

**AN EXAMINATION OF EXISTING PROGRAMS AND  
FUTURE OPPORTUNITIES TO ENSURE ACCESS TO  
AFFORDABLE, RELIABLE, AND CLEAN ENERGY  
FOR RURAL AND LOW-INCOME COMMUNITIES**

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**HEARING**  
BEFORE THE  
SUBCOMMITTEE ON ENERGY  
OF THE  
COMMITTEE ON  
ENERGY AND NATURAL RESOURCES  
UNITED STATES SENATE  
ONE HUNDRED SEVENTEENTH CONGRESS  
FIRST SESSION

—————  
JUNE 23, 2021  
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**WEDNESDAY, JUNE 23, 2021**

U.S. SENATE,  
SUBCOMMITTEE ON ENERGY,  
COMMITTEE ON ENERGY AND NATURAL RESOURCES,  
*Washington, DC.*

The Subcommittee met, pursuant to notice, at 2:07 p.m. in Room SD-366, Dirksen Senate Office Building, Hon. Mazie K. Hirono, Chair of the Subcommittee, presiding.

**OPENING STATEMENT OF HON. MAZIE K. HIRONO,  
U.S. SENATOR FROM HAWAII**

Senator HIRONO. The Subcommittee will come to order. We meet this afternoon for the first Energy Subcommittee hearing of the 117th Congress. I would like to start by congratulating Senator Hoeven on becoming Ranking Member of the Subcommittee and I am happy to be a partner with you on these issues going forward.

I would also like to welcome all the new members of the Subcommittee and I hope some of them—oh, hello, you are here. So I am looking forward to working with all of you. On the Democratic side, we have Senator Hickenlooper, and on the Republican side we have Senators Lankford and Marshall. These are the new members of the Subcommittee, and I look forward to working with everyone on the Subcommittee.

The Energy Subcommittee, much like the full Energy and Natural Resources Committee, has a great history of working together in a bipartisan way and I hope to continue that tradition. Last Congress, this Subcommittee held three legislative hearings and considered 31 pieces of energy legislation, most of which were bipartisan. The work of the Subcommittee played a significant role in the development and passage of the Energy Act of 2020, which was the first major update to our nation's energy policy in over 13 years. As we get to work this Congress, we should let that collaboration and effort guide our efforts.

Today's hearing will examine ways to make sure that people living in our rural and lower income communities are heard and fully included as we transition to a cleaner energy future. Too often in our country, our rural, isolated, and low-income communities bear the brunt of higher costs and less access to innovative infrastruc-

ture, health care, and education solutions. In particular, our low-income communities already have the highest energy burden of anyone in the United States. Department of Energy data shows that low-income households pay an average of nearly three times as much of their income for energy as other households.

A report from the American Council for an Energy-Efficient Economy shows that rural communities similarly pay more of their income for energy—about 33 percent above the nationwide average. Right now, Hawaii still relies on imported oil for over 60 percent of our electricity generation, which is a large part of why we have the highest-cost electricity in the country, with rates about 29 cents per kilowatt-hour—nearly triple the U.S. average. We already know that renewable energy sources like wind and solar are the cheapest available in the market, thanks to growing demand for clean energy sources as well as strong federal and private investment. Hawaii has set an ambitious goal of generating 100 percent of our power from renewable sources by 2045, which will take significant investment in solutions like broadly accessible rooftop and community solar, energy storage, and microgrids that can benefit Hawaii's rural and low-income communities, including our Native Hawaiian communities.

As Ranking Member Hoeven has emphasized, carbon capture systems for power plants and industrial plants can play a key role in reducing carbon emissions. Different states and regions will have different approaches, but we all have the opportunity to act now to lead the world in the clean energy transition, create millions of well-paying jobs, and mitigate the impacts of climate change. We are dealing with climate impacts now. The extreme temperatures that hit the Southwest last week and that the Northwest will face this weekend strain the power grid. Extreme temperatures will worsen the droughts, hurting farmers across the West and across the Great Plains, and are especially dangerous for those in poor housing conditions.

We should also recognize the critical role that energy efficiency plays in making energy affordable, reliable, and clean. Federal programs like the Weatherization Assistance Program, the State Energy Program, and the Energy Efficiency and Conservation Block Grant provide resources to state and local communities to improve the resiliency and reduce the energy consumption of residential, commercial, and industrial buildings. Simple energy efficiency upgrades like replacing windows, installing heat pumps, and other efficient heating, ventilation, and air conditioning systems and appliances can save households hundreds of dollars a year, which is especially important for low-income and more isolated communities. And while we highlight efforts to address home and building energy efficiency upgrades, we must also keep in mind the transportation sector as auto makers transition to making and selling electrical vehicles. We will need widely accessible public charging facilities to keep communities connected.

I am excited to hear from our panelists this afternoon about the path forward for clean, reliable, and affordable energy in Hawaii and across the nation. Thank you all for being here with us today. With that, I will turn to Ranking Member Senator Hoeven for his opening statement.

**OPENING STATEMENT OF HON. JOHN HOEVEN,  
U.S. SENATOR FROM NORTH DAKOTA**

Senator HOEVEN. Thank you, Chair Hirono, for holding our first hearing of the Energy Subcommittee. I look forward to working with you as well, and with our members on this Subcommittee.

Today, we are examining existing programs and future opportunities to ensure rural and low-income communities have access to affordable, reliable, and clean energy. I believe an important part of this is to advance new technologies to produce more energy with good environmental stewardship. In North Dakota, we have been working, actually, for over a decade to do what I call, “crack the code” on carbon capture utilization and storage (CCUS) to help us do just that.

I want to thank our witnesses for being here today and I would like to extend a special welcome to one of our witnesses from North Dakota—that is Mac McLennan, President and CEO of Minnkota Power Cooperative. Mac has been with Minnkota since 2011 and has led the company in its efforts to advance Project Tundra, a large-scale, carbon capture retrofit project at the Milton R. Young coal-fired power plant. Project Tundra is part of our effort to crack the code on CCUS. Mac is a graduate of Jamestown College and has previous experience working for my predecessor, Senator Byron Dorgan, and for the National Rural Electric Cooperative Association. When a consumer flips the light switch on or turns on the air conditioning on a hot summer day, the electricity needed does not just magically appear. That electricity must first be generated and then delivered, often across a great distance before reaching our homes and businesses. We expect that electricity to be there with our grid operating 24 hours a day, 7 days a week. It takes a skilled workforce, robust infrastructure, technology to ensure sufficient supplies of power, and that that power is always available to meet consumer demand in real time, regardless of the weather conditions.

North Dakota is a leader in producing electricity from both traditional and renewable sources. However, coal-fired electric power remains the backbone of our grid, providing 57 percent of our state’s electricity. As we have seen during recent extreme weather events, consumers are facing increased interruptions in their electric service and it is becoming more critical that we preserve the first fuel sources of generation, including baseload power to reduce the risk of blackouts and brownouts. The positive news is that the U.S. leads the world in reducing emissions while maintaining access to low-cost energy. Meeting our economic and environmental needs are not mutually exclusive. However, global demand for fossil energy sources is going to continue for the foreseeable future, particularly in developing economies, like China and India. It is for this very reason that Dr. Fatih Birol, head of the International Energy Agency (IEA), has said before our full ENR Committee that carbon capture utilization and storage—CCUS technology—is “the most important technology that exists today.” Accelerating the deployment of this technology is indispensable in meeting both our energy and environmental goals. That is why we must crack the code of CCUS, and I am appreciative of the strong bipartisan support, par-

ticularly from members of the ENR Committee, to make CCUS more widely available.

We look forward to hearing from Mac on why initiatives like Project Tundra are key to our energy future. Efforts to decarbonize coal-fired generation help ensure we are able to continue using our abundant domestic resources with improved environmental stewardship, thereby preserving access to the reliable baseload power needed to keep the lights on. Furthermore, promoting energy efficiency can help reduce costs over time while improving environmental stewardship, so long as the goal can be met in a cost-effective way without a “one-size-fits-all” mandate. For these technologies to be adopted on a broad scale, we should focus on achievable goals—not, again, one-size-fits-all mandates or fossil fuel bans. Consumers must know that their investment will pay for itself over a reasonable time period.

I look forward to hearing from Mr. Moreno and also Mr. Kealoha on how best to encourage energy efficiency improvements that are accessible, affordable, and meet the needs of consumers. Ultimately, all of our efforts need to be focused with one central goal in mind—improving access to low-cost, dependable energy. I look forward to our discussion today. With that, I turn things back to Chair Hirono.

Senator HIRONO. Thank you very much, Ranking Member Hoeven.

We now turn to our panel, two of whom will appear virtually. We ask that you keep your opening statements to five minutes. Your full statements will be placed in the record.

As I mentioned, we have three panelists with us today. First, we will start with Mr. Alejandro Moreno, who serves as the Deputy Assistant Secretary for Renewable Power at the Department of Energy. Welcome, Mr. Moreno. Please proceed.

**OPENING STATEMENT OF ALEJANDRO MORENO, DEPUTY ASSISTANT SECRETARY FOR RENEWABLE POWER, U.S. DEPARTMENT OF ENERGY**

Mr. MORENO. Thank you.

Chairman Hirono, Ranking Member Hoeven, thank you for the opportunity to testify before you today. My name is Alejandro Moreno, and I’m the Deputy Assistant Secretary for Renewable Power in the Department of Energy’s Office of Energy Efficiency and Renewable Energy (EERE). As the Deputy Assistant Secretary, I direct activities for the geothermal, water, solar, and wind technology programs.

Technology advances driven by EERE will be instrumental in realizing the Administration’s goals for achieving a clean energy future, including reaching a zero-carbon power sector by 2035 and a net-zero energy sector by 2050. But to be truly successful, our transition to clean energy must not only reduce emissions, but also provide widespread benefits to all Americans. These include stable, well-paying careers in building, installing, and operating thousands of new clean energy generation systems and ensuring equitable access to reliable, affordable energy systems and services to Americans across all regions, income levels, and races. Today, we know that low-income communities, including rural communities and

communities of color are disproportionately affected by high energy burdens and lower access to renewable energy. Households in rural communities have a higher median energy burden than urban households, and majority Black and Latinx census tracts have significantly lower solar adoption rates than white majority census tracts.

The Department supports a range of programs that support workforce development and equitable access, and we plan to build on these initial efforts moving forward to ensure a just, equitable transition to a clean energy future. This is the cornerstone of DOE and EERE's mission and work. For example, EERE's Weatherization and Intergovernmental Programs Office partners with state and local organizations to increase the energy efficiency of dwellings owned or occupied by low-income persons, reducing their total residential energy expenditures and improving their health and safety. Similarly, states have used funding from our State Energy Program to support efforts to promote energy efficiency and renewable energy in rural and low-income communities. Recent examples include solar energy projects in Washington State that are expected to result in a total \$6.1 million reduction in the energy burden of low-income households, as well as the development of a roadmap for supporting coal communities and workers in Colorado.

Within EERE's renewable power sector, the National Community Solar Partnership was established in 2015 to expand access to affordable community solar to every American household, supporting both increased renewable energy use and a more resilient energy supply. EERE issued a request last month for information to seek input and inform the program's next steps. Another renewable power initiative, the Energy Transitions Initiative Partnership Project recently selected 11 remote and island communities to assist with their transition to resilient clean energy. Through this program, EERE has leveraged the expertise of regional, community-based organizations to ensure our efforts are driven by local priorities and needs and to reach a scale that would not be possible with direct engagement alone.

While these individual programs and others within our Renewables, Efficiency, and Transportation programs have benefited the lives of low income and rural Americans, we recognize that we need to work strategically through coordinated programs to meet communities on their terms and in the context of their priorities. For this reason, the Department recently established a new office within the Office of Economic Impact and Diversity, led by the Deputy Director for Energy Justice. That office will focus primarily on energy justice issues, including the reduction of energy burden, increasing clean technology adoption in underserved census tracts, increasing access to capital among underserved populations, and creating new jobs and businesses in underserved communities.

