MAKING THE CASE FOR CLIMATE ACTION: CREATING NEW JOBS AND CATALYZING ECONOMIC GROWTH

HEARING

BEFORE THE

SELECT COMMITTEE ON THE CLIMATE CRISIS HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

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SELECT COMMITTEE ON THE CLIMATE CRISIS

ONE HUNDRED SEVENTEENTH CONGRESS

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MAKING THE CASE FOR CLIMATE ACTION: CREATING NEW JOBS AND CATALYZING ECONOMIC GROWTH

TUESDAY, APRIL 20, 2021

HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON THE CLIMATE CRISIS,
Washington, DC.

The committee met, pursuant to call, at 12:01 p.m., via Zoom, Hon. Kathy Castor [chairwoman of the committee] presiding.

Present: Representatives Castor, Bonamici, Brownley, Huffman, McEachin, Levin, Casten, Escobar, Graves of Louisiana, Palmer, Carter, Miller, and Gonzalez of Ohio.

Ms. CASTOR. All right. Good afternoon. The committee will come to order.

Without objection, the chair is authorized to declare a recess at any time. As a reminder, members participating in a hearing remotely should be visible on the camera throughout the hearing.

As with in-person meetings, members are responsible for controlling their own microphone. Members can be muted by staff, but only to avoid inadvertent background noise.

In addition, statements, documents, or motions must be submitted to the electronic repository, to sccc.repository@mail.house.gov.

Finally, if any members or witnesses have any technical problems, please inform the committee staff immediately.

And thanks again for being here today. Thanks for joining this hearing remotely. We all look forward to getting back to normal. It is a little bit down the road, but we all look forward to that time.

Last week, we discussed the physical, economic, and health impacts of the climate crisis and the escalating costs of inaction.

Today, we are looking at the benefits for our country and workers, all of the benefits that come with solving the climate crisis.

So I will recognize myself for 5 minutes for an opening statement.

Well, happy Earth Week, and happy U.S. Climate Action Week. I am inspired by the growing consensus across the economy, across the entire country, for clean energy solutions and jobs.

Whether it is public health experts, union leaders, investors, scientists, farmers, or executives at America's largest companies, we have grown an enormous coalition that is ready to solve the climate crisis.

Just last week, some of America's largest employers, including Walmart, McDonald's, Target, Starbucks, and hundreds of other

businesses and investors, announced their support for an ambitious new target to reduce our carbon emissions over the next decade.

In just a couple of days, President Biden will unveil that new target as he welcomes global heads of state to his Leaders Summit on Climate and urges other countries to go farther and faster.

America is ready not only to rejoin the global effort to keep global climate impacts in check, but lead again. Why? Because we know we can create millions of jobs and economic opportunities across America.

Last week, we held a very important hearing on the cost of failing to act on the climate crisis. So it is only fitting that today's hearing will focus on the enormous economic benefits of climate solutions.

Building a clean economy will create millions of good-paying jobs across every ZIP Code in America, it will jump-start our economic recovery, and ensure that we can compete in a world that increasingly runs on clean technologies. Plus, it will strengthen our resilience while helping reduce costs to our communities and our neighbors back home.

I cannot overstate the importance of reducing those risks and costs. Eleven years ago today, an oil rig operated by BP in the Gulf of Mexico exploded, killing 11 people and ultimately gushing 4 million barrels of oil into Gulf waters.

The BP Deepwater Horizon oil disaster cost over $60 billion to clean up. It cost Florida billions of dollars in lost tourism revenue.

And I had to look those business owners, mom-and-pop shops on the coast, in the eye during this disaster as that gushed day after day into the Gulf and really hurt our economy as we were trying to recover from the Great Recession.

It became a very painful reminder of the need to move to cleaner energy sources instead of waiting for the next disaster to strike.

It is time we put Americans to work unleashing that potential, which will help us avoid those type of catastrophes. That is what the Democrats on this committee proposed last year in our Climate Crisis Action Plan. And, according to an independent analysis of our Action Plan, we could save Americans more than a trillion dollars annually by 2050 by solving the climate crisis.

That is because switching to cleaner sources of energy will unleash enormous economic benefits and health benefits for America's families. And we can build that future by employing millions of workers and ensuring they have safe working conditions and family-sustaining wages.

We have a lot of work to do. Whether it is laying new transmission lines, replacing lead pipes, or plugging millions of abandoned oil wells, we will make sure that those job opportunities go to our middle-class workers.

We can also revitalize the American manufacturing sector through smart investments and 21st century technologies, including electric vehicle chargers and batteries that will power school buses, postal trucks, and more.

Congress has an opportunity to grow jobs across the country as we advance President Biden's American Jobs Plan.

By invoking America's can-do spirit, rolling up our sleeves to solve the climate crisis, we will help ourselves, and we will help the rest of the world.

The United States has emitted more carbon pollution than any other country in history, accounting for 25 percent of historical emissions.

While we have cut emissions in recent years, we know from climate science that we need to do more and invent and manufacture the technologies in the USA to provide the solutions to the world.

Today, we have a great slate of witnesses who will highlight the ways we can do that, reducing pollution, driving economic growth, and creating good-paying jobs for all Americans.

I look forward to today's discussion.

At this point, I will recognize Ranking Member Garret Graves for his opening statement.

You are recognized for 5 minutes.

[The statement of Ms. Castor follows:]

Opening Statement of Chair Kathy Castor

Hearing on "Making the Case for Climate Action: Creating New Jobs and Catalyzing Economic Growth"

Select Committee on the Climate Crisis

April 20, 2021

As prepared for delivery

Welcome everyone. And happy U.S. Climate Action Week! I'm so inspired by the level of support we've seen across the economy for clean energy solutions and jobs.

Whether it's public health experts, union leaders, investors, scientists, farmers, or executives at America's largest companies, we've grown an enormous coalition that is ready to solve the climate crisis. Just last week, some of America's largest employers—including Walmart, McDonald's, Target, and Starbucks—announced their support for an ambitious new target to reduce our emissions over the next decade. In just a couple of days, President Biden will unveil that new target, as he welcomes global heads of state to his Leaders Summit on Climate. America is ready not only to rejoin the global effort to keep climate impacts in check but lead again. Why? Because we can create millions of jobs and economic opportunities across America.

Last week, we held an important hearing on the costs of failing to act on the climate crisis. So it's only fitting that today's hearing will focus on the enormous economic benefits of climate solutions. Building a clean economy will create millions of good-paying jobs across every zip code in America. It will jump-start our economic recovery and ensure we can compete in a world that increasingly runs on clean technologies. And it will strengthen our resilience while helping reduce costs to our communities.

I can't overstate the importance of reducing those risks and costs. Eleven years ago today, an oil rig operated by BP in the Gulf of Mexico exploded, killing 11 people and ultimately gushing 4 million barrels of oil into Gulf waters. The BP oil disaster cost over $60 billion dollars to clean up. It cost Florida billions in lost tourism revenue. And it became a painful reminder of the need to move to cleaner sources of energy, instead of waiting for the next disaster to strike.

It's time we put Americans to work unleashing that potential, which will help us avoid future catastrophes. That's what the Democrats on this committee proposed last year in our Climate Crisis Action Plan. According to an independent analysis of our Action Plan, we could save Americans more than a trillion dollars annually by 2050 by solving the climate crisis. That's because switching to cleaner sources of energy will unleash enormous economic benefits for America's families, including health benefits. As we build that future, we'll employ millions of workers and ensure they have safe working conditions and family-sustaining wages.

We have a lot of work to do. Whether it's laying new transmission lines, replacing lead water pipes, or plugging millions of abandoned oil wells across the United States, we'll make sure those job opportunities go to our middle-class workers. We can also revitalize the U.S. manufacturing sector through smart investments in 21st

century technologies, including electric vehicle chargers and batteries that will power school buses, postal trucks, and more.

Congress has the opportunity to grow jobs across the country, as we advance President Biden's American Jobs Plan. By invoking America's can-do spirit, and rolling up our sleeves to solve the climate crisis, we will help ourselves and the rest of the world. The United States has emitted more carbon pollution than any other country in history, accounting for 25% of historical emissions. While we've cut emissions in recent years, we know from climate science that we need to do even more, and invent and manufacture the technologies in the U.S.A. to provide solutions to the rest of the world.

Today, we have a great slate of witnesses who will highlight the ways we can do that, reducing pollution, driving economic growth, and creating good-paying jobs for all Americans.

I look forward to today's discussion.

Mr. GRAVES. All right. Thank you, Madam Chair. I appreciate it.

I want to thank all the witnesses for being here today and the members of our committee.

I also want to remind, as our chair did last week, that our colleague, Dan Crenshaw, remains in, I guess, in the after-treatment for his eye issue. And I would just urge all of you please keep him in your prayers for his full recovery.

Madam Chair, creating American jobs, charting a path for a clean energy future, reducing emissions should be something that all of us on this committee, regardless of party affiliation, ideologies, should be supportive of.

Let me say that again. Job creation, creating jobs here in America, reducing emissions, charting a path of an America-based resource, clean energy future is something that we should all agree upon.

But we also have to keep in mind, in order to realize some of the benefits that you just cited, this is not something that we can solely do domestically. This truly is a global issue. These are global emissions. The emissions must be reduced across the globe, not just those in the United States.

There are two primary kind of path components that we need to be very thoughtful of as we move forward. We have got to develop the innovative energy technologies. And, Madam Chair, you even cited the innovation of this sort of American spirit that we have here, where we are able to create these technologies, where we can create an environment where we let innovators innovate.

But we have got to do it in a way that protects the intellectual property, that grounds the jobs in the United States and doesn't export them overseas, that doesn't allow for this pirating or theft of our intellectual property, of our innovative ideas.

We have got to incentivize our workers here to be able to create and retain the jobs here. We have got to ensure that the technologies are cost competitive, that they are exportable, because only then will we actually see this global reduction.

Secondly, we have got to develop and utilize American resources. Madam Chair, I noted at the last hearing that, through 2050, we are going to see a 40 percent increase in global demand for natural gas, for example.

As we have cited from the National Energy Technology Lab's analysis, U.S. natural gas has a much lower emissions profile than that of other countries.

And so, if there is going to be a 40 percent increase in demand globally, let's ensure that that demand is met by U.S. resources. Let's ensure, as we continue blazing trails and being the global leader in reducing emissions, it is based upon U.S. resources.

The Federal Government doesn't do a lot of things well. It is a very large organization. There is a lot of red tape involved. The last thing we need to have the Federal Government doing is picking technological winners and losers.

If we can reduce emissions through unconventional means, then we should be reducing emissions and pursuing clean energy strategies regardless of the source. And I am concerned that some of the paths forward, trying to have the Federal Government choosing technological winners and losers—and I only have to cite examples such as Solyndra—as to why that doesn't make sense for America and for American taxpayers.

Madam Chair, we have often talked about and I have heard many people on this committee cheer the successful outcome of the Paris Accords. I want to remind everyone, the Paris Accords codify a global increase in emissions. We are all here talking about reducing emissions. We should not be celebrating global accords that result in the emissions actually going in the wrong direction.

And that is why I was very excited that Secretary Kerry was engaging, for example, China, that has increased emissions four times for every one ton—four tons for every one ton we have reduced here in America.

Madam Chair, in closing, I have cited some of the lessons learned in terms of flawed paths forward that have resulted in lessons learned from us, the Federal Government, not picking winners and losers, making sure the global accords reduce emissions, and I have got to point out one other.

Even in the infrastructure package that is being proposed—and I know that all of us on this committee support infrastructure—a recent analysis by the National Association of Manufacturers has indicated that is actually going to result in a million job losses in just the first 2 years and projected to result in a loss of 600,000 American jobs each year for 10 years following.

So, Madam Chair, we have got to make sure that we are pursuing this in a way that is going to result in jobs not just being created, but being retained here in the United States.

Thank you. I yield back.

Ms. CASTOR. Thank you.

Without objection, members who wish to enter opening statements into the record have 5 business days to do so.

Now I would like to welcome our witnesses. We have a great panel today. This is a panel that is going to provide us with great insight on how we can create jobs and catalyze economic growth as we move forward on climate solutions.

First, the Honorable Phil Bredesen is the former Governor of Tennessee, the former Mayor of Nashville, and a successful entrepreneur. He founded Silicon Ranch, one of the largest solar independent power producers in the country.

Governor Bredesen is now the Executive Chairman of Clearloop Corporation, a startup in Nashville that partners with companies to offset their emissions by building new solar projects in American

communities that are looking for new economic development opportunities.

Next, Mr. Paul Lau, highly recommended from our colleague, Congresswoman Doris Matsui of Sacramento. He is the CEO and General Manager of the Sacramento Municipal Utility District. He was previously the utility's Chief Grid Strategy and Operations Officer, where he managed power supply and distributed energy resources. Mr. Lau is also a board member of the Electric Transportation Community Development Corporation.

SMUD has a long history of innovation. And, again, Congresswoman Matsui is so proud to represent you all in the Congress.

Ms. Leticia Colon de Mejias is the founder and CEO of Energy Efficiency Solutions, a Connecticut-based small business providing energy conservation services. She also is the Policy Co-chair of the Building Performance Association and the founder of Green Eco Warriors, a nonprofit focused on environmental education for young people.

Finally, Ms. Heather Reams is the Executive Director of Citizens for Responsible Energy Solutions, a nonprofit organization that engages policymakers and the public on energy, economic, and environmental security issues. She is also the Chair of the National Clean Energy Week, which is an annual forum for discussions around innovative technologies and policies.

Without objection, the witnesses' written statements will be made part of the record.

With that, Governor Bredesen, you are now recognized to give a 5-minute presentation of your testimony. Welcome.

And don't forget to unmute.

STATEMENTS OF THE HONORABLE PHILIP N. BREDESEN, EXECUTIVE CHAIRMAN OF THE BOARD, CLEARLOOP CORPORATION, FORMER GOVERNOR, STATE OF TENNESSEE; PAUL LAU, CEO AND GENERAL MANAGER, SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD); LETICIA COLON DE MEJIAS, FOUNDER, ENERGY EFFICIENCIES SOLUTIONS; POLICY CO–CHAIR, BUILDING PERFORMANCE ASSOCIATION; AND HEATHER REAMS, EXECUTIVE DIRECTOR, CITIZENS FOR RESPONSIBLE ENERGY SOLUTIONS (CRES)

STATEMENT OF THE HONORABLE PHILIP N. BREDESEN

Mr. BREDESEN. You would think by this point I would know that.

I would say, first of all, thank you, Chair Castor, Ranking Member Graves, and each of the select committee members for the invitation to be here today.

Policy debates in the public sector seem to always be surrounded by a lot of noise and irrelevant information. It is the nature of the beast. But climate action seems to attract even more than most.

As a former governor, I sympathize with the challenge that members of the committee face, taking a complex issue like this and cutting through the noise to try to understand the big shapes.

In my testimony today, I want to describe what I believe to be two of those big shapes in this issue.

The first one is this: the urgent need to better focus our efforts. I respectfully say to everyone who cares about climate action that

we need to stop chasing every glittering idea and instead ask ourselves a question: Where is the low-hanging fruit? Where is the first place to go?

I believe that question has an answer, and that is the lowest-hanging fruit is the generation of electricity in this country. Power generation, even after all the progress we have made with renewables and with natural gas, still creates 25 percent of all greenhouse gas emissions in the United States.

To put that in perspective, our grid today produces more greenhouse gases than every car on the road and every airplane in the sky in America. The rise of electric cars and the power demand that follows will put an even bigger strain on this grid.

The electric grid is an enormous opportunity for decarbonization. The tools are already in place. The technology is mature. The economics makes sense. Renewable energy has been around a while. It is no longer this year's show horse. But it really is the workhorse that we need right now to get started in a serious way.

The second big shape is simply the one that the select committee is addressing, that climate action is a potent tool for economic development and job creation. A coalition built around legislative and regulatory action to compel climate action, I believe, is too narrow for us to get the job done today.

Fortunately, there is a broader one waiting to be built around creating jobs, creating new tax base, and opportunities for the next generation of entrepreneurs. I think the challenge we have is to convince skeptics that the economic benefits are real and they are not just talking points.

Solar generation is a good example. By its nature, it is highly distributed, with the benefits spread broadly across the country rather than dotted it in a few places like new factories would be.

Large tracts of land are needed, and that means rural and often distressed communities are great candidates for these investments. In those communities, it creates much- appreciated local jobs while it is being built. And, once it is built, it provides tangible local benefits, including, importantly, huge support for the tax base in these areas for decades to come.

The way that energy is generated in America is really undergoing a fundamental shift that is going to continue for decades. In fact, 2020 was the third consecutive year for record-setting new corporate investment and new renewable energy projects here in North America. Yet the distribution of clean energy investments is often disjointed and uneven.

In the United States, the simple fact of turning on the light can have a significantly bigger carbon impact if you live in Nashville, Tennessee, for example, than if you live in San Francisco. That is because the electric grid is broken up into a number of regions, and they each have a number of different power sources.

Two years ago, as the chair mentioned, I helped co-found a start-up called Clearloop, with the goal of cleaning up the grid and expanding access to clean energy by opening up investment in solar to many more kinds of companies and organizations.

We are shifting the way corporate investments reduce carbon by trying to bring solar projects to regions of the country that have the most carbon-intense electric generation. We believe that doing

things this way will achieve deeper and faster emissions reductions, and also brings good-paying clean energy jobs and economic investment in regions of the country that need them.

This week, Clearloop is announcing that Silicon Valley-based Intuit, Philadelphia's Dropps, Seattle's CoolPerx, Nashville's NHL team, the Predators, are partnering with us to help fund the construction of a solar project in Jackson, Tennessee. That is an area between Memphis and Nashville, in the heart of rural west Tennessee.

We are just getting started, but what we are proving with Clearloop is that corporate climate action promotes real economic investment in communities who are looking to attract investment and talent. And I believe that, if we focus and use this change to build American infrastructure where it is most needed, we can help the American people, we can help our nation, and we can help our planet.

Thank you.

[The statement of Mr. Bredesen follows:]

Prepared Statement of Hon. Philip N. Bredesen, Executive Chairman of Clearloop Corporation and Former Tennessee Governor

Before the House Select Committee on the Climate Crisis

"Making the Case for Climate Action: Creating New Jobs and Catalyzing Economic Growth"

Tuesday, April 20, 2021 12:00 p.m. ET

First, thank you Chair Castor, Ranking Member Graves and each of the Select Committee members for the invitation to be here today.

Policy debates in the public sector seem to be always surrounded by a lot of noise and irrelevant information—it's the nature of the beast—but climate action seems to attract even more than most. As a former Governor, I sympathize with the challenge you face: to take a complex issue like this, cut through the noise and try to see the underlying big shapes.

In my testimony today, I want to step back with you and describe to you what I believe to be a couple of those big shapes.

The first one is this: the urgent need to better focus our effort. I respectfully say to everyone who cares about climate action: stop chasing every glittering new idea and instead ask a question. There's a lot of ideas around, but which of them will really make a difference? Where's the low-hanging fruit?

That question has an answer: The lowest-hanging fruit is the generation of electric power. Power generation, even after all the progress we've made with renewables and conversion to natural gas in the past decade, still creates 25% of all greenhouse gas emissions in the United States.[1] To put that in perspective, American power generation produces more greenhouse gases than every car on the road and every airplane in the sky. Half-again as much. The coming boom of electric cars and the power demand that follows will make the carbon emissions from our power sector even worse.

The electric grid is an enormous opportunity for decarbonization and an easy one to clean up with the tools that are already in place. The technology is mature—nobody has to invent anything. Solar panels, for example, are efficient, easy to manufacture and continue to get better. And the economics are there also: solar power today is the low-cost alternative. Renewable energy has been around a while; it's no longer this year's show-horse. But it's what we need right now: a genuine workhorse we can ask and trust to do the job.

The second big shape is simply the one that this Select Committee is addressing: that climate action is a potent tool for economic development and job creation. In business terms, climate action shouldn't be thought of as a cost center, but as a revenue and profit center. A coalition built around legislative and regulatory action to compel climate action is too narrow. Fortunately, there's a far broader one waiting to be built around creating jobs, a new tax base, and opportunities for the next gen-

[1] https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

eration of entrepreneurs. The challenge we have is to convince skeptics that the economic benefits are real and not just talking points.

While there are many opportunities to create jobs and wealth through climate action, renewable energy can be particularly effective in this regard. Solar generation is a good example: by its nature it is highly distributed, with the benefits spread broadly across the country rather than being dotted in a few places like new factories. It needs large tracts of land that are not too expensive, and that means rural and often poorer communities are great candidates for these investments. In those counties, it creates much appreciated local jobs while it is being built—a large-scale solar facility might use 500 or 600 workers during its construction.

Once a solar project is built, it provides tangible local benefits for decades. The good news is that clean energy has been on the rise year over year over the past decade. In fact, after leaving the governor's office a decade ago, I helped found a company, Silicon Ranch, that today boasts over 1 GW of owned and operated solar projects across the U.S.

With Silicon Ranch, we built solar farms across the South where they oftentimes become the largest taxpayer in the county the day they open. In some of these communities, a solar power plant is the first substantial industrial investment in generations. The taxes the project pays go directly to badly-needed new investments, as a solar plant uses few public services—it adds no costs to law enforcement, or fire protection, or the school system. This led to a county giving its teachers a raise as a direct result of the new tax revenues produced by the solar project investment.

In Georgia, Governor Kemp, a conservative Republican who has expressed deep skepticism about global warming, has come to several of our announcements. He comes because he's seen how these clean energy projects are boosting some of the poorer rural counties in his state. His economic development team prioritizes solar development in Georgia for precisely this reason.

The way in which energy is generated in America is undergoing a fundamental shift that will continue for decades. Clean energy growth has been fueled by private sector investment with large tech companies and manufacturers becoming the largest purchasers of renewable energy projects through Power Purchase Agreements. In fact, 2020 was the third consecutive year for record-setting corporate investment in new renewable energy projects in North America.[2]

Yet, the distribution of clean energy investments is often disjointed and uneven. In the United States, the simple act of turning on the lights or plugging in your electric vehicle can have a significantly bigger carbon impact if you live in Nashville, Tennessee, than if you lived in San Francisco, California. That's because the electric grid is broken up into several grid regions, all with a different mix of power sources.[3] In fact, every megawatt hour of electricity consumed by the California Delegation's constituents generates about 500 lbs. CO_2, while constituents in Chair Castor's and Ranking Member Graves' districts get hit with almost double the carbon pollution every time they flip on the lights for the same amount of time.[4]

Two years ago, I helped co-found a startup called Clearloop with the goal of cleaning up the grid and expanding access to clean energy, starting in our own backyard. After realizing how partisan politics were corroding common sense action, I partnered with two younger Tennesseans, who also believed that we shouldn't wait around for others to help, instead we needed to take matters into our own hands. We fundamentally believe that the innovation and benefits of new clean energy investments should reach all communities around our country equally. We recognized that between tech companies and small businesses, there are lots of companies that want to take climate action, but need more ways to invest in these new clean energy projects.

The world of corporate sustainability is full of well intentioned people, but many traditional climate solutions have simply nibbled at the edges of climate change with programs that lack transparency and bold action. Clearloop partners with companies big and small to offset their carbon footprint and expand access to clean energy by cleaning up the grid with the construction of new solar capacity in American communities otherwise getting left behind. Clearloop is shifting the way corporate investments reduce carbon by bringing solar projects to regions of the country with disproportionately carbon-intense electricity generation (i.e. dirty grids).[5] We believe

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[2] https://rebuyers.org/deal-tracker/

[3] https://www.nytimes.com/interactive/2020/10/28/climate/how-electricity-generation-changed-in-your-state-election.html?utm_campaign=Carbon%20Brief%20Daily%20Briefing&utm_content=20201029&utm_medium=email&utm_source=Revue%20Daily

[4] https://www.epa.gov/sites/production/files/2021-02/documents/egrid2019_summary_tables.pdf

[5] http://map.clearloop.us/

doing things this way will achieve deeper, and faster emissions reductions. It will also bring good-paying, clean energy jobs, and spur economic investment in regions of the country that vitally need them.

This week, Clearloop is announcing that Silicon Valley based Intuit, Philadelphia based Dropps, Seattle based CoolPerx, and Nashville's NHL team, Nashville Predators are partnering with us to help fund the construction of a 1 MW solar project in Jackson, Tennessee. A city nestled in between Memphis and Nashville and at the heart of rural west Tennessee.

We're just getting started and have a long way to go as a small startup, but what we're proving with Clearloop is that corporate climate action can spur real economic investment in communities looking to attract more investment and talent. By being intentional about where we are building these solar projects, focusing on decarbonization, but also an emphasis on distressed communities, these "unsexy" infrastructure investments are the vehicle for growing the tax base in communities, and building workforce development programs for trades like electricians.

If we focus, and use this change to build American infrastructure where it's most needed, we can help the American people, our nation and our planet.

How can Congress help? Here are some practical steps, not politicized overarching promises or big spends:

- Carve out and cap the capital gains taxes for landowners selling land for clean energy projects.
- Allow FERC to reward utilities that publicize their price for energy for longer than 5 years.
- Reward utilities that publicly share the load data for interconnection and make the queue system public and transparent.

Ms. CASTOR. Thank you, Governor.

Mr. Lau, you are recognized for 5 minutes.

STATEMENT OF PAUL LAU

Mr. LAU. Chair Castor, Ranking Member Graves, and members of the committee, thank you for holding this important hearing and for the opportunity to testify.

My name is Paul Lau, and I am the CEO of the Sacramento Municipal Utility District, or SMUD as we are called.

SMUD is the Nation's sixth-largest community-owned not-for-profit utility, serving 1.5 million people in and around Sacramento, California. We have provided world-class reliability at affordable rates while protecting the environment for more than 70 years.

We set goals that are more aggressive than the states, and doing so helped SMUD achieve many important firsts, including becoming the first large California utility to have at least 20 percent of our energy come from renewables. And, today, our power supply is 50 percent carbon free.

It is clear to me what we have done to be a leader simply isn't enough. I am disappointed and disheartened to report that Sacramento is the fifth-worst city for ozone pollution. Our children are 30 percent more likely to suffer from asthma than the average American kid. Thirty percent is unconscionable.

I am proud and excited to announce that our board of directors has approved a bold and ambitious goal to completely eliminate carbon emissions from our power supply by 2030 without compromising reliability or affordability. It is the most ambitious goal of any large utility in the U.S.

But it is much more than that. It is also a roadmap for others to follow in pursuing the Biden administration's goal of achieving a clean power sector by 2035, with benefits for all.

To get to zero, we will increase our renewables and battery storage by 350 percent. We will retire two gas plants and retool the

remaining three. And we will more than double our investments in energy efficiency and electrifications.

We will continue to support our customer investments in rooftop solar and batteries, and pioneer new technologies, like vehicle-to-grid and virtual power plants, because we know our customers are an important part of the solution.

Our past effort to be good stewards of the environment shows how decarbonizing will provide benefits for air quality, the environment, and public health.

Clean energy infrastructure investment is critical, and we must ensure the economic benefits are felt by all.

We will invest upward of $4.6 billion over the next 9 years in clean technology jobs, and a healthier, more just future for generations to come. More importantly, we will make sure no community is left behind.

SMUD's plan will create thousands of jobs in the growing clean sector. Some ask if we can afford the price tag to do all this. Our answer is: We can't afford not to.

And we won't do it on the back of our customers. We will maintain affordable rates that today are about 35 percent lower than our neighboring utilities, leaving over $800 million in our local economy each year.

And we must partner with our cities, counties, policymakers, communities, business leaders, the private sector, and our customers like never before to align resources to maximum impact for all.

