Advancing Towards 100% Clean Energy: A State-Federal Summit

Summary of Sessions

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The ***Advancing Towards 100% Clean Energy: A State-Federal Summit*** was hosted by the U.S. Department of Energy (DOE), the National Renewable Energy Laboratory (NREL), Lawrence Berkeley National Laboratory (LBNL), and the Clean Energy States Alliance (CESA) on May 17-18, 2023, at Kellogg Conference Hotel at Gallaudet University in Washington, DC. The Summit focused on how states and the federal government can work cooperatively to accelerate states' efforts to decarbonize. The nearly 200 attendees at the Summit had the opportunity to: meet state officials and stakeholders working on deep decarbonization in states across the country; hear from and interact with federal officials who are administering federal clean energy initiatives; explore opportunities for state implementation of provisions in the Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law (BIL); and learn about innovative state-level clean energy programs. The first day of the Summit was open to all stakeholders, while the second day was limited to state and federal government employees. Many of the slides and presentations from the Summit on the CESA website are available here: https://www.cesa.org/event/advancing-towards-100-clean-energy-a-state-federal-summit/.

Day One (May 17, 2023)

Session 1:

The first session, ***Clean Energy Market Trends***, considered the energy market from several perspectives—overall clean energy market trends, the role of state clean energy standards, voluntary green power markets in the electricity market, and the impact of IRA. These topics were presented by Galen Barbose, Research Scientist in the Electricity Markets and Policy Department at Lawrence Berkeley National Laboratory, Jenny Sumner, Modeling and Analysis Group Manager at National Renewable Energy Laboratory, and Ethan Zindler, Head of Americas at BloombergNEF.

Galen Barbose presented a 2023 status update on US state renewables portfolio standards (RPSs) and clean electricity standards (CESs). Barbose noted that RPS policies exist in 29 states and DC, which apply to 58% of total US retail electricity sales. Fifteen states have established a broader 100% CES, typically in combination with an RPS. Additionally, while most RPS policies have been on the books for over a decade, states continue to make significant revisions and

adopt new CESs. He also considered the historical impacts of RPS and CES policies on renewables development, including that both standards have been main drivers for renewable energy generation growth, and that RPSs have provided a stable source of demand for renewable energy new-builds. New resources will be required to meet RPS & CES demand growth: US non-hydro renewables will need to reach 22% of the US generation mix by 2030 and 27% by 2050. This suggests, as Barbose noted, a somewhat diminished role for state RPS/CES policies relative to historical trends, although in some parts of the country, these targets will continue to play a large role. Finally, the future role and impact of state RPS and CES programs will depend on several factors, including the efficacy of IRA and BIL in stimulating new clean electricity supplies and transmission.

NREL's Jenny Sumner considered the status and trends in the voluntary market and IRA & BIL impacts in her presentation. For context, in 2021, most voluntary sales were via unbundled RECs, while most customers were via community choice aggregation (CCA) programs. Unbundled RECs purchases are dominated by C&I customers who purchase large volumes. Community choice aggregation (CCA), which greatly expanded residential customer access, has flatlined in California, the leading CCA market. CCA customers are typically residential customers purchasing low volumes. Voluntary sales have continued to increase, and voluntary customers grew in most market segments (including PPAs, unbundled RECs, utility green pricing, utility contracts, etc.). In evaluating the impact of IRA & BIL on the US power sector, Sumner noted the following outcomes with the funding and programs under these two laws: clean electricity share of total generation increases to 71%-90% by 2030; wind, solar, and storage deployment rates could more than double relative to historical annual maximum levels; long-distance transmission grows 11-24% by 2030 relative to 2022; bulk-system costs decline (net of tax credits) by $3 per MWh to $6 per MWh (5%-13%); and emissions would decrease to 72% to 91% below 2005 emissions levels, resulting in $670 billion-$700 billion in cumulative avoided climate damages (2023-2030).