As we implement these priorities within EERE, we are focused both on developing new programs specifically designed to promote an equitable transition as well as making sure we consider equity, justice, and job creation throughout our entire portfolio. We recognize that in order to do either of these well, we need to engage directly with rural, low-income, indigenous, and energy-transition communities and listen to the preferences and priorities of people

in towns and neighborhoods across the entire country. DOE and I, personally, are committed to this effort to create a research, development, demonstration, and deployment portfolio in which new technologies address immediate community needs and a clean energy future is a future that benefits us all.

Thank you for the opportunity to appear before the Subcommittee today. I look forward to working with you to address the climate crisis while ensuring equitable access to low-cost and reliable clean energy. I look forward to your questions.

[The prepared statement of Mr. Moreno follows:]

**Testimony of Alejandro Moreno**  
**Deputy Assistant Secretary for Renewable Power**  
**Office of the Energy Efficiency and Renewable Energy**  
**For a Hearing on**  
*Access to Renewable Energy*  
**Before The**  
**United States Senate**  
**Energy and Natural Resource Committee**  
**Subcommittee on Energy**  
**Wednesday, June 23, 2021**  
**Washington, D.C.**

## Introduction

Chairman Hirono, Ranking Member Hoeven, and members of the subcommittee, thank you for the opportunity to testify before you today. My name is Alejandro Moreno, and I am the Deputy Assistant Secretary of the Office of Renewable Power in the Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE). As the Deputy Assistant Secretary, I direct renewable energy applied research, development, demonstration, and deployment (RDD&D) activities for the geothermal, solar energy, wind, and water power technology offices in EERE.

EERE has achieved great successes through funding technology RDD&D through competitive solicitations open to the public and through support for the National Laboratories, which play a central role in advancing America's leadership in science and technology and developing innovative solutions for the future. For example, we have achieved cost reductions of up to 82 percent in solar technologies in the last decade alone, contributing to a massive boom in solar and economic development.<sup>1</sup>

Technology advances like these are instrumental in realizing the Administration's goals for achieving a clean energy future, including reaching a zero-carbon power sector by 2035 and a net zero carbon economy by 2050. And achieving these goals is essential if we are to avoid the worst impacts of climate change. But to be truly successful, our transition to clean energy must not only reduce emissions, but also provide widespread benefits: from stable, well-paying careers in building, installing and operating the thousands of new clean energy generation systems that will be commissioned in the coming years to ensuring equitable access to reliable, affordable energy systems and services to Americans across all regions, income levels, and races.

The Department has begun to focus intently on supporting a clean energy future that benefits all Americans, with a range of programs that support workforce development and equitable access, and we plan to build on these initial efforts moving forward and ensure a just, equitable transition to a clean energy future is a cornerstone of DOE and EERE's mission and work.

### The Importance of Renewable Energy Benefitting all Americans

Today, extensive data-based evidence, including that established by EERE's Low-Income Energy Affordability Data (LEAD) tool,<sup>2</sup> and analysis on U.S. census data illustrates that low-income communities are disproportionately affected by high energy burdens, which is often defined as greater than six percent of household income spent on electricity.<sup>3</sup> Moreover, due to historical housing segregation that results in uneven distribution of quality housing stock, low-income African American families suffer disproportionately higher energy burdens.<sup>4</sup> Households

<sup>1</sup> [Documenting a Decade of Cost Declines for PV Systems | News | NREL](#)

<sup>2</sup> <https://lead.openei.org/>

<sup>3</sup> <https://www.aceee.org/sites/default/files/pdfs/u2006.pdf>

<sup>4</sup> Diana Hernández, Yang Jiang, Daniel Carrión, Douglas Phillips & Yumiko Aratani (2016) Housing hardship and energy insecurity among native-born and immigrant low-income families with children in the United States, *Journal of Children and Poverty*, 22:2, 77-92, DOI: [10.1080/10796126.2016.1148672](https://doi.org/10.1080/10796126.2016.1148672)



in rural communities, specifically, have a higher median energy burden than urban households, and the disparities increase substantially for minority, elderly, and renting households.<sup>5</sup> Finally, recent studies demonstrate a stark racial disparity in solar adoption rates. Majority Black and Latinx census tracts have significantly lower solar adoption rates than white majority census tracts, a phenomenon that is consistent even when controlling for home ownership and household income.<sup>6</sup>

We recognize that energy efficiency and renewable energy can and should play an increased role in reducing energy burden. If equitably deployed, energy efficiency and renewable energy technologies can deliver enormous benefits of broader economic development in low income and rural communities. Equitably deployed clean energy can also provide lifeline infrastructure to America's communities and drive local leadership and self-sufficiency.

These already disadvantaged communities, however, can experience challenges to accessing government programs due to complexities of applications and reporting mechanisms. For example, solar energy can help to reduce the energy burden of all households, but only 15% of solar adopters are low- and moderate income due to barriers in ownership, financing, and information access.

Through our work to ensure affordable, secure, and clean energy, EERE has a goal to reduce costs of these clean energy technologies and enable access for all Americans. At EERE, we've seen how carefully designed and specifically targeted programs can result in improved livelihoods for individuals and, at a high enough volume, local energy resilience and self-sufficiency. Several of our programs take a direct approach to supporting low-income and rural populations, and we collect stakeholder input to drive continuous improvement of those programs to deliver benefits to low-income and rural Americans. Below are some examples of DOE programs that work to address these communities.

#### **Current Activities**

Within the energy efficiency sector, EERE's Weatherization and Intergovernmental Programs Office (WIP) partners with state and local organizations to significantly accelerate the deployment of energy efficiency and renewable energy technologies and practices through place-based strategies that focus on the needs of local government, community, and business stakeholders. The Weatherization Assistance Program (WAP) is a foundational building block of DOE's vision for a clean energy future for all, delivering on its national objective to increase the energy efficiency of dwellings owned or occupied by low-income persons, reduce their total residential energy expenditures, and improve their health and safety. WAP activities reduce the cost of residential household energy bills, which are significantly disproportionately higher relative to higher-income households. Through the Sustainable Energy Resources for Consumers

<sup>5</sup> <https://www.aceee.org/sites/default/files/publications/researchreports/u1806.pdf>

<sup>6</sup> [Disparities in rooftop photovoltaics deployment in the United States by race and ethnicity | Nature Sustainability.](#)

(SERC) Grant Program, funded as part of WAP appropriations, DOE has flexibility to focus awards specifically on renewable energy installations, allowing WAP to deliver on the Administration's priority of renewable technologies deployed in underserved communities. Historically, WAP programs in Puerto Rico and other territories have been successfully installing cost-effective solar hot water heating systems since the territories entered the Program in 2007. In recent years, photovoltaics have been approved for use in weatherization projects and installed in low-income homes in Colorado and Minnesota.

Another program within WIP, the State Energy Program (SEP), strategically engages the leadership of states in deploying clean energy technologies across the U.S. SEP funding transforms the energy economy state by state, establishing and implementing clean energy policies, plans, and programs to reduce energy costs, enhance economic competitiveness, improve emergency planning, and improve the environment. States have used SEP funding to support efforts to promote energy efficiency and renewable energy in rural and low-income communities. For example, recognizing that participation in the solar economy can help ease lack of access to many of the benefits other communities enjoy, the Michigan Department of Environment, Great Lakes, and Energy is utilizing SEP funds to work to develop a community solar program with the goal of providing access to all of Michigan's residents regardless of income. Currently in its pilot phase, it is anticipated that the initiative will initially support one solar project that will benefit approximately 25 low- to moderate-income households. Technical assistance and future funding opportunities will be provided to additional communities wishing to build or expand a community solar array. In addition, in Washington State, SEP funds are being used to support the Low-Income Community Solar Deployment Program. The most recent grant cycle offered funding to nine solar energy projects across the state that are expected to result in a total \$6.1 million reduction in the energy burden of low-income households and nonprofits serving low-income communities over 25 years.

WIP also manages the Remote Alaska Communities Energy Efficiency (RACEE) program, which is DOE's initiative to accelerate energy cost saving efforts in remote Alaska communities that face several unique energy challenges.

The combination of harsh climate with the remoteness of communities accessible only by boat or plane contributes to high energy costs. In 2015, 64 Alaska communities and villages pledged to reduce energy consumption by 15% by 2020. A subset of 13 communities were selected to receive technical assistance, and of those 13, seven are working on competitively selected RACEE implementation grants.

Within EERE's renewable power sector, the Solar Energy Technology Office's (SETO) has begun work on a number of fronts to create a more equitable clean energy future. This starts by addressing the barriers that low- and moderate-income households face in accessing the benefits of solar through community solar, innovations in financing, and data analysis. SETO's National Community Solar Partnership (NCSP) is a coalition of community solar stakeholders working to expand access to affordable community solar to every American household and enable communities to realize other benefits, such as increased resilience and workforce development. The NCSP provides stakeholders with the opportunity to network and collaborate with DOE and each other. NCSP partners also have access to technical assistance resources from DOE,

National Labs, and third-party subject-matter experts for support on unique local challenges. SETO issued a request for information on equitable access to community solar on May 4, 2021, which will help inform future action plans for NCSP.

SETO also funds a portfolio of projects that are evaluating alternative solar financing models for low-income consumers, developing new tools and methods to better assess credit risk, and engaging community financial institutions and other capital sources in expanding solar financing in low-income communities. In addition, SETO supports data collection and analysis to improve market transparency of solar adoption trends and analyze the data to understand the barriers to and solutions for increasing solar adoption by low- and moderate-income households.

SETO is also addressing barriers specific to rural communities. The Solar Energy Innovation Network (SEIN) program brings together multi-stakeholder teams to research solutions to real-world challenges associated with solar energy adoption, such as solar-plus-storage procurement and valuation for electric cooperatives, the use of solar-plus-storage to manage rural electric distribution systems, and strategies for siting solar in rural communities.

Our work extends beyond solar to other offices and technologies as well. For example, EERE's Water Power Technologies Office (WPTO) has several existing initiatives in its hydropower and marine energy subprograms designed specifically to use clean energy technologies to meet local energy needs and increase resilience. In hydropower, WPTO is analyzing the interactions of small hydropower and microgrids in a project in Cordova, AK that aims to enhance grid resilience under harsh weather, cyber-threats, and dynamic grid conditions, while reducing the need for diesel fuel.

Another important program focused on energy resilience in predominantly rural communities is the Energy Transitions Initiative Partnership Program (ETIPP). ETIPP, which is supported by both WPTO and SETO, supports energy system transformation to reduce economic risk in remote and islanded communities. Through ETIPP, EERE has leveraged the expertise of regional Community Based Organizations that work directly with communities to provide technical assistance, enhance lessons learned between communities and the national labs, and establish a technical understanding of gaps, needs, and pathways to serve communities in increasing their energy resilience. Working through these organizations also allows DOE's efforts to reach a scale that would not be possible with direct engagement alone.

Wind energy also has an important role in rural communities, especially when installed as a distributed energy resource (DER). Distributed wind can complement solar and reduce the energy burden of households, agricultural operations, and commercial, industrial, and municipal facilities. EERE's Wind Energy Technologies Office (WETO) is working with rural electric utilities and the communities they serve to make distributed wind plants more accessible and compatible with other DER technologies. For example, WETO's Wind Innovations for Rural Economic Development (WIRED) initiative supports the development of decision support tools for rural electric utilities to evaluate different combinations of wind-hybrid DER systems. Also

under WIRED, WETO is working with the National Rural Electric Cooperative Association, Electric Power Research Institute, and academic and industry partners to identify distributed wind use cases and ownership and business models that ease access to and maximize the benefits of distributed wind projects for rural communities.