Now, SMUD, we have a long history of supporting underresourced communities. We have low-income customers decarbonized through energy efficiency and rooftop solar, and we will continue to install EV infrastructure and help customers borrow zero-emission vehicles in e-mobility hubs in underresourced communities.

Through our Sustainable Communities programs, we identify neighborhoods most likely to be underresourced due to the lack of community development, income, housing, employment opportunities, and transportation, and we invest in them.

Now, through partnerships, we train folks from those communities to install electrical, solar, and EV-charging equipment, providing career training and job placements for over 200 participants and counting.

Younger generations are eager to help. That is why our partnerships with universities and junior colleges to support STEM education are so important, and our STEM scholarships come with paid internships at SMUD.

SMUD spearheaded the development of the California Mobility Center, a public-private consortium to accelerate clean, scalable e-mobility technologies and solutions that are poised to generate $2.5 billion in economic activities and over 8,500 new jobs over the next 5 years.

I couldn't be more proud of all that SMUD has accomplished over the years, and I am confident that we can and will deliver our zero-carbon goal, and we are excited to make Sacramento an example to follow and a region where climate conscious business wants to be.

Getting to zero by 2030 is not political. It is simply the right thing to do for our economy, our children, our grandchildren, and our planet.

And thank you. I look forward to any questions.

[The statement of Mr. Lau follows:]

Written Testimony of Paul Lau

CEO, Sacramento Municipal Utility District

at the House Select Committee on the Climate Crisis

Hearing on

"Making the Case for Climate Action: Creating New Jobs and Catalyzing Economic Growth"

April 20, 2021

Chair Castor, Ranking Member Graves, and Members of the Committee, thank you for holding this important hearing on the economic development opportunities of climate action and for the opportunity to testify. SMUD supports the important work of this Committee in identifying and advancing key recommendations from its 2020 Congressional Action Plan for a Clean Energy Economy, and in continuing to work towards meaningful policy changes that will unleash the benefits of climate action.

My name is Paul Lau and I am the CEO of the Sacramento Municipal Utility District, or SMUD. SMUD is the nation's sixth-largest community-owned utility, operating on a not-for-profit basis to supply electricity to California's capital region since 1946. Today, SMUD serves a population of 1.5 million throughout a service territory of 900 square miles situated in the Sacramento Valley of Northern California.

We appreciate the opportunity to share our experience creating jobs and economic growth through climate action. SMUD welcomes the chance to serve as a resource for members of the Select Committee who may wish to learn more about our work keeping the lights on 24 hours-a-day, 365 days-a-year for residents and businesses in Sacramento, California while laser-focused on keeping our rates affordable and our operations environmentally sustainable with every decision we make.

SMUD powers the region's industries and homes using a generation mix that today is roughly 50% natural gas, 20% hydropower, and 30% other renewable energy (solar, wind, distributed energy). We are governed by a seven-member Board comprised of, and elected by, voters within Sacramento County. Our business model and local governance mean we are extraordinarily responsive to the wishes of our customers and local community. That's one reason why our customers consistently rank SMUD #1 in J.D. Power's customer satisfaction surveys. As a utility, reliable service, low rates, and environmental stewardship have long defined the three-pronged approach SMUD applies in serving our customers.

The devastating effects of climate change continue to impact our region. Northern California wildfires that made national news in recent years burned in counties surrounding Sacramento. SMUD implements robust vegetation management, inspection and maintenance, facility hardening and situational awareness programs that help minimize the risk that a wildfire could spread through our service territory or damage our equipment, facilities and other assets. Such proactive measures have helped our customers and our region avoid the sorts of catastrophic fires that are becoming more prevalent as our region logged some the hottest summers on record over the past few years.

Still, the American Lung Association's "2020 State of the Air" reported Sacramento ranked in the top 5 worst U.S. cities for ozone pollution. And four of the top five are in California. Children in our region are 30% more likely to suffer from childhood asthma. Like wildfires, we view this to be a statewide emergency.

That's why we have moved with urgency to reduce our carbon footprint. SMUD has consistently set and achieved goals that exceed California's environmental requirements, which are already among the most stringent in the nation. SMUD was the first large utility in the state to reach a 20% renewable portfolio standard in 2010, and our utility adopted a 33% renewable portfolio standard even before this became a mandate in California.

In 2018, our locally-elected Board adopted an Integrated Resource Plan to put SMUD on the path to net-zero emissions by 2040. But even as we geared up for that transition, our Board made the determination that it was not enough to meet the gravity of the climate crisis. So, last year they adopted a Climate Emergency

Resolution to accelerate that goal to 2030. We know it won't be an easy road, but the stakes are too high to not do everything we can to reach zero as quickly as possible. It will take a coordinated approach to clean energy policy development, investment, and engaging customers and other stakeholders to take part.

Today, I am proud to announce that our Board is poised to approve an ambitious plan to surpass its own net zero goal and completely eliminate carbon emissions from SMUD's power supply by 2030. This would make SMUD the first large utility in the U.S. to reach absolute zero carbon emissions, leading the way in context of the Biden Administration's goal of achieving a clean power sector by 2035. We just concluded the public comment period on SMUD's technical plan to accomplish this, which involves deploying existing clean technology, innovation, retiring and retooling our natural gas plants, and closely managing financial impacts.

Getting to zero by 2030 will require SMUD to invest upwards of $4.6 billion over the next 9 years. To put this context, SMUD's average annual revenue in the 3 years ending 2019 was roughly $1.5 billion. Our zero carbon investments will impact all of SMUD's operations and engage our customers as part of the solution. We will increase our renewables and batteries by 3.5 times our current capacity, retire 25% of our fossil fueled generators and run the rest on clean fuels, and we will more than double our investments in energy efficiency and electrification. We'll continue to support our customers' investments in rooftop solar and batteries as well as focusing on new technologies like vehicle to grid or virtual power plants, because our customers are an important part of the solution to reach zero carbon emissions.

Importantly for me, as an engineer and a SMUD customer, as it is to all our customers, our 2030 Zero Carbon Plan seeks to eliminate carbon emissions from our power generation activities without compromising SMUD's world-class reliability or our commitment to affordability. To be precise on affordability, that means getting to zero by 2030 while maintaining rates among the lowest in California, on average 35% lower than our neighboring utility, which effectively keeps over $800 million in our local economy. So, we see this as an investment not only in reliable and resilient clean technology and infrastructure, but also in jobs and a healthier, safer and more just future for generations to come.

As the state capital of California, Sacramento's largest employment sector has historically been federal, state and local government. However, our region's economy today is more broadly based. Government and transportation are the largest sectors of employment in the area followed by information technology and financial services, education and health services, leisure and hospitality and construction. The Sacramento region also recently updated its Comprehensive Economic Development Strategy with the U.S. Economic Development Administration, which identified the greatest growth potential in three industry sectors: food and agriculture, life sciences, and future mobility.

SMUD's customer base is among the most socio-economically diverse in the country. The population we serve is approximately 62% Caucasian, 23% Hispanic/Latinx, 17% Asian, 11% African American, 6% multi-racial and 1% Native American. Currently, the per capita income in Sacramento is roughly $32,000, median income is $67,000, with approximately 12.5% of our population living below the poverty line.

As a community partner for nearly 75 years, SMUD is paying particular attention to ensure the benefits of our zero-carbon future are felt across all our communities. We do not want to just "bring others along." That is why we have already held nearly a dozen community listening sessions on our 2030 Zero Carbon Plan and are continuing to seek feedback from local stakeholders. SMUD will continue to engage with our diverse communities as we implement our plan so that they are all part of the solution. As we aggressively decarbonize our power supply, we are striving to empower our communities to work with SMUD to develop place-based strategies, to make Sacramento communities more livable, resilient, and prepared to take advantage of a low-carbon future. We understand from experience that this can only be achieved by recognizing Sacramento is one of the most diverse cities in the nation and that we need to develop strategies respecting and building upon our local, unique qualities.

SMUD's Sustainable Communities program, launched in 2018, builds on the decades-long work we have done to support under-resourced communities. We have identified areas in our region that are in particular need of assistance through a Resource Priorities Map, developed from analysis of current data indicating neighborhoods most likely to be under-resourced or in distress due to lack of community development, income, housing, employment opportunities, and transportation. SMUD partners with policy makers, transit leaders, technology companies, health care providers and other community-based organizations to maximize our impact and collaboration with community members to help all our communities—from rural to suburban to urban—to be part of a zero-carbon future.

To this end, SMUD has invested more than $5 million with 130 local organizations to execute projects aligned with the four pillars of our Sustainable Communities program: social wellbeing, healthy environment, prosperous economy and economic wellbeing. These partnerships have allowed SMUD to establish relationships locally and create a pipeline to ensure that all communities are included in our zero-carbon future. One such partnership is with Habitat for Humanity—Greater Sacramento, through which we have brought solar and new energy solutions to hundreds of new and existing homes for low-income families, and which will continue over the next few years. By adding electric vehicle (EV) charging at many Habitat homes through our partnership, SMUD is fostering the transition from fossil-fueled based to electric transportation in our lower income neighborhoods.

SMUD is focusing our community outreach to improve equity in recruitment and remove barriers many communities face in pursuing zero-carbon careers. SMUD is helping local partners implement a workforce development program known as Energy Careers Pathways, which trains participants in basic installation of electrical, solar, and EV charging equipment. By the end of 2021, the program will have 125 graduates with a large number of participants hired to perform green energy jobs. SMUD also provides staff to assist the California Conservation Corps in running its energy lab which employs and trains young adults in electrical certifications and EV fast-charging infrastructure. Similarly, SMUD's energy "Barons" program provides training to individuals in utility trades to develop their community energy management skills for next-generation facilities management. These programs have translated into career training and zero carbon related job placement for over 200 participants, which SMUD sees as essential to ensure we have a workforce skilled to perform work needed to achieve Zero Carbon by 2030.

SMUD's education outreach and workforce pipeline efforts aim to engage students from kindergarten through college in energy-related topics and STEM disciplines. Through partnerships with universities and junior colleges, we support a range of STEM education programs and activities including a leadership program for students at California State University, Sacramento. We offer paid internships for high school and college students, and our STEM-focused college scholarships come with paid internships at SMUD.

Through the California Mobility Center, a public-private consortium led by SMUD, we are seeking to establish Sacramento as a center of electric mobility innovation. The California Mobility Center, which began operations this year, fosters clean, e-mobility technologies and solutions that can scale and become engines of economic growth. E-mobility includes on- and off-highway vehicles and refueling and charging infrastructure supporting autonomous, electric, connected, and shared/smart mobility.

Recently, the Center was awarded approximately $1.4 million in Coronavirus Aid, Relief and Economic Security (CARES) Act Grant funds from the City of Sacramento and a $600,000 grant from the California Workforce Development Board to provide workforce training to residents seeking advanced manufacturing careers. The funds have been shared with La Familia, the Greater Sacramento Urban League, Asian Resources, and the Sacramento Valley Manufacturing Association and other community training partners to develop workforce training programs supporting jobs in advanced manufacturing and mobility industries. Since the program's startup last year, over 350 participants received job-readiness or technical training in manufacturing trades, more than 50 secured internships with local companies, and over 30 participants have been placed in jobs. Many of the students trained in the Energy Career Pathways program and the California Mobility Center are being placed in union careers. Representatives of trade unions are brought in as part of these trainings to evaluate student projects and to perform onsite interviews.

Workforce training is critical to begin now because demand for skilled employees in the e-mobility sector is only going to rise. A recent economic assessment estimates that from 2022–2027 the California Mobility Center and the companies it draws to the Sacramento region could generate $2.5 billion in economic activity. The California Mobility Center's operations during that five-year span could directly and indirectly support approximately 8,500 new jobs and generate over $900 million in total annual labor income.

Among these new jobs, the assessment projects that the Mobility Center and its service provider partners would directly employ approximately 130 individuals at an average wage of $75,000. Expanding client companies are expected to add about 1,900 new jobs over the five-year period. With continued support of partners, an estimated 3,150 trainees and interns will gain job skills development through Mobility Center programs. Through the multiplier effect, an additional 3,400 indirect and induced jobs and $455.5 million in labor income could be supported at other local busi-

nesses in Greater Sacramento. The actual level of job and economic impact will depend on the number of companies that the Mobility Center is able to assist and the extent to which the new jobs created are in the Sacramento Region, but these numbers represent the expected scenario. The additional jobs and labor income at other local businesses stem from indirect and induced impacts of supplier demand created by the Mobility Center and its clients and consumer demand created by their employees.

Beyond creation of new jobs, the partnerships SMUD is developing through the California Mobility Center is helping us realize the direct benefits of emissions reduction and indirect benefits of lowering fleet operating costs (contributing to lower rates for our customers). At SMUD, we have electrified our light duty vehicle fleet 100% and implemented advanced technologies to reduce idle time and eliminate emissions from our heavier duty fleet. Currently, 13% of our fleet of nearly 1,000 vehicle and construction equipment includes an electric drive or hybrid feature, and we are aiming to accelerate this progress significantly through 2030. This year, we have partnered with a start-up, Zeus Electric Chassis, LLC—which established an operational presence in Sacramento based on its collaboration with the Mobility Center—to acquire five all-electric class 5 work trucks that will replace diesel engines in our fleet. Our investment in all-electric class 5 vehicles is SMUD's first in this medium duty class of vehicles and the only direct purchase option available from the market today. We will continue to track the market and advance fleet electrification in medium and heavy-duty vehicles classes in the future. SMUD expects to see and acquire all-electric bucket trucks in the next few years and there may be options for alternative fuel cell technology before 2030 as the market develops and heavy duty lower- or zero-emissions equipment options mature.

Looking prospectively, SMUD will be identifying new skills needed and partner with community organizations to develop upskill or entry-level training programs to support new zero carbon technologies. We expect to develop customized strategies to attract and retain residents from under-resourced communities to these stable, economically mobile careers.

We believe our carbon reduction actions will help counteract the effects of climate change, but it is much more than that, with even wider-reaching direct impacts on the health and wellbeing of the Sacramento region's 1.5 million residents today and for generations to come.

SMUD has a long track record of working collaboratively with a wide range of partners and industries to deliver environmental, economic and social benefits for the Sacramento Region. In the early 2010s, SMUD successfully installed smart meters across our entire service area as part of the SmartSacramento smart grid effort. The heavy upfront investment was offset by a $127.5 million Department of Energy grant, more than 60% of the total smart-grid grant allotment in California. SmartSacramento revolutionized the California capital region's power grid, enabling digital enhancements in home and businesses and on SMUD's grid to make our power supply more efficient, resilient, and secure. Importantly, this smart grid technology facilitated integration of increased renewable energy sources, electric vehicles, rooftop solar and other distributed energy resources, making it possible to even contemplate our zero-carbon goal.

As we move forward in our pursuit of zero carbon emissions, our approach maximizes local investment in renewable energy, with a direct impact on and improving air quality and health outcomes. It drives inclusive economic development, creates jobs, and spawns innovation. By taking a leadership role in addressing climate change, we hope to make Sacramento an example to follow and a region where climate-conscious businesses seek to establish roots. For SMUD, and me personally, what we are doing to get to zero by 2030 is not political; it is simply the right thing to do.

Again, thank you for your consideration of this important topic and please do not hesitate to call on SMUD as a resource as this Select Committee continues its work exploring and developing climate policy solutions. I look forward to addressing any questions you may have.

Ms. CASTOR. Thank you very much.

Ms. Colon de Mejias, you are recognized for 5 minutes.

STATEMENT OF LETICIA COLON DE MEJIAS

Ms. COLON DE MEJIAS. Thank you, Honorable Chair Castor and Ranking Member Graves and members of the Select Committee on the Climate Crisis, for allowing me this opportunity to express the

benefits of climate action through sensible and expanded investments in energy efficiency in homes and buildings across America.

I am Leticia Colon de Mejias and the owner of Energy Efficiency Solutions, which I founded in 2010. And, through my companies, we've provided over 14,000 home energy retrofits and upgrades in over 10 million square feet of multifamily properties. Additionally, we provide education and community engagement on the topics of sustainability and energy and climate action.

I am also the Policy Co-Chair of the Building Performance Association, and I am honored to identify policies and opportunities to advance the energy efficiency industry as we create work opportunities for Americans across the Nation.

Efficiency provides a benefit to our economy, human health, grid stability, and environmental justice goals in every state in the nation, while simultaneously making our country's building stock more efficient, resilient, safe, and affordable by reducing energy bills for millions of Americans through proven home retrofits and demand reduction technologies. Efficiency does all of this while putting Americans to work in stable career paths, resulting in national economic growth.

While America is a diverse and innovative, amazing melting pot of people and solutions, I know that, together, we can create a responsible, equitable, inclusive, diverse, safe path forward, which will sustain and grow our nation while protecting human health and lifting our communities as we move forward. And, to reach this goal, we must rebuild our nation's energy grid by implementing the best possible solutions with the least possible harm to society.

Therefore, it is critical that we invest in expanded efficiency for homes and buildings across America, because efficiency is the best path forward to draw down carbon emissions while creating high return on investment and generating numerous societal benefits.

Efficiency reaches all communities in the nation, creating and sustaining local jobs while inclusively lifting communities, because through energy retrofits we address the energy crisis while prioritizing basic needs, including safe shelter, resilient livable shelter, and an affordable energy and a livable environment for all Americans.

The affordable clean energy future should be built on the foundation of efficiency, because all roads lead home, and really no one can get ahead without a safe roof or a bed.

Energy efficiency equals economic growth. Investments in efficiency result in direct economic stimulus by creating local jobs, and Congress could provide a robust appropriation for Federal efficiency programs, because, dollar for dollar, Federal investments in efficiency create more jobs.

In my written testimony I provided a list of specific Department of Energy programs that deserve our support from American taxpayers. These programs continue to provide significant return on investments over and over.

Unfortunately, there are many low-income households who are struggling with indoor contaminants, such as mold, asbestos, and other asthma triggers, which prevent deep energy efficiency retrofits.

And, so, I suggest that potentially we look at LIHEAP programs, which could offer opportunities to improve human health through expanded building retrofits and remediation of indoor contaminants, which would allow us to draw down demand in those buildings, not just today, but forever.

Ultimately, efficiency is the most cost-effective way to draw down carbon emissions and pollution while simultaneously producing all of these additional societal benefits. Americans need jobs. In efficiency, we need workers.

Although often overlooked and not seen as very sexy, efficiency is actually the largest energy sector in the United States, employing over 2 million Americans, and our industry was the fastest-growing job sector prior to the pandemic, employing twice as many workers as the entire fossil fuel industry.

And in my role at the Building Performance Association, I hear daily from companies, like my own, across America, that are looking to hire for open energy efficiency roles. These contractors want to grow, and that growth requires hiring qualified people for really good-paying jobs.

This is why legislation, like the Blue Collar to Green Collar Jobs Act, introduced by Congressman Rush, is so important, because we need to hire people for jobs, and America has people who need jobs. Efficiency offers real jobs for real people.

I myself have seven open roles which we are struggling to fill at this time due to lack of qualified trained workers. My starting pay rate is $15 an hour, and these careers offer rapid-growth opportunities up to $26 an hour plus commission for people with only a GED, high school diploma, and a few certificates and training.

Residential efficiency is a critical infrastructure investment, which is why the Blue Collar to Green Collar Jobs Act would help bridge this gap. This grant would directly help small businesses like my own and support on-the-job training for new and existing employees.

Most importantly, this legislation would give priority to businesses that recruit employees from local communities, minorities, women, veterans, and workers transitioning directly from the fossil fuel industry. It would also support critical on-the-job training and reskilling for these workers.

We must ensure that funds are accessible to small businesses and include flexibility for on-the-job training at small businesses, because, unfortunately, at the Department of Labor, there is no code for efficiency. So, it has been very difficult for small businesses like mine to access Federal grants or state funds, particularly in the residential energy efficiency sector. And I am hoping this could be addressed through support to frontline and disadvantaged communities.

And climate change, as we know, poses the greatest threat to communities who are least prepared to adapt, particularly low-income populations, working families, and historically underrepresented groups.

These challenges and issues could all be addressed with building science and efficiency retrofits, and we can improve these problems through training and accessible, affordable training programs, which are critically part of a diverse, inclusive workforce program.

With access to workforce development and short-term training programs, struggling Americans can become fully equipped to fill existing jobs and new careers at small businesses like my own.

This also helps bolster energy affordability and energy security, because energy efficiency is one of the most effective tools to drive cost savings and increase property value, protecting financial security for Americans, while reducing energy burdens and making the grid more resilient and more efficient.

Research shows that 25 percent of all U.S. households are, unfortunately, facing high energy burdens. For low-income households, this number rises to 67 percent. Furthermore, Black, Hispanic, and Native Americans and seniors, as well as families residing in low-income and multifamily housing, experience highly disproportionate energy burdens.

We must be inclusive——

Ms. CASTOR. Ms. Colon de Mejias, can you wrap up quickly? Thanks.

Ms. COLON DE MEJIAS [continuing]. A hundred percent. Yes, Chair Castor.

And if we desire to engage this historically underrepresented population in career opportunities, we must invest in leveling the education playing field and including education on energy, science, and STEM skills, while looking towards protecting public health and creating a robust jobs program to get America back to work in our building sector.

The time for action is now, and as a small business owner, I know we can create a responsible, inclusive path forward in the American economy.

Thank you for allowing me the opportunity to speak here today.

[The statement of Ms. Colon de Mejias follows:]

Testimony of Leticia Colon de Mejias

CEO of Energy Efficiency Solutions and
Policy Co-Chair of the Building Performance Association

Before the

U.S. House of Representatives, Select Committee on the Climate Crisis

Hearing Title:

Making the Case for Climate Action:
Creating New Jobs and Catalyzing Economic Growth

April 20, 2021

Chair Castor, Ranking Member Graves, and members of the Select Committee, thank you for the opportunity to testify today on the opportunities and benefits of climate action through sensible and expanded investments in energy efficiency for homes and buildings.

I am Leticia Colon de Mejias, CEO of Energy Efficiency Solutions, and Policy Co-Chair of the Building Performance Association. I founded the home performance company Energy Efficiency Solutions (EES) in Windsor, CT in 2010. My direct service companies, EES, Best Insulation of Connecticut, and Green Eco Warriors, which I also co-founded, have completed weatherization and comprehensive energy efficiency upgrades in over 14,000 Connecticut homes and 10 million square feet of multifamily properties. Additionally, we have provided educational outreach and community engagement on the topics of energy conservation, energy efficiency, climate action, and energy equity in CT, MA, RI, NY, and CA. We are currently engaged in energy educational efforts in Chicago.

As Policy Co-Chair of the Building Performance Association, I am honored to help identify policies and opportunities to advance the residential energy efficiency industry, which in turn create career opportunities and improved policy outcomes locally and across the nation. Energy efficiency provides benefits to our economy, human health, grid stability, and environmental justice goals in every state in the nation, while simultaneously making our country's residential building stock more efficient, resilient, safe, healthy, comfortable, and affordable by reducing energy bills for millions of Americans through proven home retrofits and demand reduction technologies. Energy efficiency does this while putting Americans to work in family sustaining, stable career paths resulting in national economic growth.

America is a diverse, innovative, and amazing melting pot of people with unlimited ideas and solutions. I strongly believe that together we can create a responsible, equitable, inclusive, diverse clean energy future that will sustain and grow our nation while protecting human health and lifting our communities. As we rebuild our nation's energy grid to implement the best possible solutions with the least possible harm to our society, it is critical that we invest in expanded energy efficiency for homes and buildings.

Energy efficiency is the best path forward to draw down carbon emissions and create high return on investments, while also generating numerous societal benefits. The benefits of efficiency reach all communities across our nation, creating and sustaining local jobs, lifting communities by addressing barriers to safe and healthy housing, improving energy affordability, and mitigating waste and pollution. Through energy efficiency retrofits we can address the climate crisis while we prioritize basic needs including safe, affordable, energy efficient, resilient shelter for **all Americans**. An affordable, clean energy future should be built on a foundation of energy efficiency.

ECONOMIC GROWTH

Investments in energy efficiency are a proven job creator and result in direct economic stimulus. There is a huge opportunity to simultaneously build a skilled clean energy workforce, support small businesses, and dramatically improve and decarbonize America's building stock. According to a recent report from E2 and E4TheFuture, if Congress directed $60.7 billion to the energy efficiency sector, over a 5-year period it would **add $254.7 billion to our nation's economy and create 737,200 full-time jobs across every region and state.**[1] Investing in a robust workforce of skilled energy efficiency workers will help power our economic recovery and our nation.[2]

Investing in the nation's energy efficiency and building retrofit workforce will not only protect and create many jobs, but it will also help American families save money on utility bills and make their homes safer and more comfortable, while supporting a sustainable energy future for the country. These investments can increase purchasing power for working families and support economic growth and revitalization, especially for historically disenfranchised communities.[3]

Congress should provide **robust appropriations for federal energy efficiency programs**. Dollar for dollar, federal investments in energy efficiency will create more jobs than investments in the utility sector or fossil-fuels.[4] Federal investments in the U.S. Department of Energy (DOE) programs that support energy efficiency—like the Building Technologies Office, Weatherization Assistance Program, and State Energy Program—consistently result in job creation and economic growth.

The following programs at DOE deserve the support of American taxpayers as these programs are proven to provide a significant return on their investment. When funded they will continue to provide energy cost relief to households, support American-based industry and American jobs, strengthen the aging electrical grid, and support national security goals.

- **Building Technologies Office (BTO)** develops critical technologies, tools, and solutions that help U.S. consumers and businesses achieve peak efficiency performance in new and existing homes and buildings across all sectors of our economy, including through its important **Residential Building Integration (RBI)** program.
- **State Energy Program (SEP)** provides funding and technical assistance to states to enhance energy security, advance state-led energy initiatives, and maximize the benefits of reducing energy waste. The Oak Ridge National Laboratory found that every dollar invested in SEP by the federal government yields over $10 leveraged for energy-related economic development and realizes $7.22 in energy cost savings for U.S. citizens and businesses[5]—an excellent return on investment.

- **Weatherization Assistance Program (WAP)** helps low-income and rural families, seniors, and individuals with disabilities in every county in the nation make lasting energy efficiency improvements to their homes. WAP has a proven track record of creating jobs and contributing to the economy through the program's large supply chain of vendors, suppliers, and manufacturers. Each dollar that goes toward weatherization assistance returns $2.78 in non-energy benefits, in addition to the direct energy cost savings.[6]

In addition, I want to note the importance of the Low-Income Heating Energy Assistance Program **(LIHEAP) at the U.S. Department of Health and Human Services. LIHEAP** is a vital program that helps Americans pay their utility bills. However, this critical program may also be used to increase home energy efficiency, thus reducing those bills permanently. To better support low-income communities, LIHEAP allowable measures and cost per unit should be expanded to remove barriers to weatherization which would allow long-term solutions to energy affordability, rather than band aid solutions. Unfortunately, many low-income households are struggling with indoor health contaminants such as mold, asbestos, and other asthma triggers. These programs could offer multiple opportunities to improve human health through expanded building retrofits.[7]

Ultimately, energy efficiency is one of the most cost-effective ways to draw down carbon emissions while simultaneously producing all these added societal benefits.[8] Addressing our aging infrastructure through holistic efficiency upgrades will also support a more reliable, resilient energy system, which is critical to our current and future economic growth and our national security.

