrics to ensure that we reach cities, towns and have local governments connected to the transition, then we would ensure that we were able to build distributed generation, for example, which can reach all of our cities and towns as opposed to types of resources that may leave certain communities out as well as rural communities.

That is the other important issue where we need to think about the benefits of a decentralized and distributed approach, which could really bring jobs to all of our communities.

And lastly, I will just say this is actually an important question to think about that issue of job loss, but I think we have to connect that also to communities that are thinking about their income as well as communities that are facing risk of pollution. So this isn't a simple tradeoff of one harm to another harm. It is a complex web, and if we are honest with ourselves we really need to analyze what the tradeoff of benefits and burdens are, and that will really get to the heart of addressing specifically local governments and workers.

Mr. O'HALLERAN. Thank you. I have followup question. Can you speak to some successful examples of rural communities successfully transitioning coal jobs to clean energy jobs?

Mr. DEVAR. I myself am not an expert in specific job training programs. I think some of the other witnesses here would. But I think what I can point to is that the vehicle for ensuring that just transition happens is often rural electric cooperatives that are responsive to their customers, that care about fossil fuel workers. And so if, again, we connect to local governments and those institutions that care about folks there, care about those jobs and tie that into our transition, we will ensure that we have training and support for workers from one industry to another.

Mr. O'HALLERAN. Thank you. Those rural co-ops are also important to broadband distribution throughout our country also. Mr. Chairman, I yield.

Mr. RUSH. The gentleman yields back. The Chair now recognizes the gentleman from Indiana, Mr. Pence, for 5 minutes.

Mr. PENCE. Thank you, Chairman Rush and Ranking Member Upton, for holding this hearing, and thank you to the witnesses for appearing before us today.

The academic ideas incorporated in the majority's aggressive energy policies are neither equitable nor just for my constituents in

southeast Indiana. Under this bill, a just transition means less reliable energy for a higher price, fewer jobs, and economically depressed communities in my Hoosier State.

If we want a preview of a similar rush to green, we can look to the outcomes and looming energy shortages in Germany. The country's premature shift has left consumers with the highest cost of electricity in the European Union. All the while Germany still relies on their neighbor for coal and nuclear generation to meet peak energy needs.

At a time when gas prices are already straining the budgets of Americans in rural and suburban communities, we simply cannot afford to foot the bill to bring renewable energy and electric vehicles just to the urban areas. As the attack on fossil industries intensifies, it is important to remember the impact on the entire value and distribution chain.

That includes the trucking industry, manufacturing plants, our farmers and Hoosier products that fuel the country. Just the other week I had the opportunity to meet with Superior Oil in Connersville, Indiana. This company is helping lower our carbon footprint by recycling and reusing different types of liquid fuels for chemical, plastics, and manufacturing industries.

Consider companies in my district like Cardinal Ethanol and POET who are leaders in the high-tech ethanol and biofuel development, all from the locally sourced agriculture products. What would be the just transition for these workers in my district when we shift to complete electrification? What happens to the local economy and tax revenue that grows a community? Unfortunately, President Biden and the House Democrats' one-size-fits-all approach to energy catches rural Hoosiers in the crossfire.

Mayor Carter-King, your community faces a serious threat from the policies coming from the CLEAN Future Act. In your testimony, you detailed the real-world impact of these aggressive policies. Eliminating fossil fuels result in the loss of revenue, jobs, and wellbeing for the citizens of Gillette. One of the reasons I ran for Congress was because I watched the destruction of the manufacturing sector hollow out entire communities across Indiana in my district. It is my fear that the very policies we're talking about today will replicate this situation for my constituents.

You have been investing in new, cleaner ways to use coal, oil, and natural gas. This would benefit small rural towns by keeping anchor institutions in place. My question: Before we unjustly destroy entire communities on the way to green, shouldn't we give these innovations more time to develop so we can transition these communities in an orderly manner?

Ms. CARTER-KING. Thank you, Congressman Pence. Absolutely. That is all we're asking, is for time to develop these innovations that the great minds of the world are coming up with here in our community and in other communities. We just need more time. They can't happen overnight. But they will benefit everyone. These could have worldwide implications some of the technology that they are working on now just like the concrete solution they came up with yesterday in the XPRIZE. So yes, thank you. We need more time.

Mr. PENCE. All right. Thank you today for being here and championing our smaller communities. And Mr. Chair, I yield back.

Mr. RUSH. The gentleman yields back. The Chair now recognizes Mr. Armstrong for 5 minutes.

Mr. ARMSTRONG. Thank you, Mr. Chairman. I have heard it several times today that the free market is what is continuing the cause of the decline of coal, and I think it is important to go through this because if we're talking about creating new energy standards, understanding how the electric grid works economically is probably pretty important, and anybody who says that market forces and not government regulation is what killed coal simply doesn't understand how the economics of the electric grid work.

To be sure, abundance of natural gas from shale plates has a free-market factor in what continues to cause the decline of coal, but that is literally the only free-market portion of this conversation. Every other thing has been created by government regulation.

It actually started under the H.W. Bush administration but was aggressively and effectively pursued under the Obama administration. The admission of CO_2 to the New Source Review standard was significant because it made the decision to retire coal plants instead of retrofit them. The cost and uncertainties weren't worth it. It was a bad policy, and it was administered poorly. Rather than risk an NSR review, coal plant were shuttered. And while the clean power plant was never fully implemented, it was really effective in one thing: It gave States the message that the Federal Government was going to shut coal plants down and that States plan accordingly, which brings us to probably the most important thing.

There is no real free market in the electric grid. Electric companies in most States are government-approved monopolies. They have guaranteed market share. State regulators set the rates, and the utilities aren't allowed to make a profit from the sale of electricity. It is a cost-of-service business model. Regulated by the government, it covers expenses and builds in a profit margin which is usually around 10 percent.

We have created a system where utilities have a guaranteed profit when they spend on capital assets, but the profits they make on assets declines every year as an asset depreciates. As coal plants get older, it makes utilities less—they make less money on that asset, and as plants are paid off the electricity is cheaper, and rate payers benefit but government-controlled utilities don't.

Through a perverse regulatory incentive, utilities have strong financial reasons to retire depreciated coal plants and build wind, solar, and natural gas, and this is before we talk about regulatory and economic advantages renewables continue to have over coal with the never-ending production tax credit: 2019, 4.7 billion in market manipulation; 2020, 4.3 billion in market manipulation; 2021, 4.3 billion in market manipulation, not the least of which renewables are granted primacy on the grid.

So when we talk about a just transition, let's be honest what we are talking about, and we should just tell the people in my communities like Beulah, Hazen, Watford City, Williston and yes, Gillette, Wyoming, that we are going to kill their communities because, whether it is coal or oil or natural gas, none of these renewable

jobs that we continue to say will exist will scale up to allow these communities to survive.

And I am going to let everybody in on a little secret. Everybody who lives in Watford City, North Dakota, is in the energy business—everybody from the teacher to the cop to the government officials. If there's 15 clean energy jobs that are created in Rochester, Minnesota, that does nothing for the people in my communities in western North Dakota. And we're seeing these same fights coming in different ways right now.

One of the things we're seeing in the oil and natural gas space is how we continue to attack pipelines. Somebody said earlier States aren't going to ban fracking—and that's probably true mostly because, when it comes to oil and gas, which while there is a difference to coal, States have too much control over production—but you don't have to kill fracking to kill the industry. All you have got to do is continue to sue pipelines out, sue pipelines out, sue pipelines out, make the cost of compliance so hard, the time built to get that infrastructure in the ground is so burdensome that the capital to deliver the products to market matters.

And if we want to talk about equity in the setting that it is talking in now, I would have everybody read the declaration of Mark Fox, who is the chairman of the Three Affiliated Tribes in North Dakota. They transport 60 percent of their oil by the Dakota Access Pipeline. It accounts for 80 percent of their travel budget. Everybody who lives on that reservation is in the oil and gas industry, and every single person on that reservation is going to be negatively impacted if the Dakota Access Pipeline shuts down, and those are the real cause for real concerns.

And finally, when we are talking about community solar projects and all of these different issues, we have a model for that. It is called a co-op. We can do these things under current existing structures. My problem is and my guess is in order to make a co-op economically viable you are going to have to have a carbon fuel source to back it up when the wind doesn't blow or the sun doesn't shine. So with that, I would ask unanimous consent to enter into the record the declaration of Mark Fox, and I'll yield back.

Mr. RUSH. The gentleman yields back. And if the gentleman will hold on to his recommendation, I do have a series of documents, and included in the documents that I have for unanimous consent is the letter from Mr. Mark Fox.

So that concludes the witnesses' questioning and answers, the questioning of the Members and answers by the witnesses. I again want to thank our esteemed witnesses for their participation in today's hearing. I want to thank you for your perseverance and for your endurance, and thank you so very, very much for your exemplary testimony.

I must remind Members that, pursuant to committee rules, they have 10 business days to submit additional questions for the record to be answered by our esteemed witnesses who have appeared before us today, and I would ask each witness to respond promptly to any such questions that you may receive.

Before we adjourn, I want to request unanimous consent to enter into the record the following documents: a report from the University of Wyoming School of Energy Resources on Federal leasing and

drilling ban policies; a report from the NRRI Insights, "Resource Adequacy Needs," dated March of 2021; a letter from the Hispanics In Energy regarding opposition to SB 467; a report from the executive president of the United States CEA on the value of U.S. energy innovation and policies; a letter from the stated Mark N. Fox with the chairman of the Three Affiliated Tribes; an article from the New York Times entitled "A coal miners union indicates it will accept a switch to renewable energy in exchange for jobs;" a letter to President Biden regarding winter storm Fed assistance supporting Masonite energy; and lastly an article from the Wall Street Journal entitled "John Kerry's Climate Kowtow." Hearing no objections, so ordered.

[The information appears at the conclusion of the hearing.[1]]

Mr. RUSH. And I now declare that the Energy and Power Subcommittee do hereby stand adjourned.

[Whereupon, at 1:56 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

[1] The University of Wyoming and United States CEA reports have been retained in committee files and are available at https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=112462.

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MARCH 2021

The Intersection of Decarbonization Policy Goals and Resource Adequacy Needs: A California Case Study

Elliott J. Nethercutt and Chris Devon

A growing number of states have instituted renewable portfolio standards (RPS) through policies and corresponding commission orders to reduce carbon emissions in the electricity sector. No state has transformed its grid with more ambitious policies than California, which introduced its RPS in 2002, initially requiring 20 percent of retail electricity sales to be served by renewable resources within 15 years.[1] This program has been adjusted multiple times, most recently by Senate Bill 100 (SB100) in 2018, which increased the requirement for carbon-free generation from electric retail sales to 60 percent by 2030 and 100 percent by 2045. The California Public Utilities Commission (CPUC) is charged with implementing this RPS program and administering compliance over the state's investor-owned utilities (IOUs), Energy Service Providers (ESPs), and community choice aggregators (CCAs).[2] The CPUC is also responsible for ensuring that jurisdictional load-serving entities (LSEs) procure enough capacity to meet the commission's resource adequacy program requirements.[3] These two objectives collided on August 14 and 15, 2020, when the California Independent System Operator (CAISO) called on utilities to initiate controlled rotating electricity outages on two occasions to maintain adequate reserves in the midst of a regional heat wave. These two load-shedding events affected 491,600 and 321,000 customers, respectively.[4] California's electric system was ultimately unable to maintain reliable operations for the first time in almost two decades.

Significant loss-of-load events on the bulk power system often result from a combination of factors. After months of collaborative investigation, the CPUC, the CAISO, and the California Energy Commission (CEC) released a final root cause analysis (referred as "root cause analysis" throughout this paper) that identifies several operational factors that contributed to the events, including: actual loads exceeding forecasts; significant variability in wind and solar output; reduced imports from neighboring states (due to transmission constraints, market rules, and high demand throughout the Western Interconnection); and significant unit derates and forced outages. According to the root cause analysis, two of

1 California is one of several states with aggressive clean energy targets, requiring 100 percent carbon-free electricity by 2045. According to the NCLS, 14 states have RPS goals of 50 percent or greater by 2045. The types of resources that qualify for California's RPS have evolved. For additional information, see Section 399.12 of Senate Bill 1078 and the CPUC's RPS Program and Legislative History.

2 The California Energy Commission (CEC) is responsible for the certification of generation facilities as eligible renewable energy resources and adopting regulations for the enforcement of RPS procurement requirements of publicly owned utilities.

3 A 1-in-2 forecast assumes there is a 50 percent probability that the forecasted peak will be less than actual peak load and a 50 percent probability that the forecasted peak will be greater than actual peak load. The demand forecasts are adopted by the CEC as part of its Integrated Energy Policy Report (IEPR) process. The 15 percent planning reserve margin (PRM) includes 6 percent to meet the Western Electricity Coordinating Council (WECC)-required grid operating contingency reserves, plus a 9 percent planning contingency to account for plant outages and higher-than-average peak demand, CAISO/CPUC/CEC Final Root Cause Analysis, p. 11.