Ethan Zindler at BloombergNEF spoke about trends in the clean energy space, both nationally and globally. Zindler began with contextualizing the market, noting that while US renewables are cost-competitive, all costs have risen in the period between 2014-2022. Additionally, supply chain bottlenecks are easing overall (between 2020-2023), and US emissions generally have been sliding (between 1990-2022). Different states' markets are also facing different challenges. For example, many states in the Northeast are facing land availability issues for renewables, while states in the Midwest and Texas face curtailment risks and negative power prices. Zindler explained that while projected US annual wind and solar capacity additions are rapidly increasing, they will need to double to reach a target of 80% clean power nationally by 2030. Finally, Zindler noted that while IRA positively incentivizes solutions to many of the aforementioned challenges, it does not provide solutions for continuing issues like transmission and distribution planning, permitting, flexible load management, and workforce training.

Session 2:

The second session of the day, ***Decarbonization Progress and Challenges***, gave Summit attendees the chance to meet in small groups of approximately 15 people. Attendees from professionally diverse backgrounds and perspectives, e.g., federal and state agency representatives, private sector clean energy leaders, CESA staff, etc., exchanged their views on where states and the nation stand on the road to decarbonization and the challenges that need to be addressed in the coming few years. The small groups discussed these topics for 45 minutes and then reported back to see how similar or different the perspectives of the groups were.

In terms of progress toward decarbonization, individuals noted that some states are excelling in the electric sector, e.g., utilities are exceeding their RPS requirements. They also noted that the siting of renewable energy is slowly becoming more equitable. Examples include protecting farmlands, incentivizing the installation of solar energy on brownfields, utilizing abandoned mine lands for solar, etc. Deployment of solar in communities and locales has also grown exponentially, including for low-income customers and people of color. Relatedly, community solar has proven somewhat successful in furthering equity initiatives.

Participants highlighted several challenges on the road to decarbonization. Broader challenges include meaningful engagement with and consideration of disadvantaged communities, interconnection, permitting, energy storage to maximize clean energy potential, financing for small businesses and residences, and the difficulties faced by states that are part of Regional Transmission Organizations (RTOs), such as struggles around greenhouse gas accounting with a day-ahead market.

Other challenges included the large costs borne by developers to move a project forward, which in turn can cause a project's economics to fall through. Program design issues around data and data gaps for disadvantaged communities were another set of challenges, and participants suggested that working with the national labs to collect data to forecast abilities and identifying disadvantaged communities would be helpful (the latter of which NREL is currently developing resources for).

Attendees also expressed the need to fund and build states' organizational capacity. For example, states requested resources to help them apply for grants, as departments are being asked to quickly shift to become grant writers without adequate resources and expertise. State Public Utilities Commissions (PUCs) have also been understaffed for many years, which poses issues for the work required of them. Another major challenge participants considered centered around messaging and communication to the public. For example, in some states, the positive public perception of solar and wind has diminished and some residents have taken on a "not in my backyard" (NIMBY) attitude toward these renewables. Local town approvals are

facing blocking by the public, and it can now sometimes take a year or more to get a project approved. In other states, the opposite messaging problem has emerged. In Vermont, for example, the state has successfully deployed residential solar to many residents, in large part due to successful communications and messaging strategies encouraging the use of solar. However, the state now faces peak load challenges, where a large number of residents are using electricity during small parts of the day. As a result, the state now faces another communications challenge around educating residents about when to use and when to limit their use of electricity.

Attendees noted additional assistance they'd like from the federal government. They agreed resoundingly that applicants need more time on grants, and that extending timelines and deadlines would help immensely. Anything that the federal government can do to make it easier for entities to work through federal grant programs and simplifying that process would be helpful to make sure money flows to residents who need it most. For example, this could include creating a master form that spells out what applicants need to do to apply. They also suggested that DOE provide funding to help states respond to grant opportunities to help with the capacity issues.

Session 3:

This session featured a ***conversation with DOE Deputy Secretary David Turk***, who considered the role of the states in implementing clean energy policy, noting that energy policy and meeting equity needs must inherently vary by location to reflect local conditions, and that this gives the states a crucial role in ensuring that energy policy reflects the conditions of the specific state and the needs of its residents. He noted the successes of BIL to date, e.g., the major investments in clean energy technologies, including in manufacturing facilities. This is important, Turk noted, in order to demonstrate to the public that the transition to clean energy equates to more jobs and particularly good jobs.