CREATING JOBS

Energy efficiency is the largest energy sector in the U.S., employing over 2 million Americans.[9] Our industry was also the fastest growing jobs sector in energy prior to the pandemic, employing twice as many workers as the entire fossil fuel industry.[10] Energy efficiency jobs are inherently local and cannot be outsourced, since upgrading our nation's building stock requires "boots on the ground." These jobs are in every state in the country, across urban and rural areas, and most of the companies in our industry are small businesses like mine. Energy efficiency is an economic engine, creating and sustaining high-quality local jobs and career pathways for the American workforce.

Like so many industries, ours was hard hit by the pandemic, resulting in a 10% cumulative workforce loss (338,500 clean energy jobs were lost between February of 2020 and February 2021).[11] My company suffered greatly when the utility-run efficiency programs across Connecticut shut down on March 15th of 2020. Our work came to a screeching halt, leaving my staff and I with no way to work until late June. This was true for all efficiency contractors in my state. Ultimately, we were able to work with our local Department of Energy and Environmental Protection leadership to create a safe path forward to serve the ratepayers of Connecticut. Through a combination of virtual assessments, new safety protocols, and PPE upgrades, we were able to successfully get our entire team back to work. Many other contractors in my state were also able to get back to work, and even more of us are now looking to grow our teams, companies, and business offerings.

The pandemic has continued to shine a light on the need to invest in energy efficiency expansion. As we sheltered in place it became all too clear that safe, resilient shelters are critically necessary in a crisis. I see this realization as an opportunity to spark new career options for displaced workers across our nation by expanding energy efficiency workforce programs nationally. Crises like the recent grid collapse in Texas demonstrate why expanded investments in improving thermal boundaries and increasing home efficiency could increase our national resilience to extreme weather or other crisis situations that require people to shelter safely at home. These investments in EE simultaneously work to lower peak demand, stabilize our energy grids, and allow that same saved energy generation to be reallocated to electrification efforts.

To prepare more American workers for quality jobs in energy efficiency and bolster the economy, Congress should act to support workforce development and jobs training, by passing the **Blue Collar to Green Collar Jobs Development Act (H.R. 156, 117th Congress, sponsored by Chairman Rush).** The bill includes a vital **Energy Workforce Grant Program** that provides grants directly to small businesses to support on-the-job training for new and existing employees in the energy efficiency, renewable energy, grid modernization, and other energy industries. This would significantly help small and medium sized businesses invest in their employees, allowing workers to expand their skill set, earn higher wages, and provide improved services and technologies.

The **Blue Collar to Green Collar Jobs Development Act** would support small businesses like mine that are the backbone of the efficiency industry. Small businesses across our nation need assistance to help train our new hires and provide ongoing education to existing employees. We have a real need to ramp up the implementation of workforce programs to provide support and ensure there are qualified workers to fill these vital American jobs.

Importantly, the legislation would give priority to businesses that recruit employees from local communities, minorities, women, veterans, and workers transitioning from fossil fuel sector jobs—and it would also support critical on-the-job training and reskilling for these workers. The bill was passed by the U.S. House of Representatives in the 116th Congress as part of H.R. 2 and H.R. 4447.

We must ensure that funds and activities to support energy efficiency workforce development are accessible to small businesses and include flexibility to use funds for on-the-job training. There is no Department of Labor code for energy efficiency, so it has been very difficult to access federal and state funds for energy efficiency apprenticeship programs, particularly in the residential sector. The Department of Energy has a much better understanding of this industry and its support for residential energy efficiency businesses is crucial. These small businesses are helping to lighten the load on our national energy grid: we draw down pollution, carbon emissions, and strengthen our nation's infrastructure, while lowering energy burdens, and increasing positive health outcomes. Efficiency is simply efficient.

SUPPORTING FRONTLINE & DISADVANTAGED COMMUNITIES

Climate change poses the greatest threat to those communities that are least prepared to adapt—particularly low-income populations, disabled, elderly, young working families, and historically underrepresented communities. These communities already experience disparities in health outcomes, inequities in living conditions, and often historically lack political power. Such disparities place low-income communities and many underrepresented communities at greater risk while limiting capacity to adapt. Many of these same communities are struggling with energy affordability, barriers to safe and healthy housing, and financial insecurity. These challenges are all issues which building science and efficiency retrofits can improve. Equity-driven energy efficiency can help uplift these frontline communities, through healthier homes, lower energy bills, improved safety and increased financial security, all while offering local career opportunities.[12]

EQUITABLE TRANSITION

Taking climate action through robust investment in energy efficiency will create skilled jobs and stable career pathways with opportunities for growth in every state, not just for the moment, but for the long-term. With access to workforce development and robust short-term training programs, struggling Americans can become fully equipped to fill existing jobs and new careers in this emerging clean energy economy.

At my company for example, all our company managers started out as entry-level laborers. Over time and with training they developed into leaders at EES. Our industry boasts employees whose highest educational degree may be a GED or high school diploma, yet these staff are earning upwards of $80,000 annually. Furthermore, three past EES employees now own companies like EES. This is a wonderful demonstration of real career paths for real Americans, "Real Jobs for Real People." My past employees are now business owners who are also hiring their own staff from their own communities. **Unfortunately, we are all struggling to hire people with the skill sets we need. Therefore, it is critical that Congress supports and budgets for energy efficiency training programs for small businesses, which will offer the opportunity for Americans to join us in this amazing work.**

We are presented with an unprecedented opportunity to lift underserved communities by supporting displaced workers, and career changers, through recruitment and training for careers in energy efficiency. Supporting employer-based on-the-job (OJT) training networks can help ensure that the residential home energy retrofit workforce continues to advance and expand to drive middle class job growth.[13] With expanded training we can connect displaced and transitioning workers, underrepresented populations, and historically disadvantaged populations to these job opportunities. My company currently employs 20 staff members, 18 of whom are people of color who were unemployed or underemployed prior to working at EES. Beyond our EES staff we also provide work to a network of subcontractors who represent

a diverse group of contractors such as: window installers, manufacturers, insulators, HVAC contractors, electricians, mold remediators, solar installers, trainers, marketing teams, community engagement workers, and sales staff.

Congress can take immediate action to lift energy burdens, strengthen our energy grid, improve health outcomes, and lift communities by supporting nationwide investments in residential energy efficiency for Americans of all income levels by passing the following legislation:

The **HOPE for HOMES Act** (H.R. 7325/S. 4052, 116th Congress, pending bipartisan introduction in the House by Representatives Welch and McKinley) is groundbreaking legislation that will help to support contractors and homeowner rebates for energy efficiency home upgrades, including enhanced support for moderate-income and working families that do not qualify for weatherization assistance.

- ***HOPE for HOMES Training:*** The legislation allocates $500 million to support small businesses in training their staff to undertake energy efficiency upgrades. This training is offered on-line to increase access (even during a pandemic) and allow contractors around the country to support continued improvement of their staff's skill sets. It will also increase the general understanding of the importance of building science and the business opportunities in improving home performance.
- ***HOPE for HOMES Partial Performance:*** The "Partial Performance Rebate" is a direct rebate provided to a homeowner for 30% of the cost of an energy efficiency improvement up to $800 for installing air-sealing and insulation and rising to $1500 to include high efficiency HVAC. This is doubled for moderate income families making less than 80% of median area income.
- ***HOPE for HOMES Full Performance:*** The full performance program will be run by State Energy Offices according to building science driven guidelines — ensuring the energy savings paid for is achieved in a manner that most effectively leverages the state's energy goals and workforce. For the "Full Performance Incentive" the rebates will be 50% of the cost of the project with rebates ranging from approximately $2000-$4000 depending on the percent of energy savings achieved. **This support is also doubled for moderate income families making less than 80% of median area income.**

The HOPE for HOMES Act was passed by the U.S. House of Representatives in the 116th Congress as part of H.R. 2 and H.R. 4447, and is currently in the CLEAN Futures Act (H.R. 1512) and the LIFT Act (H.R. 1848) in the 117th Congress.

The **25C Tax Incentive** is complementary to HOPE for HOMES and is another key piece of legislation providing incentives to homeowners at their point of decision-making. Simple and current, this incentive is the only energy efficiency tax incentive available for homeowners who have a tax liability at filing. It allows homeowners to take a discount off their tax bill when they purchase high efficiency products and systems during the tax year. Congress should support a long-term, forward-looking extension of the 25C credit by updating goals and consider transitioning the credit into a permanent performance-based instead of prescriptive incentive.

ENERGY SECURITY & AFFORDABILITY

Energy efficiency is one of the most effective tools to drive cost savings, increase property value, and protect financial security for American families while reducing energy burdens. My company provides residential retrofits across Connecticut, which have proven to reduce energy demand by 33% and generally have a return on investment of between 1–3 years. Nationally, studies have shown that weatherization measures such as insulation and air sealing can reduce energy use by 25–35%. **Cutting down on energy waste lowers peak demand, resulting in improved affordability and energy security for all Americans, especially the most vulnerable.**

New research shows that 25% of all U.S. households face a high energy burden, and for low-income households that number rises to 67%.[14] Furthermore, Black, Hispanic, Native American, and seniors, as well as families residing in low-income multifamily housing, manufactured housing, and older buildings, experience disproportionally high energy burdens. **In the face of unaffordable energy costs, nearly one in three U.S. households have reported facing a challenge in paying energy bills or sustaining adequate heating and cooling in their home, which can in turn impact health.**[15] Investment in energy efficiency generates lasting savings and is a critical solution for addressing energy affordability and protecting the health and safety of American families.

Congress should improve access to energy efficiency among low-income and disadvantaged communities by supporting and expanding the Weatherization Assistance Program (WAP), including through robust appropriations for FY2022, as noted above.

Upfront costs are a huge barrier preventing many American households from investing in energy efficiency upgrades that would save money in the long run and improve their energy security.

In addition to the **Weatherization Assistance Program** and incentives like **HOPE for HOMES** and the **25C tax credit** which reduce the upfront costs, it is important that the energy efficiency upgrades are shown to have a return on investment. The **SAVE Act** (pending introduction in the Senate by Senator Bennet and to be included in Representative Perlmutter's GREEN Neighborhoods Act) would enable proper valuation of energy efficiency and energy generation features in a home's appraisal. This will help inform and engage Americans in the conversation on energy and increase demand for energy-efficient homes and retrofits of existing homes. It will also spur job creation in the construction, remodeling, and manufacturing sectors while simultaneously lowering Americans' energy bills, and decreasing carbon emissions from the housing sector.

In Addition to the programs and legislation mentioned above, educating Americans in the importance of energy efficiency and its economic and societal benefits will greatly improve the adaptation and success as we transition to a clean energy economy. Unfortunately, in many cases youth and families located in underrepresented, at-risk populations are still missing access to critical Science, Technology, Engineering, Art, and Math (STEAM) applied learning skills. STEAM could build a foundation for our future workforce needs and help us diversify the workforce. This type of systemic change will require investments in energy and environmental conservation education to increase the general population's understanding of how energy is connected to all things. If we desire to engage historically underrepresented populations in these career opportunities, we must invest in leveling the educational playing field and support applied science and energy education in public schools across our nation. We must invest in enhancing access to the information which would help connect these underrepresented populations to our vital work to transition to a clean energy economy.

At Green Eco Warriors, we collaborate with schools, families, communities, and leaders to achieve the following goals:

- Engage youth and families in meaningful learning activities such as environmental research and civic engagement and sustainability leadership, through the implementation of in-person and online education and motivation of youth and families.
- Engage underrepresented communities in preparing for growing energy workforce opportunities.
- Educate energy consumers on their role in energy consumption with special focus on at risk and minority populations, climate science, and energy equity.
- Create and provide equal access to engaging science-based educational tools aligned with national education standards.
- Reduce carbon emissions, pollution, energy waste, and energy disparities through the reduction of residential and commercial energy usage nationally.
- Educate communities on sustainable energy plans and water protection.
- Teach youth and families how to protect natural resources such as water, air, land, people, and the planet.

Green Eco Warriors has connected with thousands of youth and families which, prior to working with us, had no information on climate change, energy infrastructure, or their connection to energy, and therefore did not see themselves as a critical part of the solution or planning process. **If we desire meaningful engagement, we must ensure equal access to information that allows people to make informed decisions, and to be engaged meaningfully.**

PROTECTING PUBLIC HEALTH

Energy efficiency improvements in our buildings will create both immediate and long-term benefits for public health.[16] Home performance contractors like myself address homes from the ridge line to the frost line, assessing the whole home and addressing the interconnections between the thermal envelope and the heating and cooling systems. Using building-science-based approaches, efficiency retrofits can dramatically improve the health and safety in homes by identifying and fixing underlying issues which cause mold, unhealthy indoor air, extreme temperatures, and health factors.

The health and safety benefits of energy efficiency retrofits are well documented, including significant improvements in asthma symptoms and other respiratory illness, reduced thermal stress, and improved overall physical and mental health. Weatherization measures, like insulation and air sealing, also improve the durability of homes and minimize residents' exposure to wind, moisture and temperature extremes, which are critical to keeping people safe in unexpected storms or power outages. In dollar terms, these positive health outcomes are significant. In my state of Connecticut, research shows that a 15% reduction in energy use could *reduce health impacts by $73 per capita annually.* On a national scale, a recent study from the American Council for an Energy-Efficient Economy (ACEEE) shows that by targeting four common health risks—asthma, falls, and exposure to extreme heat or cold—existing weatherization programs could save almost $3 billion dollars in avoided health harms over a ten-year period.[17]

Energy efficiency supports public health outside of the home as well. In the U.S., air pollution leads to almost 250,000 annual premature deaths per year.[18] Building retrofits and efficiency measures save energy and lower peak demand, thereby helping reduce harmful pollution from coal- and gas-fired power plants.[19] Oftentimes these dirty "peaker" plants are in or near underrepresented at-risk populations and low-income communities, threatening the health of those populations and making it an important equity concern. In my own state, over 10 years energy efficiency programs reduced emissions by 11.4 million tons, the equivalent of taking 2.4 million cars off the road.[20]

CONCLUSION

Comprehensive climate action that advances energy efficiency in buildings across the U.S. will strengthen our nation's economy and infrastructure and help generate a cascade of societal benefits including creating good-paying jobs for Americans, improving public health and well-being, and supporting our most vulnerable communities. The building sector is one of the largest contributors to our carbon emissions, and it is also a key part of the solution. It is time to address our aging, inefficient building stock and invest in these proven solutions that will provide a lasting return on investment for families, businesses, communities, and this country. The time for action is now. As a proud American and small business owner, I know that together we can create a responsible path forward to ensure an inclusive transition to a clean, resilient, stable energy economy, which will benefit all Americans regardless of economics or social standing.

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Ms. CASTOR. Thank you very much.

Ms. Reams, you are recognized for 5 minutes to present your testimony.

STATEMENT OF HEATHER REAMS

Ms. REAMS. Thank you, Chairwoman Castor, Ranking Member Graves, and members of the committee, for the opportunity to testify today about how climate policy can create jobs and grow the economy.

My name is Heather Reams, and I am the Executive Director of Citizens for Responsible Energy Solutions, known as CRES. We are a nonprofit organization that engages policymakers and the public about responsible, conservative solutions to address climate change while increasing America's competitive edge.

This hearing is of significant importance to CRES, because we believe that climate action does not come at the expense of American job growth or economic expansion. And it is wonderful that we all agree on the science and we need to do something about the climate.

Where there is disagreement, however, is with the math. Adding unnecessary cost burdens, multiplying an already too-big-to-fail bureaucracy, subtracting perfectly viable energy options and American jobs, and dividing up our children's future, will not equal net zero. It is time for Congress to act on reason and common sense rather than the demands and rigidness of the activist fringe.

A sure bet is in the investment in American innovators. We must empower and protect them. Give them access to resources, such as our world-class Federal laboratories and abundant private sector capital. Give them strong intellectual property protections, especially from foreign threats.

Make government a partner in the work, not a barrier, so that the private sector can build facilities and a specialized workforce here in the United States to scale up manufacturing and gain access to global markets.

If we follow this model, the United States will enjoy continued economic strength, robust job creation, and lead the world in providing energy solutions that will result in reducing not just emissions here at home, but global emissions.

I have three key recommendations I would like to share today.

First, reduce energy prices, not energy choices. Low energy costs lead to more manufacturing and jobs domestically.

Today's energy choices keep energy costs affordable so that we can continue to work towards cleaner technologies that can be commercialized and exported globally.

And all the above does not necessarily mean a future dominated by fossil fuels. Instead, it is a realistic outlook about the transition to reliable, low-emissions energy sources at an affordable price.

Second, shrink our emissions, but not our economy.

As this committee knows all too well, climate change is a global issue. Today, 85 percent of all greenhouse gas emissions occur outside of the U.S. borders, a share that will increase to about 90 percent by the end of the next decade as global energy demand is rising, primarily due to increased living standards and energy use in the developing world.

As a group, China and the developing economies are estimated to account for over 100 percent of the anticipated increase in global emissions through 2050.

This means U.S. climate and energy policy must foster innovations and commercialization pathways that will work for America, as well as for India, Nigeria, and Indonesia.

Simply focusing on achieving net zero by 2050 here in the United States is unlikely to produce what it takes for developing nations to do the same.

Third, export American innovation, not American jobs. Investment in innovation is critical to maintaining the downward trend in emissions in the power sector, as well as to lower emissions in hard-to-decarbonize sectors, such as transportation and industry, which are now the second and third sources of emissions in the United States, respectively.

We need to be clearheaded about what poor countries can and will do. Here in the United States, there is a lot of talk about transitioning away from fossil fuels, and that conversation does not exist in the developing world. The difference between having power widely available and not, well, the choice is easy.

Energy access raises the quality of life in developing nations. Will their energy technology be clean? Sure, it is a concern, but it is not their priority, and who can blame them?

Let's follow the science and do the math. The United States will be far more effective in reducing emissions—and equitable—by driving down the cost of low-carbon technologies to make them more competitive and viable for developing countries to adopt.

Here is a logical role for the United States and its scalable, affordable clean tech solutions, but we must invest today so that we have this technology for tomorrow.

And I will underscore that these are advanced jobs, based here in the United States and focused on research and development, deployment, and commercialization of clean energy technologies.

I thank you for the opportunity to share my organization's views with you today. I sincerely believe our best hope for curbing the impact of global emissions is to ensure that America's climate policy supports our workers and our economy, as well as our environment.

I will be happy to answer your questions.

[The statement of Ms. Reams follows:]

Testimony of Heather Reams, Executive Director, Citizens for Responsible Energy Solutions (CRES)

To the U.S. House of Representatives, Select Committee on Climate Crisis Hearing

"Making the Case for Climate Action:
Creating New Jobs and Catalyzing Economic Growth"

April 20, 2021 Noon EDT

Chairwoman Castor, Ranking Member Graves, and Members of the Committee, thank you for the opportunity to testify today about how climate policy can create jobs and grow the economy.

My name is Heather Reams, and I am the Executive Director of Citizens for Responsible Energy Solutions, also known as CRES. We are a non-profit organization that engages policymakers and the public about responsible, conservative solutions to address climate change while increasing America's competitive edge. This hearing

is of significant importance to CRES because we believe that climate action does not come at the expense of American job growth or economic expansion.

We all agree that the science says climate change needs to be addressed. Where there is disagreement, though, is the math. Adding unnecessary cost burdens, multiplying an already "too big to fail" bureaucracy, subtracting perfectly viable energy options and American jobs, and dividing up our children's future will not equal net zero. It is time for Congress to act on reason and common sense rather than the rigidness of the activist fringe.

A sure bet is an investment in American innovators, probably the most powerful source for good the world has ever known. We must empower and protect them. Give them access to resources like our world-class federal laboratories and abundant private sector capital. Give them strong intellectual property protection, especially from overseas threats. Finally, make government a partner in the work, not a barrier, so that they can build facilities and a specialized workforce here in the U.S. to scale up manufacturing and gain access to global markets. If we follow this model, the United States will enjoy continued economic strength, robust job creation, and lead the world in providing energy solutions that will result in reducing not just emissions at home, but global emissions.

My recommendations are simple: 1. Reduce energy prices, not energy choices. 2. Export American innovation, not American jobs; and 3. Shrink our emissions, not our economy.

1. Reduce energy prices—*not energy choices.*

Low energy costs lead to more manufacturing and jobs domestically. Today's energy choices keep energy costs affordable so that we can continue to work toward cleaner technologies. All the above does not necessarily mean a future dominated by fossil fuels. Instead, it is a realistic outlook about the transition to reliable low-emissions energy sources at an affordable price.

2. Export American innovation—*not American jobs.*

Investment in innovation is key to maintaining the downward trend in emissions in the power sector, as well as to lower emissions in hard-to-decarbonize sectors such as transportation and industry, which are now the second and third sources of emissions in the United States. Cutting red tape and safeguarding American intellectual property from global competitors will foster an environment in which our nation's innovators have the resources they need to help us get to a low-carbon economy, while providing jobs for hard-working Americans. Scaling new clean energy technologies will also reduce their cost and make them more accessible for developing economies whose carbon footprint is growing.

3. Shrink our emissions—*not our economy.*

It is clear at this point that clean energy is not at odds with economic growth. Providing incentives that will allow the most innovative technologies to flourish and be produced at scale will help position the American clean energy industry globally. To ensure America's global leadership in technological innovation for clean energy, however, we must be very cognizant of the global supply chains related to these technologies. We must take great care to reduce our reliance on foreign competitors for the critical minerals and components that are used in elements such as wind turbines and EV batteries.

At a basic level, investing in innovation is an investment in America's future. Federal support for R&D, and an unfettered private sector to deploy and commercialize clean energy technologies will reduce costs and increase options to address climate change. Competition in a free and fair market will help drive the domestic economy as America's next generation of clean energy solutions are deployed around the world. We've seen this work in other industries and technologies, and if done correctly will work for climate mitigation, too.

Since this week the President is hosting the Leaders Summit on Climate, I would like to address the 2050 net zero target that the Biden administration has embraced and how it relates to innovation and job growth. While more countries appear to be adopting this mid-century goal, here in the U.S. we have not answered the all-important questions: is it realistic? And what is needed to achieve it?

It's undoubtedly a huge challenge. We currently lack the technology required to tackle it in a way that is commercially viable. These are not one or two technologies to solve a problem in one or two sectors here in America—we need a suite of breakthroughs covering multiple sources and sectors that can be scaled to deploy around the world. These technologies need to be affordable and reliable, and more importantly, globally cost competitive with today's conventional energy.

Global deployment will be needed

We have to think big—in a different way. We no longer live in the U.S.-centric 1990s, when we produced a quarter of global emissions and the rest of the OECD produced another 25 percent. Back then we could pursue unilateral policy—perhaps

in coordination with a few other economies—and make a major dent in global emissions. That is no longer the case.

Today, 85 percent of all greenhouse gas (GHG) emissions occur outside U.S. borders—a share that will increase to about 90 percent by the end of the next decade. Global emissions are increasing, as global energy demand is rising, primarily due to increased living standards and energy use in the developing world. As a group, China and developing economies are estimated to account for over 100 percent of the anticipated increase in global emissions through 2050. This means that U.S. climate and energy policy must foster innovations and commercialization pathways that work for America as well as India, Nigeria, and Indonesia. Simply focusing on achieving net zero by 2050 here in the United States is unlikely to produce what it takes for poor countries to do the same.

We need to be clear-headed about what poor countries can and will do. Here in the United States, there's a lot of talk about transitioning away from fossil fuels—that conversation does not exist in the developing world. While there is strong support for renewables and low-carbon technologies in those countries, they all support traditional fossil fuel energy as well.

The green premium that wealthy countries take on is unrealistic in poorer countries focused on poverty eradication and energy access. Instead of exporting high regulatory costs, we would be far more effective and equitable driving down the cost of low-carbon technologies to make them competitive and viable for developing economies.

We cannot solve climate change by focusing on domestic policies that ignore basic facts like China's emissions, and what poor countries will and will not do. And if we do not change the current global emissions trajectory, we might as well focus on adaptation and resiliency.

But let's assume that we're successful. That we are able to produce affordable and reliable low-carbon technologies that poor countries will buy without any mandates, subsidies or U.S. financial assistance. Will we benefit commercially? Will there be replacement jobs for workers from formerly carbon-intensive industries? Will a low-carbon economic transformation generate substantial national wealth that all will share in, as has been so often promised?

If we rethink our policies related to regulation, trade, and intellectual property protection, maybe. If we continue doing what we have been doing, absolutely not.

Never ending subsidies and mandates skew markets in a way that stifles the American innovation necessary to address global emissions and harms entrepreneurs. In comparing the effect of Chinese subsidies on the solar module market, the Information Technology and Innovation Foundation found that as American manufacturers struggled to compete against rivals heavily funded by the Chinese government, they invested less in the very innovation that created the market in the first place. When the United States fails to enforce its trade rules on China, it's no surprise that companies scale back their investment in innovation: why invest the time, energy and money in something that will be stolen without consequence?

Solar is a cautionary tale for how wrong this can go. It was invented in the United States and then stolen by China, which through predatory trade practices nearly destroyed our homegrown manufacturing. In 2006 the United States produced 8 percent of global solar panels compared to China's 15 percent. In just over ten years, China's share had grown to over 70 percent while America's was negligible. But we continue to pay for it, in 2017 the U.S. imported 88 percent of its demand for solar cells and modules.

We must not repeat this mistake again. Well-meaning but misguided policies that incentivize thousands of new factory jobs in China on the U.S. taxpayer's dime is not a clean energy jobs program for America.

One very important principle that climate policy almost always gets wrong is: Policy should *cut energy prices, not energy choices. Competitive markets are the most efficient path to the best solution at the lowest cost.*

Here in America, there is a strong push to reduce GHG emissions by blocking fossil fuel infrastructure, including pipelines and terminals that would ultimately result in exporting that energy overseas. In my opinion, this is misguided and harms our efforts to reduce global emissions. While it is important to encourage other countries to deploy low-carbon technologies and systems, we must recognize that countries, even those in the European Union, will continue to use fossil fuels for the foreseeable future. At least until the global community commercializes low-carbon technologies that can compete with conventional energy.

It's important to understand that the GHG life-cycle emissions of fossil fuels vary by supplier—often significantly. According to the Department of Energy's National Energy Technology Laboratory, Russian-produced natural gas shipped by pipeline to Europe has approximately 41 percent higher life-cycle emissions (CO_2 equivalent)

than U.S. liquefied natural gas (LNG) shipped to the same destination. Russian-produced natural gas shipped by pipeline to China has 47 percent higher life-cycle emissions than U.S. LNG exported to China. Heavy oil produced in Venezuela has 50 percent higher life-cycle emissions than light oil produced in Wyoming.

When the world switches from foreign to U.S. fossil fuels, the emissions reductions are enormous. If the European Union produced electricity with U.S. natural gas instead of Russian, the associated global emissions would fall approximately 72 million metric tons annually. For comparison, the EU estimates that it needs to reduce its emissions by 78 million metric tons each year to reach its 2030 targets under the Paris Agreement. If China imported U.S. LNG instead of Russian gas via a recently completed pipeline, associated global emissions would be approximately 65 million metric tons lower. The emissions impact will increase significantly as China is projected to lead the world in the growth of natural gas consumption.

A similar story of misplaced demonization exists with nuclear power. We know that nuclear generates some of the cleanest, most reliable power in the world. Producing zero greenhouse gas emissions, and with new, advanced safety designs coming online, nuclear should be a growing piece of our energy portfolio if we want to reach net zero carbon emissions. But instead of learning we've allowed ourselves to be frightened off by accidents like Chernobyl, which was caused by bad design and human incompetence, and Fukushima, which was caused by a natural disaster and resulted in one death linked to radiation exposure. Instead of opportunities to build better, safer facilities, we've shuttered our most efficient zero-carbon power facilities or worse, turned them into coal plants.