Within the transportation sector, our Vehicle Technologies Office's (VTO) Technology Integration Program supports a broad technology portfolio that can reduce transportation energy costs for businesses and consumers. Among these projects are those aimed at ensuring access to mobility options for rural communities to make sure they are the beneficiaries of our electrification efforts. For example, our ROADMAP project is developing a set of potential technology solutions for electrification in rural areas, including the implementation of electric shuttle buses for a circulator route through Athens, OH. The project also incorporates outreach to local transportation service providers, such as taxi and shuttle fleets, to encourage the adoption of electric vehicles in these fleets. These efforts are supplemented by the deployment of electric vehicle (EV) charging in the city of Athens to support more widespread electrification. Ensuring equitable access to charging for rural communities will require coordination with utilities on electric service capacity and demand charges, as well as investments in distributed energy resources.

Our country can ensure equitable access to EV charging for residents who do not currently have access to charging at home by investing in workplace charging, curbside charging, and public-access locations, such as transportation hubs, commercial destinations, libraries, and government buildings. We can also address existing barriers to installing EV charging for residents of multi-family housing through innovative charging and management technology, outreach, and education efforts targeting developers and property managers, and finance models.

#### **Future Focused Approach**

We know that while these individual programs can, and do, affect the lives of low-income and rural Americans, transformative change is required to establish an equitable transition to a clean energy economy. Individual programs operating in isolation is not enough; instead we need to work holistically through coordinated programs to address national goals that meet communities on their terms and in the context of their priorities.

This is why the Department recently established a new office within the Office of Economic Impact and Diversity led by the Deputy Director for Energy Justice. That office will focus primarily on energy justice issues, including the reduction of energy burden, increasing clean technology adoption in underserved census tracts, increasing access to capital among underserved populations, and creating new jobs and businesses in underserved communities. EERE leadership and program offices currently work closely with this new office to advance the Administration's climate and energy priorities.

As we implement these priorities, we are taking a two-pronged approach: the first is to design new specific, targeted programs focused on ensuring an equitable transition; and the second is to make sure we incorporate equity considerations throughout the entire DOE portfolio and the energy sector at large. For the first, we are intentionally including low-income and rural communities in our approach of meeting communities based on their needs to support long-term,

durable deployment of clean energy. This includes working across programs to identify common goals, while respecting individual program RDD&D priorities. Two of our new programs proposed in the President's FY22 Budget Request focused on energy communities include our Local Government Clean Energy Workforce Program. This program is focused on fostering a community-driven approach to partner with small and medium-sized communities. This program will leverage existing tools and resources to help identify and achieve local goals, which could include economic development, energy security, and resilience. The program also helps communities' network and share best practices, which will provide them with long-term benefits.

Another example is Community Geothermal, a proposed initiative that will fund technical assistance to demonstrate and deploy community-scale geothermal district energy systems through installation of geothermal heat pumps or direct use of geothermal fluids for heating and cooling. This program is designed to increase communities' energy resilience and reduce or eliminate their dependence on fossil fuels, and geothermal district energy systems can be applied to urban centers, rural areas, and remote communities. With geothermal deployment, we also plan to prioritize disadvantaged communities to combat "fuel poverty" caused by disproportionately high fuel costs from fossil sources like heating oil and natural gas. By demonstrating this renewable energy solution in a geographically and socioeconomically diverse set of communities, DOE will show that geothermal energy is a proven mechanism to provide safe, clean, and resilient sources of thermal energy.

Equally important is providing opportunities for the existing workforce and facilities in American communities, in particular those transitioning from an economy driven largely by fossil fuels. This includes demonstrating the viability and value of alternative economic development pathways in clean energy, which is the mission of the proposed Geothermal Energy from Oil and Gas Demonstrated Engineering (GEODE) Consortium. GEODE is a new consortium designed to leverage oil and gas subsurface assets, technologies, and expertise to help solve geothermal energy's toughest challenges while providing clean energy employment opportunities and environmental benefits for communities adversely impacted by the transition away from fossil energy. GEODE will accelerate decarbonization of the electric sector via technology development, demonstration, and workforce transition. GEODE includes a major workforce development initiative to transition displaced oil and gas technologists into the geothermal industry. These efforts will build off the successful Geothermal Collegiate Competitions, which was established in 2014. This initiative has long valued not only our energy leaders of tomorrow by awarding cash prizes for student work, but also meeting communities where they are, and emphasizing stakeholder engagement and early community buy-in. Just this month, EERE was proud to announce that the first place winner for this semester's competition went to the University of North Dakota, which after working closely with the community proposed a district heating system for the small town of Mandaree on MHA Nation lands.

As part of the second prong of our approach, we are looking critically at all our programs and processes to assess the equity implications and ensure equity impacts are considered in the development of future research, technologies, and internal processes. One major element of this includes reducing barriers to entry for low-income and rural communities in accessing DOE funding and assistance. We are stepping up efforts on stakeholder engagement to inform the

development of project research portfolios so that our research results in technologies that meet the needs of low-income and rural communities. Understanding the needs of communities is critical to improving overall programming and increasing access to the broad array of programs that EERE implements across the research, development, demonstration, and deployment portfolios. In addition, we are looking at the structure of *how* we receive that feedback. We are working across the EERE portfolio to make sure we expand opportunities for feedback and that participants are adequately valuing stakeholders for their input to program design. In addition, across EERE programs, we are working to approach communities and share findings internally, where appropriate, to reduce the burden of input in already overburdened communities. Finally, we are also increasing the frequency and approaches to how we are reporting out to community stakeholders how the input is used.

We are diversifying the outcomes of our funding opportunities by working to reduce barriers to entry through our primary funding mechanism, the funding opportunity announcement (FOA). We are aiming to find diversity in projects and project teams so that the diversity of voices that receive EERE funding reflects the makeup of the population. We are working to right size barriers to entry for low-income and rural communities, such as critically evaluating cost share provisions and increasing training on how to apply for funds. We are improving the types of funding opportunities beyond FOAs, including prize authority and other funding authorities, to create an ecosystem of funding that is easier to access for a wider variety of potential applicants.

Earlier this month, EERE, in coordination with the Office of Economic Impact and Diversity (ED), released a request for information (RFI) to understand the current barriers and actions needed to make its funding opportunities and innovation and entrepreneurship activities more inclusive, just, and equitable, in line with the Administration's climate goals. This RFI is intended to inform EERE and ED on enabling an inclusive and just entrepreneurial and innovation ecosystem for climate and energy technology research. The responses to the RFI will help DOE understand barriers to entry to its funding opportunities, current resources, and support for innovation and entrepreneurial activities, experiences of those who have received funding or assistance, and resources and approaches that DOE can provide and implement towards removing these barriers. DOE will leverage the responses to this RFI to inform future funding opportunities, assistance for grant application support services, incubation and acceleration services for entrepreneurship, and/or develop other measures to support a just and inclusive innovation ecosystem.

The President's FY22 Budget Request calls for a *Next-Generation Connected Communities* in which EERE will competitively fund a new cohort of multi-building and community-level pilots focused on scaling highly efficient building solutions that support renewables integration and provide demand flexibility and efficiency. Even more than the current Connected Communities demonstrations, this new cohort will ensure that lower-income and disadvantaged communities and existing buildings are adequately represented.

We recognize that there is a lot to still be done, and we are actively looking to identify areas where we can expand the impact of the work of these programs. Going forward, we will need to do even more to address the barriers to adoption of renewable energy in low-income and rural

communities. We need to redouble our efforts to take a research, development, demonstration, and deployment portfolio approach—in which equitable demonstrations and deployments can address immediate community and economic development needs—and we can apply what we learn from communities involved in those efforts to improve the equity of longer-term research and development efforts.

**Conclusion**

Thank you for the opportunity to appear before the subcommittee today. I look forward to working with you to address the climate crisis while ensuring equitable access to low-cost and reliable clean energy. I look forward to your questions.

Senator HIRONO. Thank you, Mr. Moreno.

Next, we have Mr. Brian Kealoha, who is the Executive Director of Hawaii Energy, a state-funded organization that encourages energy savings and clean energy for families and businesses in Hawaii. Welcome, Mr. Kealoha. Please proceed.

**OPENING STATEMENT OF BRIAN KEALOHA,  
EXECUTIVE DIRECTOR, HAWAII ENERGY**

Mr. KEALOHA. Thank you.

Aloha, Chair Hirono, Ranking Member Hoeven, and members of the Subcommittee. My name is Brian Kealoha and I'm the Executive Director of the Hawaii Energy Program, administered by Leidos. I am pleased to appear before you today to discuss energy efficiency—the cheapest, clean energy resource—and how it is supporting rural and low-income communities in Hawaii.

Hawaii has always been an innovative leader in energy. Back in 1886, Iolani Palace had electricity before most of the world, including the White House. More recently, in 2015, Hawaii was the first state in the nation to sign a 100 percent renewable energy mandate into law. As the energy efficiency program for the State of Hawaii, Hawaii Energy's mission is to empower island families and businesses to make smart energy choices, reduce energy consumption, save money, and pursue that 100 percent clean energy future. This is especially important because, as an island state some 2,400 miles from the nearest landmass, we are heavily dependent upon imported fossil fuels to meet our energy and transportation needs. We also have the highest electricity rates in the nation, more than double the national average.

Since the inception of Hawaii Energy nearly 12 years ago, the program will reduce energy use in Hawaii by 17,000 gigawatt-hours over the life of the measures installed. Most importantly, this has provided over \$2 billion in electric savings to date, bringing immediate relief to those families and communities that need it most. Low-income households are more likely to face significant energy burdens with a disproportionately higher percentage of the total household income going toward annual electric bills. Efficiency measures help to lower energy bills so that money can be directed toward basic necessities. It also makes homes healthier, more comfortable, spurs job creation, and contributes to clean energy goals.

Low-income populations also face unique barriers that often hamper their participation in clean energy, including lack of access to energy information, lack of capital, and/or lack of credit to pay for the high upfront costs of clean energy investments. Additionally, these communities may be distrustful of programs intended to assist due to poor experiences and trauma. With Hawaii's high cost of living, many of our neighbors are surviving paycheck to paycheck, working multiple jobs, and living in multigenerational households. We also have a large share of renters—condo and apartment dwellers—who often cannot install renewable technologies such as solar on their roof. This is why efficiency is so important—it is available and accessible to everyone.

We created our Affordability & Accessibility program to focus more resources on reaching these communities. For example, we



have been working on the Island of Molokai. Located between Oahu and Maui, it is home to about 7,300 residents and has no freeways, traffic lights, or major retail stores. Going into that community, it is about establishing trust, delivering on promises. We are proud to say we have been able to implement several programs, including our “Hui Up” appliance exchange program that swaps out old, inefficient appliances like refrigerators with new, efficient, ENERGY STAR ones that we are able to coordinate through a bulk purchase for them, since they do not have access to these appliances on the island. The program has resulted in 1,500 new appliances for Molokai residents, which will save each household \$168 per year, or a cumulative \$3.5 million on their energy bills. We have also been able to install energy efficient lights, showerheads, faucet aerators, and smart power strips through our “Energy Smart 4 Homes” program. On Molokai, this program has reached 22 percent of island households. We have also completed similar work in the majority of affordable housing units managed by the State and County of Honolulu and Catholic Charities.

There is so much more that energy efficiency can do. At a policy level we look to the Federal Government to establish standards such as lighting and appliance standards, that will ensure that the most efficient equipment is purchased. In our experience, we have found that collaborating is the best way to effectively shift attitudes and behaviors. From working with government and the utilities to community organizers, contractors, and non-profits serving the community, the Hawaii Energy program is an example of how key partnerships are making a difference in helping all Hawaii residents reap the benefits of our clean energy transition that can serve as a model for the rest of the country.

As for Iolani Palace, they have since replaced those first incandescent lights with LED, continuing Hawaii’s legacy in being a clean energy leader. Thank you for the opportunity to address the Subcommittee today. I look forward to your questions.