He also considered some of the biggest challenges and solutions for implementing IRA and BIL, including expanding transmission, for which DOE is already taking action under BIL, as well as speeding interconnection. This echoes President Biden's calls for supporting and carefully crafting permitting reform, Turk noted. He underscored a few actions states can take over the coming year to help ensure the success of the IRA and BIL: spearhead consumer education around IRA tax credits and rebates, especially for communities traditionally and continually left behind; highlight IRA opportunities for businesses and community-based organizations to benefit from the IRA; and work with the federal government to address transmission and interconnection issues.

Session 4:

In this session, ***The Cost of the Clean Energy Transition for LMI Households***, attendees heard about the importance of decarbonizing without increasing the energy burden for low- and moderate-income (LMI) ratepayers with limited ability to pay higher electricity bills. Panelists looked at strategies for maintaining electricity affordability for these and other customers. Attendees heard from Damali Harding, Principal and Acting US Program Director at the Regulatory Assistance Project, and Quinn Parker, CEO of Encolor, a nonprofit working with utilities, non-profits, public organizations, and companies develop and implement diversity, equity, and inclusion (DEI) initiatives with impact.

Damali Harding discussed the importance of defining equity and energy equity, noting that achieving energy equity requires intentionally designing systems, technology, procedures, and policies that lead to the fair and just distribution of benefits in the energy system. She referenced examples of equity in clean energy policy, specifically as a result of investigations and reviews of integrated resource plans (IRPs) by public utility commissions in Hawaii, Michigan, Washington, and California. Harding noted the importance of utilizing common applications rather than differing types of applications that are not standardized or easy to understand and complete, and other policy mechanisms to support energy equity. She also discussed the four dimensions of energy equity in achieving an equitable energy system: recognition, procedural, distributive, and restorative justice.

Quinn Parker presented on the energy burdens faced by environmental justice and low-income communities, including the difficult daily decisions faced by households, such as having to balance energy services against other necessities, like food or medicine; living with uncomfortable conditions to save money; and seeking cheaper alternatives for heating, cooling, and other utility services that can impact safety. Parker noted the structural and historical racism associated with these energy burdens, the inferior condition of housing stock within disadvantaged communities, the lack of economic or educational opportunities for advancement, and more. She highlighted the importance of bringing the community into the conversation and considering co-design tactics to increase equity while using plain language to ensure that community members understand and can adequately participate in this knowledge sharing and program design.

Session 5:

In ***Regional Breakout Groups***, participants were divided into four groups by region to discuss ways in which they can cooperate to advance clean energy in their region and to identify ways DOE and the national labs can help with technical assistance. The four regions were Mid-Atlantic/Southeast, Midwest, Northeast, and West.

In the Mid-Atlantic/Southeast group, states expressed challenges they're facing three-dimensionally: immature markets hindering implementation, coordinating between agencies, and hiring and capacity building. The group thought that DOE could offer the most value-added

by helping coordinate between agencies beyond energy agencies (for example, between transportation, housing, health, etc.). States also agreed that it would be helpful to states if they received more information about which federal agencies have related services or funding beyond DOE, e.g., the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT), etc. States requested that DOE departments know about and understand each other's programs, given that federal siloing contributes to state siloing. States were happy to learn that DOE's Office of State and Community Energy Programs (SCEP) will become a one-stop-shop, including for cities and counties.

In the Midwest group, states discussed the following challenges: how land is designated for siting, e.g., who gets to use and develop native land; how state energy offices in deregulated states can't apply for tax credits; considerations of whole region impacts on equity and meaningful community engagement; and the large expenses of the outdated distribution system. States in this region also highlighted examples of their cross-state successes, including coordination among Minnesota, Michigan, and Wisconsin, who released climate action plans within a two year period and meet monthly to talk and update one another. This group of three states is also coordinating around the EPA Climate Pollution Reduction Grant (CPRG) program, emissions modeling, and energy modeling. Additionally, Arkansas, Oklahoma, and Louisiana formed a coalition, submitting joint projects on carbon capture sequestration. DOE's Solar Energy Technologies (SETO) office also explained their approach to large-scale solar siting and working across the state energy offices to do so. SETO encouraged states to facilitate community meetings to discuss energy with their residents, given that some residents are likely to have more trust in their state government than an unfamiliar federal agency.