Do better with critical minerals

Critical minerals are materials essential to the economic and national security of the country, but whose supply may be at risk due to geological scarcity or geopolitical issues. A May 2020 report by the International Energy Agency (IEA)[1] concluded that the transition to a low-carbon economy will require a reliable supply of critical and strategic minerals. Cobalt, lithium, and nickel, for example, are key for battery performance and charging capability. Copper is essential for anything involving electrification, given its exceptional conductivity. Many U.S. businesses are voluntarily committing to sourcing power from renewables like wind power or transitioning completely to electric vehicles (e.g., General Motors). Fulfilling this demand will strain the already limited availability of these minerals. According to the IEA report, an electric vehicle requires five times the amount of critical minerals than a fossil fuel vehicle does, and a wind turbine plant demands eight times as much as a gas-powered plant with a similar capacity.

The Democratic Republic of Congo (DRC) produces around 70 percent of the world's cobalt, and China is responsible for refining the same percentage of cobalt globally. Between 2015 and 2018, the U.S. obtained around 80 percent of rare earth imports from China.[2] China is the largest global consumer of cobalt, with 80 percent being used to manufacture rechargeable batteries,[3] and has the largest lithium-ion battery market in the world. In 2019, the top three U.S. suppliers of lithium-ion batteries for EVs were South Korea, Japan and China.[4]

The COVID–19 pandemic has evidenced the risks of relying on foreign countries for a regular supply of goods and minerals that are key for the daily operations of many industries. These risks are accentuated when this dependence is concentrated in commercial and geopolitical adversaries such as China. Additionally, accusations of hypocrisy ring true when the world's greatest democracy relies so heavily on regimes known for child labor and human rights abuses.

Transitioning to a clean energy economy should not come at the expense of a clean conscious. Building a secure supply chain for our low-carbon technologies with our allies, including the mining and processing of the necessary critical minerals to produce them should be a key priority for America.

Thank you for the opportunity to share my organization's views with you today. Making sure that America's climate policy supports our workers and our economy

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[4] Jeff Horowitz, David Coffin, and Brennan Taylor, *Supply Chain for EV Batteries: 2020 Trade and Value-added Update,* Office of Industries Working Paper ID–072, U.S. International Trade Commission (USITC), January 2021, https://www.usitc.gov/publications/332/working_papers/supply_chain_for_ev_batteries_2020_trade_and_value-added_010721-compliant.pdf.

as well as our environment is our best hope for curbing the impact of global emissions.

Ms. CASTOR. Thank you very much.

And I thank all of the witnesses for your insightful and informative testimony. And I recognize myself for 5 minutes for questions.

Governor Bredesen, in your testimony you said climate action shouldn't be thought of as a cost, as a cost center, but as a revenue and profit center. I like that.

So how do we help parts of the country where there may not be a state commitment to clean energy or a climate policy, but yet they are looking for economic development opportunities?

And don't forget to unmute.

Mr. BREDESEN. I think that there are good ways of being able to further establish green energy, its production and the manufacture of those things, that make it possible in other parts of the country.

There is a big manufacturing industry behind the development of solar power—the racking systems, the panels, the inverters, and so on.

One can certainly imagine Federal policies which would incent those manufacturers to place factories—new factories, in those kinds of areas to support workers who may have been displaced, as, for example, in Kentucky, by these technologies.

And then, second of all, of course, as I said in my remarks, I mean, solar itself is, by its nature, very distributed and, by its nature, tends to go into very low-cost areas, often places that have economic challenges already. And so focusing on it can be one of the ways, I think, in which you bring this there.

What we have found at Clearloop is there are a lot of companies in the country, and this effort is being driven by the private sector so much, who would love to participate but don't really have the vehicles today to be able to do that.

I think there are a number of very low-cost or no-cost things the Federal Government can do that just open up the doors in ways to use these vehicles and to bring this private capital into the creation of jobs in the parts of the country you are referencing.

Ms. CASTOR. Thank you.

And so, Mr. Lau, you have just announced today that the Sacramento Municipal Utility District will completely eliminate carbon emissions by 2030, 5 years ahead of President Biden's goal for the Nation, and you will do so while accelerating the electrification of transportation and buildings.

Tell us more about this very significant announcement. Where do you see the job creation happening here? And what do you say to naysayers who say, well, this can't be done, or it is going to cost too much, or it is going to make the grid unreliable?

Mr. LAU. Thank you, Chair Castor.

So the first thing about this announcement by the board is really our board's proclamation kind of to the world to say clean energy is important to us because it is important to the environment, come join us and be a global leader to fight climate change, but do it in a way that really helps the economic vitality of the region. You are doing this by really kind of partnering and really leveraging innovation.

So where we see the jobs are coming, because we are going to invest $4.5 billion in the next 9 years to really double our energy efficiencies and electrification efforts, and we are also going to invest heavily in local renewables, like local solar.

So that is going to create, really, thousands of jobs, good-paying jobs, and we are working with the underserved communities to make sure, when we go out there, install, really, thousands of electrical chargers that we will need to support our electric vehicles. We are going to put batteries on homes so that we can leverage the sun when solar is producing during the day and dispatch those energies onto the grid when it is most needed and most expensive.

So we really believe, by putting this goal out there, it is something that is very significant. And it is not only about the economy, but it is also about all the things that are important to the Sacramento region, I think, for most communities. It is about the air quality. It is about economic development. It is about transportation. It is about healthcare.

So this plan is really our board and our region's hope to be leading by example, that you can work with your communities, with the regulators, with the private sector, to come together and really kind of align your resources for maximum impact so that it is not either/or. You can still have a very, very clean future, clean energy future, an inclusive zero-carbon economy, but do it in a way that is also great for the environment and really kind of great for our kids and grandkids.

Thank you, Chair Castor.

Ms. CASTOR. Thank you very much. Yes, you have built the coalitions to make it happen. It is very impressive.

At this point, I will recognize Ranking Member Graves for 5 minutes for questions.

Mr. GRAVES. Thank you, Madam Chair.

I want to thank all the witnesses for your testimony. It is very helpful.

Mr. Lau, it was interesting listening to you talk about the bold goals that you have set, the nearly $5 billion investments that you are making. Yet, looking at research that has been done by the National Academies, it indicates that there has been—that 24—up to 24 percent of the pollutants that are measured in California, Western States, for example, are actually coming from Asian air transport, meaning from Asian countries across the Pacific.

More recent analysis, after 25 years of studying emissions and smog in California, including scientists from NOAA, University of Colorado at Boulder, Princeton, and others, they found that despite a 50 percent reduction in smog-forming emissions in the United States, you have actually seen a year-over-year increase in smog, and they attributed as much as 65 percent of that to, again, transport coming from overseas.

My point is that, how do we address this issue? You are worried about health. You are worried about health outcomes for our kids, which we all are. But if everything you are doing is more than being offset by what is happening from China and India and other countries, and you are spending $5 billion and not improving things, how do we fix this?

Mr. LAU. That is a great question, Ranking Member Graves. But I think one thing that we have got to remember when we created this plan, it is more than just carbon. It is about local air quality.

So what we are doing is that we are being very, very aggressive in terms of energy efficiency. We are going to do two or three times the energy efficiency that we are doing today. And we are also electrifying the buildings and transportation.

So when you take a look at the carbon emissions from our plants, it is about 2 million metric tons per year. When you look at the emissions by the electric vehicles and the buildings, it is about 8 million metric tons, about four times that.

So to address that issue is that we have to look at it locally. So by taking the action that we are doing, we are creating the jobs locally. We are inviting investment to come, to invest in Sacramento.

Mr. GRAVES. Right. But let's keep in mind that our objectives here aren't just about creating jobs. It is about improving air quality.

And, also, I want to clarify, I am not sure if I understood your comment correctly, but I am talking—the University of Colorado, NOAA, Princeton, that involved smog, which is, of course, ground-level ozone.

Mr. LAU. Yes.

Mr. GRAVES. And so, if we are spending all this money and we are not improving air quality, don't we need to ensure that there is a global component to this?

Mr. LAU. Oh, we are. So right now, currently, SMUD has about 16,000 electric vehicles. And if our plan works out, we are going to go to about 228,000 electric vehicles. And so that is taking almost a million metric tons of carbon and air pollutants out of our local community.

Mr. GRAVES. So, effectively, the strategy that you are talking about, though, effectively, it is taxing Americans, including the $4.6 billion that you referenced, to mitigate for what is happening in China and other countries. And that raises really strong concerns on my part in that we have got to have a global approach.

Ms. Reams, thank you for your testimony. I appreciate you talking about reducing emissions and addressing climate change. And you also noted that we don't need to come in and reduce energy choices.

Can you talk about the importance of the affordability that I believe is related to energy choices, the affordability issue, as we plot this path forward in terms of a clean energy future based on America's resources?

Ms. REAMS. Sure. There is a strong push to reduce greenhouse gases by blocking fossil fuel infrastructure, including pipelines and exporting terminals.

We also see the keep-it-in-the-ground movement. And I find that to be misguided, and harms our efforts to reduce global emissions.

If the world just switched from foreign to U.S. fossil fuels, emissions would be reduced tremendously. And let's not forget these developing nations need cheap baseload energy. So we are likely talking about natural gas here. And that is there for the foreseeable future.

So the technologies that we need to reduce emissions from fossil fuels needs to be invested in. It is a reality.

Mr. GRAVES. Thank you very much, Ms. Reams.

Very quickly, Governor, you brought up the deployment of renewable energy technologies. One of the issues that we have come across is the bureaucratic red tape in actually getting siting and other things through the regulatory process as well as reliance upon minerals from China, like rare earths and strategic minerals.

Do you care to comment on solutions?

Mr. BREDESEN. Yeah. My point was that, rather than always thinking in terms of how do you, as you put it, tax Americans to spend some more money on these things and drive it, that there are a number of ways in which simplifying the process of siting, giving much clearer insight under the PURPA kinds of contracts, the Qualified Facilities rules, into what future costs are to make these projects financeable and so on, there are things like that that don't cost a dime to the Federal Government and really don't cost anything to the ultimate consumers, but which unleash a lot of private activity and capital in support of this.

That is not to say you shouldn't ever spend Federal money, but I am saying I think the first place you ought to go is figure out those things you can do that leverage the obvious willingness on the part of private entities to take part in this.

Mr. GRAVES. Thank you, Governor.

Yield back.

Ms. CASTOR. Rep. Bonamici, you are recognized for 5 minutes.

Ms. BONAMICI. Thank you, Chair Castor and Ranking Member Graves.

And, really, thank you to our witnesses for your excellent testimony.

This is a perfect time to be having this hearing at this point in time in our country where we have about 10 million Americans who are unemployed. And we have an opportunity to upskill and reskill workers as we build back better. And our transition to a clean energy economy will create good-paying, high-quality union jobs and support people who have historically faced barriers to employment, especially women and people of color.

I want to give a little shout-out to Oregon Tradeswomen, which has been doing a great job of diversifying the workforce.

As we have heard in the testimony, there is already an unmet need for skilled workers in the energy efficiency sector. Building back better also means restoring that economic fairness, with better wages, stronger benefits, fair and safe workplaces. And I say that as the granddaughter of a coal miner.

Our Climate Action Plan includes provisions that will address these historical failures that left workers behind, and, instead, we are going to make sure that Federal clean energy investments uphold labor standards. Like Davis-Bacon, the use of community benefit agreements, project labor agreements. These are going to be good jobs, family wage jobs.

And I want to start with Ms. Colon de Mejias.

I appreciated that you noted how energy efficiency can be an economic opportunity for quality job creation. And, as the founder of

the STEAM Caucus, I also appreciated your note about the importance of STEAM education to help diversify the workforce.

So I hear from employers like you who are struggling to find workers with the skills they need. And, last week, I introduced my bipartisan, bicameral BUILDS Act, which I invite all the Members to join. This is to scale up registered apprenticeships and pre-apprenticeships in the clean energy infrastructure and manufacturing sectors and provide workers with the support services they need to succeed while they are learning.

So the House also recently passed the first reauthorization of the National Apprenticeship Act since the 1930s, which addressed some of the challenges you have mentioned.

So how would more robust Federal investments in quality on-the-job training programs help address the skills gap in the energy efficiency sector?

Ms. COLON DE MEJIAS. Thank you so much for your question.

So a couple of things are, one, I think that small businesses are able to provide living-wage jobs that offer benefits and protections without necessarily being part of a union.

I myself am not part of a union, and I employ 20 people. Eighteen are people of color who were underemployed or unemployed. And, like I said, no one on my team starts at less than $15 an hour, and they all have benefits as well.

So I think that it is really critical that, as we invest in that, we consider the impacts on small businesses and that we ensure that those resources are allocated in a way that supports small businesses, whether they are part of a union or not, and that we ensure that the workforce programs are placed in the communities that are most needy so that they can access the training and connect with the career opportunities that exist right now, today, all across America.

I hope that answers your question, but you can clarify if you would like more detail.

Ms. BONAMICI. It does, and I appreciate that.

And I also appreciated your focus on public health and the benefits of energy efficiency improvements.

Last summer, Oregonians were facing the compounding crisis, not only from the pandemic, but an unprecedented wildfire season. Air quality frequently surpassed hazardous levels, further endangering the health and livelihoods of those already at risk of respiratory issues from the coronavirus pandemic.

And I will tell you, it was really challenging, because you just couldn't get away from it anywhere.

So how can Congress better support investments in energy efficiency and demonstrate the value as a public health investment?

Ms. COLON DE MEJIAS. That is an excellent question.

And there is the SAVE Act, actual legislation that could be supported, which would help us properly evaluate people's homes and buildings to ensure that they are getting the demand reduction.

And also, that those benefits are properly informed to people so they can make informed decisions when they are choosing energy choices, or when they are upgrading their buildings or properties, or when they are purchasing something, they would be informed.

The other thing that is important that you bring up on the health note is that Yale recently did a study about the increasing heat index and how that really is going to hurt our vulnerable populations most.

And so it is extremely important that, as we plan our path forward, that we engage in those conversations on how we can lift those communities and protect their health through expanding energy efficiency and building retrofits, which also address health issues at the site that they live in, but also at the power plant where the energy is created by doing more with less.

That is what efficiency does, right?

Ms. BONAMICI. Exactly.

Ms. COLON DE MEJIAS. Efficiency is literally the concept of being efficient.

Thank you.

Ms. BONAMICI. Exactly. And in the district I represent, I have a multifamily, low-income housing facility that was built to passive house standards. The first phase was 57 units. And they have significantly cut energy costs. And it is just—it is a great investment.

So thank you for your testimony all.

And I yield back.

Ms. CASTOR. Thank you.

Rep. Palmer, you are recognized for 5 minutes.

Mr. PALMER. Thank you, Madam Chairman.

I just want to talk a little bit about how our experience in pushing for green jobs has worked out for us.

In 2009, the stimulus package passed by the Democrats and the Obama-Biden administration claimed it would produce 5 million green jobs. And the Brookings Institute reported that, of the nearly 2.7 million green jobs that the Obama-Biden administration and the Democrats identified, most were bus drivers, sewage workers, and other types of work that don't fit the green jobs of the future description.

I just want to make sure that, as you push forward your radical Green New Deal, that we have a clear definition of what the green jobs will be.

I also want to point out that, in order to convert to a 100 percent renewable energy grid, or 50 percent, whatever it is, the goal that you have established, that much of the materials that we are going to need to produce the solar panels and the turbines is going to have to come from China.

Germany has already experienced this. In 2011, they had 300,000 green jobs in Germany. By 2018, it was down to 150,000. And part of that is because the companies that were trying to produce the materials for the construction of their turbines couldn't compete with China. And that is largely because in China they are using forced labor. That includes forced labor in the mines, forced labor in manufacturing.

And I just wonder from the panelists if people support, being in a very disadvantaged position with China, if they still would support this green agenda, if we are relying on China, and China is providing these materials with forced labor.

So any of the panelists can respond to that if they would like.

Go ahead.

Ms. COLON DE MEJIAS. Hello, Rep. Palmer. My name is Leticia Colon de Mejias, just so you know who I am.

Mr. PALMER. I know who you are.

Ms. COLON DE MEJIAS. And I agree that it is important that we keep our eye on the world and the progress that is going forward. But as an American I know that we have always led the way in doing the right thing, both nationally and internationally.

And I believe strongly that it is not a matter of red versus blue, but this is really a matter of red, white, and blue, because we have the opportunity to really do this right this time, to plan it collectively together, and ensure that the jobs are really good jobs for Americans and that they truly do lift our community and strengthen our energy grid as we go.

Mr. PALMER. Okay. I am all for the red, white, and blue, but the fact of the matter is we don't produce these materials, and China is producing them using forced labor. They have got kids working in mines and working in manufacturing.

And, again, looking at just the fact-checking on what President Biden said during the campaign on a million new auto jobs, Associated Press did a fact check and said that it is actually far from certain. It is not even likely.

What I hear a lot here, and I know this will offend some of you, but it is propaganda. Coming from having worked for two international engineering companies, I have a pretty good understanding of what it takes to get things done. And then to make these claims about all these green jobs that you are going to produce, there will be some green jobs that will be highly inefficient in terms of energy production.

And, Madam Chairman, I don't see a clock. Oh, I see it now. So I have got just a little time left.

We are not going to be able to give the United States a secure energy future with renewables. There is no way to do it. And even if we went 100 percent renewable, reputable scientists will admit, if the United States went to absolute zero-carbon emissions it would not stop climate change—if the entire world went to absolute zero.

And you have got China, on the other hand, just in the last year, 75 percent of the increase in energy consumption was in China. They are ramping up their coal mining. They are militarizing the South China Sea for energy extraction. They are even moving toward the Arctic for mineral extraction.

So I just think we need to have a major reality check here about what we are going to be able to accomplish for this and the type of jobs we will be able to produce.

I am fine with bus drivers and sewage workers. And the Brookings Institution—even the Bureau of Labor Statistics, not Brookings, even identified Green New Deal lobbyists as green jobs.

So with that, Madam Chairman, I yield back.

Ms. CASTOR. Okay. Rep. Brownley, you are recognized for 5 minutes.

Ms. BROWNLEY. Thank you, Chair Castor, for bringing us together. All the hearings we have been having in the 116th and now the 117th, we have really gained a great deal of knowledge and

learned from so many some of the great innovative things that are taking place across the country. So it is very, very exciting.

And I thank the witnesses for being here.

Governor Bredesen, I wanted to ask you, in your written testimony, at the very end of your written testimony you gave some practical steps of things that we should do or could do. And one I didn't quite understand, which was to allow—to reward utilities that publicize their price for energy for longer than 5 years.

So maybe I am not behind the eight-ball here, but I just didn't totally understand what that meant.

Mr. BREDESEN. Sure. PURPA makes available to investors in the United States the ability to build solar and put the solar energy thereby produced to utilities. They are called qualified—Federal qualified utilities. And the utilities, in turn, have to give the investor 5 years of visibility into what their affordable cost, what the rate is going to be going forward. Okay? All that makes sense.

That 5 years is an arbitrary number. It was developed in some fashion. Unfortunately, what that is, is not enough time to allow anyone to finance a facility. I mean, 15 or 20 years of visibility allows the financing; 5 doesn't. And utilities understand that.

So what it says, first of all, you could, with a simple regulatory change and suggesting that utilities be forced to make available what the avoided costs are for 15 or 20 years into the future—they have these numbers—suddenly makes a lot of projects financeable by investors and releases capital.

And I said, second of all, that one of the problems utilities have with this is that some places you put it on the grid it is a pain in the neck for. It is problematical to their grid. There are plenty of other places where it is very helpful on the grid, in terms of load balancing or where they need it.

So something like saying, if you put these things in some areas where they are useful to utilities, it helps them, we will give you this kind of visibility into it. I mean, opens up an enormous amount of potential private investment into the construction of the solar facilities.

It does not cost the Federal Government a dime, probably doesn't cost any ratepayers anything either given the cost of these facilities now. Just an alternative to the more traditional kind of let's appropriate money or let's give tax incentives.

Ms. BROWNLEY. Thank you so much for that, Governor.

Mr. Lau, I wanted to ask you—I am a former legislator from California, so spent some time in Sacramento. So thanks for your leadership. And Chair Castor, her opening question to you was asking about this aggressive, ambitious goal that you have announced to get to zero by 2030.

And in your written testimony you talked about it is going to cost you upwards of $4.6 billion. And you also go on to say that, to put that into perspective, that your annual revenue over a 3-year period ending in 2019 is roughly $1.5 billion.

So I guess my question is, how are you going to do this? I mean, where are you getting the resources to make these really important investments that I think will get you there and without really making extensive increases in rates to the ratepayer?

Mr. LAU. Thank you, Congresswoman Brownley. So I think that is a great question.

So one of the things, a tenet of how we are going to get there, is really kind of partner with our customers and partner with the private investment companies.

And so what we want to do is, once we put the goal out there and this is the kind of investment that we are going to need, we are going to look to create partnerships with the cities, the counties, the air quality districts, the air resources board, to start actually pooling our resources together to fund this endeavor that we are talking about.

Because right now I think, in the Brookings Institute—Sacramento, we are one of the most diverse cities in the U.S., but we do a lot of things by itself, like air quality by itself, greenhouse gas by itself, energy by itself, transportation.

So what we are doing is that we are pooling our resources together. And we are working with private industries, like Ms. Mejias, about what do we need to do to create those jobs. Where do we increase energy efficiencies? Where are we putting chargers? What is the best way for us to pool that capital together to do that?

Now, one of the things that we are also doing is, certainly, we are looking to leverage technologies to drive down our internal operation costs and be as efficient as possible. And so we are taking advantage really about what the customers are putting in.

The customers are putting about $180 million of what we call DER—it is like rooftop solar, batteries, electric vehicles in the area. So what we want to do is that we want to co-optimize their investments for the benefit of the grid.

And so, case in point I think, you heard Governor Bredesen talk about putting infrastructure in where it benefits both the customer and the grid.

We have something called StorageShares. So Electrify America was putting in DC fast chargers, and they want to put in batteries in a location where the grid doesn't need it. We have excess capacity there.

So we actually worked out a partnership with them to say, hey, put this over here and we will give you the same arbitrage, the same rate arbitrage, the same, just like the batteries actually next door to you.

And so this is how we are co-investing and leveraging what our customers are putting in to do this.

Ms. CASTOR. Thanks very much.

Mr. LAU. Thanks.

Ms. CASTOR. Rep. Miller——

Ms. BROWNLEY. Thank you, Mr. Lau.

Mr. LAU. Thank you so much. Sorry for the long-winded answer.

Mr. CASTOR [continuing]. Representative Miller, you are recognized for 5 minutes.

Ms. BROWNLEY. I apologize. I yield.

Mrs. MILLER. Thank you, Chair Castor, and also Ranking Member Graves.

And thank you to all of you witnesses for being here today.

During my time on this committee, my colleagues have heard me talk many times about the war on coal during President Obama's

term. These disastrous policies decimated my state of West Virginia. They not only closed the mines, but they shuttered entire communities that supported their workers.

And with that came such a hopelessness that it cast a dark shadow in the southern part of the state, and certain parts where the families still struggle to put food on the table. And many of them succumbed to the opioid epidemic.

Our fossil fuel workers are the giants that we now stand atop. We cannot and should not forget the advancements that these workers and industries have made. We are now able to produce our energy in a much more clean manner with a less carbon footprint.

Completely turning our back on fossil fuels, like many of my colleagues would like to have you think we should do, is not only shortsighted, but it will take jobs away from hardworking Americans.

American energy independence, achieved thanks to our coal, natural gas, and oil industries, has made America less reliant on malign actors. They have created thousands of jobs, and they have helped reduce our own energy poverty within our own country.

Furthermore, exporting our energy to our allies and the developing nations, in my opinion, is the key to reducing emissions around the world. American energy has the potential to raise those in other countries out of poverty and can also minimize dangerous governments' influences worldwide. I think of the Ukraine when I say that.

Ms. Reams, can you talk about the potential of exporting America's cheap baseload energy to other countries and how it could help their economies to come online?

Ms. REAMS. Thank you for the question, Congresswoman.

And as a mother it breaks my heart to think about the families and the opioid addiction and the challenges that joblessness and hopelessness can bring, and also thinking about developing nations and those mothers, those parents who want to offer their children a better life.

And energy is part of that. It is not about which kind of energy, but will they have energy? Because it is going to pull them out of poverty. It is going to mean a better quality of life, better healthcare, better education. And that starts with what we are doing here in the United States and the technologies that we can create to export them abroad.

There is no doubt that fossil fuels will be around for a while, particularly in the developing nations, and it is up to the U.S. and countries like us to develop those technologies, to sequester that carbon however we can, so that those countries can get out of poverty.

This is the right thing to do, but I say that also as not just an advocate, but as a mother.

Mrs. MILLER. In your testimony you talked about developing nations that are growing markets for American energy. Can you discuss the benefits of exporting American energy to these nations?

Ms. REAMS. Absolutely. Developing nations are a market for a lot of countries, not just the United States. So who is getting there first, and who is going to provide them the energy, the fuel they need to fund their economies and improve their lives?

Even if the U.S. got to net zero tomorrow, we know that we still have a lot of work to do around the world. It is not enough that just the United States is fighting climate change.

So this is exportable. This is global and exportable.

That still means great jobs here in the United States. And we have great examples of Federal investment and expanding private sector dollars, sometimes 22 times the investment from the private sector from public sector dollars.

So this is the jobs here that we can have. It is not just the clean energy jobs here in the United States, but it is also that technology that can be exported, I think, that is most exciting.

Mrs. MILLER. Well, how do you think American energy can reduce energy poverty around the world?

Ms. REAMS. Yeah, absolutely. I mean, we have got abundant natural gas, for instance. It is cleaner than any other natural gas that we have around the world. I say this statistic, I think, in my testimony, but if we actually went straight from U.S. fossil fuels from foreign fuels, we would be reducing emissions.

So we are a good actor in the geopolitical world, and getting American fuels into these countries is not just important, it is good for a stabilizing factor, but also brings energy online where we have got families that actually have energy. They are not thinking about what kind of energy. When you don't have any, you want something.

And I think it is wonderful to think that we can be developing our technology, investing today for tomorrow's technology so those nations—those people—can have a better quality of life.

Mrs. MILLER. Thank you. I yield back.

Ms. CASTOR. Thank you.

Rep. Casten, you are recognized for 5 minutes.

Mr. CASTEN. Thank you so much.

I did just want to just comment quickly on the last exchange. It is really critical that we look out for workers who are losing their livelihoods in coal country.

But let us make no mistake. Longwall mining killed coal jobs. Economics killed coal plants. And it is tragic that the folks who represent Appalachia looked out for the interests of coal owners to reduce labor content when it was for longwall mining, and they are now making a big deal. Let's all look out and let's do this on a bipartisan basis.

Mr. Lau, really, really enjoyed your testimony. I am a former utility CEO myself, a little smaller than yours, but upstate New York. And we struggled a lot with trying to fix the problems in rate regulation so that we could actually share in the benefits of energy efficiency with our customers and got New York State to come up with some fairly creative regulatory approaches to that.

In your answer to Rep. Brownley, I found myself wondering whether the tools you were able to use are unique to your position as a municipal utility, or are those tools applicable to IOUs and co-ops as well?

Are there things we could do to allow other utility-type structures to do what you are doing, deploying a tremendous amount of capital into cheaper and cleaner energy?

Mr. LAU. Thank you. Thank you, Congressman Casten.