The 50/50 load forecast assumes a normal distribution. For example, if the forecasted load for a system is 25,000 MW, there is a 50 percent chance actual load will be higher, and a 50 percent chance load will be lower.

4 Total customer outages amounted to 491,600 on August 14 and 321,000 on August 15, CAISO/CPUC/CEC Final Root Cause Analysis, p. 35.

the three primary causal factors were related to resource planning targets that "have not kept pace" with the changing resource mix, leading to insufficient resources available to meet demand during the early evening hours.[5] The August events highlight the need for continued improvement to resource adequacy constructs, along with developing and implementing enhanced metrics to accurately assess an electric system that continues to be transformed by ambitious state decarbonization policies.

In this *NRRI Insights* paper, we examine how the evolution of California's RPS program has led to increasing system variability with higher potential for reliability events—particularly during extreme weather conditions. We further explain how the rapid retirement of baseload and dispatchable generation has outpaced replacement capacity with adequate characteristics needed to maintain system reliability. We discuss the CPUC's recent finding that future procurement decisions must balance RPS requirements with resource adequacy needs. We then explore how the continued development of advanced reliability metrics can help bridge the gap between decarbonization policy goals and resource adequacy needs. Throughout this paper, we review the ongoing CPUC and CAISO actions in response to the ongoing supply shortages and offer some additional proposals aimed at improving the state's near- and long-term reliability outlook.

California's Decarbonization Policies and System Reliability

The California legislature established the first RPS program in 2002, with subsequent decisions and process modifications introduced by the CPUC.[6] Additional legislation with more stringent requirements and associated compliance timelines were signed into law in 2003, 2005, 2015, and 2018.[7] Load-serving entities repeatedly demonstrated that they could interconnect large amounts of utility-scale wind and solar, while large amounts of rooftop photovoltaic were also installed behind the meter. During this period of relatively rapid system transformation, the CAISO continued to operate the system without any major events, reinforcing the idea that policy-makers could introduce more ambitious RPS requirements without compromising grid reliability.[8] The CAISO has facilitated the interconnection of large amounts of utility-scale wind and solar by providing open and non-discriminatory access to the wholesale transmission grid and supporting comprehensive infrastructure planning through dozens of stakeholder initiatives. These initiatives led to the deployment of over 13 gigawatts (GW) of utility-scale solar and 7 GW of wind on the CAISO system in under 18 years.[9] As a result, the CAISO system is currently able to serve over 80 percent of demand with renewables during certain periods, double the amount reported in 2015, and more than any other system in the country (**Figure 1**).[10]

The Decline of Baseload and Dispatchable Resources in California

California's rapid and ongoing growth of intermittent resources like wind and solar has flourished, while baseload and dispatchable resources have

5 CAISO/CPUC/CEC Final Root Cause Analysis, p. 1.

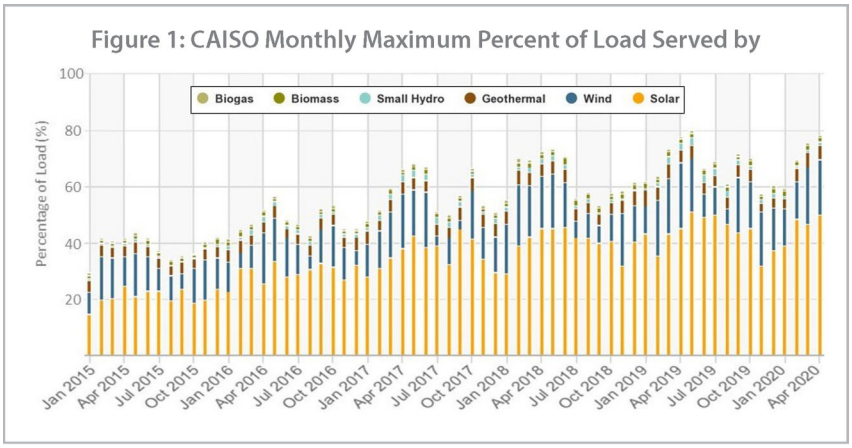
6 See the CPUC RPS website for a complete list of the state's RPS program.

7 The 2003 Energy Action Plan I accelerated the 20 percent deadline from 2017 to 2010 (Senate Bill 107 (2006) codified the accelerated deadline into law). The 2005 Energy Action Plan II examined a further goal of 33 percent by 2020. Senate Bill 350 (2015) required all in-state utilities to source half of their electricity sales from renewable sources by 2030.

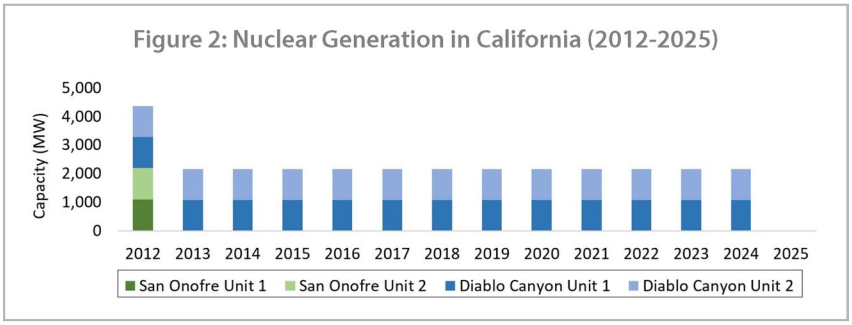
8 California's electric system had not experienced wide-spread rotating outages since 2001, when the CAISO declared a Stage 3 emergency leading to the controllable firm load-shedding during the California Energy Crisis. The 2011 Southwest Blackout was not a controlled load shedding event, rather it was determined that the system was not operating at an N-1 state.

9 California Energy Commission's Electric Generation Capacity and Energy data indicates 11.2 GW of solar additions and 4.4 GW of wind additions between 2001 and 2019. In July 2020, the CAISO footprint has 13,383 MW of utility-sale solar and 6,977 MW of wind.

10 The CAISO system served a record 81.88 percent of system demand with renewable generation on May 2, 2020 at 1:40 p.m. The CAISO chart does not show May 2 record of renewables serving demand. Chart modified and resized by authors.



declined.[11] In 2012, the San Onofre Nuclear Generating Station (SONGS) plant was taken offline and permanently decommissioned one year later. SONGS had provided 2.2 GW of zero-emission baseload generation in close proximity to the densely populated Southern California load pockets. Four years later, plans were announced to close the state's remaining nuclear plant, Diablo Canyon, by 2025. Its two reactors total 2,160 MW and serve three million customers. Nuclear plants maintained an average 2019 capacity factor of 93 percent, compared to approximately 24 percent for solar. Thus, it would require at least 6 GW of nameplate solar capacity to fill the void created by the retirement of the Diablo Canyon plant.[12]



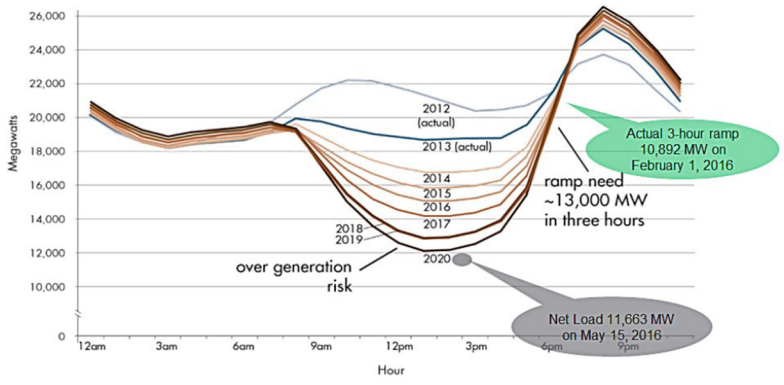
11 Baseload generation includes power plants with high capacity factors that are able to be operated at sustained output levels with limited cycling or ramping. Examples includes most nuclear, coal, and natural gas steam generators, none of which qualify toward achieving the state's RPS. California has essentially retired all coal-fired capacity.

12 EIA 2019 Capacity Factors for Utility Scale Generators Primarily Using Non-Fossil Fuels; EFI: Optionality, Flexibility & Innovation: Pathways for Deep Decarbonization in California, p. 40.

In addition to the ongoing loss of baseload generators, dispatchable resources that are highly responsive to intermittent resources are also in decline. Ramping concerns initially emerged as a growing challenge for the CAISO more than a decade ago. Today, the majority of the state's solar resources are not dispatchable by the CAISO, but are located behind-the-meter on customer rooftops.[13] Solar output from these distributed resources (in aggregate) offsets what would otherwise be higher system loads. However, output rapidly declines after the sun sets, creating a steep ramp in demand that must be served by other resources on the CAISO system. During the same period, residential electricity demand also increases, as customers return home from work and use more appliances during the late-afternoon and early-evening (especially air conditioning). This load pattern, often referred to as the duck curve (and more recently referred to as "net-load ramps"), is exacerbated by the long, narrow, north-south geographic orientation of the state (**Figure 3**).[14,15]

The ongoing challenges associated with meeting increasingly steep net load ramps were identified in the joint report as a contributing factor to the August 2020 events.[16] Concerns about insufficient ramping capability on the system were initially recognized by the CAISO Board of Governors in 2011 and resulted in their approval of a flexible ramping constraint interim compensation methodology. The resulting market policy established a flexible ramping product to address ". . . increasing levels of

Figure 3: The Duck Curve Highlights the Need for Responsive Resources to Address Growing Ramping Needs



13 According to the CAISO's January 2021 Key Statistics, there are 12,697 MW of utility-scale solar (includes load-serving entities participating in California's market). SEIA's Q3-2020 fact sheet indicates that a total of 29,218 MW of total installed solar.

14 If solar resources were instead spread across an east-to-west orientation, the decline in solar output would occur over a longer period as the sun sets. This would allow operators more time to identify and "ramp-up" other dispatchable resources. A ramp refers to the generator responding to the change in load or to changes in output from other generators on the system. Daily net load ramps are especially prevalent during the spring and fall and are the result of growing amounts of distributed solar resources (primarily rooftop photovoltaic) that have caused overall system demand to decline during the middle of the day (the belly of the duck, when solar output is highest). Demand then rapidly increases in the late afternoon and early evening, when solar performance declines as the sun sets, causing net load to increase rapidly.

15 The duck curve demonstrates that the net load variability required fast-acting resources to "ramp-up" as much as 10,892 MW in 3 hours during the late-afternoon on February 1, 2016. CAISO Fast Facts: What the duck curve tells us about managing a green grid (2016).

16 CAISO/CPUC/CEC Final Root Cause Analysis. Executive Summary ES.2, pp. 3-5.

variable energy resources and behind the meter generation…" which contributes to the operational challenges associated with ramping capability.[17] The flexible ramping product promotes securing enough ramping capability in the 5-minute and 15-minute market to address the variability of wind and solar resources.[18] Unlike baseload generation, which provides relatively constant output, generation capable of ramping allows the CAISO to dispatch these plants to change output based on the changing needs of the system. These impacts are on the demand-side (due to the variability of distributed rooftop solar PV), as well as the supply side (due to changes in output from utility-scale wind and solar). Accordingly, the CAISO needs additional flexible resources capable of responding to increasingly variable system conditions. Flexible resources include the ability to perform the following functions:[19]

- Sustain upward or downward ramps
- Change ramp directions quickly (react quickly and meet expected operating levels)
- Respond to operator dispatch to maintain output for a defined period of time
- Store and modify time of energy use
- Start-up from a zero or low-electricity operating level with short notice (i.e., rapid start-up)
- Start and stop multiple times per day
- Provide accurate operating capability projections (i.e., the metered output from a unit matches the information provided to the system operator)

However, resources on the CAISO system with many of these characteristics have been taken out of service at a rapid pace. Approximately 9 GW of natural gas fired generation was removed from service within five years, including many combustion or combined-cycle plants that can respond rapidly to net load ramps.

Table 1: Capability of Different Power Generating Technologies to Provide Flexibility

Plant Type	Start-up Time	Max Change in 30 Seconds (%)	Max Ramp Rate (%/min)
Simple Cycle CT	10 - 20 min	20 - 30	20
Combined Cycle CT	30 - 60 min	10 - 20	5 - 10
Coal Plant	1 - 10 hr.	5 - 10	1 - 5
Nuclear Plant	2 hr. - 2 d	< 5	1 - 5

The ramp rates for most simple-cycle and combined-cycle gas turbine models are shown in **Table 1** and compared with other generating technologies.[20]

Meanwhile, the CAISO previous projections that the 3-hour ramp would grow to 13,000 MW by 2020, actually occurred on January 1, 2019, with an actual 3-hour ramp rate of 15,639 MW.[21] Despite these alarming trends, an additional 1.9 GW of dispatchable capacity was taken offline between June 2019 and June 2020.[22]

Replacement Capacity Must Address the System's Changing Reliability Needs

Generation retirements to meet RPS requirements or

17 CASO Revised Draft Final Proposal - Flexible Ramping Product, p. 3.

18 The Flexible Ramping Product requirements for the 15-minute market is usually higher than the requirement for the real-time dispatch, since there is uncertainty observed between the two market intervals, CAISO Energy Markets Price Performance, p. 72.