[The prepared statement of Mr. Kealoha follows:]

**Testimony of Brian Kealoha**  
**Executive Director**  
**Hawai'i Energy/Leidos**  
**Before the Senate Committee on Energy & Natural Resources**  
**Subcommittee on Energy**

Hawai'i Energy's Accessibility and Affordability Programs to Reach Rural and Low-Income Communities  
*June 23, 2021*

Aloha Chair Hirono, Ranking Member Hoeven, and members of the Energy Subcommittee. My name is Brian Kealoha, and I am the Executive Director of the Hawai'i Energy program administered by Leidos. I am pleased to appear before you today to discuss energy efficiency and how it is supporting rural and low-income communities in Hawai'i. My following testimony will showcase the critical role energy efficiency plays in ensuring energy and economic security for the 50th state. I'll also cover how Hawai'i Energy's diverse portfolio of residential and commercial programs, marketing, and policy efforts are effectively connecting low- to moderate-income communities, many in rural areas, to energy savings opportunities to reduce their energy burden. Since the inception of Hawai'i Energy nearly 12 years ago, the program will reduce energy use in Hawai'i by 17,000 gigawatt hours over the life of the measures installed. Most importantly, this has provided over \$2 billion in electric bill savings to date, bringing immediate relief to those families and communities who need it most. On behalf of Hawai'i Energy, I am honored to highlight the hard work of the Hawai'i Energy and Leidos team.

**Background**

Hawai'i Energy is the energy efficiency program for the state of Hawai'i, implemented by Leidos, serving Honolulu, Maui, and Hawai'i counties. Our mission is to empower island families and businesses to make smarter energy choices to reduce energy consumption, save money, and pursue a 100% clean energy future.

Clean energy is critical to Hawai'i's economy. As the most isolated landmass on Earth, we are heavily reliant on imported fossil fuels to meet both our electricity and transportation needs. In 2019, the state imported more than six million tons of petroleum, petroleum products and coal,<sup>1</sup> making it one of Hawai'i's main imports. In 2018, the value of petroleum imports was \$3.3 billion.<sup>2</sup>

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<sup>1</sup> [Hawai'i's Energy Fact & Figures, 2020 Edition](#), Hawai'i State Energy Office, page 2

<sup>2</sup> *Ibid*, page 3

We also have the highest electricity rates in the nation, with the state's average prices being more than double the national average<sup>3</sup>. In 2019, the average monthly electricity bill was \$162, with the island of Lanai paying an average of \$195 per month.<sup>4</sup> When the temperature rises, Hawaiian Electric reports energy use for homes without rooftop solar tends to increase about 10% during the months of June through October, as many households ramp up their use of air conditioners<sup>5</sup>.

In 2015, Hawai'i was the first state in the nation to sign a 100% renewable energy mandate into law. The goal stemmed from the Hawai'i Clean Energy Initiative<sup>6</sup> which, in 2008, established the State's initial renewable portfolio standards and energy efficiency portfolio standards. To achieve the State's ambitious clean energy goals set by the Hawai'i Clean Energy Initiative, the Hawai'i Energy program was created as a third-party program implementer, funded by electric utility ratepayers via a Public Benefits Fee, to accelerate energy efficiency and clean energy technologies by raising awareness and inspiring action to reduce energy use across the state.

The electricity industry in Hawai'i is in a period of dramatic transition, evolving from centralized fossil-fuel-based generation to renewable energy and distributed technologies. The transition will require the adoption of increased amounts of distributed energy resources, and in particular energy efficiency, with more active engagement with the grid through smart buildings and devices.

Our program, administered by a small, dedicated team under contract with the Hawai'i Public Utilities Commission, oversees a portfolio of over 40 different offerings on equipment such as ENERGY STAR<sup>®</sup> appliances, solar water heating, and electric vehicle charging stations, to name a few. We focus on incentivizing the use of clean energy technologies and smart energy management systems, increasing opportunities for underserved communities to lower their electricity bills, and changing energy usage behaviors through education and awareness.

Through a solid network of community partners and the *kuleana*, or responsibility, of an ever-growing number of residents and businesses who lead by example, Hawai'i has saved over **\$2 billion** in energy costs through efficiency efforts alone. The Hawai'i Energy program continues to rank in the top third of efficiency programs nationally for its performance, and in April 2021, was awarded the prestigious

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<sup>3</sup> Ibid, page 7

<sup>4</sup> Ibid, page 9

<sup>5</sup> ["Electricity bills expected to rise with summer heat."](#) Honolulu Star-Advertiser, June 13, 2021.

<sup>6</sup> [Hawai'i Clean Energy Initiative, Hawai'i State Energy Office.](#)

ENERGY STAR® Partner of the Year in Energy Efficiency Program Delivery by the U.S. Environmental Protection Agency.

There is still a lot more to do.

In September 2018, the Rocky Mountain Institute highlighted that the size and cost of the potential resource base of energy efficiency is much larger and cheaper than previously believed<sup>7</sup>. The research stated that the potential for energy efficiency has been massively understated and its cost overstated, by analyzing not whole buildings, vehicles, and factories, but only their individual parts, thus missing valuable ways to help the parts work together to save more energy at lower cost. The path to our clean energy future relies on the reduction of emissions from the existing commercial building stock. This requires a holistic approach to building management in order to drive deeper retrofits. Hawai'i Energy offers a framework to drive deep retrofits that can combine building automation systems with other distributed energy resources like energy storage, smart inverters, and electric vehicle workplace charging.

Energy efficiency continues to be the cheapest and easiest form of clean energy, requiring less renewable energy generation to be built by first reducing energy usage. It also provides additional benefits to our community, including a little extra money back each month, money that can be used for other critical needs. During our last program year, every dollar the program invested in energy efficiency resulted in \$10 of energy savings for families and businesses. Energy efficiency is something everyone can participate in, no matter their age, income, location, or whether they own or rent a home.

#### **Reducing the Energy Burden for Low to Moderate Income and Rural Residents**

Low-income households are more likely to face high energy burdens with a higher percentage of their total household income going toward paying utility bills. Energy efficiency programs provide important services to customers, not only by lowering energy bills so that money can be directed toward basic necessities, but also in making homes healthier and more comfortable, giving residents and businesses more control over how and when they use energy, and contributing to local clean environment and sustainability goals. Historically, however, it has been challenging to reach low-income populations who face unique barriers to participating, including lack of access to energy efficiency information, lack of capital, and/or lack of credit to pay for high up-front costs of energy efficiency investments. Additionally,

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<sup>7</sup> ["How big is the energy efficiency resource."](#) Amory B Lovins 2018 Environ. Res. Lett. 13 090401

split incentives between owners and renters, coupled with an aging housing stock, further complicates the delivery of efficiency upgrades. These communities include low-income households, rural communities, renters, multi-unit building owners, senior citizens, military veterans, small businesses, non-profits, agricultural operations, and other underserved, vulnerable and geographically isolated segments.

With Hawai'i already being one of the most expensive places in the country to live, reducing monthly energy costs is important for our families and businesses. According to Aloha United Way's ALICE® (Asset Limited, Income Constrained, Employed) report released last year, 165,013 households (37%) are ALICE households living in financial hardship while another 47,066 households (11%) live below the poverty level. Our ALICE population represents people who have one or multiple jobs but struggle to afford basic necessities to remain stable and self-sufficient. Reducing energy costs are a necessity, and not a luxury, for these families. The Hawai'i Energy programs intend to increase investment for the ALICE population to include everyone in the clean energy transition. Understandably, with little disposable income to invest in clean energy, incentives and programs play a critical role in bridging the gap through energy efficiency.

On top of the socio-economic strains, COVID-19 further exacerbated the day-to-day financial challenges for both Hawai'i residents and businesses. Unfortunately, when the state went into lockdown in March 2020, residential energy consumption rose as many families converted to work- and learn-from-home lifestyles. Many customers found themselves worried about their electricity bills and sought resources to help alleviate the financial strain. Hawai'i Energy focused its efforts on increasing education around simple, low or no-cost energy-saving actions in combination with increased incentives to support longer-term investments in equipment.

Recognizing the opportunity for our programs to support vulnerable communities, Hawai'i Energy stepped up our Accessibility & Affordability efforts. We increased our Community-Based Energy Efficiency (CBEE) efforts that target select zip codes considered to be in the low- to moderate-income category. These communities are typically rural with less access to clean energy technologies and lower awareness of clean energy opportunities.

For example, we have been working on the island of Molokai, which is home to only 7,345 residents and has no freeways, traffic lights, nor major retail stores. Our work on the "Friendly Isle" has allowed Hawai'i Energy to build trust within the social structure and promote wider, community-centric adoption

of efficiency practices. In the last four years, Molokai received 1,500 new, energy-efficient appliances through our “Hui Up” appliance exchange program, saving households up to \$168 a year and a cumulative of nearly \$3.5 million on their energy bills.

Hawai'i Energy has also recently been working with several other “hard-to-reach” communities facing similar issues: the rural district of North Kohala on Hawai'i island; the town of Waimānalo on O'ahu; and the Ko'olaupua district on O'ahu's northeastern shore. What is perhaps most important to note about these efforts is that while these communities may face similar issues, the extent to which demographics or socio-economic structure impacts their ability to purchase efficiency products varies widely. We tailor our approach to each community and have found success through working with organizations based in those communities, such as neighborhood improvement groups, education service providers, and more, to help add credibility to our messages and build capacity. These community groups are trained by Hawai'i Energy to collect signups and payments, schedule deliveries, and answer questions from residents about products. Through this process, many staffers subsequently become advocates for energy efficiency within their personal circles.

One of our most successful programs targeting low- to moderate-income residents is our “Energy Smart 4 Homes” program. The program provides a direct install service where trained technicians perform the installation, removing another barrier to participation. Technicians will install energy-efficient products tenants that can save up to \$160 in electricity costs per year, as well as high-efficiency showerheads and faucet aerators to reduce electric water heating demand by up to 30 percent and lower water and sewer fees. Technicians also install the energy-saving Advanced Power Strip which helps manage energy consumption and can eliminate phantom electrical loads (which can then reduce total energy demand). Technicians also change out the existing lighting to LED lamps, which is 78-87% more energy efficient than incandescent lighting. On Molokai, our “Energy Smart 4 Homes” program reached nearly 22% of the island's households, while on O'ahu, we completed the majority of the City and County of Honolulu's affordable housing units, along with Catholic Charities and other affordable housing managers. The program has evolved into targeted single family homes, which are often rentals, to ensure greater access.

Hawai'i Energy also engages with renters/tenants in partnership with affordable housing providers to increase energy awareness and action through a campaign that takes advantage of a number of behavioral insight best practices to overcome known barriers in this hard-to-reach and underserved market area.

### Helping Small Businesses Reduce Waste

On the commercial side, we also wanted to support small businesses that suffered financial loss due to the COVID-19 stay-at-home orders. In August 2020, we launched the Energy Relief Grant program, designed to help fund energy efficiency improvements for nonprofits, small businesses and other qualifying organizations hit hard by the pandemic. Our strategy was to offer a financial incentive for the installation of certain energy-efficient technologies at a time when many businesses were sitting empty and a few fortunate ones were using the downtime to make upgrades.

A total of \$2.8 million in Energy Relief Grants was awarded to 165 businesses on O'ahu, 31 businesses in Maui County and 55 businesses on Hawai'i Island. The recipients were each awarded up to \$25,000 in grants and could use the funding to cover eligible energy efficiency projects including, but not limited to, upgrading inefficient air conditioning units, lighting retrofits, commercial kitchen equipment and solar water heaters. Our projections show the total annual energy savings to be around 1.8 million kWh and total annual customer bill savings over \$500,000. In fact, 47% of grant recipients reported they are already seeing a lower electric bill and 66% said they plan to implement other energy efficiency upgrades. The results well exceeded our expectations, and we plan to offer another round of Energy Relief Grants later this year.

Not only was it important to help businesses save money, but we wanted to spur project development opportunities for those who work in the energy efficiency sector. The most recent numbers show that in 2018, Hawai'i had nearly 16,000 clean energy jobs, which paid on average \$3- to \$7-per-hour better than the median wage<sup>8</sup>. When COVID hit Hawai'i, many contractors saw work come to a halt. An April 2020 survey of our Clean Energy Allies — a network of contractors, equipment vendors, architects, engineers, distributors, manufacturers and retailers that provide energy-efficiency services — found that while 95% were still operating, a large majority (93%) saw project delays, 87% saw a decrease in sales, and half were forced to downsize<sup>9</sup>. The pandemic resulted in over 2,500 clean energy jobs lost in the state<sup>10</sup>, but on the bright side, there was also a good level of recovery with the highest percentage of clean energy job growth by the end of 2020<sup>11</sup>. A follow-up survey of our Clean Energy Allies this past

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<sup>8</sup> ["Transcending Oil: Hawai'i's path to a clean energy economy,"](#) Rhodium Group, April 19, 2018

<sup>9</sup> ["COVID Recovery & Resilience Plan,"](#) Hawai'i Energy, June 2020.