So I think it absolutely can. So, I mean, I think SMUD, we receive $127 million from the AGRI grants from the Obama administration. And we are able to test. Like, we were one of the first utilities in California to push into time of day rates, or time of use rates.

So we started moving away from the tier structure, and we are now moving forward in terms of looking at critical peak pricing. And we are thinking about now, how do you invite people with DERs and third parties to come in with virtual power plants, to start actually leveraging not just energy efficiency, but really about load flexibility?

How do you use rates to incentivize behaviors for customers to use energy or renewable energy when it is in abundance, like midday off-peak pricing, and then also, give pricing, like critical peak pricing, when it is most expensive?

So absolutely I think some of the stuff that we have done from a rate design perspective is something that could be copied across utilities across the U.S.

Mr. CASTEN. So on that subject, there has been a lot of talk lately in California about sort of the ever-deepening duck curve. And last term I introduced and we got signed into law the BEST Act to bring—to put about a billion dollars into energy storage research, development, and deployment to smooth some of that out.

Today, I introduced with Senator Heinrich the Interregional Transmission Planning Improvement Act to try to better connect resources around the country.

Are there other things that you would like to see our national labs doing in working with you as far as technology deployment to make sure that those increasingly dramatic changes in the time of use in your load profile can be smoothed out a little better?

Mr. LAU. Yeah, absolutely. I mean, the third thing is that on the utility grid side—I mean, one of the challenges of renewable energy is a lot of it is intermittent. So the more that you can actually start actually creating, like, baseload and renewable energy, like green hydrogen, about burning green hydrogen in our plants, is one way to shore that up.

The other piece is really about taking advantage of the Renewable Act could really help us to retool the grid challenge that we have. Think about, at least in California, we can have 5 million electric vehicles by 2030.

And so each one of those—I have a Tesla, and I can easily charge my Tesla and pump 5 kW of those for 4 hours during the peak hours.

So how do you actually leverage the DERs for the benefit of the grid and reliability is something I think that the Federal Government can really, really help us in terms of driving the cost of those DERs' adoption across the U.S., but then also helping on the power sector.

And actually I love your thoughts about the transmission piece, about opening up transmission so that renewables from regions could be exported. And so now you have regional diversity to help with the reliability issues that you were talking about.

Mr. CASTEN. Well, thanks. So many of those rules are state and local utility regulations. And if you have thoughts on how we might

nationalize some of those, I would love to work with your office on that.

In the few minutes I have left, Ms. Reams, I really, really appreciated your written testimony, in particular when you said that—I think I have got this quote right—"Never ending subsidies skew markets in a way that stifles American innovation."

I could not agree more, as a guy who sat there as an innovator deploying clean technology.

If you had an industry that over the last decade had seen a 45 percent reduction in demand for its product as competition came along, that saw a 40 to 45 percent reduction in their per-unit price because there just wasn't the demand to prop that price up, that saw $340 billion of negative cash flow, that saw 250 bankruptcies, do you think government should subsidize that industry to keep it afloat?

Ms. REAMS. I think that mature technologies—there is a tough argument to be made for mature technologies receiving any kind of subsidy.

Mr. CASTEN. Okay. Well, I agree. I just described the oil and gas sector. That was 45 percent decline in coal, 40 to 45 percent reduction in the prices of coal and gas, $342 billion of negative free cash flow in the shale gas sector, 250 bankruptcies, $20 billion of write-offs for ExxonMobil. And, yet, according to the IMF, we still subsidize the fossil fuel industry to the tune of $650 billion, with a "b," dollars a year.

We need a level playing field, and we need to stop deluding ourself that the level playing field doesn't overwhelmingly skew to the dirty energy sector.

Thank you. I yield back.

Ms. CASTOR. Thank you, Rep. Casten.

Rep. Gonzalez, you are recognized for 5 minutes.

Mr. GONZALEZ. Thank you, Chairwoman Castor and Ranking Member Graves, for holding this hearing today, and to our distinguished witnesses for joining us.

My fear, as always, is that there is a growing consensus on the other side of the aisle that rapid technological changes are becoming so disruptive and renewable energy is so cheap that there is no economic risk in accelerating or even mandating a path to zero-carbon emissions.

But the experiences of our European allies reveals that such thinking can actually be quite harmful. If you look at Germany as an example, instead of using market incentives to establish a viable and cost-effective introduction of renewables, they deployed massive subsidies to wind and solar technologies that increased household energy rates by 7.5 percent and forced greater dependence on foreign suppliers, like Russia, for natural gas, because they were shutting down their nukes, which didn't make any sense to me.

But if our goal is to subsidize renewable energies and rely on them alone to supply the baseload, I think we need to realize that there will be immense trade-offs—higher energy costs for low-income Americans, greater reliance on Russia and China, less dependable electric power, more blackouts, lower economic growth,

and less capital investment in the breakthrough technologies that will help us achieve an energy transition.

I have been on the record in this hearing and in my Science, Space, and Technology Committee and worked with Rep. Casten on the BEST Act.

But I believe we need to invent our way through this, we need to invent our way out of this. I do not believe the existing suite of technologies can get us all the way there in a way that doesn't force us to make brutal trade-offs for low-income Americans.

Ms. Reams, in your testimony you emphasized the importance of developing innovative, cost-effective technologies here in the U.S. that can be exported across the world. I could not agree more.

In your assessment, what clean energy technologies have the greatest potential for breakthrough?

Ms. REAMS. Well, that is a great question. Thank you, Congressman.

I mean, first of all, knowing that there is investment in technology, we have the private sector that comes in, in a big way. So I think that that is important to know. With any kind of investment, we are going to get good ROI on our investment.

The emerging technologies that we are seeing in advanced nuclear, we are seeing in green hydrogen, are showing tremendous promise. Also, in carbon capture utilization and sequestration.

But I would be remiss if I wasn't talking about other technologies, such as offshore wind, that are receiving challenges simply because of permitting processes. It is an untapped area as well.

Mr. GONZALEZ. Also a challenge with the advanced nuclear, right? I have spoken to some—to Oklo, for example, and the fact that they have made it as far as they have is actually—sounds like a miracle based on the amount of red tape that they have been forced to run through as somebody who is trying to innovate in the nuclear space, which is something I believe we desperately need.

You also highlighted the history of U.S. solar innovation. Specifically, you mentioned China was able to steal our technology and corner the manufacturing market because of weak trade and IP protections. That is an issue across the economy, not just in clean energy, of course.

What policies do you think we should be considering to ensure more companies feel confident enough to invest in innovative technologies and protect themselves from the IP theft issue?

Ms. REAMS. First of all, definitely protecting the IP theft is a national problem. As an entrepreneur, we know that this has a chilling effect on any kind of investment when you know it is going to be stolen. So I think those protections and trade policies are going to be incredibly important moving forward.

I think with this we should not make that mistake again when we have misguided policies that incentivize jobs overseas, in China, but we are not getting the ROI here in the United States.

So we need to make sure, when we are creating these jobs, that they are here domestically, that the technology can be exported, not necessarily the regulatory, not necessarily the people, but we are keeping them here onshore.

Mr. GONZALEZ. Yeah. No, I couldn't agree more. I think this issue creates a lot of difficult trade-offs. But it also creates an opportunity.

If we do fund the right R&D, if we do develop the innovative technologies that are going to allow us to emerge from this scenario and lead the world really, it will allow us to grow our economy, it will create jobs domestically, and it will be good for the environment and the planet, which I think is something that everybody wants on this committee and across the country.

And so I am encouraged that hopefully we can find some bipartisanship on that front. And with that, I yield back.

Ms. CASTOR. Thank you, Rep. Gonzalez.

Next, we will go to Rep. Escobar.

You are recognized for 5 minutes.

Ms. ESCOBAR. Thank you, Madam Chair.

And many thanks to our great panelists. I really appreciate this conversation this afternoon.

I can tell you, I think, that the vast majority of Americans are really looking forward to some pretty broad, bold solutions, with an eye towards saving our planet. We just need to provide Americans the tools and the access to opportunity for jobs and to participate actively in helping save our planet.

In my district, we are nicknamed, actually, the Sun City because we have about 300 days of sun every year. Yet our local utility has yet to fully harness that clean, natural resource. Our local electric utility, in fact, is about to build a new natural gas facility.

We heard yesterday from Secretary Kerry that the advancement of facilities like this will create in the future stranded assets, stranded assets that are paid for by ratepayers.

So we have got to find ways of incentivizing utilities and business owners in districts like mine that the time to transition is now. But it is really challenging.

Mr. Lau, in your testimony you discussed in great detail how your utility is moving to net zero, and that is incredible and very exciting. But local utilities like mine that are private entities, they are moving at their own timeline to reach net zero, if they even have one at all.

Do you have any suggestions for how Congress can begin encouraging private utilities to make the transition to net zero now to reduce their carbon footprint and avoid building stranded assets?

Mr. LAU. Thank you, Congresswoman. I think that is an excellent question.

I think one of the things Congress can do, they can really actually offer incentives for those utilities, working with the Federal Government, working with the labs, to really kind of take the utility-scale renewables into their portfolio in a way that does not actually harm their stockholders.

And so one of the things I would recommend Congress do is have those utilities work with the local communities, really find out about really what they want.

So one of the great, I guess, tenets of our plan was that we worked—we have been having at least 12 community meetings. We met with 600 customers and stakeholders to have them jointly

input what they want in a clean energy plan and how it is going to help them.

So I would implore Congress, in terms of allowing those utilities, the private utilities, as a way to work with the local communities so that their wants and needs, in terms of transitioning to a zero-carbon economy, and making sure that the underserved communities are not left behind.

I think that is one of the things that is key and central about making sure that the jobs you are going to create in this transition are front and center, the underserved communities are actually being served.

That is one thing I would recommend.

Thank you, Congresswoman.

Ms. ESCOBAR. Thank you so much.

Ms. Colon de Mejias, that is a great transition to a question for you.

What can we do to make sure, to guarantee that we are bringing emerging green energy jobs and technology to economically disadvantaged communities like the one that I represent?

Ms. COLON DE MEJIAS. Thank you for the question, Congresswoman.

I think it is really important at this time that we make great efforts to engage those groups in conversations and dialogue and ensure that there is access to both training and general broad sets of information on energy and the interconnections between health, economy, jobs, and really level the playing field by ensuring that they have access to that information in a way that resonates with them.

I also think it is really important that we ensure that everyone understands that these jobs are available to anyone who has an interest in training for them, and that they can change careers at any time and take on a new industry.

Earlier, somebody mentioned the 2009 investment in green jobs, and I am one of the people that came out of that era of investment in green jobs, as are the people that work for me now. All 20 of them have been with me that long.

So although I agree that sometimes things don't work out exactly as planned, there certainly were a lot of benefits from those investments that we are still really reaping today.

Ms. ESCOBAR. Wonderful. Thank you so much.

I am just about out of time, so I yield back.

Ms. CASTOR. Thank you so much.

Rep. Carter, you are recognized for 5 minutes.

Mr. CARTER. Thank you, Madam Chair.

And thank all of you for being here. Very important discussion.

Ms. Reams, I want to start with you and ask you, you said in your testimony that the U.S. is not in this alone. We are not in a vacuum here. This is a global problem. We all understand that, and we all understand how important it is that we work together with other countries to make sure that we are all doing our part in reducing global emissions.

A ton of carbon in the atmosphere causes just as much harm no matter where it comes from. Whether it comes from U.S. or China or wherever it comes from, it is still a problem.

But I want to ask you, Ms. Reams, specifically, can you speak to the marginal cost of us in the U.S. further reducing emissions versus working to reduce emissions globally?

Ms. REAMS. Actually, I don't know that I can do that, Congressman. Could you rephrase the question just a little bit further?

Mr. CARTER. Well, what I am saying is, essentially, we don't live in a vacuum, and we all understand how important it is that we help these other countries to decrease their emissions as well.

Look, I believe in climate change, and I think it is real. And a lot of my constituents do. A lot of people in my party do. They believe it. But they don't think that we here in the U.S. should be all suffering the consequences, economically especially, and financially, when other countries aren't doing their part.

You know, at some point you reach a rate of no return, and that is what I am trying to get at here. At what point do we reach that? At what time do we reach that point where we are doing—I mean, it has been said that if the U.S. were to decrease our emissions to zero, that unless the other countries do their part, it is not going to help. It is not going to change.

Ms. REAMS. Understood, Congressman, and thank you for the question. I do understand now.

Absolutely, this is something that we have talked about. I think it is a great conversation to talk about the jobs that we can create here in the United States on dealing with clean energy and clean tech, and that is exciting.

But we also have to look abroad and seeing what those countries need as well. And it is just access to energy. Sometimes it is really that simple.

But there are bad actors out there, and I will point to China in particular, that is allowed to pollute regardless of a Paris Agreement. This was codified in the Agreement years ago. And that is of concern.

Polling shows that voters—not just Republicans—that voters believe in more of a level playing field when it comes to responsibility and payment for these issues. So why do we let China off the hook while the U.S. continues to reduce its emissions and then pay—and also pay for the climate challenges that we will have as a result of that pollution from China and other nations?

So we have got to get real about where the global emissions are coming from. They are emissions. And it is not necessarily from any particular energy source, although some are higher carbon emitters than others, but it is the pollution that is the problem, not necessarily the energy source.

And, again, I point to—and we talked about this with Carol Miller, Representative Miller—is the opportunity to have a more civilized nation, a cleaner, healthier nation, when you have got access to any kind of fuel. We want it to be cleaner. That is why the technology developed here in the United States today needs to be exported.

Mr. CARTER. Right. And I appreciate that, because that is one of the biggest complaints that we get. And it is not necessarily America first as much as it is we just want a level playing field. You know, we want to do our part, but we want them to do their part as well. And who can blame anybody for feeling that way?

I want to ask you, Governor—and, first of all, I want to thank you, Governor, for highlighting the success that we have had in the State of Georgia with solar energy. We are now one of the top ten states in the nation as far as solar energy goes. I am very proud of that. Because we have got a lot of pine trees in Georgia. We have got a lot of sunshine, too, especially in south Georgia.

In your testimony you said this hasn't really happened in the name of climate change and it is not really driven by mandates, but scale solar comes with a lot of permitting and regulating and regulations. And I just wanted to see if you could talk about the regulatory situation that has made it easier to pursue projects like this in Georgia.

Mr. BREDESEN. Sure.

First of all, I am, as you know, very aware of Georgia. I think we may have built a lot of that solar that you are describing there and so on.

Mr. CARTER. Yes.

Mr. BREDESEN. Georgia has been an easy place to do business, both because it has a lot of sun and the economics work, but also because the communities have been very interested in and accepting of it.

Some of these rural communities, I am sure you know well, that they are very conservative communities, and they actually love the idea of something which helps to begin to move beyond simply being simply sort of a farming economy.

These solar plants, when they are built, typically become, the day they open, the largest taxpayer in the county, and they use very few services in return for that. There are counties that have increased teacher pay, for example, simply because a new solar farm has come in.

So in Georgia it has not been an issue. Certainly in other parts of the country it is. Permitting is not always easy in that regard.

But if you had to look for a place, a pressure point, I would say that easing the process of financing and connecting into the grid these things, the regulatory from that standpoint as opposed to local land use or something like that, is probably the point that would free up the most sort of new private capital and new investment in this area.

Those become significant issues. There are huge, huge backlogs, for example, in getting permissions for interconnections that are unnecessary in the way they are. And I am hoping that in some way one of the results of this committee can be to start focusing on some of those kinds of issues.

Mr. CARTER. Exactly. And I know I am out of time, but what a great point. Thank you, Governor.

And, Madam Chair, that is one thing we on this committee need to be working on, is those regulations.

So thank you. And I yield back.

Ms. CASTOR. Thank you, Rep. Carter.

Next, we will go to Rep. Levin.

You are recognized for 5 minutes.

Mr. LEVIN. Thank you, as always, Chair Castor. I appreciate you holding this hearing today. I think the topic is critical.

The world recognizes we need to significantly and permanently reduce our greenhouse gas emissions. We have got a whole series of events happening this week along those lines.

And I think the question remains whether we, as the United States, will capture here domestically the benefits of developing, building, and exporting the clean energy and transportation technologies of the future, and I am committed to ensuring that we do. But we in the Federal Government have an important role to play in making that a reality.

And I think I speak for many of my colleagues, we are thrilled that the Biden Administration has given us a strong path forward through the American Jobs Plan, which includes so many recommendations from this committee's Action Plan. And I hope that my colleagues will join me in working to advance this initiative as quickly as possible.

One last thing before my question.

So I want to give a shout-out to SMUD for your continued leadership. And I do hope that in the months and years ahead we can come as a committee, or a group of us can come and visit you, as well as the California Independent System Operator and California Resources Board. I think that would be great.

And I hope that some of our colleagues across the aisle can, I guess, have some of the preconceived notions they may have about how California does things and either prove or disprove those notions based on lived experience and actually seeing and understanding firsthand.

Governor Bredesen, I wanted to turn to you. I was so pleased to see your testimony highlight the need to deploy clean technologies that have already been developed and that are ready to be built out. I have been a strong advocate for clean energy tax incentives, like the investment tax credit, and the importance also of refundability.

That is so important as the economic impacts of COVID have made it very hard to finance projects. And by strengthening incentives, I hope we will accelerate further development of wind and solar and other clean energy projects.

So, Governor, do you think we need to extend, expand, and strengthen Federal clean energy tax incentives? And how do Federal incentives help create jobs across the country, in particular in Tennessee and other states that you are working in?

Mr. BREDESEN. First of all, the existing tax credits, they certainly are helpful. There is no question about that. I think one of the most important ways, though, in which they help, which is not always seen, is that there are places in the country that wouldn't need those credits. The solar is cheap enough that it can be—it is economic on its own terms.

But what that does is really open up solar as a competitive entity in a lot of parts of the country where it still would be very marginal. And I think it is in our interest to make sure that Minnesota and Wisconsin and the Dakotas and so on have access to these kinds of technologies as well as New Mexico and Arizona and California's Central Valley and so on, so from that standpoint they are successful.

On the issue of refundability, there is no question that monetizing those tax credits is a pinch point at the moment in terms of developing solar.

I personally would not want to see us go back to refundability at the individual developer level, because when we had that—I think it was section 1602 stuff—I mean, there was a lot of fraud that went on there.

There was just a lot of—I used to describe it as you would get these companies that were the Acme Donuts and Solar Company or something that were doing stuff, and the stuff that was built was not all that useful in terms of its connection to the grid and its reliability.

What having to go through a third party for these tax credits has done is really to force a third set of eyes on that, an independent review. And the stuff which is being built under those conditions is much higher quality and much longer, longer term.

I think, however, that changing the rules, perhaps making them refundable after 6 months or a year at those levels, would open up that market a lot more than it is right now, which is really limited to a few big banks in the country.

So I think you are on to something with that, just would strongly suggest not going all the way back to the individual tax credits, because I think they were problematical.

Mr. LEVIN. Well, I appreciate that, Governor. Thank you for your leadership and your perspective.

And, very briefly, if I may, Chair Castor, I had a question for Ms. Colon de Mejias.

I am working on an energy efficiency bill in the Veterans' Affairs Committee that would provide veterans with—or Veterans Affairs—the opportunity to factor energy savings into a veteran's monthly income for the purpose of determining their ability to repay a home loan when the veteran provides an energy efficiency report for the home. And the idea there is to increase the veteran's buying power by offsetting regular expenses for the home calculated in the debt-to-income ratio.

So, in general, do you see value in that sort of policy? Do you think it can help improve residential energy efficiency? And was curious if you had any other thoughts or suggestions, briefly.

Ms. COLON DE MEJIAS. Thank you for that question.

I always think that valuing things appropriately and providing the information directly to the consumer is extremely important. Whenever we are evaluating anything, we should do it appropriately and count all the benefits and all the costs at the same time, right? So, yes, that is very important.

The other piece of bipartisan legislation that comes to mind, you asked a question about taxes a minute ago, is that there are bipartisan Hopes for Home legislation that will be introduced by Welch and McKinley. And this actually would help shore up American housing and afford supports to middle-class families and working families [inaudible] drawing down energy bills.

The other complementary piece to that is the 25C tax incentive, which would also go directly to support middle-class and working families and drawing down their energy burdens, including vet-

erans. And I employ some veterans. I love and respect them very much. They are really beneficial to our work.

So thank you for your question.

Mr. LEVIN. Thank you so much.

I yield back, Chair. Thank you.

Ms. CASTOR. Thank you.

Now I recognize Rep. Huffman for 5 minutes.

Mr. HUFFMAN. Thank you, Madam Chair.

As we have heard from our witnesses here today, there is an enormous economic upside to climate action. As we decarbonize this economy to avoid climate disaster, we can simultaneously seize these huge opportunities.

And, Mr. Lau, you and SMUD are really showing how that can work. So let me congratulate you on your big announcement today, a plan to completely eliminate carbon emissions from your power supply by 2030, exceeding President Biden's goal of a carbon-free electricity sector by 2035. That is fantastic.

And you have gotten a little bit of a taste today of how some of our colleagues in Congress are pushing back against climate action.

Today's hearing about the economic upside of clean energy, something that shouldn't even be controversial, is apparently so threatening to the fossil fuel industry and its champions in Congress that they keep talking about China as some kind of excuse for fossil fuel business as usual, as if China somehow wants the U.S. to seize all these opportunities and become the global leader in innovation and investment and dominate the global clean energy economy. It is really preposterous.

You have also heard the suggestion that we should not seize all of these clean energy opportunities unless and until China stops polluting. And just to be clear, no one is proposing to give China a pass, especially now that the United States is back in the Paris Accords, now that we have allies again, now that we are pursuing a climate-focused foreign policy.

But as we work on emission reductions from all countries in the world, including the Republican's favorite new country of China, we are not standing still here at home. We are not waiting for fossil fuel champions in Congress to tell us when China has finally done enough for us to take action.

So let me come back to the subject of this hearing and to another issue that our Republican colleagues like to bring up when we talk about climate action: cost.

The world's leading scientists and economists have explained over and over the cost of inaction is astronomical, but invariably, when we talk about confronting this crisis, we are told climate action just costs too much.

Now, the Sacramento region is economically diverse. You have got struggling working families trying to pay their energy bills. And you noted your commitment to keeping energy bills affordable to those customers.

Would you please explain how that can be done?

And as you do that, please, if you can, touch on how, when it comes to the price of energy, it is not just the unit cost or the price per kilowatt-hour that matters, it is the overall bill. If energy effi-

ciency and conservation results in lower bills, even with higher nominal rates, that is still a good deal for consumers.

So, please, as an expert in this sector, if you could explain how that works to the members of this committee, because they often seem to be confused about California's electricity bills.

Mr. LAU. Thank you, Congressman.

I think you are absolutely right. People don't pay rates. In fact, most customers don't even know how much they pay for kilowatt-hours. People pay bills.

So one of the things that we have been doing is that we have been working very aggressively with our community to let them know the benefit of energy efficiency, as Ms. Mejias said. We have been doubling our energy efficiency.

Since 2007, we passed an aggressive goal to reduce our load by 1.5 percent per year through energy efficiency, and that translates to saving roughly about 15 to 20 million dollars a year ever since. And some years we do 2 percent. And then, with the new goal that we have, we are going to do three times that.

So that is one of the things that we have been looking at, is that it is not really about the rates that you are paying; it is really about the bills.

So we have been very, very aggressive with our Sustainable Communities to work with those underserved communities to find out what do we need to do to bring them into the, I want to say, the zero-carbon economy.

So we have been working with them to very aggressively do energy efficiency at their homes. We have been working with GRID America in terms of GRID Alternatives, to put solar on the roof. Now we are talking about looking at maybe we have NEM for multifamilies for low-income.

And then, most importantly, we have been very, very intentional about directing our resources for job training. So, case in point, just the fact that we worked with the California Mobility Center and we were able to get $1.9 million to train folks to do light manufacturing for the region.

I think you heard Ms. Mejias talk about there is a problem getting skilled workers. And so what better way to do it than to work with your community, to work with all those local, I want to say, nonprofit organizations, who those communities trust, and really develop the pipeline to do that, and in a way that creates those jobs that you need to talk about, good-paying jobs for our communities.

That is how we are doing it. So it is not about rates. It is all about what your customer wants.

So our latest plan, we have a 93 percent—no, 97 percent approval from our customers saying this is what they want to do. And we are bringing our underserved communities right along with it.

And that is why we are working with the air quality districts and local financiers to put zero-emission vehicles, so low-income customers can borrow those cars for a few hours and go do the stuff they need to do.

Mr. HUFFMAN. I appreciate that. I know I don't have time to compare California's energy bills with fossil fuel States like Louisiana, which would compare quite favorably. But you have helped, I think, sharpen the conversation in a helpful way.

I yield back.

Ms. CASTOR. Thank you, Rep. Huffman.

Next, let's go to Rep. McEachin for 5 minutes.

Mr. MCEACHIN. Thank you, Madam Chair. And, again, thank you for convening this very, very important hearing.

I would like to start off with Ms. Mejias, if I can.

You were kind enough to discuss LIHEAP in your testimony. And of course LIHEAP is a vital program. In fact, the American Rescue Plan provides 4.5 billion in emergency funding for LIHEAP. And I have a bill to expand LIHEAP so that more of the funding can be used for solar energy.

Please tell us more about the program. Why is it an important program? And how can we use it to protect public jobs and protect public health?

Ms. COLON DE MEJIAS. Thank you so much, Representative, for your question.

LIHEAP is a phenomenal program that helps customers that are struggling with unaffordable energy bills pay those bills. And I see the opportunity here really to broaden that definition and ensure that we provide equal access to those customers that are struggling the most, the most disadvantaged and most at risk, to access things like renewable resources, as you have just suggested.

But also to remove the barriers that exist in their housing currently so that they can access deeper retrofits, like air sealing and insulation upgrades. Some of the problems that we see in low-income housing that are often recipients of LIHEAP dollars are mold, asbestos, vermiculite, and knob-and-tube wiring, which makes it difficult to upgrade to, let's say, a ductless mini split, or even to install something like insulation that could cut their costs by 32 percent.

So it is really important. And Mr. Lau has done a great job of giving some statistics. But I want you to know that, when I work in low-income housing, which is 50 percent of my clients, we reduce consumption by up to 32 percent. That is both in single-family and multifamily housing.

And there are many studies that I could follow up with after this that explain how we can drive those bills down consistently and long-term so that we could reallocate some of those LIHEAP dollars to things that you have an interest in, like access to renewable resources for people who live in multifamily housing or low-income housing.

I hope that answers your question.

Mr. MCEACHIN. It does indeed, and I thank you for your answer.

Mr. Lau, we have seen research showing that gas appliances can worsen air quality—indoor air quality—and exacerbate health problems. We have also seen research showing that exposure to air pollution can increase the likelihood of severe impacts from COVID–19, even including death.

How is your utility helping customers switch to electric alternatives, to gas water heaters and space heaters?

Mr. LAU. Thank you, Congressman.

So we have been very, very active in terms of advancing our building electrification efforts. So we offer right now rebates. We

offer heat pump water heater rebates. We offer heat pump in terms of space heating rebates.

So we have been working very, very closely with our communities in terms of showing them the benefits that, when you switch over from gas to electric, you save money, on average, I think a couple hundred dollars a year on family households. When you look at the things you pay for gasoline, and then when you combine the bill together, it is actually quite a bit of savings.

And you remove the pollutants when you bring gas inside a home. It is actually safer. And you never have to worry about you forgot to turn off the stove because it is electric.

And so we have been working very, very closely with our community to educate them about the benefit of electrification.

And so that is really one of the most important things, as more and more people put in energy efficiency, as more and more DERs get put on the grid. Utilities need to have healthy growth through building and transportation electrification, because those are beneficial growth.