19 CAISO Fast Facts: What the duck curve tells us about managing a green grid, 2016, p. 2.

20 Recent Changes to U.S. Coal Plant Operations and Current Compensation Practices (2020). (p.10).

21 Actual ramps have been as high as 14,360 MW during a 3-hour period, CAISO projecting 3-hour ramping needs to surpass 20,000 MW by 2022, p. 20. The net load is defined as system load minus renewable generation, including distributed generation (primarily rooftop photovoltaic), solar thermal, and wind power in California. The net load ramp also refers to the evening period of greatest ramping needs driven by the quickly diminishing solar output. Projections and actual data provided by the CAISO's Flexible Capacity Needs and Availability for 2020, p. 22.

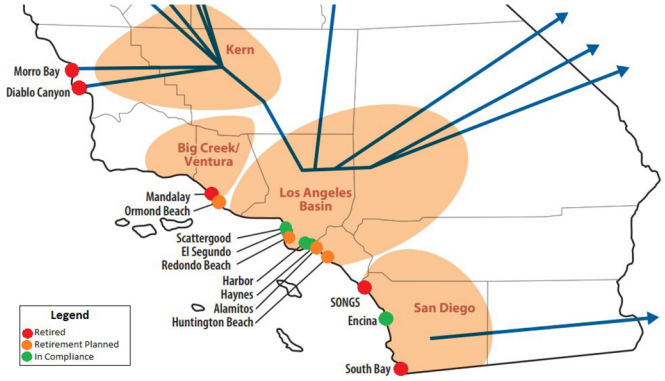
22 A total of 1,926 MW of dispatchable generation was taken out of service from June 1, 2019 to June 1, 2020, CAISO 2020 Summer Loads and Resources Assessment, p. 27.

comply with the California State Water Board's ongoing regulations that phase-out once-through-cooling (OTC), have occurred without securing enough adequate replacement capacity needed to address the operational challenges associated with increased system variability.[23] Former FERC Commissioner Cheryl LaFluer recognized this problem: "In the past three years, California has closed 5,000 MW of gas generation in anticipation of building 3,000 MW of battery storage that is still on the drawing board. In a heat wave, when every resource is needed, this gap in resources came home to roost."[24]

Former Energy Secretary Ernest Moniz also observed that "there is a shortage of [generating] capacity" and warned California policymakers that a combination of solar power and battery storage would not be able to fill the state's projected demand for electricity during the coming decade.

The ongoing retirements of nuclear capacity will significantly reduce the baseload capacity in Southern California. Concurrently, the most concentrated phase-out of gas-fired generation is occurring in the Los Angeles region.[25] To maintain system reliability, replacement capacity must be capable of providing essential reliability services to aid operators in managing growing net-load ramps caused by intermittent wind and solar. Transmission additions or reinforcements can further support the deliverability of resources across the system.[26] Of the 19 identified OTC plants (totaling 20,600 MW), more than half (10,400 MW) have been taken out of service since 2010. As shown in Figure 4, seven of the remaining plants are located near load

Figure 4: Southern California Generation Impacted by the Once-Through Cooling Phase-out Policy



23 Once-through cooling (OTC) technology causes adverse environmental impact by pulling large numbers of fish and shellfish or their eggs into a power plant's cooling system. Organisms may be killed or injured by heat, physical stress, or by chemicals used to clean the cooling system. Larger organisms may be killed or injured when they are trapped against screens at the front of an intake structure.

24 LaFleur, Cheryl A., What's Ailing California's Electric System?, Columbia University Earth Institute, September 2, 2020, https://blogs.ei.columbia.edu/2020/09/02/whats-ailing-californias-electric-system/.

25 The Los Angeles Department of Water and Power (LADWP) plans to retire three natural gas-fired power plants (1,211 MW) by 2025. EFI California Energy Study Outlines Ambitious Agenda to Maintain Global Leadership, p. 39.

26 "Deliverability" refers to a generator's ability to deliver its energy to load during different system conditions, including expected congestion caused by other generators' output, https://www.caiso.com/Documents/Jan2-2020-TariffAmendment-ImplementDeliverabilityAssessmentMethodologyEnhancements-ER20-732.pdf.

centers (Los Angeles and San Diego) providing reactive power, voltage support, inertia, and other essential reliability services to those areas. We expand on the importance of maintaining essential reliability services in the next section.

After the August events, then-President and CEO of CAISO, Steve Berberich highlighted the CAISO's requests to address projected capacity shortfalls needed to maintain established levels of resource adequacy.[27] The joint root cause analysis further recognized the need to ". . . address electric sector reliability and resiliency considering evolving policy goals of the state."[28] One proposed approach involves more cautious planning approaches for capacity retirements. In recognition of the recent capacity shortages highlighted by the August events, regulators at California's State Water Board extended OTC compliance deadlines and corresponding scheduled retirements of four power plants.[29] The continued availability of this generation will help maintain system reliability through 2023, as appropriate replacement capacity is identified and brought online.

The CPUC has also taken steps to address the concern regarding ongoing capacity shortages, indicating that "at least 3,300 MW of incremental system resource adequacy capacity and renewable integration resources would be needed by summer 2021."[30] The CPUC has contracted for 2,906 MW of Net Qualifying Capacity, scheduled to be online by August 1 of 2021, consisting primarily of intermittent resources and new storage technologies (**Table 2**).[31] Wind and solar resources have lower capacity factors and provide less consistent output compared to fully

Table 2: New Resources Expected – Sum of Net Qualifying Capacity (MW) by Load Serving Entity (LSE) and Technology Type

Sum of Net Qualifying Capacity (NQC), September NQC Megawatts (MW)					
	Online by 8/1/2021	Online by 8/1/2022	Online by 8/1/2023	Online post 8/1/2023	Grand Total
Contracted NQC MW	**2,388**	**840**	**481**	**267**	**3,977**
Investor-Owned Utility (IOUs)	*1,769*	*548*	*33*	*10*	**2,360**
Energy Storage	1,221	548	25	10	**1,804**
Solar plus Storage	494				**494**
Solar	38		8		**47**
Wind	16				**16**
Community Choice Aggregators (CCAs)	*584*	*274*	*427*	*257*	**1,543**
Solar plus Storage	152	81	269	257	**759**
Energy Storage	240	113	80		**433**
Solar	85	58	78		**221**
Wind	96	9			**105**
Geothermal		14			**14**
Small Hydro	12				**12**
Electric Service Providers (ESPs)	*35*	*18*	*21*		**74**
Solar	35	3	6		**43**
Solar plus Storage			15		**15**
Wind		15			**15**
Confidential or Uncontracted NQC MW	**518**	**156**	**693**		**1,368**
Grand Total NQC MW	**2,906**	**996**	**1,175**	**267**	**5,345**

27 August 17 briefing: "We told the CPUC 4,700 MW was needed through 2022 and that the gap started in 2020…Despite all that, only 3,300 MW was authorized for procurement, but that's not starting [until] 2021." Additionally, Berberich emphasized "…the situation we are in could have been avoided…For many years we have pointed out to the procurement authorizing authorities that there was inadequate power available."

28 CAISO/CPUC/CEC Final Root Cause Analysis. (p.75).

29 The State Water Resources Control Board amendment extends OTC compliance or phase-out dates at four fossil fuel power plants as follows: Compliance dates for Alamitos Units 3, 4, and 5 (1,165 MW), Huntington Beach Unit 2 (225 MW), and Ormond Beach Units 1 and 2 (1,516 MW) extended until December 31, 2023; the compliance date for Redondo Beach Units 5, 6, and 8 (850 MW) extended until December 31, 2021.

30 CPUC Rulemaking 20-11-003: Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Reliable Electric Service in California in the Event of an Extreme Weather Event in 2021. (p.10)

31 CPUC Status of New Resources Expected, as of December 2020 (See slide 7).

dispatchable resources, especially during peak demand periods, as demonstrated during the August events.[32] Battery storage technology accounts for a small portion of the resource mix, with the CAISO currently operating 216 MW of installed capacity.

Battery Storage as Replacement Capacity Faces Remaining Operational and Market Hurdles

Relying primarily on battery storage additions to address near-term supply shortages poses reliability risks for several reasons. First, while the CAISO has demonstrated the ability to incorporate new technologies, operators still have limited experience with dispatching batteries on the system. Operators must contend with a learning curve associated with the deployment of a novel technology to develop an understanding of the behavioral characteristics and potential challenges associated with large-scale battery storage. Second, the CAISO has identified that the performance and effectiveness of battery storage systems are highly dependent on their location. Battery systems located near load centers can face challenges in accessing available transmission to ensure they are able to be charged and available when called upon.[33] Alternatively, batteries located long distances from load centers may face transmission congestion when attempting to inject power where needed. Related market performance issues are also still in development. A CAISO stakeholder initiative is underway to determine appropriate locational price signals to promote battery charging and availability windows that align with system needs.

Finally, it is important to recognize that even the most advanced batteries can provide continuous, stable energy output for limited durations (approximately four hours).[34] Extreme heat waves can last for days. CAISO's Steve Berberich has suggested that as much as 15,000 MW of fast-acting batteries (of different duration levels and various technologies) would be needed for California to achieve 100 percent renewables by 2045. Ongoing measures by the CAISO and the CPUC to monitor the impact of additional battery storage will help ensure that this technology can be reliably added to California's system to help offset the loss of dispatchable generation.

Reliance on Imports from Neighboring States

The transformation of California's system towards 100 percent carbon-free resources has also increased dependence on imported power from neighboring states. On average, the state relies on imported power to serve approximately a quarter of its annual electricity demand. However, maximum net imports during high-load conditions actually declined from 11,147 MW in 2017 to 8,792 MW in 2019, despite the ongoing expansion of the Western Energy Imbalance Market (EIM).[35] This trend indicates that the availability of imports needed for high load periods could be at risk during a time when CAISO may be most dependent on them.[36]

While the EIM has helped to promote coordinated resource sharing by allowing participants to access CAISO's real-time market, notable benefits won't be recognized until participants can also bid in the

32 According to the CAISO/CPUC/CEC Final Root Cause Analysis, "…with today's new resource mix, behind-the-meter and front-of-meter (utility-scale) solar generation declines in the late afternoon at a faster rate than demand decreases. These changes in the resource mix and the timing of the net peak have increased the challenge of maintaining system reliability…" (p.4). Resource performance will be further discussed in the next section.

33 Transmission congestion can occur in load centers that make it difficult for batteries to charge during certain periods, since lines are already loaded to serve demand. Congestion can also make it difficult for batteries to inject power in some areas of the system.

34 Whereas existing storage technology can provide longer durations, the four-hour output requirement is a function of the RA rules. Specifically, the rules only require that a storage facility produce at least four hours of output to be classified as RA.

35 The EIM participants across the Western Interconnection can bid into the CAISO's real-time market to buy and sell power close to the time electricity is consumed. It offers system operators real-time visibility across neighboring grids. The ability to share a larger pool of resources can support resource adequacy needs by increasing balancing capabilities and reducing costs. "High-load conditions" are described by the CAISO as load that is "equal to or greater than 43,000 MW," CAISO/CPUC/CEC Final Root Cause Analysis, p. 4.

36 CAISO/CPUC/CEC Final Root Cause Analysis, p. 4.

day-ahead market. This would allow entities throughout the west to efficiently plan and commit resources based on price signals. The day-ahead commitment will also help the CAISO identify transfer capability, system congestion, and potential resource shortages with more time to secure additional generation. This ongoing stakeholder initiative to unlock such benefits has been under discussion for several years due to unresolved concerns of some EIM members.

Despite the potential progress toward an extended day-ahead market or a Western RTO, the limitations of the existing transmission infrastructure are also a concern. During the August events, transmission paths across both the California-Oregon Intertie and Nevada-Oregon Border were heavily congested, as "…transmission constraints ultimately limited the amount of physical transfer capability into the CAISO footprint."[37]

Importing additional power into California will likely require transmission upgrades or additions, assuming that neighboring states are willing to offer these imports in the future. Entities across the west could begin to withhold exporting power to meet decarbonization policies in their own state. For example, Washington State's RPS of 100 percent renewables by 2045 may limit hydro exports to California. Similarly, plant retirements in Arizona, Nevada, and New Mexico may further diminish the CAISO's current access to out of state resources.