<sup>10</sup> ["Clean energy employment initial impacts from the COVID-19 economic crisis, December 2020, revised,"](#) bw Research Partnership, February 8, 2021, page 5.

<sup>11</sup> *Ibid*, page 1.

May found that business has improved, although a majority (67%) are still experiencing supply chain disruption.

#### **Electric Vehicle Charging Station Rebate Program**

The transportation sector is a major user of energy resources in Hawai'i, with ground transportation accounting for nearly two-thirds of our fossil fuel use<sup>12</sup>. The state also has some of the highest gas prices in the nation, with AAA Hawai'i reporting the statewide average price for regular unleaded at \$3.97 per gallon, as of June 10, 2021<sup>13</sup>. This, plus the release of more electric models and the federal tax incentives for the purchase of EVs and hybrids, has more people driving electric. Hawai'i ranks second in the nation, behind California, for the highest plug-in vehicle registrations per capita, as of 2018<sup>14</sup>.

Hawai'i Energy has expanded our program offerings to include rebates for the installation of electric vehicle charging stations (EVCS). This program was funded by the Hawai'i State Legislature in 2019 and signed into law by Gov. David Ige as Act 142. Under the direction of the Hawai'i Public Utilities Commission, the EVCS rebate program incentivizes new installations and retrofits of existing public charging stations throughout the state to increase the public charging network. The rebates were available to properties that could offer charging to customers, employees or guests. To date, the program has resulted in the installation of 35 new Level 2 chargers, the retrofit of 58 Level 2 chargers, and one new and one retrofitted DC Fast Charger.

To help make EV charging accessible to lower income drivers, we also provided a bonus incentive on top of the abovementioned rebates for affordable housing developments, with two O'ahu projects taking advantage of it. The additional funding helped cover the costs of installation, which is typically the main barrier for developers. While some may argue that residents in affordable housing communities are not driving electric, we see it as future-proofing so one day EVs, even second-hand vehicles, can be an option for them.

#### **Policy and Partnerships**

Hawai'i Energy recognizes the significant role policy plays in shaping our future while balancing critical needs. At the state and county levels, we see how energy-efficient policies can help support an equitable transition to clean energy for all residents. This includes an appliance standards bill passed in

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<sup>12</sup> [Blue Planet Foundation, Clean Transportation.](#)

<sup>13</sup> ["AAA Hawaii: Gas prices continue increasing." AAA Hawaii, June 10, 2021](#)

<sup>14</sup> ["U.S.: West Coast had highest plug-in electric car sales per capita." InsideEVs, February 17, 2021](#)



2019 by the Hawai'i State Legislature and signed into law as Act 141, which established minimum efficiency requirements for shower heads, faucets, high-CRI (color rendering index) fluorescent lamps, sprinkler heads, and computers, ensuring that Hawai'i consumers have access to efficient versions of these small appliances beginning in 2021. These appliance standards also included protections against the repeal of federal standards and are projected to save Hawai'i residents up to \$38 million on their utility bills.

Other key areas are increasing the energy efficiency of government buildings and the adoption of state and county energy codes. Energy codes are critical to ensure new building inventory are meeting a minimum level of energy efficiency standards. When paired with incentives from utility and third-party energy efficiency program administrators, greater efficiency gains can be obtained. Codes are important given it is far less expensive to design energy efficiency measures into a new building versus needing to perform a retrofit.

Energy benchmarking and disclosure is an important tool used to increase building energy performance awareness and transparency among key stakeholders. Benchmarking creates demand for energy efficiency improvements by preventing active reduction of energy usage in the commercial real estate marketplace that often pass energy costs directly to tenants. It also provides the opportunity to identify and value the energy efficiency of existing buildings as tenants make decisions on where to lease space and help drive increased efficiencies in the building sector.

Key partnerships have allowed Hawai'i Energy to further our reach, but we can't do it alone. Earlier this year, we spearheaded the creation of an Energy Equity Hui, a gathering of industry, government and community representatives who are interested in making clean energy as accessible as possible. From efficiency and renewable energy to clean transportation, the Hui is aiming to ensure an equitable transformation in Hawai'i's clean energy quest.

#### **Supporting Economic and Workforce Development**

Of the nearly 16,000 Hawai'i residents employed in clean energy, about 5,100 are specifically employed in energy efficiency. Several hundred are members of our Clean Energy Allies (CEA) network that is comprised of architects, engineers, contractors, manufacturers, and distributors to drive the adoption of energy efficiency measures while growing this important part of Hawai'i's economy. To best support this, one of the main goals of the Hawai'i Energy CEA program is to increase the base of qualified contractors and augment the skill sets to implement clean energy and energy efficiency projects,

products and services. This, in turn, will help CEAs successfully educate and support their customers, while expanding their energy efficiency operations through energy-saving projects. Developing our Allies' ability to serve customers by implementing energy efficiency measures will improve the growing economic engine of our State as well as help customers reduce their energy costs. Hawai'i Energy provides educational opportunities to CEAs through technical trainings, Continuing Education Credits and professional sales and financing training. These initiatives will allow CEAs to gain a competitive edge by staying abreast of market trends by obtaining knowledge, resources and credentials that enable them to deepen their service offerings and customer base, which ultimately drives greater adoption of energy efficiency, reduces waste and grows the economy.

**Conclusion**

For years, Hawai'i has always been a leader in the clean energy space. Whether it's by setting the first 100% clean energy mandate in the nation or showcasing innovative solutions, the 50<sup>th</sup> state is home to a thriving clean energy industry, one that is needed to diversify an economy so heavily dependent on tourism and fossil fuel imports. Although energy efficiency can often be overlooked, it has demonstrated to be an essential first step to making clean energy more accessible to more people.

On behalf of the team at Hawai'i Energy and Leidos, I want to thank Chair Hirono for the invitation to share our story with this Senate subcommittee. We are committed to continuing our work in energy efficiency and being an example for the rest of the nation on how efficiency is a significant contributor to the clean energy conversation.

Senator HIRONO. Thank you, Mr. Kealoha. I am glad you mentioned Iolani Palace, because there are a lot of people who do not know that Hawaii was a monarchy. We had a king and queen. Learn something new every day.

Finally, we have Mr. Mac McLennan, the President and CEO of Minnkota Power Cooperative, which provides electricity services to thousands of rural customers in North Dakota and Minnesota.

Welcome, Mr. McLennan. Please proceed.

**OPENING STATEMENT OF MAC McLENNAN,  
PRESIDENT AND CEO, MINNKOTA POWER COOPERATIVE**

Mr. McLENNAN. Thank you, Chair Hirono and Senator Hoeven, thank you as well for all the support associated with these projects. I am happy to testify today and talk a little bit about the things we are doing in the states around how to produce reliable, affordable, clean energy, and I think the answer is that it is not any one sector and I will talk about that as we move ahead. As the Chairman indicated, we are a provider of electricity to rural electric cooperatives on the eastern half of North Dakota and the northwest corner of Minnesota. We have about 160,000 consumers, and we serve some of the lowest income counties per capita in both North Dakota and Minnesota, along with some other disadvantaged areas. We only have about four consumers per-mile of line, so we have a phenomenal amount of infrastructure that goes in to serve those over a 34,000 square mile space.

Our mission, fundamentally—we are a not-for-profit—and our mission is to affordably and reliably generate and transmit electricity into rural communities, and we have been doing that for 80-plus years. We use a diverse mix of generation, not unlike, I think, a lot of utilities in this country, but primarily, in our case, we have coal, wind, and hydro. Forty-two percent of our generation capacity is already derived from carbon-free resources, about a third of that being wind. I will talk about that in just a moment. However, what we discover is, that the wind, even in North Dakota, does not blow all of the time and so we need to have a diverse mix to be able to meet those times when it does not. If you look back over the last couple of years, in 2014, 2019, and most recently now in February 2021—at those times when we needed electricity the most, so during a polar vortex time—during the times here in January, or in February when it is most cold, there were times during that stretch that we had none of our wind blow at all. So zero production out of 30 percent of our supply. When you face 30 degree below temperatures in the winter in North Dakota, having no wind blow and no electricity is life threatening. And so we need to find additional alternatives in our neck of the woods—or at least the capacity for technology—to change our ability to deliver on electricity.

In addition to those resources, for the last 30 years we have developed what I think is one of the highest penetration levels for demand response, meaning we can control more than a third of our load as well, if necessary, at times when critical. And so we have put together a tremendous program as well on the load side—or the member side—to help them be able to manage times when we have significant events. We have also had numerous energy efficiency programs and we have lots of rebate programs and opportu-

nities to try to incentivize people to reduce their electric use. The question about how to provide affordable—and this will be somewhat cliché—but I think the answer is “All of the above.” So when we look at what we need to be able to produce and keep affordable, reliable electricity, it is all of those things.

In our case, because of our heavy focus on coal, as Senator Hoeven indicated, we have taken on what is called Project Tundra, which is to capture 90 percent of the CO<sub>2</sub> off the back-end of our largest unit and store that permanently right below the facility. We are fortunate in the State of North Dakota to have geology that allows us, we think, to be able to store it down there permanently and safely forever. So it is an effort to be able to continue to—base-load, dispatchable, affordable electricity at the same time, including or in cleaning up our environmental footprint as it relates to the CO<sub>2</sub>. I do not think there is any silver bullet as you look at this with respect to what you can do in this space. I think you need all of it, maybe even technologies that we do not see as that advanced today, including significant carbon capture off of coal, gas, and other industrial facilities.

There are some things I think the Committee can do immediately. One is, as you continue to ponder moving forward, recognize that each utility segment is structured differently. We don't all look the same, we don't all work the same, we're not all the same. And so, as we think about cooperatives and municipals and investor-owned utilities, we all have different needs. The second is, if we are going to provide incentives to advance changes in what we do, provide comparable incentives, like direct pay—where we are not afforded the ability to use the tax code, to use direct incentives that help. The last two things I just may comment on are support—efforts like the Flexible Financing Act, which allows us to reprice our debt, which allows us to keep our debt costs down and be able to advance those over into the communities where we serve. And then lastly, I think Senator Hoeven said this, is support efforts that help us advance carbon capture and utilization.

I'll just close by saying recent events demonstrate that reliable and affordable electricity is vital to the individuals who live in this region and to the economic circumstances to allow them to continue to be successful. We need a strategy that allows us to use all the resources available while advancing the next set of technologies. Thank you.

[The prepared statement of Mr. McLennan follows:]

**Testimony of Mac McLennan  
President and CEO  
Minnkota Power Cooperative, Inc.**

**Before the Senate Committee on Energy and  
Natural Resources' Subcommittee on Energy**

“An Examination of Existing Programs and Future Opportunities  
to Ensure Access to Affordable, Reliable, and Clean Energy for Rural and Low-Income  
Communities”

*June 23, 2021*

**Introduction**

Chair Hirono, Ranking Member Hoeven and members of the Subcommittee, thank you for inviting me to testify today on existing programs and future opportunities to ensure access to affordable, reliable, and clean energy for rural and low-income communities. As President and CEO of Minnkota Power Cooperative, I am proud of the work we have done to lead on these issues and privileged to share those efforts with you today.

**Cooperative Mission**

By way of background, Minnkota is a not-for-profit generation and transmission cooperative headquartered in Grand Forks, North Dakota, supplying wholesale electricity to 11 member distribution cooperatives and several municipalities, in North Dakota and northwestern Minnesota. In total, we serve approximately 160,000 consumers over a 34,500 square mile area.