And when they use clean energy, it helps to drive the costs lower for everyone, and it really does help to improve the air quality indoor and outdoor for everyone.

Mr. MCEACHIN. Well, thank you, sir.

Madam Chair, I don't see a clock. So in an abundance of caution, and so I don't pluck your nerves or the committee's nerves, I will yield back.

Ms. CASTOR. Thank you, Rep. McEachin.

And I want to thank all of our witnesses for your very informative testimony on this Earth Week or U.S. Climate Action Week as we look forward to crafting bipartisan climate solutions that create jobs and protect the health and put money back into the pockets of consumers.

We have a number of unanimous consent. Without—a number of documents to enter into the record, if you all would like to stick around for that.

In response to Representative Palmer's interesting comments about forced labor in the solar supply chain, a Thursday, February 4, 2021, statement from the Solar Energy Industries Association, where 175 solar companies, including some of the top solar manufacturers in the world, announced that they have signed a pledge opposing forced labor in the solar supply chain, stating their commitment to help prevent these abhorrent practices and ensure that the products they are using do not have links to forced labor in the region of China or anywhere else in the world. And then hopefully we can bring some of those supply chains back to the U.S. and help create jobs.

Also, without objection, we will submit, in response to Representative Palmer's statement that the American Recovery and Reinvestment Act wasn't a very good job creator when it came to clean energy, a report from 2016, the Council of Economic Advisors, that states that from 2009 to 2015 the energy-related investments from ARRA supported roughly 150,000 jobs, and it leveraged $150 billion in non-Federal and private capital for clean energy investments.

Also entering into the record an April 13 letter from the Outdoor Business Climate Partnership in support of our April 15 hearing, "Making the Case for Climate Action: The Growing Risks and Costs of Inaction"; an April 13 letter from We Mean Business Coalition, representing hundreds of companies and investors, calling for ambitious U.S. nationally determined contributions at at least 50 percent emissions reductions by 2030; a March 23 letter from environmental justice organizations and national environmental groups outlining spending priorities for economic recovery legislation that reduces pollution, tackles climate change, and addresses environmental injustice while creating jobs in the hardest-hit communities; an April 19 letter from the Solar Energy Industry Association aligning policy recommendations to scale up solar energy development to meet clean energy goals; an April 20 report from the Rhodium Group entitled "Pathways to Build Back Better: Jobs From Investing in Clean Electricity," which highlights the goal of the Biden American Jobs Plan to create millions of new jobs through Federal investments in clean infrastructure and finds that decarbonization of electricity can create more than 600,000 jobs a year on average between 2022 and 2031; and—Mr. Lau, you will like this—a statement from Congresswoman Doris Matsui regarding the Sacramento Municipal Utility District.

[The information follows:]

Submissions for the Record

Representative Kathy Castor
Select Committee on the Climate Crisis

April 20, 2021

ATTACHMENT: SEIA. (2021, February 4). *Solar Companies Unite to Prevent Forced Labor in the Solar Supply Chain.*

The press release is retained in the committee files and available at: https://www.seia.org/news/solar-companies-unite-prevent-forced-labor-solar-supply-chain

ATTACHMENT: White House Council on Economic Advisors. (2016, February 25). *FACT SHEET: The Recovery Act Made The Largest Single Investment In Clean Energy In History, Driving The Deployment Of Clean Energy, Promoting Energy Efficiency, And Supporting Manufacturing.*

The fact sheet is retained in the committee files and available at: https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy

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April 13, 2021

House Select Committee on the Climate Crisis
H2–359 Ford Building
Washington, DC 20515

Dear House Select Committee on the Climate Crisis,

As the three trade associations representing the U.S. outdoor industry, we are sending a letter in support of your hearing this week, "Making the Case for Climate Action: The Growing Risks and Costs of Inaction."

Our members, outdoor gear manufacturers, retailers and ski resorts, make up the majority of the outdoor industry that generates over $778 billion in U.S. consumer spending annually and supports 7.6 million jobs. As an industry that is inextricably

linked to the natural environment, we are sharply tuned into the impacts of climate change.

Climate change is threatening our communities, infrastructure and economy. The Fourth National Climate Assessment identified outdoor recreation and tourism as key sectors that will be negatively impacted by climate change. Longer and hotter summers, prolonged droughts, increasingly devastating forest fires, rising sea levels, warming waters, reduced river flows and unreliable snowpack are all impacting the outdoor recreation economy. The unpredictability that comes with climate change presents challenges for outdoor recreation businesses with respect to planning, staffing, inventory, capital investments, and other key decision-making. Changes in snowpack and earlier snowmelt affect not just ski resorts, but fly fishing and rafting as well. The record 2020 wildfires, intensified by drought conditions across the West, profoundly impacted rural communities and could cost up to $150 billion in economic losses.

There is no time to wait to address climate change, and we support your efforts to increase the urgency to address it in Washington. Many of our member-businesses are already taking-action, setting ambitious science-based emissions targets and working to reduce their carbon footprints through our respective organization's climate programs. But the private sector cannot do this alone—we need systemic change that only a strong national climate policy can deliver.

To achieve this, our organizations support:

- Prioritizing BIPOC communities in any climate and infrastructure investments, as well as those communities impacted in the transition to a clean energy economy.
- Curbing carbon emissions across the largest-emitting sectors.
- Placing a price on carbon pollution to incentivize emissions reductions.
- Fostering investments to accelerate the transition to a zero-emissions economy including research, jobs and green infrastructure.
- Providing incentives for renewable energy and storage, cleaner transportation, clean technology innovation and natural climate solutions.

Our trade associations—representing more than 1,500 businesses with operations across all 50 states—have united against this common threat because together, we can be a stronger voice for the climate policies urgently needed to protect the places that we live, and the future of our industry. We know that addressing climate change is an opportunity to position our country for a successful, net-zero future and support a healthy outdoor recreation experience for all.

Sincerely,

National Ski Areas Association, Lakewood, CO;
Outdoor Industry Association, Boulder, CO;
Snowsports Industries America, Park City, UT

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ATTACHMENT: *Businesses and Investors Support U.S. Federal Climate Target in Open Letter to President Biden.* We Mean Business coalition. (2021, April 13).

The letter is retained in the committee files and available at:
https://www.wemeanbusinesscoalition.org/ambitious-u-s-2030-ndc/

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March 23, 2021

The Honorable Nancy Pelosi
Speaker of the House
U.S. House of Representatives
H–232, U.S. Capitol
Washington, D.C. 20515

The Honorable Charles Schumer
Majority Leader
U.S. Senate
S–221, U.S. Capitol
Washington, D.C. 20510

The Honorable Kevin McCarthy
Minority Leader
U.S. House of Representatives
H–204, U.S. Capitol
Washington, D.C. 20515

The Honorable Mitch McConnell
Minority Leader
U.S. Senate
S–230, U.S. Capitol
Washington, D.C. 20510

Dear Speaker Pelosi, Majority Leader Schumer, Minority Leader McCarthy, and Minority Leader McConnell:

Our country is currently facing the devastating impact of intersecting health, economic, racial justice, environmental justice and climate crises. Too many communities of color, low-income communities, Tribal communities and environmental justice communities have long faced a toxic legacy of pollution as a result of environmental racism and are now suffering disproportionate economic and health impacts as a result of the COVID–19 pandemic. And they are on the front lines of climate change, bearing the brunt of climate impacts and most at risk of being deprived of the benefits of a clean energy transformation. For these communities, the current challenges are deeply interconnected, and require immediate action. Congress now has an opportunity to meet these crises head on through bold leadership, a commitment to justice, and significant, sustained and equitable investments in recovery with a focus on these aforementioned communities.

During his first week in office, President Biden committed to achieve bold and concrete climate and environmental justice goals and launched an all-of-government approach to tackling climate change and addressing decades of environmental racism. With his Justice40 commitment, the President directed his Administration to take immediate steps toward delivering 40% of the overall benefits from federal investment in clean energy and climate-resilient infrastructure and affordable housing to disadvantaged communities. This commitment is central to the success of any significant investment package and must be met or exceeded by Congress through a long-term investment program that centers equity and justice.

We therefore urge Congress to advance transformative economic recovery legislation that confronts these ongoing crises by reducing pollution, tackling climate change and addressing environmental injustice while creating jobs in the hardest-hit communities. As described in our recommendations below, we urge Congress to support an investment package that improves public health and addresses health disparities, increases access to healthcare, and ensures uninterrupted access to potable water and reliable electricity for all households and communities. This investment package must also reduce pollution, create meaningful local job opportunities, support pollution-free energy and transportation options, and invest in affordable and climate-ready housing and other equitable and just community development programs.

In addition, stimulus legislation must include safeguards to ensure that funds are spent in ways that comply with environmental regulations to avoid increasing public health and safety risks. Congress must ensure that projects supported by recovery legislation reduce locally harmful air pollution in communities coping with the cumulative impacts of multiple pollution sources, including low-income communities, Tribal communities, communities of color, and environmental justice communities. Congress must also direct companies receiving stimulus support with facilities located in or near low-income neighborhoods, Tribal communities and communities of color to significantly reduce locally harmful pollution, such as airborne particulate matter, in these communities. Finally, Congress must remove federal program cost-share requirements for environmental justice and other disadvantaged communities and, where needed, adjust existing funding allocation formulas to ensure that at least 40 percent of federal program investments go directly to environmental justice and disadvantaged communities.

We write today as a group of environmental justice organizations and national environmental groups working together to advance a bold and equitable national climate agenda.[1] On behalf of our members and supporters, we urge you to address environmental injustice, tackle climate change and build an equitable and just economic recovery. Specifically, we urge you to include the spending priorities recommended below in any economic stimulus legislation and to advance this critical legislation promptly.

WATER

Access to affordable clean water is critical, especially as households nationwide respond to the COVID–19 pandemic. Winter storms in Texas in February underscored the fragility of our nation's water systems when millions of people lost water access during the crisis. The below actions are long overdue. We recommend the following specific actions and funding:

Keep national moratorium on water shutoffs for all households in place.

Include $100 million for immediate potable water distribution, filter installation and sanitation systems for homes without access to these necessities. Spending should prioritize urban, rural, and Tribal communities who cur-

[1] Equitable and Justice National Climate Platform available at: www.ajustclimate.org

rently lack access to safe drinking water and adequate water and sanitation systems.

Include $45 billion in grants and technical assistance dollars for the replacement of both household plumbing and lead services lines. Spending should prioritize households' whose plumbing systems have been corroded by municipal drinking water systems, such as in Flint, Michigan. This should also allow for home water filters for contaminants including but not limited to lead and PFAS. Trust in municipal water systems must be rebuilt.

$1 billion over 5 years for School Drinking Fountain Replacement to help schools and daycare centers replace lead-bearing water fountains and faucets with water hydration stations with certified filters that meet the Q<1 standard.

Include $150 million to establish three Community Water and Energy Resource Centers (CWERCs) in Michigan. CWERCs will resolve many ratepayer, infrastructure, and environmental issues to improve Michigan's essential freshwater resources through a decentralized approach to water treatment and infrastructure. Congress should make similar investments available to communities across the country without affordable access to safe drinking water and wastewater resources.

Fund $100 billion for the Drinking Water and the Clean Water State Revolving Funds (SRFs), split evenly between the two SRFs, with at least 20 percent of funding distributed to disadvantaged communities as additional grants rather than loans and at least 20 percent of SRF funding set aside for investing in green infrastructure projects. These funds support investments in infrastructure and programs that are essential to providing safe and affordable drinking water to communities, protecting water systems, managing waste- and stormwater, building climate resilience and expanding economic opportunities for low-income communities and communities of color. The American Society of Civil Engineers gave U.S. drinking water and wastewater infrastructure "D" and "D+" grades, respectively, and estimates that the investment gap for these critical systems will reach $105 billion by 2025.

$3 billion for the Low-Income Household Drinking Water and Wastewater Emergency Assistance Program. This newly created program aims to increase water accessibility by helping low-income families pay their water bills and reducing their water utility rates. The program provides funds to owners or operators of public water systems or treatment works to reduce arrearages of and rates charged to low-income households. Congress should provide robust funding for this program and ensure the funds are properly directed to low-income households.

$60 million annually for the Small & Disadvantaged Communities program, which assists public water systems in underserved, small and disadvantaged communities meet Safe Drinking Water Act requirements.

$120 million annually for Alaska Native Villages and Rural Communities Water Grant program.

$100 million annually for the U.S.-Mexico Border Water Infrastructure Program to provide drinking water and wastewater services to communities living on the border.

ENERGY

Households must have access to affordable, reliable and sustainable electricity to ensure public health and safety and support an inclusive, just and pollution-free energy economy with high-quality jobs. Winter storms in Texas in February underscore the need for significant investments to increase electric grid resilience and reliability. We recommend that Congress include funding for the following programs in economic stimulus legislation:

$3.9 billion for the Energy Efficiency and Conservation Block Grant (EECBG) Program. According to DOE's Office of Energy Efficiency and Renewable Energy, "Through the 2009 American Recovery and Reinvestment Act (Recovery Act), the U.S. Department of Energy's (DOE's) Energy Efficiency and Conservation Block Grant (EECBG) Program provided $3.2 billion in block grants to cities, communities, states, U.S. territories, and Indian tribes to develop, promote, implement, and manage energy efficiency and conservation projects that ultimately created jobs." Congress must provide $3.9 billion to the EECBG program through economic stimulus legislation and direct the DOE to prioritize program-spending in communities left behind by past and ongoing energy efficiency programs.

$7 billion for the Low-Income Home Energy Assistance Program. LIHEAP assists families with energy costs related to energy bills and weatherization and energy-related home minor repairs. Stimulus legislation should include $7 billion for LIHEAP.

$7 billion for the Weatherization Assistance Program (WAP). WAP provides weatherization for low-income households, leading to $238 or more in average sav-

ings on energy costs. WAP lowers energy bills for mid- and low-income families by supporting home energy efficiency improvements and supports clean energy jobs. Every year the requests for WAP support far exceed the funds available, leaving many households without the support they need to improve their energy efficiency and reduce energy costs. Congress should include $7 billion for WAP in stimulus legislation and strengthen the program to better reach and serve low-income families.

$2 billion for Department of Energy grants. DOE energy grants should be used to build pollution-free energy microgrids and other projects that improve the reliability and resilience of energy infrastructure in communities and cities in all regions of the country, such as renewable energy, battery storage, and community-owned solar or wind projects. These grants should prioritize investments in low-income and communities of color, as well as Tribal and environmental justice communities. These funds should also be made available for technical assistance to partner with communities to design and implement these projects that meet community priorities and needs.

POLLUTION FREE TRANSPORTATION AND GOODS MOVEMENT

Existing federal programs, with adequate funding, can substantially reduce air pollution from transportation and goods movement. These programs provide critical funds to shift fleets and equipment from diesel to zero emissions, while improving air quality and public health. We recommend that Congress support the following programs:

$2.5 billion annually for Federal Transit Administration's Low or No Emissions Vehicle Program. Prioritize program spending in EJ communities confronted with the cumulative impacts of disproportionately high levels of pollution, particularly to reduce diesel pollution from medium- and heavy-duty vehicles and public transit fleets.

$2.5 billion annually for the Diesel Emissions Reductions Act (DERA). Prioritize zero emissions replacement equipment and spending in communities confronted with the cumulative impacts of disproportionately high levels of pollution. These grants should be used to replace high polluting drayage trucks, locomotives, and cargo handling equipment with pollution-free technology, and to reduce emissions from related non-road sources of diesel in the goods movement sector, such as ocean going vessels idling at berth, tugboats, and cranes.

SAFE, HEALTHY AND POLLUTION–FREE COMMUNITIES

To build safe and healthy communities and infrastructure, we recommend that Congress fund the following programs:

$100 million for the National Institute of Environmental Health Science (NIEHS) Environmental Career Worker Training. The NIEHS Environmental Career Worker Training Program (ECWTP) provides job and safety training for disadvantaged and underrepresented members of communities of color and low-income communities to secure jobs in environmental restoration, construction, handling hazardous materials and waste, and emergency response. A 2015 report assessing the program found that "an annual federal investment of $3.5 million in the ECWTP generates a $100 million return." The report found that the program increases the earning potential of those trained, increases tax revenue, lowers workplace injury and hiring costs, and reduces crime.

$16 billion annually for a Civilian Climate Corps. President Biden's EO 14008 set up the process for creating a Civilian Climate Corps Initiative, inspired by the New Deal's Civilian Conservation Corps, to mobilize the next generation of conservation and resilience workers and maximize the creation of accessible training opportunities and jobs. Not only will this program provide much-needed jobs for communities, but it will also restore public lands, and help reduce local pollution. Congress should appropriate additional funding for the Civilian Climate Corps to bolster the program and allow more communities to reap the benefits, including by prioritizing training for people living in low-income and communities of color, and Tribal and environmental justice communities.

$100 million for EPA's Superfund Job Training Initiative (SuperJTI) and the Environmental Workforce Development and Job Training (EWDJT) program. SuperJTI is a job readiness program that provides training and employment opportunities for people living in communities affected by Superfund sites, which are often low-income and communities of color. Participants learn technical skills to work on a broad range of construction projects, environmental remediation projects, and cleanup projects at Superfund sites. The EWDJT program recruits, trains, and places local, unemployed and under-employed residents with the skills needed to secure full-time employment in the environmental field. Participants are

trained in Brownfields assessment and cleanup, hazardous waste operations, and other training related to wastewater, Superfund cleanup, and solid waste management. Curricula is usually based on local labor market assessments and employers' hiring needs. Congress should provide $100 million for these programs to spur local job growth and support pollution cleanup.

$6 billion for the EPA Environmental Justice Small Grants (EJSG) Program. This program provides grants to communities to address environmental risks associated with high concentrations of pollution, to prepare for climate change effects, and to improve public health. In 2019, the EJSG program provided roughly $1.5 million for one-year grants of up to $30,000 each. Given the disproportionate exposure to high levels of pollution, climate change effects and other impacts of historic economic and racial inequality, these grants provide critical resources to low-income communities, tribal communities and communities of color to improve community health and support job creation. Congress should increase the annual funding for the EJSG program to $6 billion, increase the grant size to up to $500,000, and increase the grant period from one to three years. In addition, the program should be renamed the "Environmental Justice Grants Program."

Provide robust funding for grants for environmental justice communities, including EPA's Multipurpose Grants to States and Tribes, Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program, and the State Environmental Justice Cooperative Agreement (SEJCA) program. Multipurpose grants allow states and tribes flexibility to address their highest environmental priorities, especially PFAS cleanup. The EJCPS Program provides financial assistance to enable community-based organizations to partner with stakeholders from across industry, government, and academia to develop and implement solutions that will significantly address environmental and/or public health issues at the local level. The SEJCA program supports state activities that lead to measurable environmental or public health results in communities disproportionately burdened by environmental harms and risks. Congress should provide funding for these and other grants to empower communities and address environmental health risks.

$1 billion for the EPA's Office of Community Revitalization (OCR) to support community-driven economic development through grants and technical assistance programs, and locally-led efforts to improve public health and the environment. This program has a critical role to play in community-based revitalization by aiding small and minority businesses that would otherwise struggle to participate in larger loan and grant programs. This funding across these programs should be directed and prioritized for environmental justice communities who are facing facility closure, such as coal-fired generating units or other oil and gas supply chains, such as closure of supply lines.

$20 billion for Superfund Site Cleanup to protect communities from toxic pollution. Hurricanes Harvey, Florence, and Maria spotlighted the elevated public health and safety risks that Superfund sites pose to communities. Superfund cleanup spending is crucial to protect the 53 million people living within three miles of the existing 1,836 Superfund sites. Congress should increase Superfund site cleanup funding to $20 billion through economic stimulus legislation.

$560 million for EPA to enforce environmental regulations. Industrial facilities and other companies must comply with environmental regulations to avoid increasing public health and safety risks, particularly at a time when public health is already threatened by the COVID–19 pandemic. To protect public health and safety and hold companies accountable when they violate environmental regulations, Congress should provide $560 million for EPA to ensure compliance and enforcement with environmental regulations. Congress should direct EPA to prioritize enforcement in communities of color and low-income communities, especially those overburdened with pollution.

$30 billion for Community Development Block Grants (CDBG). The Department of Housing and Urban Development's (HUD's) CDBG program provides grants to states to support community development and address economic and public health challenges created by historic racial and economic inequality. CDBG grants support construction of affordable housing, programs to create economic opportunities and jobs, services for those in need, job creation, and improvement of community living conditions and quality of life. In light of ongoing public health and safety risks, Congress should provide $30 billion for CDBG to support equitable and just community development and access to safe, affordable, resilient and energy efficient housing. HUD should track this funding according to the Justice40 commitment to ensure that community support and investments benefit the communities with the greatest needs.

$2 billion for the Community Development Financial Institutions (CDFI) Fund. CDFIs mobilize investments in public health and social services to support communities in transition, environmental justice, and frontline communities in all 50 states and Washington, D.C. Since CDFIs are located in the communities they serve, they are well-equipped to respond to the specific needs of the community. CDFIs are a proven tool for increasing financing of affordable housing, local businesses, and spurring job growth. Congress should provide $2 billion for the CDFI Fund to leverage roughly $24 billion in capital to increase the energy efficiency of existing buildings and expand access to clean renewable energy, quality affordable housing, and improve other critical community infrastructure and services in underserved communities.

$100 billion for a Clean Energy and Sustainability Accelerator. A Clean Energy and Sustainability Accelerator, based on the idea of a National Climate Bank, would mobilize massive new investment into clean energy and transportation and resilient infrastructure. It has the potential to create millions of good-paying, green jobs and significantly decrease greenhouse gas emissions and local pollution. Congress should mandate that at least 40% of the Accelerator's investments and benefits be directed to environmental justice communities, including low-income communities and communities of color, communities overburdened by pollution, tribal communities, and communities in transition. These investments should focus on pollution free renewable energy, transportation and resilience projects that have the support and input of local EJ communities.

$2 billion for Brownfields Redevelopment and Brownfields Area-Wide Planning Grants. EPA's Brownfields Program supports economic redevelopment by helping states and communities safely clean up and sustainably reuse former industrial and contaminated sites. Congress should increase the FY 2019 annual appropriation of $250 million for EPA's Brownfields redevelopment program to $2 billion to support economic development and sustainable approaches to local land use. This program should be implemented through community-driven planning that protects against community displacement.

$100 million for the Community Action for a Renewed Environment (CARE) Program. The CARE program was a competitive grant program that aimed to reduce releases of and minimize exposure to toxic pollutants. Through the program, non-profits, schools, community organizations, or businesses formed cooperative agreements with state, local, or tribal governments or EPA to work together to assess toxics risks and come up with innovative solutions for solving the problem. Congress should revitalize this program and fund it at $100 million in the next economic recovery package.

$10 million for USDA's Socially-Disadvantaged Groups Grant. This program helps provide technical assistance to socially-disadvantaged groups in rural areas through cooperatives and Cooperative Development Centers. Technical assistance can include feasibility studies, business plans, strategic planning, and leadership training.

$100 million per year for USDA's Outreach and Assistance for Socially Disadvantaged Farmers and Ranchers and Veteran Farmers and Ranchers Program (The 2501 Program). This program helps provide outreach and technical assistance for underserved farmers, ranchers, and foresters, in owning and operating sustainable farms and ranches. The funds are used for conferences, workshops, and demonstrations on various farming techniques. The program has not only helped farmers and ranchers of color operate sustainable farms, but also fosters new partnerships and relationships with USDA.

$5 billion for the Building Resilient Infrastructure and Communities and Flood Hazard Mitigation programs. These programs help create jobs and bolster community resilience by investing in measures to reduce extreme weather risks before disaster strikes, including natural infrastructure solutions like floodplain restoration, and accelerating flood mapping updates. Communities of color and low-income communities should be prioritized for this funding.

Fund $10 billion for abandoned mine lands cleanup. These funds should be used to support the cleanup and restoration of abandoned coal mines on federal, state, Tribal, and private lands through the Abandoned Mine Lands program. This program spurs long-term, locally driven economic development opportunities, and helps address the problems created by old mine sites, including polluted streams, piles of coal waste, and hazardous erosion.

Fund $10.02 billion to revitalize energy communities. Congress should fund at least $4.6 billion for the Economic Development Administration, the Appalachian Regional Commission (ARC) POWER Initiative, ARC Broadband, ARC Workplace re-entry strategies, the Assistance to Coal Communities program, and the Department of Labor's Employment and Training Administration, and fund $5.42 billion

for National Dislocated Worker Grants. Congress should also hold coal companies liable for continued contributions to the Black Lung Disability Trust Fund by extending and increasing the coal excise tax for at least ten years. Congress must ensure energy communities are not left behind during the transition to a clean energy economy. Funding across these programs should be available for just transition for communities and workers who have been laid off as a result of facility closure.

Fund $2 billion for orphan well cleanup. Congress should establish an orphan well cleanup fund to plug and reclaim dangerous and polluting abandoned oil and gas wells. Congress must also ensure the program is not an industry bailout and address both the existing orphan wells and the drivers of potential future orphan wells. This would help to create jobs and clean up pollution in communities that have long suffered at the hands of fossil fuel companies. This should be paired with bonding reform policy.

Fund $500 million for the Urban & Community Forestry Program. Through diverse, innovative partnerships between municipalities and non-governmental organizations, this program helps create jobs in establishing, restoring, and sustaining forest cover. Improved forest cover benefits all communities by improving air quality, reducing energy burdens and extreme heat-risks, and absorbing carbon.

Fund $7.3 billion for Federally Qualified Health Centers. These facilities provide essential, affordable, and quality primary care in underserved areas, and are supported by the Health Resources and Services Administration.

$38.5 billion for the Substance Abuse and Mental Health Services Administration. These funds are needed to provide mental health support and substance-use treatment during the pandemic, and to offer increased outreach. Many people have been hit hard by the pandemic, causing high rates of clinical anxiety and depression in communities across the country. Additional funding for this program is essential to ensuring that people in need have access to prevention, treatment, and recovery services.

Fund $5 billion for the HOME Investment Partnerships program. HOME funds can be used to build energy efficient and climate climate-resilient affordable housing or provide direct rental assistance to low-income households, with a focus on electrification and access to transit. Congress should prioritize support for families in low-income communities and communities of color, including those overburdened by pollution.

$500 million to expand air quality monitoring to protect fenceline communities. Lower income families and communities of color suffer and die disproportionately because of the long-term, cumulative health consequences and complications associated with toxic air pollution from facilities in their neighborhoods. Communities' need to know the pollution they are breathing is especially urgent because of research evaluating links between exposure to toxic air pollution and COVID–19 vulnerability. Unfortunately, in too many communities and at too many facilities, there is either inadequate air monitoring or it is missing altogether. An essential step in better protecting fenceline communities and Americans everywhere is identifying which pollutants are currently being emitted and how much, and making that data publicly available. Congress should allocate funds for EPA to: immediately implement fenceline monitoring for toxic air pollutants at facilities contributing to high local cancer risk and other health threats; ensure that fenceline monitoring and continuous emission monitoring are core components of national emission standards for chemical, petrochemical and other sources of fugitive toxic air pollution; rapidly expand the NAAQS or national ambient air monitoring network through the addition of new monitoring stations and report on the status of the entire network with a plan to address repair, replacement and maintenance needs at all broken or failing monitors.

Establish and fund programs to protect environmental justice communities from COVID–19 hazardous and medical waste. These programs are needed to improve monitoring, documentation, and reporting of medical waste disposal. Increased use of Personal Protective Equipment, including masks and gloves, has generated vast amounts of biomedical waste, endangering the health and safety of communities. This waste, including medical, nursing home, and testing waste, must be properly managed to reduce infection and environmental pollution.