The importance of reliance on imports from neighboring states necessitates continued collaboration to better understand how individual state policy goals will impact transfer capability. In the northeast, the Integrated Clean Capacity Market (ICCM) puts individual state energy policies at the center of a revised resource adequacy market, while modernizing existing resource adequacy constructs throughout the PJM Interconnection. Specifically, the ICCM promotes a flexible market framework to accommodate states at varying levels of progress toward a decarbonized electric system so that the energy goals of some states can be supported without imposing any costs on other states with differing policy priorities.

In the near-term, the CAISO may also consider modifying the assumptions for projected imports in their seasonal assessments, which currently assume the inclusion of non-RA imports, despite the risk that this energy may not be available during extreme weather events throughout the region. Future projections of import availability could also include scenarios that examine increased limitations due to potential transmission constraints and/or EIM market rules that impose transfer limits (e.g., flexible ramping sufficiency test).[38]

Limitations of Demand Response

The preliminary root cause analysis partially addresses the issue of procuring additional resources through a recommendation that the CPUC and CEC collaborate "to expedite the regulatory and procurement processes to develop additional resources that can be online by 2021. This will most likely focus on resources such as demand response and flexibility. . . "[39] In November 2020, the CPUC opened a proceeding to address reliability needs for the 2021 summer. Three of the four CPUC proposals supported demand-side solutions.[40]

Demand response and other demand-side management programs have traditionally been used to reduce peak capacity investment needs by reducing electricity consumption during emergency events. However, demand response programs vary significantly in how they are controlled and dispatched by the system operator. Demand response performance is also a concern, as well as limitations on the number of times a program participant can be called upon to respond per season or year. In evaluating

37 Ibid, p. 48.

38 CAISO/CPUC/CEC Final Root Cause Analysis. "On August 14 and 15, the CAISO failed for less than two hours on each day and a cap was imposed on the transfer limit into the CAISO." See B.3.4 Energy Imbalance Market, pp. 130-131.

39 CAISO/CPUC/CEC Preliminary Root Cause Analysis, Preliminary Recommendations ES.5, p. 15.

40 CPUC Press Release, "CPUC Acts to Establish Policies and Procedures for Ensuring Grid Reliability during Extreme Weather Events," p. 1.

these proposals, it will be important to recognize the flexibility limitations associated with demand response, particularly in the inland portion of the state, where there is less tolerance for cutting air conditioning or temporarily suspending the operation of agricultural pumping stations during the summer months.[41] For this reason, demand response programs need to compliment, not substitute for "iron in the ground" capacity.

Supplemental Reliability Procedures

Despite the ongoing system retirements described above, the system operator holds two important backstops to address unresolved resource adequacy deficiencies and/or meet specified reliability needs. The first backstop, the capacity procurement mechanism (CPM), provides an economic incentive to keep generators online. The CAISO tariff provides two compensation options. The CPM resource can either receive compensation based on its capacity bid price up to the CPM soft offer cap (set at $6.31/kw-month),[42] or the CPM resource can offer capacity at a cost above the soft offer cap. Offering capacity above the cap requires the provider to file a justification for the higher price with the FERC. Both options allow the CPM resource to retain all future revenues earned in the CAISO markets.[43] The CPM provides a useful tool for incenting retiring resources to remain online, although the CAISO may need to revisit the soft offer cap in 2021.[44] Future revisions to the program will likely be informed by the August events, including the impacts of 1,900 MW of dispatchable generation taken out of service between October 2019 and January 2020.[45]

The second reliability backstop allows the CAISO to designate certain power plants as Reliability Must-Run (RMR).[46] This delays any scheduled retirements or recalls mothballed units when needed to meet the established reliability criteria. Prior to the summer of 2020, the CAISO designated three natural gas units (totaling approximately 125 MW) to remain available for the 2020 summer.[47] Even with the extended availability of these RMR units, system operators did not have enough controllable resources to serve load during the August supply shortages.

While these backstop mechanisms are effective, regulators might also wish to examine policies that further promote the mothballing of certain plants. Similar to the RMR approach, this would involve collaborating with the CAISO to identify units that would remain idle, but not decommissioned, to support compliance with environmental requirements, but available to address future capacity shortages and local resources adequacy concerns. Similar approaches have been introduced in Texas, where NRG Energy restarted a 385 MW natural gas-fired combined-cycle plant that had been mothballed since 2016, for the 2020 summer season, partly to address tight supply conditions in ERCOT. Germany, a country with decarbonization goals similar to California's, used a similar approach to return approximately 1.4 gigawatts of mothballed

41 The CPUC, CEC, and the CAISO assign derates to DR programs based upon the results of DR load impact studies and program dispatch requirements (e.g., price, demand, location, duration).

42 This cap is based on the fixed operations and maintenance costs, ad valorem taxes, and insurance costs of a reference unit, plus a 20 percent adder to that total cost. See FERC's May 29, 2020, Order Accepting CAISO Tariff Revisions.

43 A 2019 stakeholder initiative to increase the soft offer cap was rejected in mid-2020 when it was determined that the current soft offer cap was still relevant to the existing grid composition.

44 A higher offer cap may further incent additional generation, or incent existing generators to remain operational, instead of retiring.

45 Including: Alamitos units 1, 2, 6, 7 (844 MW); Redondo unit 7 (493 MW); Inland Empire Energy Center Unit 1 (340 MW); and Huntington Beach Unit 1 (225 MW).

46 Local Reliability Criteria are unique to the transmission systems of each of the Participating Transmission Owners. Local Reliability Criteria and related Local Capacity Requirements reflect CAISO, NERC, and Western Electricity Coordinating Council (WECC) Planning Standards, as well as WECC Operating Criteria (OC) Path Ratings and System Operating Limits (SOL).

47 These units included Greenleaf Unit 2 (47 MW), the E.F. Oxnard plant (48 MW), and Channel Islands Power plant (27 MW).

gas plants to service in 2020.[48] Introducing market mechanisms to keep certain capacity idle but operable could help California meet carbon emission reduction goals, while still maintaining enough standby capacity for periods when system reliability is threatened. Examples of this process include ERCOT's Operating Reserve Demand Curve, PJM's capacity markets, ISO-New England's competitive forward capacity auctions (used competitive forward capacity auctions, and other market structures for securing system supply to meet projected resource adequacy needs.

The next section examines ongoing efforts by the CPUC and the CAISO to enhance their infrastructure planning approaches. We also explore potential opportunities for regulators and operators to more accurately capture the changing reliability characteristics (and potential risks) associated with an increasingly variable system.

Addressing Resource Adequacy Needs through Enhanced Planning Metrics

The final root cause analysis recognized that "changes in the resource mix and the timing of the net peak have increased the challenge of maintaining system reliability [and] . . . additional work is needed to ensure that sufficient resources are available to serve load during the net peak period and other potential periods of system strain."[49]

In order to understand the additional work that is underway, it is important to identify the multiple participants that share responsibility for infrastructure planning in California. These entities and planning processes have remained largely intact since the late-1990s, with key responsibilities summarized in **Table 3.**[50]

California's infrastructure planning processes necessitate close collaboration with – and input from – both the CAISO and CEC. System-wide and local reliability requirements, as well as flexibility needs, are ultimately developed within the CPUC's resource adequacy (RA) program.[51] Established after the 2000-2001 California Energy Crisis, this program creates requirements for jurisdictional LSEs to maintain resource availability through contractual obligations. The planning reserve margin (PRM) is a critical element of the RA program and is used to

Table 3: Primary Entities Involved in California's Resource Planning Processes

CPUC	Jurisdictional LSEs	CAISO	CEC
Manages the state's Integrated Resource Plan and Long-Term Procurement Plan (IRP-LTPP). This process is designed to ensure that the electric sector meets its GHG reduction targets while maintaining reliability (with a resource adequacy program) at the lowest possible cost. This process involves modeling the system topology and market dispatch results to determine the appropriate resource portfolio needed to meet policy goals.	Must submit individual IRPs (based on the parameters in the IRP-LTPP) for CPUC review and approval.	Develops an annual Transmission Planning Process used to identify needed transmission upgrades and inform the CPUC's IRP-LTPP process.	Develops long-term energy demand forecasts as part of their Integrated Energy Policy Report (IEPR). The CEC's IEPR demand forecasts are inputs into the CPUC's long-term resource planning process and the short-term annual resource adequacy process, used to establish RA procurement obligations for LSEs.

48 Germany met over 40 percent of the country's power consumption with renewables in 2019, exceeding the 2020 target of 35 percent one year ahead of time. The government is now taking aim at 65 percent by 2030, as stated in its Climate Action Programme 2030.

49 CAISO/CPUC/CEC Final Root Cause Analysis, p. 5.

50 A detailed process is available within the CPUC's Long-Term Procurement Plan History and Related Process Documentation. (See Process Diagram (v3.8). While the terminology has changed since the release of the v3.8, the CPUC has not released an updated diagram.

51 CPUC Integrated Resource Plan and Long-Term Procurement Plan (IRP-LTPP).

establish monthly requirements to ensure LSEs procure sufficient resources for the CAISO to reliably operate the system. The PRM targets also inform the commission's procurement decisions.

Limitations of Existing Resource Adequacy Metrics

As discussed earlier, jurisdictional LSEs must procure enough capacity to serve the peak demand forecast, plus a 15 percent PRM.[52] To demonstrate this concept, we examine California's planning reserve margin leading up to the August 2020 events.[53] From a seasonal planning perspective, the CAISO system appeared to have had adequate planning reserves going into the summer of 2020. The CAISOs projected 46,903 MW of capacity to be available in August, with a 1-in-2 net peak load forecast of 40,370 MW. Using NERC's reserve margin method would have indicated that this was a healthy reserve margin of 17.1 percent, excluding the projected 1,339 MW of demand response capability:[54]

$$\textit{CAISO Reserve Margin} = \frac{\text{Peak Resources} - \text{Forecasted Load}}{\text{Forecasted Load}} = \frac{46{,}903 - 40{,}037}{40{,}037} = 17.1\%$$

The reserve margin metric provides a snapshot of system adequacy and reliability at the highest forecasted demand. It is based on the important assumption that system reliability will be maintained throughout all other hours of the analysis period (planning horizon). Based on traditional planning criteria, a 17.1 percent margin (well-above the 15 percent PRM target) indicated that the system had adequate planning reserves for the 2020 summer season. However, the current PRM target of 15 percent was established in 2004, based on "analysis of then-current market data and forecasts of how the market was expected to evolve due to anticipated increases in renewables, energy efficiency, demand response, and other factors."[55] A significant finding of the final root cause analysis of the August events was that "resource planning targets have not kept pace to lead to sufficient resources that can be relied upon to meet demand in the early evening hours. This makes balancing demand and supply more challenging."[56]

California's PRM targets are based on Loss of Load Expectation (LOLE) modeling, designed to measure the reliability of an electric system, based on assumptions that incorporate a variety of conditions.[57] The PRM targets are ultimately dependent on the level of system reliability that the CPUC determines to be acceptable for the state. Currently, PRM targets are developed based on an annual LOLE target ranging from 0.095 to 0.105. This roughly translates to 1 loss of load event over a 10-year period. The CAISO's current LOLE assumptions combine multiple loss-of-load events occurring within one day into a single event (for purposes of counting events toward a reliability targets).[58] Accordingly, the analysis fails to capture a series of smaller events that could, in aggregate, impact system reliability.

The LOLE analysis and the more commonly referenced reserve margin have both been heavily relied-upon by the industry for decades. Although useful and informative, these metrics must be examined in the proper

52 Like RA, IRP modeling is also based on the CEC's adopted 1-in-2 demand forecast plus a 15 percent PRM.

53 This example is a simplistic example examining the entire CAISO system. PRM requirements apply to individual of LSEs.

54 NERC (the North American Electric Reliability Corporation) defines the reserve margin as "…the difference in resources (anticipated or prospective) and net internal demand then divided by net internal demand and shown as a percentage" (p.35). Available demand response capability: CAISO 2020 Load and Resources Report, p. 5.

55 CPUC Rulemaking 19-11-009. Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Forward Resource Adequacy Procurement Obligations, pp. 18-19.

56 CAISO/CPUC/CEC Final Root Cause Analysis, pp. 1, 4, 38.

57 CPUC 2020 ELCC Methodology Working Group – Review of ELCC Study improvements, September 2019.

58 CPUC Unified Resource Adequacy and Integrated Resource Plan Inputs and Assumptions – Guidance for Production Cost Modeling and Network Reliability Studies, p. 11.

context. Baseball enthusiasts don't rely on a single statistic to evaluate a player. They examine the player's on-base percentage (OPS), runs batted in (RBI), home runs (HR), stolen bases (SB), and dozens of other measures of performance in various aspects of the game. Measuring resource adequacy and system reliability should be no different – especially considering the significant changes on California's system during the past decade.