The primary focus of electric cooperatives is on the consumer-members we serve, specifically delivering reliable service at a price that consumers can afford. Importantly, electric co-ops serve 92% of all persistent poverty counties in America, so reliability and affordability of electricity matters. As consumer-owned entities that don't have shareholders to fall back on, co-ops must seek answers to the difficult questions about how to meet any new standard or regulation while keeping electricity reliable and affordable. Our electric system is an essential service that operates on the principles of science and engineering. More than ever, people depend on us to operate that system without interruption to preserve energy security for all. We are committed to that primary purpose.

As an electric cooperative, our responsibility also extends beyond poles, wire and steel. We were formed by our local communities more than 80 years ago, and we remain committed to helping them grow and thrive. In Minnkota's case, we serve an average of 4.1 consumers per mile of transmission line, compared to more than 30 consumers per mile for the average non-cooperative utility. Additionally, Minnkota serves several of the lowest income counties per capita in Minnesota along with other economically-disadvantaged areas across our two-state region. We take our role in providing affordable and responsible power very seriously.

To meet the 24/7 power needs of these communities, Minnkota utilizes a diverse mix of coal, wind and hydro resources. We are proud that 42% of the generation capacity on our system is already derived from carbon-free resources like wind and hydro. More specifically, approximately one-third of our generation capacity portfolio comes from wind energy. Although we have added a significant amount of renewable energy over the last 15 years, and have been recognized nationally as leaders in renewable energy development, coal remains a critical resource to ensure the reliability of the electric grid. Harsh winters in the Upper Midwest can and do severely limit the ability of renewables to operate for extended periods of time. During the recent polar vortex events in 2014, 2019 and 2021, Minnkota received almost no production from our wind facilities for multiple days. At temperatures of negative 30 degrees, the absence of reliable power is life-threatening. The recent power outage events in Texas and California have shown that we must prioritize reliability and resiliency even as we continue deploying clean energy technologies. Not only is our nation's grid challenged by extreme weather events, but volatility within power supply markets is increasingly an issue. Just this month, our region's Midcontinent Independent System Operator (MISO) experienced a maximum generation event and significant grid strain during fairly normal summer weather conditions.

Minnkota recognizes that we will need to continue to make reductions in carbon dioxide (CO<sub>2</sub>) emissions. We are currently in the process of evaluating Project Tundra – an effort to install carbon capture technology at the coal-based Milton R. Young Station near Bismarck, N.D. This power plant has reliably delivered electricity to the grid for decades and is well-positioned for technology advancements. Project Tundra is designed to capture 90% of CO<sub>2</sub> emissions from the flue gas – which equates to 4 million tons per year, and is the equivalent of permanently taking 800,000 gasoline-fueled cars off the road. The CO<sub>2</sub> would be safely stored more than one mile underground near the plant's site. We fully anticipate additional state and federal policies to reduce CO<sub>2</sub> emissions, but if the objective is to meet climate goals around the world, the United States must focus its efforts on innovation and technology development. Our nation cannot export regulations, but together we can build, demonstrate and ultimately drive down the costs of commercial carbon capture projects to support global CO<sub>2</sub> emissions reductions. Leading climate science shows that we cannot meet net-zero goals for greenhouse-gas emissions without carbon capture.

#### **Federal Role in Assisting Cooperatives**

Congress is uniquely poised to help co-ops with their mission to provide affordable, reliable and ultimately clean energy to the member at the end of the line. For example, passing the Flexible Financing for Rural America Act (S. 978) would help co-ops around the country hit hard by the pandemic restructure their Rural Utilities Service debt. For Minnkota alone, this opportunity would translate into \$14 million of relief to our members annually, a substantial savings to our membership going forward.

Furthermore, Congress can help unleash the innovative spirit that cooperatives have shown for generations by providing better access to tax credits that drive innovative technologies. As non-profit businesses, co-ops pay state and local taxes, but most are tax exempt for federal income tax purposes. Because of this, electric cooperatives do not have access to the same federal tax incentives as for-profit businesses and are disadvantaged when implementing new methods to

drive down emissions. The potential for co-op investments in emerging energy sources while keeping rates affordable for their consumer-members could be enhanced if they have comparable incentives and receive the full value for the tax credits through the direct payment of tax credits.

Specifically, I urge Congress to pass the “Carbon Capture Modernization Act” (S. 661) and “Carbon Capture, Utilization, and Storage (CCUS) Tax Credit Amendments Act” (S. 986), which would make improvements to both the 45Q CCUS tax credit and the 48A tax credit, including direct pay options, to promote the installation of carbon capture technologies on power plants. Congress could further support carbon capture projects around the country by funding CCUS deployment, particularly power sector carbon capture commercialization and demonstration projects, at full levels authorized in the Energy Act of 2020 and passing the “SCALE Act” (S. 799) to assist in overcoming barriers to CO<sub>2</sub> pipelines, storage, and permitting and support CO<sub>2</sub> utilization programs.

### **Closing**

America’s energy sector is undergoing one of the most transformational periods in its history. It is an exciting time for our industry, but it can also be daunting. We all want to push for it to be a better product – more reliable, more resilient, affordable for every household, and as clean as possible. To reach these goals, we need to work together as utilities, policymakers and regulatory agencies. We also need to recognize that the energy transition will only be successful if we set reasonable, achievable goals that are supported by public policy. If we make mistakes or missteps during the energy transition, they can prove extraordinarily difficult to reverse. I appreciate the opportunity to share some insights with you as we chart a path forward for the future of reliable, affordable and environmentally-responsible energy.

Senator HIRONO. Thank you, Mr. McLennan, and to all the other panelists. I will start the questioning.

For Mr. Kealoha, you talked about your experience on Molokai with 7,300 residents. Did you do things such as actually go door-to-door in that community to have them exchange their appliances, et cetera?

Mr. KEALOHA. Yes, we have to be present in the community, and we worked with a couple of community groups on the island to be able to get the word out and really outreach to the residents of Molokai. This is a small, tight-knit community.

Senator HIRONO. So can you scale up what you did on Molokai with the State of Hawaii that consists of some 1.4 million people?

Mr. KEALOHA. Absolutely. We are currently doing that now in four different other communities, picking the right community partners who are ready in those communities to really enable them to do more.

Senator HIRONO. I think that is really very intriguing because you really have to scale up substantially to get to all of these rural communities. People do not maybe realize that in much of the State of Hawaii there are significant numbers of our residents who live in very rural areas. It is mainly on Oahu where there is a concentration of people.

So what do you see as some of the biggest, perhaps yet untapped future opportunities for energy efficiency to make an impact on low-income and rural communities?

Mr. KEALOHA. As I mentioned earlier, many low-income families do not have money to make energy efficiency upgrades, so adequate funding of the Weatherization Assistance Program can make a big difference. In Hawaii, the demand far outpaces the funding for eligible households, and that is really the case in a lot of other areas across the country.

Another thing is Hawaii Energy, along with other efficiency programs across the country, utilizes ENERGY STAR for its benchmark in providing incentives. It is an easy way to improve energy literacy quickly in these communities when we say look for the ENERGY STAR logo. So they can save a lot of money when they purchase ENERGY STAR, and ensuring that ENERGY STAR, which saved consumers over \$39 billion in energy costs last year, making sure that program is adequately funded is very important.

Senator HIRONO. Thank you.

Mr. Moreno, you noted in your testimony that the federal programs that could help ensure equitable access to reliable, affordable, and clean energy are not as accessible to low-income and rural Americans. You indicated that the DOE is examining how to reduce barriers for low-income and rural communities to access DOE funding and assistance. I would also like to note that tax credits for energy and energy efficiency are mostly helpful for households that have a tax burden, which many low-income households either do not have at all or have too little of for the tax credit to make much of a difference. What, in your view, can Congress do to ensure that our federal programs have the flexibility they need to provide the types of financial assistance that are most useful to individual communities?

Mr. MORENO. Thank you. Thank you for the question.



Certainly, it is absolutely essential that these programs are accessible to all communities—in particular to the low-income communities. The work that we have done in EERE within the Renewable Power program—for example, on community solar—looks at how we create financing structures that make technologies that exist more accessible to people who may not, in this case, own their own homes. And so providing technologies and financing structures that can allow people the same access and the same benefits that somebody might get with their own rooftop solar.

The same thing in the State Energy Program, for example, is making sure that we have the programs and—the work that we have to be able to focus specific projects and specific incentives around low-income communities and around some of the work that, for example, that I mentioned with the transition communities with developing a roadmap that can help provide resources and help provide guidance for how we can ensure communities and workers in those communities are not disadvantaged by transitioning to clean energy as well.

In terms of tax credits, I know there has been a lot of discussion about creating, as my co-witness said, direct-pay mechanisms that can make it easier for those without a tax burden to see the same benefits. And that is something I would be interested in working with you and your staff to explore.

Senator HIRONO. I would also be very interested in this new office you mentioned that would focus on energy justice issues because clearly, part of what this hearing is all about is that there are poor and rural communities that do not have access to the kind of energy that we are talking about.

I would just like to have the indulgence of my Committee to ask Mr. McLennan a short question.

I understand that Minnkota is a generation and transition cooperative, but are any of your member cooperatives pursuing community solar projects on behalf of their members?

Mr. MCLENNAN. They are. We have two members who have pursued—and they are the larger members because they tend to have more consumers be able to utilize the program. So we have 11 members. Two of them have community solar programs today.

Senator HIRONO. Do you consider those to be very successful ways for families that otherwise would not be able to afford this kind of energy source to get lower-cost energy?

Mr. MCLENNAN. Yes, really, they are a good mechanism to achieve that because they allow for them to aggregate at a site rather than try to figure out how to place—and in some cases very poor solar opportunities, in other cases, I think Mr. Kealoha described it well, don't have the means for which to place it on their home or to go through the—so there's a phenomenal amount of convenience to them using community solar from an aggregation perspective. So I think it is a good way, if you want to think about it from a practical perspective, for those who might not be advantaged or live in apartments or do not have circumstances which would allow them to do that.

Senator HIRONO. Thank you.

Senator HOEVEN.

Senator HOEVEN. Thank you.

So Mac, tell me in general terms, how are electric cooperatives such as yours at a disadvantage when it comes to accessing capital through the federal tax incentives?

Mr. MCLENNAN. Yes, so because we are not-for-profit and don't generate, obviously, large amounts of revenues for which you would pay taxes on, using tax incentives doesn't really have any value to us. And not just in—in our case right now, obviously, as you well know, working on how to do that with respect to a carbon capture facility—but I'll reference back. So we have six wind contracts right now, all of those, actually, with NextEra Energy Resources, because they can figure out how you monetize those tax credits.

And so the disadvantage, if you will, is that we're using an incentive mechanism that really doesn't have value for at least two sectors of the electric utility industry. So municipals and cooperatives both have no ability to use that incentive. And so, you look at the pie chart that suggests that cooperatives and municipals at times aren't engaging in the clean energy transition. I would argue part of that is that they have not been afforded the opportunity to be able to do so as it relates to the wrong side of ownership. It doesn't mean that they don't have it. Like in our case, 42 percent of our supply already comes from non carbon-based resources. So that is clearly one of them, Senator Hoeven, is that we use mechanisms, and tax credits aren't the only place that we've chosen to use incentive programs, but they are the most prominent.

Senator HOEVEN. Right, so you can use a counterparty, but then that diminishes the value of that tax credit to you, correct?

Mr. MCLENNAN. Yes, there are always some, you know, banks and lenders do not do anything for free, right? So there is always a transaction fee or a portion of it that they are going to take off the top for their risk of converting those tax credits. And it's substantial. So if you look at the current project that we're working on today, we estimate somewhere between 10 and 13 percent will go for the conversion of those tax credits or finding those partners or someone taking additional risks. And so they're the revenues, fundamentally they go to—and I do not want that to suggest that I don't appreciate what banks do and others—but they will take a substantial portion of the project cost that could otherwise go into the development of infrastructure, but for that mechanism.