Invest in programs that address social determinants of health. Assessing the social, economic, and environmental factors that drive inequality, including poor housing conditions, food insecurity, and lack of mobility and educational opportunities, is critical to reducing the substantial and often deadly health disparities that have been spotlighted by COVID–19 but have long-existed for a number of chronic health conditions.

CUMULATIVE IMPACTS

Environmental regulations and investments in pollution cleanup do not guarantee healthy environments for all communities. Many communities suffer from the cumulative effects of multiple pollution sources. Economic recovery legislation must not abandon or diminish the important goal of reducing all forms of toxic pollution, particularly in communities that are overburdened by high concentrations of pollution near where people live, work, go to school, play and pray. The recovery package is an important opportunity to support an innovative and comprehensive approach to reducing the health, environmental and economic disparities created by systemic racism. Congress must design the recovery package intentionally to ensure that it improves the health, well-being and prosperity of communities hit hardest by the pandemic while not creating additional health and environmental risks. Congress can do this by ensuring that the programs noted above, as well as other programs included in the recovery package, prioritize support for communities that are the most vulnerable to economic downturns, systemic racism and environmental and public health threats.

Thank you for your consideration of these policies and programs.

Sincerely,

Alaska Wilderness League
Alliance of Nurses for Healthy Environments
As the Spirit Moves Us
Audubon Naturalist Society
Breast Cancer Prevention Partners
Center for American Progress
Center for Convention on Democratic Integrity lnc
Center for Earth, Energy, and Democracy
Clean Power Lake County
Clean Water Action
Climate Changemakers
Coming Clean
Conservation Voters of South Carolina
Deep South Center for Environmental Justice
Defenders of Wildlife
EARTHDAY.ORG
Earthjustice
Ecology Center
Endangered Species Coalition
Environmental & Public Health Consulting
Environmental Defense Fund
Environmental Justice Health Alliance for Chemical Policy Reform
Farmworker Association of Florida
Friends of the Earth
Generation Progress
Green Door Initiative
Green Education and Legal Fund
Greenpeace USA
GRID Alternatives
Harambee House, Inc.
Hispanic Access Foundation
Inner City Green Team
Kinetic Communities Consulting
League of Conservation Voters (LCV)
Los Jardines Institute
Mainers for Accountable Leadership
Michigan Environmental Justice Coalition
Midwest Environmental Justice Network
National Audubon Society
Natural Resources Defense Council
New Jersey Environmental Justice Alliance
Nuclear Information and Resource Service
Population Connection
RE–AMP Network
ReGenesis Community Development Corporation
Riverkeeper
Sierra Club
The CLEO Institute
The Nature Conservancy

The Tishman Environment and Design Center
The Wilderness Society
Union of Concerned Scientists
Urban Systems Lab, The New School
WE ACT for Environmental Justice
Women's Voices for the Earth

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Chairwoman Kathy Castor
House Select Committee on Climate Crisis
H2–359 Ford House Office Building
Washington, DC 20515

RE: MAKING THE CASE FOR CLIMATE ACTION: CREATING NEW JOBS AND CATALYZING ECONOMIC GROWTH

Dear Chairwoman Castor,

On behalf of the Solar Energy Industries Association (SEIA), I first want to thank you for your leadership on behalf of the American people and the aggressive work you have already undertaken during the beginning days of this 117th Congress in work to get us on a trajectory to a 100 percent clean economy by 2050. As the House Select Committee on Climate Crisis prepares to discuss policy solutions at a hearing entitled *"Making the Case for Climate Action: Creating New Jobs and Catalyzing Economic Growth" hearing* I wanted to give you some specific details on how the solar industry has and continues to work aggressively towards your goals and President Biden's goal of a 100 percent clean energy future that the committee seeks to attain, and the nation so desperately needs and deserves.

SEIA has set a goal of solar energy being 20% of the US electricity mix by 2030. We have deemed the upcoming 10 years as the "Solar+ Decade" to represent not just the immense amount of solar energy that must be deployed for the US to reach both the committee's goal and those stated in the Intergovernmental Panel on Climate Change (IPCC) goal for climate mitigation. If we achieve this goal, the solar industry will have generated hundreds of billions of dollars in investment and created thousands of American jobs.

As recently as last week, solar industry leaders took this message to lawmakers and Biden Administration officials in an advocacy blitz that highlights that highlighted the critical importance of additional policy action. As the legislative debate shifts toward infrastructure and labor issues, we feel that now is the time to take steps that will chart America's path to 100% clean electricity. Achieving that target will require U.S. solar capacity to reach nearly 700 GW by 2030, and annual installations will need to grow from 20 GW in 2020 to more than 90 GW in 2030. This means that the U.S. will need an extra 270 GW of total solar capacity by 2030 to stay on track with our climate goals, which is 3 times greater than that we have installed in the entire history of solar in this nation. This additional capacity represents hundreds of thousands of U.S. jobs and billions in economic investment in clean energy that the solar industry, in all facets.

With continued innovation and policy support, these goals become more than realistic. Wood Mackenzie found that the recent two-year extension of the solar Investment Tax Credit (ITC), increased solar installation forecasts by 17%. Smart policy works, and SEIA continues to fight for policies that incentivize solar deployment, streamline permitting and interconnection, encourage renewable energy development on public lands, and invest in solutions that provide long-term and sustained support for domestic manufacturing, among other priorities.

One of the most urgent priorities is our workforce. For solar to account for 20% of U.S. electricity generation by 2030, the industry will need to grow to 600,000 workers. The solar industry was able to keep tens of thousands of workers on the payroll during the pandemic, but some residential solar companies experienced hardship and others are still having difficulty securing tax equity for their projects. The solar industry is made up of primarily small businesses, and these changes can make it hard to adjust, let alone grow their businesses and hire more workers.

One near-term solution is to add a direct pay option for the ITC, which would make the industry less reliant on tax equity for financing. Another solution is a long-term extension of the ITC that would give the industry a long runway to continue its growth. Solar companies are major job creators, but they need certainty and a stable tax policy to go to work for our economy.

SEIA also knows that addressing diversity, equity, inclusion, and justice within our industry must be a priority as we move towards an America dominated by clean

energy. Our industry is taking important steps to focus on this work and ensure it is considered throughout all aspects of our industry. Incorporating environmental justice and equity into our policy priorities is a crucial aspect of our energy future and we continuing to develop best practices and any federal policy aiming to address climate change (and therefore impacting our industry) must simultaneously address the socioeconomic and systemic challenges faced by communities of color and other marginalized groups. The solar industry has a crucial role to play in the development of these policies.

Our message to leaders in Washington is simple: Policies that support solar will help our economy recover, create jobs, and address climate change. The stakes are high, but they also present an incredible opportunity for America to prosper.

Below are some policy priorities for the solar industry that will put us on the path to making 20% of the nation's energy mix solar while making electricity cost savings through solar accessible to every family and small business, putting the United States on a path to decarbonizing the electricity sector in its entirety:

Strong tax policy: The Investment Tax Credit

The Investment Tax Credit (ITC) is the most effective proven federal policy on the books to deploy more solar energy. While the tax credit is due to step down from 30% at the end of this year to 26% then eventually phase out over three years for residential solar and remain at 10% for commercial & utility-scale solar, SEIA is advocating for a delay in the stepdown of this integral incentive policy. The ITC has been the most effective tool for allowing companies to finance solar installations, and with other compounding factors affecting the deployment of solar such as trade policy and tariffs, we urge an extension of this important credit. Extending clean energy tax credits is one of the most effective tools available to help meet climate goals while creating over a hundred thousand new jobs and tens of billions of dollars in economic growth.

Other Issue Areas

SEIA has identified the following areas as beneficial drivers for solar energy including:

- *Grid modernization and transmission*: Grid modernization efforts should include establishment of a robust and transparent benefit cost framework to inform utility planning and ensure full and fair valuation of distributed energy resources. To reduce transmission barriers to the further expansion of utility-scale solar, we need a disciplined, well-coordinated, cross-jurisdictional regional-level transmission planning effort.
- *US manufacturing:* To help ensure U.S. manufacturers can succeed in this environment, the United States must leverage its unique technology and innovation ecosystem, including national labs, regional and local incubators, and the venture capital investment community.
- *Resiliency & cybersecurity:* Ensuring resiliency requires a focus on developing technological solutions for reliability, including developing industry guidance for equipment corrosion protection in design and installation, establishing grid management and source-based maintenance programs that ensure integration as main or back-up systems and developing industry-wide procedures for operations and maintenance.
- *Workforce development:* To reach 20% of generation by 2030, our estimates show that nearly 400,000 jobs will be added over the next decade, with many of them coming in emerging states and regions that will require significant training and workforce development.

SEIA is proud of the amount the solar industry has contributed to decarbonizing the electricity system, but we know we still have a long way to go. With your support in addition to our industry taking on aggressive collaboration to work with other technologies and partners, we are confident that the Solar+ Decade will be fruitful for the American economy, American workers, and homeowners and small businesses. Thank you for your consideration of these policies and continued dialogue with the solar industry.

Sincerely,
Abigail Ross Hopper, Esq.
President & CEO

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ATTACHMENT: Larsen, J., Mohan, S., & Houser, T. (2021, April 20). "Pathways to Build Back Better: Jobs from Investing in Clean Electricity." Rhodium Group.

The report is retained in the committee files and available at:
https://rhg.com/research/build-back-better-jobs-electric-power/

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Statement from Congresswoman Doris Matsui

House Select Committee on the Climate Crisis

Full Committee Hearing:

"Making the Case for Climate Action:
Creating New Jobs and Catalyzing Economic Growth"

Tuesday, April 20th at 12PM via Zoom

Chairwoman Castor, Ranking Member Graves, and members of the Committee:

In October of last year, Mr. Paul Lau was appointed as the Chief Executive Officer (CEO) of my local utility company, the Sacramento Municipal Utility District (SMUD). But his leadership to fulfill SMUD's mission to provide clean, safe, and affordable electricity to Sacramentans began long before. Paul is a son of Sacramento. Originally from Hong Kong, he immigrated with his family to the city at the age of 12. He attended high school and college in Sacramento and has built his professional career for the last 38 years at SMUD. It all started in 1982 when he was a young electrical engineering student at California State University, Sacramento interning at the company. I am honored to have him as my constituent and as a fellow leader serving the California Capital Region.

Paul's work ethic and commitment to SMUD and the Sacramento community have positioned him to be a part of the utility's executive team for more than 12 years, most recently serving as chief grid strategy and operations officer, and now as CEO. His expertise in emerging energy technologies has also led him to serve as Vice Chair of the Large Public Power Council Emerging Trends Task Force, on the Boards of the Smart Electric Power Alliance and the Electric Transportation Community Development Corporation, on the Sacramento Asian-Pacific Chamber of Commerce, and as an Alternate Commissioner of the Balancing Authority of Northern California. In his new leadership role as CEO, Paul will use his nearly four decades of experience to spearhead the most ambitious carbon-reduction goal of any utility in the United States, SMUD's 'Zero Carbon' Plan.

As you know, SMUD is one of the nation's largest community-owned utilities, operating on a not-for-profit basis and supplying electricity to 1.5 million residents in the California Capital Region for over 75 years. As a strong partner in the fight against the climate crisis, the company has set ambitious goals to meet and exceed California's rigorous environmental requirements: it was the first large utility in the state to reach a 20 percent renewable portfolio standard and in 2018 the utility's board adopted a plan to put SMUD on a path to net-zero emissions by 2040. Now, SMUD seeks to build on its robust legacy by becoming the first utility company in the nation to completely eliminate carbon emissions from its power supply by 2030.

Paul and SMUD are not just leading the way on deep decarbonization, they are incorporating energy equity and local workforce development as they chart a path towards a clean energy future. SMUD is also focused on expanding clean energy access to underserved communities, creating green jobs, and building a pipeline to recruit, train, and hire diverse communities in the region for this transition. They seek to build community wealth by investing in partnerships with local organizations, colleges, and universities. Additionally, through its work with the California Mobility Center—a public-private consortium—SMUD aims to establish Sacramento as a center of electric mobility innovation. Its investments in local workforce development for electrical, solar, and EV charging equipment combined with charging infrastructure efforts through the public-private consortium are estimated to generate $2.5 billion in economic activity in the region in the coming years.

Clean energy deployment and green jobs are a part of the future that our communities deserve, and SMUD is an exceptional example that we can achieve our goals to build back better sustainably. I am honored to work alongside a progressive, community-owned, and community-minded utility company and thankful to have Mr. Lau's expertise and leadership guiding clean energy efforts in Sacramento and beyond.

Thank you for your time and I yield back.

Ms. CASTOR. As you know, she is your biggest fan.

And so, without objection, all members will have 10 business days within which to submit additional written questions for the witnesses, and I ask our witnesses to please respond promptly.

And just as a reminder, to tune in to President Biden's Leaders Submit. What a refreshing time it is that the United States of America is leading again on the world stage to urge China and all other countries to go farther and faster on their NDCs under the Paris Climate Accord.

Secretary Blinken said yesterday that here in the U.S. we have around 4 percent of the world's population, but we contribute nearly 15 percent of global emissions. If we do our part at home, we can make a significant contribution to addressing this crisis. And I know that we will then inspire others to go farther and faster as well.

So thank you all for being here today. And we are adjourned. Thanks so much.

[Whereupon, at 1:57 p.m., the committee was adjourned.]

United States House of Representatives
Select Committee on the Climate Crisis
Hearing on April 20, 2021
"Making the Case for Climate Action:
Creating New Jobs and Catalyzing Economic Growth"

Questions for the Record

The Honorable Philip N. Bredesen
Executive Chairman of the Board
Clearloop Corporation, and
Former Governor
State of Tennessee

THE HONORABLE KATHY CASTOR

1. Governor Bredesen, I am working on legislation to help upgrade and expand our electric grid. How would a modernized and expanded grid help companies like Silicon Ranch and Clearloop grow and hire more workers?

Upgrading and expanding the electrical grid is an enormous project, but one that can have an outsized impact on carbon reduction, job creation and national security. While jobs would be created within both Silicon Ranch and Clearloop, the vast majority of them will be in the manufacture of the components needed for that upgrade and the construction that results. There is an important opportunity to introduce training that enables workers to enter and progress in this new sector of the economy, and to incentivize the creation of these jobs in areas of our country which are experiencing job losses as our economy continues to evolve. The Federal government doesn't have to act in a heavy-handed way; there in the current environment there is leverage for intelligent, focused and limited action to have a large impact.

2. Governor Bredesen, state and local governments around the country have announced clean energy goals, clean vehicle commitments, and climate pledges. You have held multiple state offices in Tennessee from Governor to Mayor, and now you are a successful entrepreneur. How can Congress support state and local climate action? What types of investments and policies do we need?

Many state and local governments have made commitments to decarbonization, just as many private companies have. Many of the things that Congress is considering to assist and incentivize the private sector are applicable to the public sector as well. Improvements to the tax credit process to facilitate more investment in renewables, for example, will provide additional investment in renewable energy and lower costs for state and local governments as well as major corporations.

3. Governor Bredesen, the pandemic is slowing tax equity financing for clean energy, with many banks hesitant to finance projects while their own tax liabilities are uncertain. Making clean energy tax credits eligible for direct pay would address some of these challenges. In your view, how would broadening the pool of investors accelerate the deployment of clean energy?

I don't believe that making tax credits refundable (direct pay) as they were until several years ago would be a sound approach and might well slow down the development of the high quality projects at scale that modernizing the grid requires.

The former process brought a great many unqualified operators into the business and in my experience was often abused and costly to the federal government. The result was too many small, poorly-designed projects that are far from what is needed to modernize the electrical grid. The current tax equity financing process relies on sophisticated investors who bring independent third party analysis and audit into the system as a check on the developer. That involvement produces higher quality, lower cost and much larger projects. Some changes to enable a quicker write-off or to make the credits refundable after a waiting period (a couple years, for example) would free up additional tax credit financing without returning to the expensive wild west days of refundable tax credits.

4. Governor Bredesen, you helped found a company, Silicon Ranch, that is one of the signatories to the Solar Energy Industries Association April 27, 2021 Solar Industry Forced Labor Prevention Pledge. In addition, the Climate Crisis Action Plan recommends developing a national strategy and research program for critical minerals in the clean energy and electric vehicle supply chains and it recommends increasing domestic manufacturing of climate solutions. Governor Bredesen, what reason do you have for optimism that we can solve these challenges?

I'm optimistic about the future because of the broadness of interest in fighting climate change through reducing greenhouse gas emissions. In the United States, the private sector has been leading the way and there is broad support for action among the largest corporations. A few states have taken legislative and regulatory action, and many local governments are beginning to address the issue. Some components of a carbon strategy—electric cars for example—have substantial citizen support. Most importantly, there is growing recognition everywhere that the changes to the energy economy that are underway can be a potent creator of jobs if we take advantage of the opportunity this change presents.

THE HONORABLE GARRET GRAVES

1. Governor Bredesen, in our conversation and in your exchange with Representative Carter, you noted some of the challenges in certain regions of the country with respect to permitting that often make it difficult to attract private investment in renewable energy products. I agree that often too much red tape can stop important infrastructure projects at all steps of the development process, which is why I introduced the BUILDER Act to make the NEPA process more efficient. While some of the challenges you mentioned are the result of local and state regulatory structures, what specific steps should Congress take to reduce obstacles in permitting and construction that will provide the necessary certainty for private investment?

In our experience, once a customer for renewable power has been identified, the primary external challenges are the identification of a suitable tract of land and negotiation of an interconnection agreement. Nearly every site has some form of wetland issues, but it has been straightforward and not a significant expense to design in a way that meets NEPA requirements. I'm aware that others have complained about environmental permitting being a constraint, particularly in California, but it has not been a significant one for us in our markets. Most of our customers would see a significant weakening of environmental requirements to provide them their renewable energy as a major and likely disqualifying negative.

In my testimony, I suggested some capital gains changes that could make it easier to acquire the necessary land from long-term landholders, and some FERC changes that could speed and improve the technical aspect of acquiring interconnection agreements. For us, those would be more useful than changes to NEPA.

Questions for the Record

Paul Lau
CEO and General Manager
Sacramento Municipal Utility District

THE HONORABLE KATHY CASTOR

1. Mr. Lau, I am working on legislation to help upgrade and expand our electric grid. Before becoming the CEO, you were the Sacramento Municipal Utility District (SMUD)'s Chief Grid Strategy and Operations Officer. How would a modernized and expanded electric grid help you meet your corporate goals faster and at lower cost?

Thank you, Chair Castor. As Committee members know, we are in transition from a one-way grid to a bi-directional grid that facilitates transactions between customers and the utility, and soon transactions between customers. We have seen tremendous benefits from our grid modernization investments on our distribution system—particularly the move to smart meters, which SMUD undertook in 2009 with the aid of a grant from the Department of Energy through the American Recovery and Reinvestment Act (ARRA). Investing in smart systems is increasingly important because it will help us efficiently and cost-effectively integrate distributed energy resources (DER) owned by customers, accelerating carbon reduction while benefiting customers and the utility. Looking forward, we are focused on building our Advanced Distributed Management System (ADMS) and Distributed Energy Resource Management System (DERMS) which will allow us to achieve shared benefits of customer sited distributed energy resources like rooftop solar, battery storage, and electric vehicles. As part of our Zero Carbon Plan, we are very interested in business models that are mutually beneficial for SMUD, customers and carbon reduction, such as building a Virtual Power Plant program, and allowing Vehicle-to-Grid interaction on our system. We believe these customer programs will help contribute to achieving our zero carbon goal and the modern systems which will allow us to interact with our customers and their devices will be key to expanding these programs.

Expanding our large-scale transmission grids could bring reliability and clean energy benefits by providing improved access to areas with favorable wind or solar conditions (or other clean energy sources) and thereby make renewable energy cheaper and more accessible. Since transmission can also bring geographical diversity, it can support improved reliability. Examples where this could bring benefits include transmission for offshore wind in California or improved long-distance transmission to improve access to wind resources in Wyoming.

2. Mr. Lau, I recently introduced the Community Solar Consumer Choice Act of 2021 to help deploy more community solar because residential solar and other distributed energy resources generate clean electricity, increase grid resilience and flexibility, and create jobs. What role do you see residential solar and other distributed energy resources playing in SMUD's plans to eliminate emissions by 2030? How can Congress support more deployment of residential solar and other distributed energy resources?

Thank you, Chair Castor. SMUD was a pioneer in establishing a community solar program known as SolarShares. We see customer-owned resources playing a significant role in our 2030 Plan. DERs will play a major role not only in decarbonizing, but for maintaining reliability and keeping costs low, by optimizing resources for the customer and the entire grid. We're gearing up to pilot what's called a "virtual power plant" that leverages increased utility control of customer-owned resources to leverage the benefits of these distributed resources across the grid and enhance efficiency to reduce emissions. Further, these resources are even more efficient and useful to the grid when paired with storage. SMUD supports efforts to expand the solar investment tax credit (ITC) to storage projects, (on a stand-alone basis) which makes solar that much more appealing and effective as a tool to reduce emissions during critical peak hours, and to make these credits refundable, direct-pay instruments. Finally, it is important to point out that this investment needs to be made inclusively across all communities, including our under-resourced communities, to maximize benefits and ensure no communities are left behind.

Congress could support increased adoption of residential solar and other distributed energy resources by supporting R&D through tax incentives and research grants for new technologies and business models. Developing and deploying new technology such as virtual power plants, vehicle-to-grid technologies and microgrids is costly and risky for utilities, but in the long run these technologies could prove to be cost-effective game changers once sufficient scale is reached. Federal invest-

ment in emerging technologies and to launch and accelerate new industries have been very successful in many areas, including to grow the wind and solar energy sectors.

3. Mr. Lau, California has a state-wide building energy benchmarking program for commercial and multi-family buildings. I am working on a bill to establish a national benchmarking policy to encourage disclosure of the energy use and emissions of commercial and multi-family buildings. How does benchmarking help building owners reduce energy costs and cut harmful pollution?

Thank you, Chair Castor. Benchmarking can provide critical information to consumers who would otherwise not be able to make meaningful comparisons of the relative energy use of buildings. In our service territory, we have customers that are particularly motivated by the environmental impact of their choices as consumers, and will actively work to reduce their carbon footprint. Benchmarking provides key data to inform these customer choices and drive market solutions to reduce building emissions, such as energy efficiency and electrification measures.

4. Mr. Lau, you announced that SMUD will completely eliminate carbon emissions by 2030, five years ahead of President Biden's goal for the nation, and you will do so while accelerating the electrification of transportation and buildings. What kinds of investments could Congress make to help other utilities across the country catch up to SMUD?

Thank you, Chair Castor. Congress can play a critical role in de-risking and incentivizing large investments. There are lots of examples where SMUD has innovated and invested in clean technology: for example, SMUD has been partnering in local dairies to turn waste into energy through "cow power," we're electrifying school buses in historically under-resourced communities, and as I mentioned, vehicle-to-grid and virtual power plants. These are innovations and investments where SMUD can take on the risk without adversely impacting our customers or our financial position. However, many of the emerging technologies that will allow us to ultimately replace all of our natural gas plants with clean carbon-free technology are either too expensive or not available at scale today; these include long-duration energy storage technologies, green hydrogen, and carbon capture and sequestration. We must approach these emerging technologies carefully, so we don't over commit to one single option too early before the real winners present themselves, potentially getting ourselves into a position where we cannot financially shift dollars to a different leading technology down the road. We don't have unlimited funding and can't accept a high degree of risk associated with early investment in emerging large-scale carbon-free resources on behalf of our customers. Our exploration of these emerging resources must be small and of pilot scale during the initial phase, and we hope in partnership with others and potentially with grant funding, as we prove out these new carbon free technologies. That's where support from the Federal government would be instrumental.

Fortunately, many of the necessary emerging technology investments are already under consideration by Congress: grants, incentives, and technical assistance programs that encourage partnerships and help make the financial case for local and private investment.

The American Jobs Act and CLEAN Future Act provide important avenues to aid in the electrification of transportation and the built environment. Utilities are natural investors and stakeholders in electrification because it is an additional delivery point for our product while addressing carbon emissions in sectors that to this point have done very little in terms of decarbonization over the past 20 years. Utilities can also be local and regional conveners of partnerships with other entities that have an interest in affordable housing, charging infrastructure, and mobility solutions. Beyond electrification, Congress should continue investment in innovation and R&D for cutting-edge technology, both on grid scale and distributed clean technologies; bolster incentives for demonstration and pilot programs for technology that is ready to be commercialized but has not yet been proven; incentivize and ensure opportunities for new technology adoption are inclusive and equitable in implementation; and expand grants and incentives to utilities for clean energy projects to mitigate cost impacts to ratepayers.

5. Mr. Lau, in your testimony, you discuss SMUD's progress in electrifying and reducing pollution from its vehicle fleet. How will fleet electrification improve health in your community, and what can Congress do to help other communities realize these benefits?

Thank you, Chair Castor. The partnerships SMUD is developing through the California Mobility Center are helping us realize the direct benefits of emissions reduc-

tion and indirect benefits of lowering fleet operating costs, contributing to lower rates for our customers. At SMUD, we have electrified 100% of our light duty vehicle fleet and implemented advanced technologies to reduce idle time and eliminate emissions from our heavier duty fleet. Currently, 13% of our fleet of nearly 1,000 vehicles and construction equipment includes an electric drive or hybrid feature, and we are aiming to increase this percentage as much as is feasible through 2030. As I said during the hearing, our region has some of the poorest air quality in the nation, making these investments critical for not only carbon emissions but other pollutants harmful to public health.

Given that under-resourced communities are often adjacent to major roadways and fleet operation centers, fleet electrification can be very effective in eliminating criteria pollutants such as diesel suet (particulate matter pollution) and other smog-forming chemicals that damage lungs and respiratory function. The fact that under-resourced communities have a disproportionately higher percentage of asthma, lung cancer, and other respiratory ailments makes it imperative that we find technologies such as electrification to help reduce these harmful emissions and help these communities. SMUD is performing a detail analysis of where all the large fleet operations centers are in our service territory and will be using that information to create a blueprint plan on how to support both electric and hydrogen zero emission vehicle technology deployment into those areas. SMUD is already sharing information on this initiative with other California utilities and will start promoting it nationally as the initiative progresses.

Questions for the Record

Leticia Colon de Mejias
Founder
Energy Efficiencies Solutions
Policy Co-Chair
Building Performance Association, and
President
Green Eco Warriors

THE HONORABLE KATHY CASTOR

1. Mrs. Colon de Mejias, you lead a successful energy efficiency business. The work you do saves consumers money, and it reduces emissions. It also protects their health, which is critical during the ongoing COVID–19 pandemic. In your view, is energy efficiency something that should be supported by everyone? How would energy efficiency benefit the constituents of all Members of Congress?