Increasingly, the LOLE and deterministic reserve margin approaches do not fully capture the level of resource adequacy for systems with large amounts of intermittent wind and solar. This is because the LOLE methodology was initially developed to measure the resource adequacy of systems with mostly controllable resources (e.g., large hydro, fossil-fired, and steam-powered generators) serving relatively predictable load patterns. Because these resources were controllable by system operators, planners made procurement decisions based largely on serving changing demand projections. Today, system operators also have reduced control over the supply side due to growing levels of utility-scale wind and solar that is variable in nature (i.e., operators cannot increase wind speed). On the demand side, load projections have also grown in complexity with the rapid deployment of distributed solar PV, which causes net-load to fluctuate based on cloud cover and other factors that are outside the system operator's control.

The CPUC took action to address these concerns prior to the 2020 summer supply shortages. Their June 2020 order initiated a review of the PRM target range, authorizing the commission's Energy Division to facilitate a working group to develop a set of assumptions for use in an LOLE study.[59] After the August events, the commission also opened an Emergency Reliability rulemaking to prioritize resource adequacy and resource procurement for the 2021 summer season. Several entities involved in California's resource planning efforts responded, including CAISO:

> The CAISO greatly appreciates the Commission's efforts to increase resource adequacy procurement to address summer 2021 reliability. Importantly, this incremental procurement should be tied to an increase in the planning reserve margin (PRM) to 20 percent for two critical reasons. First, increasing the PRM will ensure new resources do not substitute for existing capacity, thus leading to little or no net increase in the resource adequacy resource fleet. Second, increasing the PRM will allow the CAISO to use its capacity procurement mechanism (CPM) to backstop to the higher PRM.[60]

The CAISO subsequently revised its recommendation to 17.5 percent.

Increasing the PRM will improve short-term resource adequacy by requiring jurisdictional LSEs to secure additional reserve capacity.[61] The CPUC will ultimately need to examine the cost implications associated with a higher PRM requirement. The commission might also consider developing a PRM range with localized requirements to address areas facing insufficient resources or transmission constraints. Local reserve requirements designed to co-optimize the energy dispatch and reserve schedules could promote local market prices that reflect constraints based on reserve availability in a sub-area.[62]

The Case for Hourly Modeling

Because LOLE and reserve margin analyses are becoming a smaller part of the resource adequacy puzzle, the CPUC recognized that "a LOLE value of 0.1, which is a direct translation of the decades old industry "one day in ten years" standard, may warrant

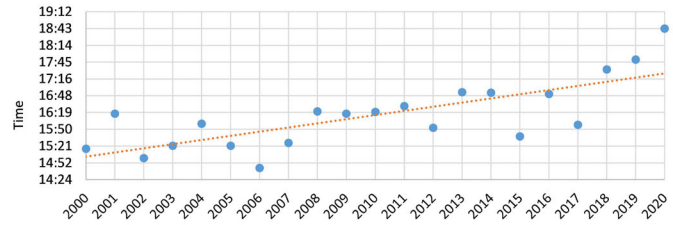
59 CPUC Decision 20-06-031. Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Forward Resource Adequacy Procurement Obligations, pp. 4, 21, 89.

60 CAISO Responses to Ruling Proposals and Questions. Response to question 5, p. 3.

61 Any change in the PRM would not apply to non-firm (independent power producers) capacity, as the CPUC will likely require all qualifying resources to provide qualifying RA.

62 William Hogan has suggested this approach for ERCOT, Harvard Electricity Policy Group: Priorities for the Evolution of an Energy-Only Electricity Market, 2017.

Figure 5: The Summer Peak Is Occurring Later in the Day



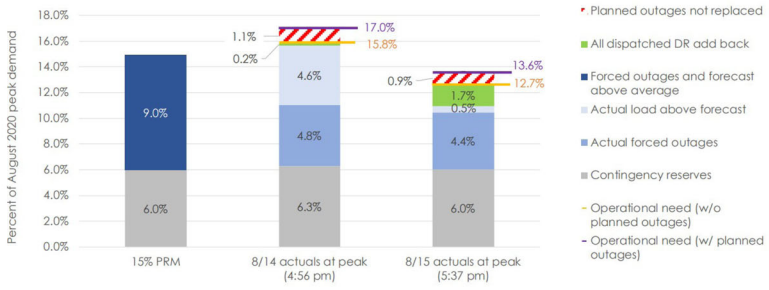
reconsideration in light of the sophisticated hourly models and advanced computing available now. . . "[63] Hourly modeling is necessary to address the changing load patterns, which have pushed seasonal system peaks further into the evening (**Figure 5**).[64]

Figure 6 demonstrates that the CAISO system was able to reliably serve load during the both peaks on August 14 and 15 and "although a PRM comparison is informative, the rotating outages both occurred after the peak hour..."[65] Hourly modeling can provide important insights for planners, allowing them to identify and prepare for potential reliability risks that occur outside of the peak period.

Resource Adequacy Accountability

The final root cause analysis recommended increasing RA requirements for LSEs to address extreme weather events.[66] However, as the number of CCAs and smaller electric service providers (ESPs) continues to increase, it's important to ensure these entities are providing sufficient levels of RA capacity. CCAs and ESPs currently provide 26 percent of the load formerly served by the state's three largest investor-owned

Figure 6: August 2020 PRM and Actual Operational Need during Peak



63 CPUC Unified Resource Adequacy and Integrated Resource Plan Inputs and Assumptions – Guidance for Production Cost Modeling and Network Reliability Studies, p. 11.

64 Figure created by NRRI staff using the following CAISO data: CAISO historic peak loads; CAISO Key Statistics – August 2020.

65 CAISO/CPUC/CEC Final Root Cause Analysis, p. 43.

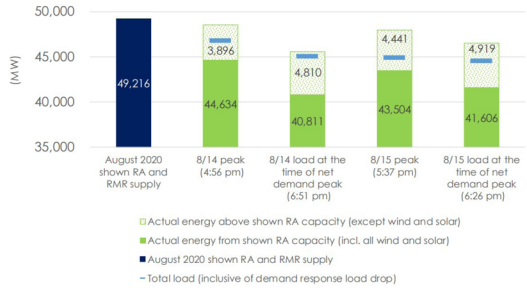
66 Ibid, pp. 91-92.

utilities (IOUs).[67] The CPUC has warned that this trend contributes to a state-wide planning process that is less consolidated and "creates a more complex paradigm for assessing both system reliability and whether California is on-track to achieve its climate goal. While CCAs and ESPs are subject to the same annual RPS Procurement Plan (RPS Plans) requirements as required by the IOUs, recent RPS Plans show that many CCAs and ESPs continue to provide minimal information in their RPS Plans… inadequate procurement planning may cause LSEs to not meet the state's requirements, resulting in negative implications for reliability of the power system."[68] As CCAs continue to expand their generation portfolios and customer base, these entities must be increasingly involved in planning activities and held accountable for meeting system reliability requirements.[69] The CPUC plans to address challenges during the coming years within their IRP-LTPP program by possibly introducing enforcement penalties for CCAs and ESPs that fail to provide them with adequate planning data.[70]

Developing More Robust Resource Adequacy Metrics

Recognizing these shortfalls, system planners across the country have made significant progress in improving resource adequacy metrics, moving away from deterministic approaches and toward a greater focus on stochastic and probabilistic methods. One of the recommendations of the final root cause analysis called on the CAISO to coordinate with the CPUC and other stakeholders to "refine the counting rules as they apply to hydro resources, demand response resources, renewable, use limited resources, and imports."[71] The analysis further indicated that the actual output of RA and reliability-must-run (RMR) capacity did not reflect their projected availability (**Figure 7**).[72, 73]

Figure 7: August 2020 Shown RA and RMR Capacity vs. August 14 and 15 Actual Energy Production



The CPUC and CAISO will benefit by further examining these discrepancies and updating the underlying assumptions used in future RA and RMM projections. In terms of actual performance by resource type, the final root cause analysis further reported that the natural gas generation fleet collectively experienced between 1,704 MW to 2,371 MW of forced outages, more than any other resource.[74] These outages translate to between 4-6 percent of the natural gas generation fleet that was not already scheduled to be

67 CCAs allow for communities to join together to choose their electric provider and sources of electricity.

68 *CPUC 2019 RPS Annual Report to the Legislature,* p. 54.

69 According to the CPUC, "load allocated to CCAs in the year ahead process went from two percent of the peak in 2016 to 25 percent of the peak in 2019. Energy Division anticipates 'this trend towards disaggregation of load to continue…'" CPUC Rulemaking 17-09-020, p. 21.

70 Additional information on the CPUC gap analysis that addresses CCA RA shortfalls is available here: California Customer Choice Project - Choice Action Plan and Gap Analysis.

71 CAISO/CPUC/CEC Final Root Cause Analysis, p.72.

72 Ibid, p. 110.

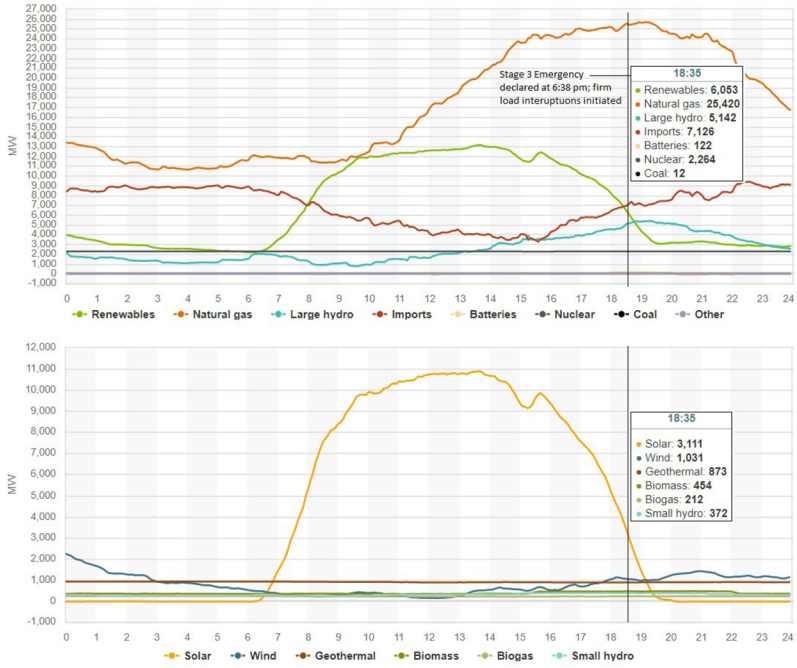
73 Assumes all wind and solar counts as RA supply; CAISO/CPUC/CEC Final Root Cause Analysis, p. 110.

74 CAISO/CPUC/CEC Final Root Cause Analysis, p.87. (Includes derates to individual units, as well as unit outages.)

out of service. The natural gas generation fleet served over half of the state's load when the Stage 3 Emergency was declared at 18:38 on August 14.[75] During the same period, actual output from 24,016 MW of installed renewable resources served 6,053 MW (14.3 percent) of load.[76] Renewable output (particularly solar) actually decreased by 1,064 MW during the next 15-minutes as net load continued to increase, finally peaking at 18:51. In contrast, output from dispatchable resources, including natural gas and in-state large hydro, increased by 321 MW during the same 15-minute period, serving 73.1 percent of net load during the peak. Although renewable resources performed as expected, their overall contribution during the peak period further highlights the performance attributes of each resource—especially during extreme weather events (**Figure 8**).

The CAISO has already begun using more sophisticated approaches for assessing resource adequacy with increased renewables, including the Unloaded

Figure 8: August 14, 2020 Total Supply Performance at 18:35 (Beginning of Stage 3 Emergency)



75 Assumes the California Energy Commissions 2019 Installed In-State Electric Generation Capacity (latest available), with a natural gas generation fleet totaling 40,382 MW. Natural gas performance at 18:50-18:55pm (5-minute market) was providing 25,539 to serve the net demand peak (42,237) at 18:51 p.m. on August 14. See the CAISO supply trend data for August 14, 2020. Demand data: CAISO/CPUC/CEC Final Root Cause Analysis, pp. 44-45.

76 CAISO Key Statistics – July 2020. See Installed renewable resources (as of 8/01/2020), p. 3.

Capacity Margin (UCM). This metric measures the amount of surplus resources or capacity that can respond within 20 minutes or less during the forecasted demand during a specified interval.[77] Similar to a reserve margin, the UCM metric is expressed as a percentage, but it is more comprehensive, because it captures multiple hours (beyond the peak period). The CAISO's 2020 Load and Resources Assessment demonstrated that the median UCM for all 2,928 summer hours (modeled within each of the 2,000 summer scenarios), was 41.3 percent.[78] Levels of UCM above the operating reserve requirement for any given hour (typically around 6 percent) indicate the amount of capacity projected to be available to address system contingencies (beyond the NERC operating reserve requirement). The Minimum Unloaded Capacity Margin (MUCM), the lowest UCM from each of the 2,000 scenarios modeled, is used to establish the probability of various events occurring. Continuing to enhance stochastic production simulation tools will enhance the CAISO's ability to assess the widest array of load, wind, and solar outages, as well as understand historic performance profiles. This tool can also provide planners with a distribution of potential outcomes and probabilities. The ongoing Resource Adequacy Enhancements initiative will depend on input from the CPUC and other stakeholders to determine the appropriate reliability criteria, as well as the quantity and attributes needed to address existing resource portfolio deficiencies.