Senator HOEVEN. So how would the Carbon Capture Modernization Act and Carbon Capture Utilization and Storage Tax Credit Amendment Act—bipartisan legislation I have introduced along with Senator Tina Smith and others—how would that help you?

Mr. MCLENNAN. So that allows us to then bypass having to go find a series of tax aggregators and tax equity investors and essentially allows the project to move forward—that that tax be paid back directly in a way that would help us then pay down the debt and the cost associated with the project.

So it is, you know, it is a substantial benefit in that and it substantially simplifies the number of transactions and the pieces that you have to put together as well. So the legal documents get significantly smaller, in my mind, as it relates to having to deal with trying to put all the tax equity provisions together.

Senator HOEVEN. So nationally, how would that direct-pay option for 45Q and 48A provide certainty for all those that want to move forward with carbon capture and storage across the country?

Mr. MCLENNAN. Yes, so how it provides certainty is that you then know it's there and that you know it is available. So you aren't then left to the whims of trying to find individuals who have tremendous tax burdens that they are going to offset by use of a tax credit.

Senator HOEVEN. So that certainty, you think, would really help advance the ball in terms of making carbon capture and storage commercially viable and getting companies across the country to do it?

Mr. MCLENNAN. Yes, I think it is a tremendous benefit to be able to advance the projects that have direct pay. And not only for us, that we talk about in carbon capture for, in our case, obviously, a coal unit. Ethanol facilities who are currently looking at whether they can capture carbon off the backside of ethanol are exactly in the same position. They don't generally generate huge tax burdens that you would have to offset by making the investment. So it's well beyond what happens with respect to, in our case, a coal unit in North Dakota—it is gas units, ethanol facilities, wherever you might want to capture carbon in a way that the tax credits are advantageous.

Senator HOEVEN. Right, so it is important for renewable energy like biofuels as well, correct?

Mr. MCLENNAN. Correct.

Senator HOEVEN. Okay. Thank you.

Thank you, Chair Hirono.

Senator HIRONO. Senator Heinrich.

Senator HEINRICH. Thank you, Madam Chair. Mr. Moreno, I wanted to start with you. You know, we are all concerned about reducing the burden of high energy costs on rural and low-income families, and we have had that policy objective for a long time, but we are hearing today about some of the things that stand in the way. We probably started back with the Weatherization Assistance Program in the seventies, but a lot of well-intentioned programs just do not get at it. We have heard about the inadequacy today, for example, of tax credits. If you do not have a tax burden, that does not really help you. You cannot wait around if you are somebody who has a high energy burden and is struggling just to make ends meet to begin with, you cannot really wait around until you file your taxes anyway, to get the benefit to be able to afford new infrastructure in your home.

So I wanted to ask, would a point-of-sale rebate program for the sort of highly efficient electric appliances, things like air-sourced heat pumps and heat pump water heaters, would that help underserved communities benefit from lower monthly power bills and clean up their indoor air quality?

Mr. MORENO. Thank you, Senator, and thank you for the leadership on this issue.

I would be very interested to go and look at the details of the specific program and I think the intent behind a program like that is potentially very good. Certainly, we heard from one of my fellow witnesses some of the challenges of existing programs and the way

they are designed in ways that unintentionally do not let some of the people that we most want to benefit from them be able to benefit. Every community is different, so I do not want to give a blanket answer that yes, any program will be a one-size-fits-all answer. I think what we will find is programs like that are likely to benefit some communities and others less so.

And from a DOE perspective, the key, I very strongly believe, is that programs need to be designed from the beginning with low-income communities in mind and listening to low-income communities and not treating every community exactly the same. Even as we have heard today, certain low-income communities and rural communities have different needs. If we are not at the table with them, they are not at the table with us. And also, informed by data and research, we can increasingly focus on the needs of low-income communities, giving communities the tools to be able to engage in the development of research in decisions that affect them in an informed way, in an impactful way. That is the way to make sure that the programs, whether they are Congressional programs or DOE programs, are truly going to be as effective as possible for as wide a variety of people as possible.

Senator HEINRICH. Yes, and I would add, Mr. Moreno, that in addition to being at the table with all of those communities, looking at private-sector players who have figured this out, who have gotten it right, you know, stories like BlocPower, that are effectively cleaning up the very communities that we are talking about, getting cleaner infrastructure and they are benefiting their customer's air quality as well as their monthly power bills.

We have talked a little bit about community solar here. Does the DOE offer technical assistance to state and local PUCs and PRCs that are trying to set up the rules for their community solar in their states?

Mr. MORENO. That is a very good question and DOE does have a number of different technical assistance programs for different state bodies. Ultimately, it is up to the states through, for example, the State Energy Program, where most of the technical assistance that we provide through various programs, including through our solar program to PUCs, if that is of interest to the PUCs, it is absolutely something that we can provide assistance on.

Senator HEINRICH. We may want to follow up with you on that because I know that we passed a community solar bill recently in New Mexico and now our PRC is trying to pull together the data to make that real—and my time is starting to run short. I will just finally put another challenge on the table, which is to make the point that coal thermal generation is not the same baseload as it used to be. When my dad worked for a utility, we had a 70 percent coal capacity factor in the United States. Today, it is 40 percent. So you cannot really call it baseload exactly, because some of that is driven by economics and the poor economics of coal, some of that is driven by the fact that when a coal-fired generating station goes down, it goes down. It is zero megawatts.

And so in a market where nuclear is 16 cents, and coal is 11, and solar is coming in at 3.6, and 4 cents for wind—those are, you know, challenges that we are going to have to figure out because

at 40 percent, I just do not think you can call that baseload anymore.

Senator HIRONO. Thank you.

We are going to start voting soon, but I think we can proceed with a second round before we finish up.

Mr. Moreno, I am really glad that you mentioned that each community has different energy needs and how important it is to work with them from the very beginning. One of the concerns that I have is that these communities often need reliable sources of energy and one of the ways that we can do that is to promote microgrids. Would you agree with that, Mr. Moreno?

Mr. MORENO. Thank you and yes, I think for a number of communities a microgrid can increase the reliability and the resilience of the system, of course, depending on the generation that is serving it and the design and operation of the system. I would note—

Senator HIRONO. Yes, the thing is that there are such very limited federal resources to support microgrid development. So what work is the Department doing to expand these microgrids as a solution for resilient energy for communities, and what could Congress do to expedite these efforts?

Mr. MORENO. Sure, we do have a microgrid program within our Office of Electricity and I would defer to my colleagues for the specifics on that, but I would point out within my programs in the Office of Energy Efficiency and Renewable Energy, I had mentioned the Energy Transitions Initiative Partnership Program, which is designed to specifically work with remote communities, and we have actually selected two in Hawaii to do energy.

Senator HIRONO. Where are they?

Mr. MORENO. One is, in fact, looking at microgrids in Honolulu.

Senator HIRONO. Okay.

Mr. MORENO. And what we are finding is that microgrids are of very high interest, particularly to small communities where that may be the entirety of their system. In addition, microgrids can be a solution to improve resilience as part of a larger system when they can be de facto islanded.

Senator HIRONO. I agree with you and I would like to work more closely with you as to these two Hawaii communities. I hope that one of these communities is on the neighbor islands, so we will work with you.

Senator Hoeven, please.

Senator HOEVEN. So Mr. Moreno, you highlight in your testimony a recent first place award the University of North Dakota provided for a project using existing gas wells to generate geothermal energy in the community of Mandaree, located on Fort Berthold Indian Reservation for the Mandan, Hidatsa, and Arikara Nation. So my question is, will the Department work with us to support an all-of-the-above approach to meeting our energy and environmental goals and specifically supporting technologies like CCUS?

Mr. MORENO. Thank you for the question.

I will likewise defer to my colleagues in our Fossil Energy and Carbon Management program for the specifics on CCUS, but I will note that the Department has been a leading innovator and driving the research in CCUS for over 20 years, and as somebody who has

spent my career in renewables, I will say that firm, flexible generation is incredibly valuable as part of an entire system.

Senator HOEVEN. Good.

Mac, Senator Heinrich mentioned that coal has a 40 percent capacity factor. What is the capacity factor for the Milton Young plant?

Mr. MCLENNAN. Yes, so our capacity factor is closer to 90 plus, year over year, 80. Our target, I would put it this way, that we have for the plant is 92 percent availability and 93 percent availability on the other unit.

Senator HOEVEN. Okay.

Mr. MCLENNAN. We use ours frequently.

Senator HOEVEN. Which again goes to the importance of having that baseload regardless of what the demands are, what the weather conditions are, correct?

Mr. MCLENNAN. True.

Senator HOEVEN. Okay, thank you.

And then, Mr. Kealoha, would you agree that, I guess with a couple things, one is that as we talk about all these different approaches, we have to not only have flexibility, but we have to demonstrate dependability, cost savings, and that—you know, we are talking here about states as diverse as North Dakota, Hawaii, and many others across this country—that we really do have to empower states and regions to develop a lot of these different types of energy and have that kind of mix to truly have the kind of energy security, stability, and environmental soundness that we all want.

Mr. KEALOHA. Thank you for the question, Senator. From my perspective, and I think as we are approaching things here in Hawaii and particularly with Hawaii Energy, there is no silver bullet to how we are going to get there. I think we are trying to find ways to pursue whatever means that will get us to, at least in Hawaii, our 100 percent clean energy mandate and part of that and some of my fellow testifiers have shared this, but part of this means we have to consult the people who will be most directly affected, make sure they participate and benefit. And folks oftentimes bypass the voice of the community in the effort of trying to pursue clean energy. And I think it is really important that that voice is also heard.

Senator HOEVEN. Right, yes, I agree with that. Thank you.

And then, Mac, is there anything else? I appreciate you joining us today. Is there anything else that you want to bring up relative to these efforts to advance carbon capture and storage that I did not ask about?

Mr. MCLENNAN. That is a really open-ended question.

Senator HOEVEN. Well, you have a minute and a half.

[Laughter.]

Mr. MCLENNAN. A minute and a half. Well, I would say that, to your point, I mean, it is an alternative for us, based on the region that we operate within, the characteristics and resources that we have today. It is demonstrable, so we are not talking about something that does not exist today and it leaves an option, right? So I think at times we get myopic as we start to think about how do we get there and, I mean, you look at energy efficiency, you look

at new technologies, you look at technologies that don't exist today and I think today, arguably, carbon capture is one that we will be able to demonstrate—even get there—and it will produce electricity with no carbon footprint or near zero carbon footprint and be able to store carbon.

I think the other thing that is not just about fossil or coal-based assets and I think you noted this is we can't get there to reduce the carbon footprint of the world without figuring out how to store carbon in the ground safely.

Senator HOEVEN. Thank you. Thank you for your leadership and thank you to all of our witnesses today. I thought you all had great testimony to offer and I appreciate it very much.

Thank you, Chair Hirono.

Senator HIRONO. Thank you very much.

Just one last note. Both Mr. Moreno and Mr. Kealoha testified, I believe, on the importance of community input going forward and Mr. McLennan, would you agree that that is a very important aspect of what we are doing as we enable rural communities and poorer communities to access the kind of energy that they need?

Mr. McLENNAN. Sure. And then, in our model, Chair Hirono, that's how it works. I have a Board of Directors who are elected from their communities, by their colleagues in those communities, who sit on those boards and provide the guidance to us about the path and direction of the things that they would like to achieve.

Senator HIRONO. Thank you all for participating in this discussion. Members will have until close of business tomorrow to submit additional questions for the record.

The Subcommittee is adjourned. Mahalo, everyone.

[Whereupon, at 3:00 p.m., the hearing was adjourned.]

**APPENDIX MATERIAL SUBMITTED**

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**U.S. Senate Committee on Energy and Natural Resources**  
**Subcommittee on Energy**  
**June 23, 2021 Hearing: *Existing Programs and Future Opportunities***  
***to ensure Access to Affordable, Reliable, and Clean Energy for Rural and Low-Income Communities***  
**Questions for the Record Submitted to Mr. Alejandro Moreno**

**Questions from Senator Catherine Cortez Masto**

Q1: Your written testimony featured two new DOE programs proposed in the Department's FY 2022 Budget Request that are focused on community-driven approaches.