Efficiency should be supported by everyone because efficiency is simply efficient. Although this seems simplistic, it applies to everything. For example, if gas is used to generate electricity we can still benefit from using less of that resource, using less means there is more in reserve. This makes it more affordable and more accessible to all people and decreases our dependence on foreign resources stabilizing our economy and our energy grid. Using less of any resource ensures that we use fewer natural resources, and we inflict less harm on our planet resulting in more positive environmental justice outcomes. Energy efficiency is a proven resource to lift the health of all Americans [1]. Beyond that, energy efficiency can be applied to every single-family home, multifamily buildings, commercial buildings, and schools. Wherever energy efficiency is employed appropriately and comprehensively, communities reap additional positive health and economic benefits. This is accomplished when we address issues such as gas leaks, mold, asbestos, vermiculite, or carbon monoxide, pests, cracks, leaks, drafts, and other harmful health hazards which exist in many low to moderate-income communities. [2]

Beyond the direct health implications of removing indoor onsite barriers, we also draw down the pollution created at the power plants.[3] These emissions generated by the burning of fossil fuels to create heat or electric energy have broader implications on human health, resulting in asthma, cancer, and ramifications on our water

[1] *https://efficiencyforall.org/wordpress/wp-content/uploads/2017/04/h1801.pdf*
[2] *https://efficiencyforall.org/wordpress/wp-content/uploads/2019/02/EE-Health_2-18-2019_Flyer.pdf*
[3] *https://efficiencyforall.org/wordpress/wp-content/uploads/2017/04/Energy-Efficiency-Economy.pdf*

quality and water cost.[4] The more energy we save vs waste, the less we pay per kWh, this is another critical benefit of comprehensive home performance and efficiency measures; it lowers our costs as well as the related pollution.[5] If these benefits are not enough to ensure our nation should invest in a wide expansion of energy efficiency, the jobs and economic benefits are just as impressive. Energy efficiency employs more people in the USA than we have teachers.[6] Our workforce offers a wide range of job opportunities which many people are sadly unaware of at this time. Having a good job is one of the easiest ways to lift a person's mental health. It is important to think of equity, for how can one get ahead without a stable roof or a bed? To have these basic necessities a roof and a bed, lights, food, safety, and electricity Americans need jobs. All of these basic necessities directly or indirectly are impacted by how we create, distribute, and use energy. All things are connected, and our health is certainly connected to our housing and our energy plans.

Energy efficiency is the most effective and least expensive way to draw down carbon emissions, protect human health and provide career paths for people in the United States of America. It is a critical component in strengthening and stabilizing our electric and energy infrastructure. Whether our states choose to invest in fossil fuels, nuclear, electric, solar, hydroelectric energy, wind, or potential new energy resources, using less of any resource is more effective and efficient, as well as conservative and a responsible path forward.

Energy efficiency would benefit the constituents of all Members of Congress in a number of ways, including creating and sustaining local jobs. Energy Efficiency is a proven job creator in every state across America; wherever there are buildings, you can employ Energy Efficiency workers. Before the pandemic, energy efficiency was one of the nation's biggest job sectors, employing nearly 2.4 million Americans. The majority of energy efficiency companies are small businesses, with 70% of companies employing 10 or fewer workers. In 2020, the Energy Efficiency sector was expected to grow 3 percent.[7] The pandemic resulted instead, in a loss of 11 percent.[8] Energy Efficiency can provide jobs regardless of the state or the local climate. Because drawing down peak demand is most effective in the hottest months or coolest months in any state.

The bipartisan **HOPE for HOMES Act of 2021 (H.R. 3456, S. 1768)**, includes immediate and long-term initiatives to support the residential energy efficiency sector in the face of sustained challenges stemming from the pandemic, getting them back to work helping homeowners, multifamily property owners, and renters save energy and money by investing in clean, efficient technology. Through the establishment of grants for online workforce training, residential contractors will immediately gain access to online training designed to prepare them to conduct comprehensive home energy efficiency retrofits. These grants will allow small contracting businesses like mine to hire and re-invest in their employees despite continued economic recession.

Efficiency also supports resilience and energy security. When we strengthen the thermal boundaries we make our shelters more resilient to severe weather impacts, allowing people to shelter in a place during a pandemic, a storm, or any unexpected natural or man-made events. By drawing down energy demand, efficiency also helps improve reliability and reduce strain on the grid. When the climate is hot or cold, we sadly see blackouts and brownouts due to extended use of heating, cooling, and electric needs that occur across that state or region simultaneously. There is ample opportunity to lower peak demand through investments in energy efficiency in buildings. Therefore expanding comprehensive EE across America will make our energy grid more resilient, less reliant on imported resources, and more stable for American households and businesses. We know that climate change impacts are already being seen. A report by Dr. Bozzi at Yale was sobering for my staff and the State of Connecticut Commission on women children elderly equity and opportunity.[9]

The implications on heat index rise, sea-level changes, lack of access to potable water, and health were moving. We know that these issues are impacting the most vulnerable people in our nation, and it is our duty to take action now to protect

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[4] *https://coeh.ph.ucla.edu/effects-of-residential-gas-appliances-on-indoor-and-outdoor-air-quality-and-public-health-in-california/*

[5] *https://efficiencyforall.org/wordpress/wp-content/uploads/2017/04/EE-2_13-Slides-2.pdf*

[6] According to the E2 Clean Jobs America 2021 report, energy efficiency jobs outnumber all elementary and middle school teachers across the country. *https://e2.org/wp-content/uploads/2021/04/E2-2021-Clean-Jobs-America-Report-04-19-2021.pdf* (p. 7, 13)

[7] https://e4thefuture.org/wp-content/uploads/2020/11/EE_Jobs_America_2020.pdf

[8] https://e2.org/wp-content/uploads/2021/04/E2-2021-Clean-Jobs-America-Report-04-19-2021.pdf

[9] *https://files-profile.medicine.yale.edu/documents/8a79a736-2706-4546-86fa-a1a0f0925065*.

them from the worst impacts of climate change. Expansion of energy efficiency supports and programs will lift Americans while we build bridges to opportunity and equity and tear down the longstanding walls of historical injustice.

As an American who has been working in the Energy Efficiency industry since 2010, I have seen incredible outcomes in my home state of Connecticut. Connecticut has removed the equivalent of two power plants, and millions of vehicles off the road just by implementing energy efficiency in residential and multifamily buildings.[10] When viewed as a whole, this data demonstrates that a major increase in investments in comprehensive EE will benefit ALL Americans. We must ensure that all Americans understand efficiency and conservation; that they know how to participate meaningfully and that we create equal access to programs, services, and career opportunities. We must provide support and incentives to help constituents afford the implementation of energy efficiency retrofits, specifically focusing on low to moderate households. When demand for energy at the usage site is drawn down, the cost of energy is also reduced, making it more affordable creating a stronger infrastructure that is more resilient, more stable, and safer.

Jobs = Opportunity: There is nothing better than giving someone a job because a job lifts the individual and the community that they live in. Having a job creates a positive outlook, it allows that person the ability to take care of and provide for their family. There is truly no better way to lift a community than to create paths to a positive workplace, and self-reliance is a key principle of the American way. Energy efficiency employs more people than police officers or teachers. We don't think about EE or retrofitting jobs as careers because so few people understand energy or our nation's infrastructure or the steps to obtain these careers. I have walked this path for the last 12 years and I have seen the benefit of providing jobs and careers in my own community. I have seen first hand the benefits of retrofitting people's homes and buildings. I have hundreds of letters from past customers, Americans, *who now pay 30% less on*[11] their heating and electric bills, who live better lives, who have personal stories of how their health improved, and who have careers that they now love and cherish.[12]

Another benefit of Energy Efficiency to all constituents, of all members of Congress, is the fact that comprehensive energy efficiency retrofits create a healthier environment while simultaneously drawing down the cost of energy, and strengthening our nation's infrastructure. Every state would enjoy the lower cost of energy and the benefits of lowered air and water pollution. This is even more important when there are pockets of people of color and at-risk groups with asthma. The time for action is now; cleaning up our air and our water and Energy Efficiency is the best, and least expensive, way forward to do such a thing.[13]

2. Mrs. Colon de Mejias, I am working on a bill to establish a nationwide benchmarking program to encourage disclosure of the energy use and emissions of commercial and multi-family buildings. What would greater transparency about energy use and emissions do for businesses like yours? Would it help create greater demand for energy efficiency services?

I'm so excited to hear about your bill to establish a nationwide benchmarking program. It is time for Americans to understand their energy bills and the demands, as well as where their energy comes from. Yes, I do believe that transparency on energy used in multi-family and commercial buildings would create a greater demand for efficiency services. Greater transparency in energy use helps people understand where energy is being wasted. This will help them know how to draw down those demands and get their energy use under control. I have seen that once someone has access to information they can make much better-informed decisions. Knowledge is power. Knowing how our energy usage impacts people, the planet, our nation, and our economy is imperative as we move into the future. Americans deserve to know where energy comes from, which resource is being used, and how they can save energy and save Dinero.

3. Mrs. Colon de Mejias, you are the President of Green Eco Warriors, which focuses on climate education. The Climate Crisis Action Plan recommends expanding Federal support for climate literacy in STEM (science, technology, engineering, and mathematics) education programs in our schools, with an emphasis on removing barriers and broadening participation for underrepresented groups. Based on your experience, why is cli-

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[10] *https://efficiencyforall.org/wordpress/wp-content/uploads/2018/03/Final-2017-Annual-Legislative-Report-WEB-2-20-18.pdf.*

[11] *https://efficiencyforall.org/wordpress/wp-content/uploads/2017/04/Uconn-2.pdf*

[12] *https://eesgogreen.com/customer-testimonials/*

[13] *https://youtu.be/l_7MUIDb2E0*

mate education so important? What kind of gaps are you seeing in the real world in terms of the public's understanding of energy use, the climate risks we face, and the opportunities that we have for climate solutions?

Knowledge = Power

America is a diverse place where innovative ideas and solutions abound. For far too long, people of color have been underrepresented or more often completely left out of the conversation on climate change, energy plans, and energy infrastructure. This has left them without access to job opportunities, and often also leads to a lack of participation in programs and services that would lower their energy burdens. This type of unintentional procedural exclusion is historic and broadly impacts underrepresented populations negatively. **If we desire meaningful engagement, we must ensure equal access to information that allows people to make informed decisions, and to empower them with information and stackable learning opportunities starting at an early age. The best path forward to lift communities is to provide low cost accessible engaging diverse education that would empower Americans with information and allow them to participate meaningfully in careers, programs, and policy creation.**

Unfortunately, some areas of our nation have been historically oppressed by economic distress or other socio-economic disparities, this results in a lack of focus on applied science and STEM skills. When youth do not have the opportunity to be engaged in applied science they have a hard time seeing themselves in careers that are science-based, and they are often left unprepared for career opportunities. We can address this issue by ensuring applied hands-on science is taught in all public schools. This will spark interest and engagement in communities which have been historically left behind and, intentionally or unintentionally, excluded from these career opportunities and the program supports which are offered to help lower energy burdens. Building science and energy efficiency as well as climate science and environmental issues may not be the most pressing issue on the minds of some Americans. This is only true because many Americans may not be aware of the far-reaching implications of climate change, on our health, wealth, daily lives, and ultimately on our survival as a nation and as humans.

In my career as an educator, workforce specialist, and trainer, I have learned that to affect meaningful long-term change a person must understand what they are learning and be able to assimilate the ideas. This requires the participant to see themselves as capable of learning the material, and the person needs to see value in learning the material. The most effective way to encourage someone to pay attention to a topic, is to demonstrate the direct relation of that topic to the person or people related to that person. This is because people care when they see an issue as directly related to them. Starting education early increases the potential that a person will gain stackable knowledge and be able to apply what they learned. I suggest we start in Pre Kindergarten and offer education at school, online, and through media platforms such as books, graphic texts, children's TV shows, or videos.

The areas that I see lacking in our current educational platforms and workforce programs are the basic sets of information including but not limited to: where energy comes from, the types of energy renewable and nonrenewable resources, what uses the most energy, how our energy grid works, the impacts of energy use and energy choices on people and the planet, how to save energy, how to reduce an energy bill, the interconnectedness of energy and water nexus, the concepts all things are connected and our choices do matter, civic engagement (how policies and laws are made), fiscal responsibility and the impacts of our financial choices. These are the areas that cause the highest levels of disengagement and procedural exclusion for communities of color.

If the United States of America truly wants to invest in communities of color and underrepresented groups, and lift the communities they reside in, then it is time to invest in expanding access to climate literacy, energy literacy, energy equity, and STEAM education. I specifically mentioned STEAM education vs. STEM education because I find the addition of art and music to science technology engineering and math increases youth and adult opportunities to be engaged by lowering the anxiety of participating. I believe we need an intensional emphasis on removing barriers to underrepresentation in the education field, the American energy workforce, and in energy efficiency and home performance careers.

Based on my experience, I know climate change education is important because before I knew about climate change I had no desire to work in an Energy Efficiency career. This is because I did not know that there were building performance or energy careers. I had no knowledge of where electricity came from or the impacts on human health. But once I learned about the issues and the direct impact on my children's health, and wealth I was moved to quit my job and create a path for minori-

ties to work in this industry. Had I not seen the film "Kilowatt Ours", by Jeffery Barrie and the DOE, I would have never created my company where I now employ 22 people of color and help thousands of people a year reduce their energy bills and improve their health. Nor would I have helped thousands of American's lower their energy waste, energy bills, and energy costs, or educated thousands of children and families on the issues of energy and climate connections. I have seen the outcome of educating the community on the topics of energy and climate. As I have successfully helped thousands of families and children learn through our own work at Green Eco Warriors. Success stories are located here [14] and in the attached Appendix A.

There are real gaps in terms of public education and understanding of energy use, as well as climate risks. We must expand access to science, technology, engineering, art, and math as it directly relates to the understanding of climate change and climate impacts. Certainly ensuring equal access to science and climate change education would create bridges to allow underrepresented groups to find new career opportunities in many areas that relate to those fields and connect them to ways they can save energy and lower energy bills.

"There is a huge opportunity to simultaneously build a skilled clean energy workforce, support small businesses, and dramatically improve and decarbonize America's building stock. According to a recent report from E2 and E4TheFuture, if Congress directed $60.7 billion to the energy efficiency sector, over a 5-year period it would **add $254.7 billion to our nation's economy and create 737,200 full-time jobs across every region and state.**[1] Investing in a robust workforce of skilled energy efficiency workers will help power our economic recovery and our nation.[2]"

- **Appendix A attached, includes comments collected from students and teachers which were gathered through our work as Green Eco Warriors (G.E.W). G.E.W is a minority-run nonprofit, with a focus on Energy Equity, civic engagement, and Creating a Culture of Sustainable Thinkers™.** [15]

THE HONORABLE GARRET GRAVES

1. Representative Palmer asked you about concerns with China being the world's leading supplier of the minerals critical to the manufacture of renewable and storage technologies. I appreciate your statement that "we have the opportunity to really do this right." 90% of the world's solar panels currently come from China. Are you concerned with the potential national security and human rights implications associated with the current state of the supply chain? Do you agree that we should increase domestic production of these minerals? Can you share your thoughts on how best to pursue a clean energy technology approach and disconnect our reliance on China?

Yes, I am concerned with the implications of using child labor, or any labor that results in harm to humans or abuses humans. I feel strongly that it is our responsibility to choose wisely about where we purchase products or services from. This is why my company uses local windows made in America, as well as American made insulation, and if it was readily available we would use solar that were made in America. Creating material and technology in the USA allows us to control the safety of the supply chain and ensure workforce safety standards.

Increasing domestic production of clean energy resources is a wonderful way to create local jobs, to ensure our supply chain is stable, and to expand our clean energy resources, stabilizing our electric grid and national infrastructure which is a benefit to all Americans.

Investments in our public school systems to ensure youth are learning STEAM skills and are ready to workforce ready, will help in creating technology in our nation, and will help future job seekers prepare for the use of new technology. We need to expand investments in workforce programs that support small businesses, and which support training for historically underrepresented populations. Far too often workforce programs are focused only on unions and this leaves small businesses with little to no support.

Small Businesses are the backbone of America and we should be intentional in our plans and budgets to ensure small businesses like mine and the many home performance contractors and solar installers, electricians, heat pump installers, and

[14] *https://www.gewportal.org/articles/*
[15] *https://www.gewportal.org/*

other American workers have access to training support which are accessible and affordable. This will pave the way to our clean energy future.

With access to workforce development and robust short-term training programs, struggling Americans can become fully equipped to fill existing jobs and new careers in this emerging clean energy economy. The **Blue Collar to Green Collar Jobs Development Act (H.R. 156),** introduced by Congressman Rush, has a crucial energy workforce grant program that small businesses can apply to directly to help them hire and train new workers as opposed to going through labor organizations or registered apprenticeship programs that do not exist for the home performance industry and often perpetuate diversity disparities. Small businesses like mine are the backbone of the efficiency industry, and I urge Congress to support this type of direct support to make an immediate difference for our industry.

The **HOPE for HOMES Act (H.R. 3456, S. 1768)** would also support jobs and small businesses in our industry through remote training opportunities and rebates to drive demand. Energy efficiency is a proven catalyst for broad economic recovery that can create solid careers in every state and county for years to come, and independent research shows the HOPE for HOMES Act would create local jobs while saving energy and reducing carbon emissions. A 2020 analysis from the American Council for an Energy-Efficient Economy (ACEEE) of a smaller-scaled bill estimated it could support 42,000 annual jobs (job-years) over the next few years, and 85,000 total jobs.[16] This updated version of HOPE for HOMES would create even more jobs in an industry adversely affected by the pandemic.

Americans need to understand the value of this work to draw down the cost of energy, the pollution-related to energy, and the Environmental Justice impacts of our energy choices. The HOPE for HOMES Act, and the Blue Collar to Green Collar Jobs Act would go a long way to spark the work which we must undertake to expand our clean energy infrastructure and ensure Americans receive the benefits of the local jobs and clean energy.

Workforce in Connecticut update: This week, we were honored to learn that Efficiency For All (EFA), a minority-run nonprofit focused on closing the energy equity gap, and creating a diverse energy workforce, was granted funds to train ten energy efficiency workers in building science. Our participants will be selected from at-risk and underserved populations. They will learn soft skills, problem-solving, energy career options, and they will graduate with a certification in Building Science Analysis, OSHA 10, Lead RRP, and other critical skill sets. They will then be placed in a six-week internship at a minority-owned or veteran-owned contractor. We will work to highlight the trainees and track their career progression to ensure we document successes and demonstrate that these careers lift people and the communities in which they reside. We look forward to sharing our successes.

I thank you for the opportunity to provide additional responses and resources on these important topics. I am at your service as an American citizen who holds my government and my nation in high regard, and as a Latina Small Business owner who loves my career, my staff, and the Americans we serve through our work in energy efficiency, home performance, community engagement, and education.

[1] https://e4thefuture.org/wp-content/uploads/2020/07/E2E4-Build-Back-Better-Faster-Stimulus-Projection-Report-July2020.pdf

[2] https://www.youtube.com/watch?v=e8j-YJdbWZY&t=247s

[3] https://www.eesi.org/files/Leticia_Colon_de_Mejias_093020.pdf

Appendix A

Exhibit A

Sena Wazer, Student at University of Connecticut

As a youth myself, I speak with other students, elementary through college, on a regular basis. From these interactions, I know that most students have a very limited understanding of the science behind climate change, as well as possible solutions. Furthermore, when they do know about climate change, it is often due to their own personal research, not what has been taught to them in school.

With the exception of students whose teachers are particularly interested in climate change, most students are not taught in a comprehensive manner about climate change. They do not understand how different sectors contribute to climate change (ex. turning on lights or having your computer plugged in draws energy which, according to the *US Energy Information Administration*, is mostly coming from fossil fuels), or what the possible solutions are, such as solar panels, geothermal, and wind turbines.

[16] https://www.aceee.org/white-paper/2020/09/growing-greener-economy-job-and-climate-impacts-energy-efficiency-investments

Young people will face a disproportionate amount of climate change effects since climate change will continue to worsen over time (*NASA*), and as such, young people should be equipped with the facts about what is happening to their future. It is also important that there is climate education in all public schools because otherwise, it introduces inequity in access to information. This often leads to students from majority communities of color, and low-income communities, knowing less about climate science than students in richer and whiter communities. This is especially concerning because people of color and low-income individuals are disproportionately affected by climate change.

Finally, I have heard the concern that teaching climate science will unnecessarily scare students. However, as a young person, I would like to push back on this idea. Climate change is certainly frightening, but not being educated is even more upsetting and frightening. Students want to learn, want to be a part of the solution, and so I am asking that you empower teachers to give them that information and opportunity.

Jennifer Solomon—Teacher at Loomis Chaffee School Windsor, CT

Dear Honorable Chair Kathy Castor,

It is incredibly important that we require and fund climate literacy and stem education programs, additionally it is in other content areas (the humanities, Arts, Etc.). Students might regularly ask "why do I need this? When will I use this?" when learning units throughout their education. There are perhaps few topics more important than climate change education, which impacts our children TODAY. It impacts them not just as a global threat, but in their own communities. This is particularly true for lower-income communities and communities of color, which have experienced the effect of environmental racism for decades. In many areas, true climate change education comes during an environmental studies class, typically reserved for high-achieving science students in a course that is not required for graduation. All of my own 12th-grade students who recently did a project with Leticia: de Mejia, remarked that they had not known how dire the situation was with climate change and what they could do about it until working with her. Learning this in the 12th grade is excellent, but far too late climate change education should be a requirement, and Beyond merely learning what is happening, have students learn what they can do to slow this change. Empower them with the information and skills to make a difference. However, when speaking with science and Decatur's, many might say something like quote climate change is important, but what would we give up to make room for this?" This is the take-it-or-leave-it mentality created by not having climate-change education required. It is also the product of a system that removes educator voice and choice. Not only should climate change be required as a topic, but teachers should also be given the opportunity to differentiate how this topic is taught based on their geographic location and the needs of their students. Perhaps there is a power plant near the neighborhood that impacts health outcomes in their community. That educator should be able to have their students analyze this and use their voices to address it in the classroom.

-Jennifer

Tom—Student at Loomis Chaffee Loomis Chaffee School Windsor, CT

Leticia,

It was such a pleasure to meet you and work with you. I love listening to you talk about your passions to fight climate change and starting your companies. This experience alarmed me of the short amount of time that we have before the irreversible consequences. It also made me realize the power ordinary Americans have to influence government policies through their representatives. It is truly people's own call to take Advantage of powers that we're entitled to them. And in order for them to do that, they must be informed of their power and the issues at State. This is why education is important. And accessible, inclusive, and interesting climate education. Thank you for showing us that we don't need a Ph.D. to take climate actions, and the power we have to influence others around us.

-Tom

Matt—Student at Loomis Chaffee Loomis Chaffee School Windsor, CT

Dear Leticia,

Thank you so much for taking the time to talk to our class about the importance of climate change. I know what I will say about what stuck with me will be very similar to many of my classmates since everything was so incredibly important therefore, I'm trying to give you a full overview of everything I found important. The first thing that struck me was the disparities in the neighborhoods. Whether it be

separated by race, age, or both, there were disparities. Next, Sena Wazer's "We have 9 years" speech, which I also used at the start of my group presentation, was one of the most eye-opening facts I've heard about climate change. Last week, the Board of Education member who asked me if hot air rises then why are the tops of Mountains Cold?. Not only did this question surprise me, it kind of annoyed me. Having people on the board of education, aka the people in charge of making the curriculum, spreading lies that climate change doesn't exist Kirk's me. So, I thank you from the bottom of my heart for educating my class about the current distressing state of climate change and climate change education.

Sincerely,

Matt

Ethan—Student at Loomis Chaffee Loomis Chaffee School Windsor, CT

Hi Leticia,

I just wanted to say thank you so much for working with us. I feel that you really taught us so much. Starting with the amazing panel which opened our eyes to so much information that we were not privileged too prior. I think that this project has made me truly aware of the current situation and that action needs to be taken. I know for a fact that I will be continuing with sustainable goals and sustainable living moving forward. It was an honor to work with you Leticia, thank you.

-Ethan

Simone—Student at Loomis Chaffee Loomis Chaffee School Windsor, CT

Dear Leticia,

It was a pleasure to work with such an awe-inspiring, drive, and high-spirited mover and shaker like yourself. Your enthusiasm encouraged me to devote a stronger passion to this work and to seek opportunities to connect with people who will aid in this fight for equitable, diverse, and interesting climate change education. Over the past few weeks, I learned how urgent this matter is, how powerful real stories are, and how demanding this work can be. In the expert panel, Sena Wazer spoke to the gravity of climate change and stated that "we only have 9 years" until the impacts of climate change become irreversible. Her opening remarks forced me to acknowledge that time will run out if we do not take the necessary steps to advocate for climate change policy and encourage members of our community to develop sustainable practices. Dr. Bozzi accompanies Wazer's call to action with a pristinely drafted document of the 19 indicators in CT that show the reality of climate change. Not only did her data present a compelling case for climate-curious or denying individuals, but when coupled with her claims about real people and real stories, the issue seemed to hit home for me. Yes, data is great, but the stories are what will move the needle forwards; hence why Dr. Bozzi showed us a photo of a home destroyed by a hurricane. This photo stuck with me the most and proved to me that the livelihood of ordinary people is at stake. As long as the communities most affected are barred from the conversation, the negligence of lawmakers and the ignorance of man will continue to hamper the efforts of climate change advocates like you and me. Until then, I'll do my part of teaching kids in my community the importance of speaking up about the inequities that plagued my city while watching you take down all opposition in congressional hearings. Collective action will get us where we need to be—I'm sure of it! Thank you, Leticia, for igniting a fire in me that—after this project—will never burn out! I look forward to connecting with you for future projects!

-Simone

Kariuki—Student at Loomis Chaffee Loomis Chaffee School Windsor, CT

Dear Leticia,

I believe wholeheartedly that you changed my perspective on what climate change really is. Before our meeting with you I could not see it being more than just polar ice caps melting and sea levels rising. But, after our conversations and after see how much it affects minority groups throughout America and even the world I am beginning to understand just how much this situation affects me and my people. For this realization I want to thank you! Even though I am going on to college to do other things I will make sure to keep this in mind as I move into my adult life and continue to learn more.

Best,

Kariuki

CT State Representative - Christine Palm

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DEMOCRATIC LEADER
INTERNSHIP COMMITTEE

MEMBER
JUDICIARY COMMITTEE
GOVERNMENT ADMINSTRATION AND ELECTIONS
COMMITTEE

To: House Select Committee on Climate Crisis

Date: May 20, 2021

Dear Chair Castor and Esteemed Committee Members:

Thank you for your dedication in addressing the climate crisis. I write to you today in support of climate change education.

Here in Connecticut, where I am a state legislator, many public schools teach about climate change as an urgent problem largely caused by human activity. But not all do. The unequal adherence to climate change curricula is further widening the gap between those being prepared for green jobs and those destined to be left behind. And this is appalling in a state already known for having among the greatest wealth disparity in the nation.

Connecticut is one of about 18 states that adopted the Next Generation Science Standards (NGSS), which recommend that climate change be taught as part of the science curriculum. However, NGSS, while excellent pedagogical standards, are not mandates. They are educational suggestions for best practice.

Therefore, in my first term (2019) I introduced a bill to codify into state statute that climate change be mandated (by changing the "may" currently in the NGSS language to "shall"). Although the bill passed the Connecticut House on a bipartisan basis, it was never called in the Senate and so failed.

The bill:

https://www.cga.ct.gov/searchresults.asp?cx=005177121039084408563%3Ahs1zq3ague8&ie=UTF-8&cof=FORID%3A10&q=2019+Palm+climate+teaching+&submission=%EF%80%82

I intend to continue to introduce it until it passes.

In the meantime, climate change education seems to be a rare weak link in the Biden Administration's otherwise wonderful progress, attitude and direction concerning the planet.

(Read here: https://news.climate.columbia.edu/2020/11/17/biden-harris-climate-change-education/)

Therefore, I urge you to push for national climate change education wherever and whenever appropriate, while still respecting states' rights over curricula development.

With Respect,

Rep. Christine Palm