NERC, the FERC-designated electric reliability organization (ERO) in the United States, has codified multiple reliability attributes provided by different resources. These essential reliability services (ERS) include frequency and voltage support, as well as ramping and balancing capability. The ERS capabilities and operating behaviors of conventional generators are well-documented, compared to those of relatively new wind and solar technologies. NERC states that "changes in the generation resource mix and technologies are altering the operational characteristics of the grid and will challenge system planners and operators to maintain reliability, thereby raising issues that need to be further examined."[79] Measuring a system's level of ERS offers a more comprehensive approach to resource adequacy by examining other important reliability attributes. NERC indicates that overall system reliability can be maintained…

> as the resource mix evolves, provided that sufficient amounts of essential reliability services are available.[80] [NERC further emphasizes that]. . . merely having available generation capacity does not equate to having the necessary reliability services or ramping capability to balance generation and load. It is essential for the electric grid to have resources with the capability to provide sufficient amounts of these [essential reliability] services and maintain system balance.[81]

Although wind and solar resources can provide certain types of ERS (e.g., synthetic inertia), there must also be adequate levels of frequency response, ramping capability, inertia, and reactive support for voltage control. Operators rely on these essential reliability services to operate the system under a variety of conditions, including extreme weather events that can cause generator outages and increase variability in wind and solar output.

Conclusion

The contributing factors leading to the August 2020 reliability events in California have been examined, and the lessons-learned from the events can be applied to other states that are introducing policies

77 CAISO, 2020 Load and Resources Assessment, p. 6.

78 Taking into account the unloaded capacity margin for all of 2,928 summer hours (June 1 through September 30) within each of the 2,000 summer scenarios. According to the 2020 Load and Resources Assessment: "The unloaded capacity refers to any portion of online generation capacity that is not serving load and offline generation capacity that can come online in 20 minutes or less to serve load as well as curtailable demands such as demand response, interruptible pumping load, and aggregated participating load that can provide non-spinning reserve or demand reduction. The unloaded capacity includes operating reserves the system procures. The Unloaded Capacity Margin (UCM) is the excess of the available resources, within 20 minutes or less, over the projected load expressed as a percentage on an hourly basis."

79 NERC Sufficiency Guidelines White Paper, December 2016, p. iv.

80 Ibid, p. vii.

81 Ibid, p. iv.

aimed at rapidly decarbonizing the grid, often leading to the addition of intermittent and behind-the-meter resources. These include:

- Systems with increasing amounts of intermittent resources (e.g., wind and solar) will require additional modeling and stochastic metrics that can provide a more complete measure of resource adequacy and help identify associated reliability risks.
- The continued development of advanced reliability metrics, including those that examine risks beyond the peak hour, can inform policy and regulatory decisions to promote the reliable transformation to a cleaner system.
- Existing planning processes and reliability constructs need to better identify the system impacts of retiring resources, examining the status of essential reliability services on the system, including ramping capability, frequency response, and inertia.
- Future projections of RA availability and ELCC values should be reviewed and modified to incorporate resource performance during the August events.[82]
- Regionalization can help promote reliability by efficiently pooling resources; however, increased coordination will be needed to recognize the impacts of transmission constraints and individual state policy goals.

These approaches can inform policy makers and state regulators charged with balancing the responsibilities of managing RPS compliance and resource adequacy requirements.

82 "Based on further analysis by the DMM, the actual production of all resources shown as RA or obligated under an RMR contract was sufficient during the peak but insufficient during the net demand peak period to meet all load, losses and spinning and non-spinning reserve obligations on August 14 and 15," CAISO/CPUC/CEC Final Root Cause Analysis, pp. 109-110.

About the Authors

Elliott J. Nethercutt is a Principal Researcher at NRRI. He has worked on market design enhancements at the California Independent System Operator (CAISO), developed reliability assessments at the North American Electric Reliability Corporation (NERC), and supported transmission siting efforts and smart grid funding programs at the U.S. Department of Energy. Elliott earned a bachelor's degree in economics from the University of Colorado and a master's degree in applied economics from the Johns Hopkins University.

Chris Devon is a Director of Market Intelligence at Customized Energy Solutions. He provides regulatory and market design policy coverage on the California Independent System Operator (CAISO) and wholesale electric markets in the West. He has also worked on resource adequacy and emerging technology policy enhancements at the California Independent System Operator (CAISO). Prior to his work in California, he advised the Michigan Public Service Commission (MPSC) on energy market design and resource adequacy policy matters. Chris earned a bachelor's degree in economics from Michigan State University.

About NRRI

The National Regulatory Research Institute (NRRI) was established in 1976 as the research arm of the National Association of Regulatory Utility Commissioners (NARUC). NRRI provides research, training, and technical support to State Public Utility Commissions. NRRI and NARUC are co-located in Washington, DC.

Hispanics In Energy

April 13, 2021

OPPOSE UNLESS AMENDED - SB 467

Dear Natural Resources Committee Members,
My name is Mike Flores and I am a writing this letter in opposition, unless amended, to SB 467 on behalf of Hispanics in Energy (HIE) and our president, Jose Perez.

Let me state from the outset that HIE supports efforts to fight climate change and supports clean energy development. Providing a healthy future for our families is a core value for our community and we support practical and well thought efforts for clean energy development.

However, SB 467 is a faulty and poorly thought out bill that will hit the Hispanic community where it hurts the most - loss of jobs. Hispanics make up 30% of the oil and gas workforce, both direct and indirect. If this bill moves on to the Senate floor and then passes, thousands will lose well paying jobs with no back up plan. Not only will this bill create job loss, it has no plan for transitioning the workforce to new careers - these workers are left blowing in the wind.

We believe this idea needs much more thought and analysis before such a radical approach is adopted without concern for the Hispanic employees who will lose their outstanding paying jobs. As of yet, there is no evidence that Hispanics will benefit economically and prosper from the emerging clean energy economy.

Western States Petroleum Association's statement on SB467 puts it best; "*The bill is so broad and ambiguous that the results of its passage would lead to a total production ban in California. That means, hundreds of thousands of more Californians without jobs, the state facing billions in takings claims, and our people being completely reliant on petroleum produced in other parts of the world*."

We ask therefore, at a minimum, to create a Commission, to study the issue, to identify practical ways to retrain, maintain the salaries and benefits of these workers, and prepare for a seamless transition into the near future by helping not hurting our community.

The largest ethnic group in California, WANTS A SEAT AT THE TABLE.

Sincerely,

Mike Flores
Policy Advisor
Hispanics in Energy

Exhibit 1

Declaration of Mark N. Fox,
Chairman of the Mandan, Hidatsa &
Arikara Nation, also known as
the Three Affiliated Tribes

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STANDING ROCK SIOUX TRIBE; YANKTON SIOUX TRIBE; ROBERT FLYING HAWK; OGLALA SIOUX TRIBE, Plaintiffs, and CHEYENNE RIVER SIOUX TRIBE; SARA JUMPING EAGLE, ET AL., Plaintiff-Intervenors, v. U.S. ARMY CORPS OF ENGINEERS, Defendant-Cross Defendant, and DAKOTA ACCESS, LLC, Defendant-Intervenor-Cross Claimant.	Case No. 1:16-cv-01534-JEB (and Consolidated Case Nos. 16-cv-1796 and 17-cv-267)

DECLARATION OF CHAIRMAN MARK N. FOX OF THE MANDAN, HIDATSA & ARIKARA NATION

1. My name is Mark N. Fox. I am Chairman of the Mandan, Hidatsa & Arikara (MHA) Nation, also known as the Three Affiliated Tribes. The MHA Nation's address is 404 Frontage Road, New Town, North Dakota 58763.

2. The MHA Nation is located on the Fort Berthold Indian Reservation ("Reservation") in North Dakota. Our Reservation surrounds the Missouri River and Lake Sakakawea and covers over one million acres of land. As of April 8, 2021, the MHA Nation had 16,808 enrolled members.

3. The MHA Nation's oil and gas reserves are held in trust on our behalf by the United States. As trustee, the United States owes the MHA Nation and its members a fiduciary duty to protect, administer, and account for the MHA Nation's trust property and oil and gas resources, and it must do so in a way that ensures the MHA Nation continues to enjoy full use of its trust resources without any diminution in value caused by its trustee's actions.

4. If the Dakota Access Pipeline ("DAPL") is shut down, the MHA Nation will suffer significant financial, environmental and safety harms that will add further injury to the MHA Nation's economy already suffering monumental losses as a result of the COVID-19 pandemic.

5. The MHA Nation has significant oil and gas reserves on our Reservation, with an estimated total of hundreds of millions of barrels of oil. Oil production on our Reservation is likewise significant, currently totaling approximately 300,000 barrels per day. There are currently over 2500 wells on the Reservation. About 25% of North Dakota's current total oil production takes place on our Reservation. Since 2008, the MHA Nation has been engaged in developing its oil and gas resources with the approval of the federal government. There are potentially over 2,000 more new wells to be developed in the future. Each well represents millions of dollars in tax and royalty revenue to the MHA Nation for the benefit of its members.

6. The MHA Nation's economy is heavily dependent on oil and gas development. Oil production on our Reservation is a critical source of governmental revenue for the MHA Nation. More than 80% of our tribal budget in the current fiscal year comes from oil and gas royalties and tax revenue. These funds are used by the MHA Nation to pay for things like health insurance for our members, contractual commitments for ongoing infrastructure projects, tribal courts, law enforcement and drug enforcement, a child safety center and foster home, elder care and assistance,

housing and many other programs and needs on our Reservation. The MHA Nation's cost of health insurance alone exceeds $40,000,000 annually.

7. The MHA Nation uses a significant amount of its oil and gas revenue to construct community buildings like new schools, athletic fields, cultural centers, health clinics, emergency management centers, law enforcement centers, and courthouses. Oil and gas revenue also goes to construct and maintain highways and maintain our regulatory infrastructure. The MHA Nation spends significant revenue to fund tribal regulatory agencies charged with mitigating the environmental and social impacts of oil and gas development, to ensure that our oil and gas resources are developed in a responsible manner, and as well to protect our land, water, air, and species against not just the impacts of energy development but also the very real threats of climate change, so that we may preserve our culture and ways of life for generations to come.

8. The sharp drop in oil prices as a result of the COVID-19 pandemic has already led to a sharp decrease in revenue for the MHA Nation. Federal relief dollars have not come close to making up the difference, and that gaping lost revenue gap has greatly affected our ability to meet our contractual and commitments and fund our planned programs and projects. The MHA Nation can thus not afford further challenges to its ability to get its oil production to market.

9. Over sixty percent of the oil trust resources produced on our Reservation is transported to market on DAPL. If DAPL is shut down by any branch of the U.S. government, much of our Reservation production will be difficult to move to market and future production will be sharply curtailed. Not only would a DAPL shutdown deprive the MHA Nation of any return on substantial investments we have made in planned increases in oil production from our trust resources, it would also deprive us of substantial revenue from existing wells on our Reservation, causing significant additional financial harm both to the MHA Nation and the many people, native and non native

alike, who work in our Reservation's oil and gas industry. We have every reason to believe that the MHA Nation and individual Indian trust royalty owners will suffer significant financial losses as the value of our oil and gas trust resources is diminished by a shutdown of DAPL.

10. I directed MHA Nation staff and consultant experts to provide a study of the financial harm that could be done to the MHA Nation in the event DAPL is shut down. They have estimated that the losses will exceed $160,000,000 over a one year period and exceed $250,000,000 over two years.

11. The MHA Nation will also suffer significant environmental harms if DAPL is shut down. DAPL is the most efficient, environmentally-friendly way to transport to market the trust oil produced on our Reservation. The only alternative to the pipeline transport is to increase use of truck and rail transport. To the extent our Reservation trust oil now carried by DAPL is shifted to either of these more expensive options, the result will be increased truck and rail traffic in and around our Reservation, with increased road damage, more motor vehicle accidents, as well as increased air pollution from dust and and heavy vehicle emissions that pose short-and-long-term risks to the health and safety of MHA Nation members, their livestock and the many species of animals and fish that inhabit our lands and waters.

12. In addition, shutting down DAPL would likely result in increased fatalities among the members of the MHA Nation using the roads on our Reservation. When DAPL began transporting our Reservation trust oil in 2017, it brought a decrease in the reliance on heavy truck and rail to transport oil from the region, and the MHA Nation noticed a significant reduction in traffic-related fatalities on our Reservation. According to state highway statistics, five fewer fatalities occurred annually after DAPL reduced traffic on our Reservation. Shutting down DAPL would likely result in a corresponding increase in fatalities within our MHA Nation.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed: April 19, 2021

Mark N. Fox, Chairman
Tribal Business Council
MHA Nation

A coal miners union indicates it will accept a switch to renewable energy in exchange for jobs.