One of these proposals is Community Geothermal, or an initiative to fund technical assistance to demonstrate and deploy community-scale geothermal district energy systems for heating and cooling. You went on to tout that these systems can be applied to urban centers, rural areas, and remote communities.

Q1a. Can you please elaborate on this initiative and speak to some of the additional benefits that Community Geothermal can have for select regions throughout the country?

A1a. The Community Geothermal Heating and Cooling initiative will provide technical assistance to demonstrate and deploy community-scale direct use geothermal. The initiative aims to provide funds to competitively selected geographic coalitions to implement geothermal district energy systems through installation of geothermal heat pumps (GHP) or direct use of geothermal fluids. Communities of interest may include urban centers, rural areas, and remote communities where geothermal has high technical and economic potential and can reduce dependence on fossil fuels.<sup>1</sup>

A major objective of the initiative is to develop a set of proven test cases that can be duplicated by communities throughout the U.S. by funding geographic coalitions of industry, universities, trade schools, community colleges, local government, and/or subject matter experts that would receive technical assistance funding from DOE to execute feasibility studies, field work, outreach, and installation of these systems. This initiative will also spur workforce development in communities by training individuals seeking employment in the geothermal trades. By demonstrating this renewable energy solution in a geographically and socioeconomically diverse set of communities, DOE will further demonstrate that geothermal is a proven mechanism to provide safe, clean, and resilient sources of thermal energy, enhance grid flexibility, and achieve clean energy goals.

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<sup>1</sup> <https://www.energy.gov/cere/geothermal/geovision>

**U.S. Senate Committee on Energy and Natural Resources**  
**Subcommittee on Energy**  
**June 23, 2021 Hearing: *Existing Programs and Future Opportunities***  
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**Questions for the Record Submitted to Mr. Alejandro Moreno**

Q1b. Your written testimony also touched on DOE's efforts to boost funding and assistance for low-income and rural communities – Apart from funding, what additional help or support is needed from Congress?

A1b. We appreciate congressional leadership in supporting the allocation of the benefits of clean energy to low-income consumers. Making low-income consumer benefits across our portfolio is a priority for the both the Department and the Administration, as is cross-agency coordination to address this complex issue, demonstrated by the Administration's government-wide Justice40 Initiative that has the goal of delivering 40 percent of the overall benefits of relevant federal investments to disadvantaged communities.

Q2: Your written testimony touts that DOE has achieved cost reductions of up to 82 percent in solar technologies over the last decade alone. However, you go on to note that only 15 percent of solar adopters are low- and moderate-income households – largely due to barriers in ownership, financing, and information access.

What is DOE's strategy to better ensure that these solar opportunities are accessible to those who may benefit from installations the most?

A2. Many Americans still lack access to affordable solar electricity, including many renters, homeowners to whom affordable financing options are unavailable, and those without suitable roof conditions. Soft costs, or non-hardware costs, play a role in limiting solar access and affordability.

DOE's Solar Energy Technologies Office (SETO) funds projects in four major areas aimed at increasing equitable access to solar energy: (1) data collection, analysis, and tool development, (2) innovative, equitable, and accessible financing, (3) increasing access through community solar with meaningful benefits by convening partners, information sharing, and technical assistance, and (4) fast-tracking permitting.

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**Data Collection, Analysis, and Tool Development**

DOE-funded projects in this area gather data to improve market transparency of solar adoption trends and analyze the data to understand the barriers the low- and moderate-income households face in going solar. These projects develop solutions for overcoming those challenges.

**Innovative, Equitable, and Accessible Financing**

For households without resources to pay for the upfront costs of a new solar installation, the typical financing options are either a loan or a power purchase agreement. But these options can exclude low- and moderate-income (LMI) Americans, who may not qualify for those financing options. The majority of households that are going solar have incomes of greater than \$100,000, although households with incomes less than \$100k did grow from 39% of solar adopters in 2010 to 48% in 2018.<sup>2</sup> High credit requirements are a key barrier to solar adoption for LMI households—almost 90% of 2018 solar adopters have either prime or super-prime credit scores.<sup>3</sup> DOE-funded projects evaluate alternative solar financing models for low-income consumers and housing providers, develop new tools and methods to better assess credit risk, and engage community financial institutions and other capital and tax equity sources in expanding solar financing in low-income communities.

**Increasing Community Solar Access with Meaningful Benefits**

Community solar is a major opportunity to create more equitable access to the benefits of solar. DOE defines community solar as any solar project or purchasing program, within a defined geographic area (such as utility territory), in which the benefits of a solar project flow to multiple customers such as individuals, businesses, nonprofits, and other groups. Community solar can expand affordable access to solar to all Americans by allowing everyone to share in the benefits regardless of whether their homes can support rooftop solar panels. Community solar projects are

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<sup>2</sup> [https://eta-publications.lbl.gov/sites/default/files/solar-adopter\\_income\\_trends\\_report.pdf](https://eta-publications.lbl.gov/sites/default/files/solar-adopter_income_trends_report.pdf)

<sup>3</sup> [https://eta-publications.lbl.gov/sites/default/files/solar-adopter\\_income\\_trends\\_report.pdf](https://eta-publications.lbl.gov/sites/default/files/solar-adopter_income_trends_report.pdf)

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on the rise and span 39 states and the District of Columbia, but the bulk are in just four states and represent about 4% of solar capacity.<sup>4</sup> In 2019, DOE launched the National Community Solar Partnership—an annual \$5 million initiative that engages stakeholders interested in community solar to share information, access educational resources, and engage in direct technical assistance to make affordable community solar available to all Americans.

**Fast-Tracking Safe Permitting**

In July, the Department announced the nationwide launch of the Solar Automated Permit Processing Plus (SolarAPP+) tool – a free web-based platform that gives local governments the ability to safely expedite their review and approval of residential solar installation permits. Developed by DOE’s National Renewable Energy Laboratory (NREL), SolarAPP+ will drastically reduce barriers to solar deployment, spur community economic development, and advance the Administration’s clean energy goals.

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<sup>4</sup> <https://www.nrel.gov/docs/fy20osti/75438.pdf>

**QFR Response for Mr. Kealoha's US Senate Testimony delivered on 6-23-2021**

**Question from the Honorable Senator Catherine Cortez Masto:**

Your written testimony stated that: "Energy efficiency continues to be the cheapest and easiest form of clean energy, requiring less renewable energy generation to be built by first reducing energy usage."

Based on your experiences, what more could the federal government do to further incentivize energy efficiency upgrades and assist ratepayers?

- A. Are there innovative projects we should be investing in to increase the availability of affordable energy efficient products for U.S. families and businesses?

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Thank you for the opportunity to respond to your question regarding what the federal government could do to further incentivize energy efficiency upgrades and assist ratepayers.

My background comes in leading the Hawai'i Energy program as its Executive Director. With Hawai'i already being one of the most expensive places in the country to live, reducing monthly energy costs is important for our families and businesses. According to Aloha United Way's ALICE® (Asset Limited, Income Constrained, Employed) report released last year, 165,013 households in Hawai'i (37%) are ALICE households living in financial hardship while another 47,066 households (11%) live below the poverty level.<sup>1</sup> Our low and moderate income population represents people who have one or multiple jobs but struggle to afford basic necessities to remain stable and self-sufficient. Reducing energy costs are a necessity, and not a luxury, for these families.

Historically, due to a lack of resources, it has been challenging to best serve populations who face unique barriers to participating in energy efficiency programs. These barriers can include a lack of access to energy efficiency information and a lack of capital or credit to pay for high up-front costs of energy efficiency investments. Additionally, split incentives between owners and renters, coupled with an aging housing stock, further complicates the delivery of efficiency upgrades. Those often affected by these barriers include low-income households, rural communities, renters, multi-unit building owners, *kupuna* (i.e., senior citizens), military veterans, small businesses, non-profits, agricultural operations, and other underserved, vulnerable and geographically isolated segments.

Included below are details on two key initiatives that would help address these concerns, and we believe would further incentivize equitable energy efficiency upgrades and increase the availability of affordable products. These initiatives focus on engaging underserved sectors to ensure they have access to clean energy technologies and can participate the clean energy transition. These initiatives would be beneficial for not only the people of Hawai'i but for households and businesses throughout the United States.

**Initiative #1 - Continue funding and, in some cases, expand funding for existing programs**

The U.S. Department of Energy and the U.S. Department of Health and Human Services already have in place several programs that have proven to provide a significant return on their investment when funded. Expanding the below programs could further assist US ratepayers.

- **The 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

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<sup>1</sup> [https://www.unitedforalice.org/Attachments/AllReports/2020ALICEReport\\_HI\\_FINAL.pdf](https://www.unitedforalice.org/Attachments/AllReports/2020ALICEReport_HI_FINAL.pdf)

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.<sup>2</sup> Improving access to energy efficiency among low-income and disadvantaged communities by supporting and expanding the Weatherization Assistance Program (WAP), through proper appropriations.

- **The Low-Income Heating Energy Assistance Program (LIHEAP)** is a vital program that helps Americans pay their utility bills. 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.<sup>3</sup>
- **ENERGY STAR®** is the government-backed symbol for energy efficiency, providing simple, credible, and unbiased information that consumers and businesses rely on to make well-informed decisions. Thousands of industrial, commercial, utility, state, and local organizations—including Hawai'i Energy - partner with the U.S. Environmental Protection Agency (EPA) to deliver cost-saving energy efficiency solutions that protect the climate while improving air quality and protecting public health. Hawai'i Energy, along with many other efficiency programs across the country utilize ENERGY STAR as its benchmark for providing incentives. It is an easy way to improve energy literacy quickly in these communities when we say "look for the ENERGY STAR logo" while also being able to reduce energy costs for families and businesses. In 2019 alone, ENERGY STAR saved consumers \$39 billion on energy costs, ensuring this program is adequately funded is important.

#### **Initiative #2 - Green-Collar Job Development**

The **Blue Collar to Green Collar Jobs Development Act** would support small businesses and promote a green collar workforce. Small businesses across our nation need assistance to help train new hires and provide ongoing education to existing employees. Importantly, this 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 116<sup>th</sup> Congress as part of H.R. 2 and H.R. 4447.

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

<sup>2</sup> <https://www.energy.gov/eere/wap/about-weatherization-assistance-program>

<sup>3</sup> <https://efficiencyforall.org/wordpress/2021/03/01/addressing-health-and-affordability-challenges-for-low-income-families/>

737,200 full-time jobs across every region and state.<sup>4</sup> Investing in a robust workforce of skilled energy efficiency workers will help power our economic recovery and our nation.<sup>5</sup>

Investing in the nation's energy efficiency and building retrofit workforce 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.<sup>6</sup>

**Conclusion:**

Research shows that 25% of all U.S. households face a high energy burden, and for low-income households that number rises to 67%.<sup>7</sup> Furthermore, Black, Hispanic, Indigenous/Native Hawaiian populations, and seniors, as well as families residing in low-income multifamily housing, manufactured housing, and older buildings, experience disproportionately 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.<sup>8</sup> 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.

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<sup>4</sup> <https://e4thefuture.org/wp-content/uploads/2020/07/E2E4-Build-Back-Better-Faster-Stimulus-Projection-Report-Julv2020.pdf>

<sup>5</sup> <https://www.youtube.com/watch?v=e8i-YjdbWZY&t=247s> [https://www.eesi.org/files/Leticia\\_Colon\\_de\\_Mejias\\_093020.pdf](https://www.eesi.org/files/Leticia_Colon_de_Mejias_093020.pdf)

<sup>6</sup> <https://rooseveltinstitute.org/publications/economic-recovery-begins-at-home-retrofitting-housing-jobs-health-savings-climate/>

<sup>7</sup> <https://www.aceee.org/research-report/u2006>

<sup>8</sup> [https://www.eia.gov/todayinenergy/detail.php?id=37072;](https://www.eia.gov/todayinenergy/detail.php?id=37072)