A coal mine in Gillette, Wyo. Credit...Mead Gruver/Associated Press

By Noam Scheiber, New York Times • Posted: Tuesday, April 20, 2021

The country's largest mine workers union signaled on Monday that it would accept a transition away from fossil fuels in exchange for new jobs in renewable energy, spending on technology to make coal cleaner and financial aid for miners who lose their jobs.

"There needs to be a tremendous investment here," Cecil E. Roberts, the president of the United Mine Workers of America, said in an interview. "We always end up dealing with climate change, closing down coal mines. We never get to the second piece of it."

The mine workers' plan, which Mr. Roberts is presenting at an event with Senator Joe Manchin, Democrat of West Virginia, calls for the creation of new jobs in Appalachia through tax credits that would subsidize the making of solar panel and wind turbine components, and by funding the reclamation of abandoned mines that pose a risk to public health.

The mine workers are also calling for spending on research on carbon capture and storage technology, which would allow coal-fired plants to store carbon dioxide underground rather than release it into the atmosphere, and for policies that allow coal plants to remain open if they commit to installing the technology.

The union wants the federal government to support miners who lose their jobs through retraining and by replacing their wages, health insurance and pensions.

Many of these proposals appear in President Biden's $2.3 trillion jobs and infrastructure plan, including funding for research into carbon capture, which critics deride as prohibitively expensive, and money for reclaiming mines.

"Change is coming, whether we seek it or not," stated a document that the mine workers union released on Monday, titled "Preserving Coal Country." It notes that employment in the coal industry had dropped to about 44,000 as of last December, down from 92,000 at the end of 2011.

Mr. Roberts said the union would resist any climate legislation that did not help ensure a livelihood for its members.

"We're on the side of job creation, of a future for our people," he said. "If that isn't part of the conversation at the end of the day, we'll be hard pressed to be supportive."

Congress of the United States
Washington, DC 20510

February 22, 2021

The Honorable Joseph Biden
President of the United States
The White House
1600 Pennsylvania Ave, NW
Washington, DC 20500

Dear President Biden,

We are currently in the midst of one of the most remarkable and disastrous energy crises in recent history. An arctic air mass has wreaked havoc across most of the United States. This extreme weather event caused power disruptions for millions of Americans, leaving them to suffer through below-freezing temperatures and contributing to dozens of deaths. First and foremost, we request that your administration do all that it can to address the immediate needs of those impacted.

We do not write to point fingers or cast blame. No single policy decision, source of energy, political figure, or energy market bears full responsibility. This crisis was caused by a confluence of factors, not the least of which is the unpredictability and severity of weather events. We do, however, write to underscore the strategic importance of maintaining—and, in some cases expanding—access to sufficient baseload energy sources in the United States.

The signatories of this letter have consistently championed an "all-of-the-above" energy strategy. We understand the fundamental importance of preserving our resources and natural heritage, and we agree that the consideration of environmental impacts is essential to any policymaking relating to energy. We have records demonstrating support for renewable energy technologies, and we expect their use to expand in the coming years. But the United States simply cannot afford to continue pushing a renewables-only energy strategy to the detriment of abundant and reliable baseload sources, including nuclear and natural gas. Forming and calibrating a strong national energy policy is not a zero-sum game. While this has been clear to each of us throughout our time as public servants, in light of the hardships caused by these extreme weather events, it should now be abundantly clear to the nation.

It is long past time that elected officials, pundits, business organizations, and environmental lobbyists put down their pitchforks and come to the table to have an honest discussion about the future of America's energy strategy. Many have already done so, but a handful of influential partisans and zealots have become the loudest voices on these matters, stoking fear and talking past one another as each perpetuates a "my way, or the highway" approach to issues that, at their core, require thoughtful debate and compromise.

One thing we should all agree upon is that we must undertake every effort to avoid the suffering and death yielded by this winter storm and other extreme weather events in the future. If you share this sentiment, we stand at the ready to fully participate in this discussion, and we will work to bring others in our party along to be honest brokers as well. But we must ask that you make a similar commitment on behalf of your administration and your party so that we can break the Washington-based gridlock which has suffocated meaningful debate about the future of energy and environmental policy for far too long.

Thank you for your thoughtful consideration. We look forward to working with you to achieve these objectives for the sake of the country.

Sincerely,

Adam Kinzinger
Member of Congress

Michael C. Burgess, M.D.
Member of Congress

Dan Crenshaw
Member of Congress

Rodney Davis
Member of Congress

Ann Wagner
Member of Congress

Peter Meijer
Member of Congress

Garret Graves
Member of Congress

Robert E. Latta
Member of Congress

Ashley Hinson
Member of Congress

Neal P. Dunn, M.D.
Member of Congress

Rick Crawford
Member of Congress

Brian Babin, D.D.S.
Member of Congress

Gus M. Bilirakis
Member of Congress

Greg Pence
Member of Congress

Steve Womack
Member of Congress

Hal Rogers
Member of Congress

Ben Cline
Member of Congress

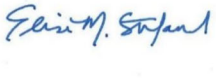
Troy Balderson
Member of Congress

Van Taylor
Member of Congress

Markwayne Mullin
Member of Congress

John Joyce, M.D.
Member of Congress

Carlos A. Gimenez
Member of Congress



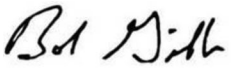
Elise M. Stefanik
Member of Congress

Pat Fallon
Member of Congress

Stephanie Bice
Member of Congress

Mike Gallagher
Member of Congress

Steven M. Palazzo
Member of Congress



Bob Gibbs
Member of Congress

Ralph Norman
Member of Congress

Debbie Lesko
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Kelly Armstrong
Member of Congress

Steve Stivers
Member of Congress

Bill Johnson
Member of Congress

Jim Hagedorn
Member of Congress

Dusty Johnson
Member of Congress

https://www.wsj.com/articles/john-kerrys-climate-kowtow-11618873552

OPINION | REVIEW & OUTLOOK

John Kerry's Climate Kowtow

How much will Biden trade away in exchange for empty promises?

By The Editorial Board
April 19, 2021 7:05 pm ET

Special Presidential Envoy for Climate John Kerry speaks during a press briefing at the White House, Jan. 27.

PHOTO: EVAN VUCCI/ASSOCIATED PRESS

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These columns noted last year that putting John Kerry in charge of climate negotiations with China was a recipe for coming home "dressed in a barrel." After Mr. Kerry's sojourn to Shanghai last week, the question is: What happened to the barrel?

President Biden's climate envoy emerged from two days of meetings with counterpart Xie Zhenhua with a joint statement that says little new. The two sides say they "are committed to cooperating with each other and with other countries to tackle the climate crisis." Both countries will work "to strengthen implementation of the Paris Agreement" limiting carbon emissions. Mr. Kerry didn't make any big concessions to Beijing, and Beijing didn't make any new promises about emissions limits it would break anyway.

OPINION: POTOMAC WATCH

President Biden's Plan to Pull Out of Afghanistan

00:00 1x

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In one sense that's a relief. But all this empty hot air isn't cost free in U.S. prestige and the missed opportunity to engage in more important talks. Making climate the sole focus of an early visit tells the Chinese that the U.S. puts that single issue above everything else in the bilateral relationship. China is happy to jibber-jabber about climate with the Americans if it means not having to engage on Taiwan, Hong Kong, Beijing's repression of Uighurs in Xinjiang, the South China Sea, North Korea, or intellectual property theft.

But Beijing is clear that it will ignore any carbon-emissions commitments that might impinge on China's economic growth. "Some countries are asking China to do more on climate change," deputy foreign minister Le Yucheng said last week. "I am afraid this is not very realistic."

Instead of triggering a rethink in Beijing, Mr. Kerry's Shanghai jaunt gave China's leaders a new opportunity to go on the public-relations offensive. "China welcomes the U.S. return to the Paris agreement and expects the U.S. side to uphold the agreement," vice-premier Han Zheng told Mr. Kerry in a jab at Washington's withdrawal from the pact under President Trump. Mr. Kerry also flattered Beijing by all but begging President Xi Jinping to join another global climate confab later this week.

Meanwhile, Mr. Kerry sounds like he's blessing China's green industrial-policy ambitions by including in the joint statement a pledge to pursue "policies, measures, and technologies to decarbonize industry and power." For China, that means more industrial than green policy. Chinese officials will keep the words handy to read back to U.S. officials in future discussions about trade distortions or subsidies. Mr. Kerry is telling China the U.S. is fine with both as long as they're for green energy.

Beijing's rhetorical flourishes concerning the Paris agreement are especially rich. In the years since the Trump Administration withdrew from that pact in 2017, American carbon emissions have kept falling and in 2019 hit their lowest level since 1992, and their lowest per capita since 1950, thanks in large part to the revolution in shale drilling for natural gas.

China saw its emissions rise in the same period, and its commitment under Paris to reduce emissions doesn't even begin until 2030. As a Reuters dispatch in February put it: "China approved the construction of a further 36.9 GW of coal-fired capacity last year, three times more than a year earlier, bringing the total under construction to 88.1 GW. It now has 247 GW of coal power under development, enough to supply the whole of Germany."

***

Chinese leaders don't mind Paris because they know it binds them to nothing while Western nations will harm their economies with new regulation and misallocated resources. The Chinese must be dumbfounded that a U.S. Administration wants to kill the shale natural gas boom that has kept energy prices low and made the U.S. less reliant on foreign oil.

The lack of any new agreement is a blessing since it would limit the U.S. without doing so for China. But Mr. Kerry has shown, in Iran and elsewhere, that he will leave no concession unmade in his pursuit of a bad deal. No wonder Beijing thinks America is in decline.

Appeared in the April 20, 2021, print edition.

Attachment—Additional Questions for the Record

Subcommittee on Energy
Hearing on
"Generating Equity: Deploying a Just and Clean Energy Future"
Tuesday, April 20, 2021

Subin DeVar, Director, Initiative for Energy Justice, Northeastern University

The Honorable Kathy Castor (D-FL)

1. Mr. DeVar, what role do you see for community solar in advancing energy equity?

RESPONSE:

Dear Representative Castor:

Thank you for your important question. Through intentional design, *equitable* community solar must play a fundamental part in advancing energy equity.

I define equitable community solar as follows:

> "Equitable community solar (1) allocates energy and benefits from one solar system to multiple customers, (2) intentionally focuses on benefitting marginalized communities, and (3) prioritizes local community governance and ownership."
>
> —Subin G. DeVar, *Equitable Community Solar: California and Beyond*, Page 1020, Ecology Law Quarterly, Aug 21, 2020, Vol. 46:4.

Like any clean energy project, community solar projects can result in either an equitable or an inequitable distribution of benefits and burdens. Not all community solar projects are created equal, and without proper policy design and incentives, such projects run the risk of further exacerbating inequalities. For this reason, community solar projects shouldn't just be considering equity on the side, but *centering* equity from the start. When we focus on equity first, we're able to take a more holistic view of an energy project and assess whether it truly is equitable, beyond simply generating clean electricity.

A key reason why equitable community solar must play a central role in advancing equity is that there are infrastructural and systemic gaps in access to rooftop solar for certain households due to issues such as roof quality, solar exposure, lack of state policy/incentives, or being a renter. Since not every household can access rooftop solar, not every household can access the potential holistic benefits of clean energy. This includes—but goes beyond—the central benefit of electric bill savings, which is especially important for reducing costs for households with high energy burdens (those that spend more than 6% of income on energy costs). The potential for health,

wealth, jobs, resilience, and other benefits from local solar are similarly out of reach if a home does not have the option to own a solar array on their rooftop. As energy equity calls for all populations to share in these energy and non-energy benefits associated with local solar, community solar is core to realizing that vision.

However, as mentioned above, without intentional policy mechanisms, community solar in its basic design does not necessarily ensure that low income, vulnerable, and other marginalized populations will benefit from these programs. Therefore, it is crucial that the deployment of community solar be focused instead on the deployment of *equitable* community solar, through clear goals, metrics, and utility accountability mechanisms to drive equitable outcomes.

For more information on how equitable community solar can advance energy equity, see:

1. 3**0 Million Solar Homes**, https://www.30millionsolarhomes.org. Equitable community solar is a component of this initiative's vision for how to advance energy equity by bringing solar access to 30 million American households. 30 Million Solar Homes is an initiative led by the Initiative for Energy Justice, Institute for Local Self Reliance, and Solar United Neighbors.
2. "**Equitable Community Solar: California and Beyond**" (Ecology Law Quarterly, Aug 21, 2020, Vol. 46:4) https://www.ecologylawquarterly.org/print/equitable-community-solar-california-beyond. By Subin G. DeVar.
3. "**Equitable Community Solar: Policy and Program Guidance for Community Solar Programs that Promote Racial and Economic Equity**" (Institute for Local Self-Reliance) https://ilsr.org/report-designing-community-solar-programs-that-promote-racial-and-economic-equity. By Timothy DenHerder-Thomas and Jonathan Welle. Contributing authors: John Farrell and Maria McCoy.

Attachment—Additional Questions for the Record

Subcommittee on Energy
Hearing on
"Generating Equity: Deploying a Just and Clean Energy Future"
Tuesday, April 20, 2021

Mr. Kiran Bhatraju, Chief Executive Officer, Arcadia

The Honorable Kathy Castor (D-FL)

1. Mr. Bhatraju, how can community solar increase equitable access to reliable, clean energy? How could investing in local solar drive economic growth?

RESPONSE:
Thank you for this thoughtful question, Representative Castor.

Community solar is the best way to make the benefits of solar power - which include reliable, clean energy - accessible to everyone, all while driving economic growth.

Rooftop solar is an essential component of our clean energy future, but relying on it alone will exclude the majority of Americans from the benefits of solar. Rooftop solar is only a good fit for households that own their own home, can afford to either make large upfront payments for solar panels or can access affordable financing, and who have a rooftop that's suitable for solar panels. Each of these barriers is quite significant.

To start with, 64.8% of American households own their own home. Of those, 68% have a credit score above 700, which is a common requirement for financing solar panels. Finally, 81% of homes in the United States have a roof that can support solar panels, meaning it's structurally sound and gets sufficient sunlight. Taken together, just 34% of families meet all three of these criteria, which means that 2/3rds of families are excluded from rooftop solar.[1] Community solar exists to bring the benefits of solar to those 85 million households.

Arcadia is leading the way to make sure that community solar lives up to its promise. We provide subscriber management services to 179 community solar projects in eight states. When fully operational, these projects will serve 65,000 households - most of whom would have been unable to access the benefits of solar otherwise. The only eligibility criteria we have is that a customer has to have a credit card or checking account to pay their subscriber fees. Beyond that, the projects we manage are open to everyone, no matter their credit score or whether they rent or

[1] https://blog.arcadia.com/why-community-solar-solves-solar-s-biggest-problem/

own. Best of all, our contracts with our customers are structured so that the customers are guaranteed to save money and there are no long-term commitments with exit penalties.

Community solar does more than just help subscribers save money with clean energy. I'd like to highlight two specific ways that community solar delivers broad economic development benefits.

First, community solar is an important part of an affordable, reliable electric grid. Community solar projects are small-scale which means they can be located closer to where electricity is used. This is so-called "distributed generation". A recent modeling exercise by Vibrant Clean Energy found that the most cost-effective way to significantly reduce greenhouse gas pollution in the electricity sector was to deploy a large amount of distributed generation. Specifically, the study found that deploying 247 GW of rooftop and community solar would save utility consumers $473 billion by 2050 while creating 2 million local jobs.[2]

Second, community solar projects are by-definition located somewhere other than the subscribers' home. Most commonly, community solar project owners lease land or commercial rooftop space, creating a new revenue stream for land- and building-owners. This is particularly important for rural landowners, who can get lease payments of as much as $1,000 per acre per year on underutilized agricultural land.[3] Indeed, farmers and rural landowners are some of the strongest community solar advocates.[4] Similarly, hosting a community solar project can dramatically increase the tax rate on a piece of property, which will lead to new tax payments from project owners that can fund local government operations.[5]

The biggest problem with community solar today is that it's only available in states where legislatures have enabled it. That's why Arcadia only provides community solar in eight states today. Now is the time for federal leadership to expand community solar across the whole country. You know this better than anyone, which is why you've introduced the Community Solar Consumer Choice Act of 2021. This bill would require every state to consider implementing a community solar program. As part of their consideration, I would expect states to be influenced by the fact that community solar leads to economic growth while making the benefits of solar available to everyone.

Thank you for your leadership on this critical issue. I am always available to answer any other questions you have about this important topic.

Thank you again.

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[2] https://www.localsolarforall.org/roadmap

[3] https://strategicsolargroup.com/what-is-the-average-solar-farm-lease-rate/

[4] https://www.pa4communitysolar.com/about-us

[5] https://pamplinmedia.com/msp/129-news/503127-403030-more-solar-farms-sprout-in-county

Attachment—Additional Questions for the Record

Subcommittee on Energy
Hearing on
"Generating Equity: Deploying a Just and Clean Energy Future"
Tuesday, April 20, 2021

Chandra Farley, Just Energy Director, Partnership for Southern Equity

The Honorable Kathy Castor (D-FL)

1. Ms. Farley, how can we ensure that everyone has the opportunity to participate in the clean energy economy?

RESPONSE:

Thank you for this question Rep. Castor. We can ensure that everyone has the opportunity to participate in the clean energy economy by including the people who have been and are still currently being left behind by the clean energy transition.

We know, with data informed clarity, that societal barriers have hampered the opportunity for Black communities, communities of color, rural and low-wealth communities to lend their perspective to the shaping of their clean energy future and to fully benefit from rapidly expanding clean energy markets. We can overcome these barriers by co-creating an equity agenda with marginalized groups that accounts for differences in opportunities and burdens, as well as needs. This intentional process of inclusion in the full spectrum of decision-making that drives the clean energy economy facilitates the proposal and pursuit of just and equitable solutions.

Utilizing equity as lens advances many opportunities for everyone to participate in and benefit from the clean energy economy. Through community organizing, leadership development for residents in disinvested communities, coalition building to bring uncommon allies together to create solutions and leveraging data and research on equal footing with the lived experience of those currently being left behind, we can achieve a fully inclusive clean energy economy.

An equitable society is one in which all can participate, prosper, and reach their full potential. So then, national energy policy must also create the conditions, and remove barriers, that ensure Black communities, communities of color, rural and low-wealth communities can benefit from the increased economic development, improved health outcomes and environmental justice that can flow from a just transition to a distributed, democratic, and clean energy economy ecosystem.

Attachment—Additional Questions for the Record

Subcommittee on Energy
Hearing on
"Generating Equity: Deploying a Just and Clean Energy Future"
Tuesday, April 20, 2021

Mr. Donnel Baird, Chief Executive Officer, BlocPower

The Honorable Kathy Castor (D-FL)

Mr. Baird, I am working on a bill to encourage disclosure of the energy use and emissions of commercial buildings.

1. Mr. Baird, would you like to add your views on the aforementioned?

RESPONSE:

BlocPower endorses increased transparency and disclosure requirements around building energy use and emissions. These requirements would better inform all stakeholders—including building owners, tenants, community nonprofits, investor-owned utilities, healthcare entities, and governmental entities—on the climate and health risks of fossil-fuel-powered buildings. As a result, the requirements would also increase demand for energy efficiency and electrification upgrades.

BlocPower applauds New York City Local Law 33 of 2018, as amended by Local Law 95 of 2019, which directed the City Department of Buildings to assign buildings over 25,000 square feet energy efficiency grades and required those buildings to publicly display their grades. In BlocPower's experience, this law noticeably increased tenant and building owner interest in energy efficiency and electrification.

However, any federal emissions disclosure bill should apply to all buildings, not just those buildings exceeding some minimum square footage. The more buildings that are required to disclose emissions, the more demand for energy efficiency and electrification grows, and the greater the increase in efficiency for the entire industry. Emissions grades/scores can also be paired with other building health scores to measure environmental hazards like lead, asbestos, and other structural deficiencies.

2. Mr. Baird, what would greater transparency about energy use and emissions do for businesses like yours? Would it help create greater demand for your services and lead you to hire more workers?

RESPONSE:

Greater transparency requirements around building energy use and emissions would create greater demand and financial resources for service providers and energy efficiency, electrification and weatherization companies. More transparent information would lower the building-by-building individual energy equipment assessment costs, as well as lowering sales, marketing, engineering, and financing costs, leading to a dramatic investment of capital in the green buildings industry. BlocPower is committed to hiring local workers from the environmental and social justice (ESJ) and low- and moderate-income (LMI) communities we serve, and an increase in demand for our services would enable us to hire more workers.

In February, we saw that the energy systems failure led to a tragic loss of life for too many Texas residents. We need to avoid a situation like that happening again.

3. Mr. Baird, how can investments in weatherization of buildings protect residents from extreme heat and cold and save consumers money? Please tell us more about the energy efficiency needs you see.

RESPONSE:

As climate change worsens, the United States will suffer from more and more extreme heat and cold. However, this suffering has not been and will not be felt equally across geographies and communities. In particular, residents in environmental and social justice (ESJ) communities will bear the brunt of extreme weather and its dangers.

Because ESJ communities have long been denied (due to redlining) government investments in green spaces and tree cover, they are more likely to suffer from extreme heat and its consequences. In some cities, the difference in summer surface temperatures between redlined and non-redlined neighborhoods can reach as much as 20 degrees Fahrenheit (www.scientificamerican.com/article/past-racist-redlining-practices-increased-climate-burden-on-minority-neighborhoods/). Redlined neighborhoods, full of buildings with deficient insulation, are also colder in winter than non-redlined neighborhoods. The increased exposure to extreme temperatures results in dangerous health outcomes and increased energy burdens for ESJ communities. Across the United States, the median energy burden for Black households is 43% higher than for non-Hispanic White households (www.aceee.org/sites/default/files/pdfs/u2006.pdf).

Weatherization upgrades—especially insulation upgrades and weather-stripping doors and windows—can reduce indoor temperature fluctuations and energy burdens (the percentage of gross household income spent on energy costs). Electrification of household appliances can further reduce energy burdens, especially if associated with flexible and accessible financing structures. For example, BlocPower has saved its customers between 20 and 70 percent on annual energy costs—all while requiring zero up-front investment.

4. Mr. Baird, could you please describe the current level of access residents in your community have to distributed energy resources and microgrids that could provide backup power in the event of an energy systems failure?

RESPONSE:

Most new technologies, including microgrids and distributed energy resources like residential solar, follow old patterns of adoption that rely on affluent early adopters to bring down cost, which decreases slowly as more consumers adopt the technology. The tail end of the adoption curve includes late adopters both by choice and necessity. Most individuals living in environmental and social justice (ESJ) communities fall into the tail end, missing out on early adoption because they cannot afford the new technology, the technology does not fit their unique and most pressing needs, or the technology was not built with their market in mind.

This approach leaves underserved and under-resourced individuals without access to many emerging technologies, including microgrid and DER technologies. At the same time, these technologies would most benefit stakeholders and energy grid operators in those underserved communities. As climate change worsens and extreme weather events increase in frequency and magnitude, dangerous events like power outages and heat waves will disproportionately impact ESJ communities and their residents. Distributed energy resources could help to level the playing field and save lives, but ESJ communities—who have the most to gain from clean technology, both in terms of health benefits and decreased energy burdens—will not be able to access the technology without government rebates and transparency of energy data in exchange for those rebates.

These patterns have been demonstrated within residential solar and other distributed energy resources. According to a 2019 paper published in *Nature Sustainability*, for the same median household income, "black- and Hispanic-majority census tracts have installed less rooftop PV [photovoltaics] compared with no majority tracts by 69 and 30%, respectively, while white-majority census tracts have installed 21% more" (https://www.nature.com/articles/s41893-018-0204-z). These racial disparities in rooftop solar installation worsen still once home ownership is accounted for. A similar story is playing out with microgrids and other distributed energy resources.

Until now, few policies or programs have intervened to change the old patterns of top-down technology adoption or offer new approaches that actually prioritize economic energy equity and ESJ communities. Moving forward, policies must begin, not end, with ESJ communities. By doing so, we can begin to build resiliency in the communities that need it most, whose residents will benefit from energy grid maintenance, public policy advocacy, and produce outsized reductions in building energy waste.

We know that investing in clean energy and energy efficiency will be a massive job creator. In fact, a recent report from the American Council for an Energy-Efficient Economy showed that investments in energy efficiency can create hundreds of thousands of jobs. As we think about ensuring that underserved communities have access to affordable energy and to energy-efficient homes, let's also make sure we're giving people the opportunity to get these jobs improving their own neighborhoods and communities.

5. Mr. Baird, what are the workforce development needs in these communities? How can we make sure that they are seeing the job creating benefits of energy efficiency investments?

RESPONSE:

Marginalized communities need to be trained in design-build approaches to energy efficiency, solar, battery storage, and building electrification. Training for accessing bonding, project finance, and government contracts is also needed.

Community hiring agreements between governments, developers, contractors, subcontractors, and lenders on government-funded projects mandating 30-60% local hiring requirements are the simplest way to ensure equity.

We can also mandate the utilization of graduates of training centers focused on serving vulnerable populations in areas where local hiring is not available.

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