The Northeast group also discussed the particular challenges facing their states. These included: differing certification requirements for licensed electricians between states in the region and electricians having adequate transportation to reach rural areas; reaching underserved residents in multifamily rental buildings with limited rooftop space for solar; multifamily affordable housing issues across the region; crumbling infrastructure of homes that don't lend themselves to solar installation; and defining LMI households given that there are currently multiple definitions, e.g., by state legislatures or the federal government. States noted that DOE could do the following to help: coordinate standards around licensing and reciprocity; help states utilize AI to, for example, review applications for eligibility; and create an accelerator with states on the electrification front to electrify buildings, develop technology, attract manufacturing capacity for heat pumps, and scale up to get manufacturers interested.

In the Western group, challenges faced by states included: regional market planning and lack of transmission authority; difficulty around greenhouse gas accounting given that states have different values and differing politics; getting utilities to work together on transmission without adequate incentives; and the roadblocks to developing more transmission, including private landowners. States noted that DOE can help by: bringing neighboring states together for conversations about transmission; guiding conversations with the national labs around long-duration storage; working with and incorporating the needs of Western Tribes; assisting with

consumer education and collective narrative/storytelling; and helping address governance challenges, given that states are losing authority as generators join power markets.

Session 6:

Day one of the Summit concluded with a panel on ***Energy Justice and 100% Clean Energy***. This panel featured a discussion among federal and state officials working actively to advance energy equity and environmental justice, especially in conjunction with 100% clean energy initiatives. The panelists were Catherine Clark, Energy Justice Liaison in the Office of Clean Energy Demonstrations (OCED) at DOE; Edward Hsieh, Senior Program Manager at the Massachusetts Clean Energy Center; Maria Redmond, Director of the Wisconsin Office of Sustainability and Clean Energy; and Austin Scharff, Energy Policy Specialist at the Washington State Department of Commerce.

Catherine Clark considered these issues from the federal perspective, emphasizing the importance of equity as a major priority for DOE and taking the Justice40 initiative seriously. She spoke about the initiatives of the newly formed OCED to get its equity work across the country up and running.

Edward Hsieh considered these issues from a workforce development perspective, including by highlighting: the major gap in the amount of labor power needed to meet states' net-zero climate goals; methods of building a robust and equitable workforce led by community members and minority- and women-owned enterprises and businesses (MWEBs); developing accessible training programs and apprenticeships; and understanding the needs of potential members of the new workforce to sustainably retain them, e.g., transportation, childcare, etc.

From the state perspective, Maria Redmond emphasized the large number of state programs tackling equity needs in Wisconsin. She spoke about the need to incorporate equity considerations into each step of states' clean energy plans in order to make those plans a reality. Austin Scharff detailed how Washington state incorporated equity into legislation and the state's decarbonization plan, making the subject the first chapter of their plan and the central intent of their clean energy work.

Day Two (May 18, 2023):

Session 1:

In the first part of this session, ***Inflation Reduction Act Initiatives***, attendees heard from federal officials who gave brief summaries of the statuses of five key federal IRA initiatives: the Climate Pollution Reduction Grants (CPRG) program, Community Benefits Plans, the Energy Efficiency and Conservation Block Grant (EECBG) program, the Home Energy Rebate program, and the tax credit bonuses for facilities located in energy communities, low-income communities, and on

Tribal lands. Presentations and updates were provided by: Paul Donohoo-Vallett, Policy Analyst in DOE's Office of Policy; Adam Guzzo, Program Manager for DOE's EECBG program; Peter Hansel, Special Advisor for Implementation at EPA; Christy Veeder, Special Advisor at DOE's Office of Policy; and Madeline Salzman, Management and Programs Analyst for the Home Energy Rebates Program.

After hearing updates and trajectories for each of the programs, participants began Part B of the session by choosing from among five discussion groups, each of which focused on a different federal initiative featured in the first part of the session. The state participants had a chance to ask questions about the programs to the respective program representative, discussed how their state is thinking about implementing that initiative, and what issues have come up or could come up related to implementation. After 30 minutes, participants were given the chance to stay and learn more about the first program they chose or switch to a second discussion group so that everyone had the chance to participate in two groups over the course of the hour.

Session 2:

In the next set of sessions, participants were given the opportunity to attend one of two breakout sessions. Session A, ***Energy Storage Policy for Decarbonization***, featured panelists from DOE, Sandia National Laboratories, and CESA, and it focused on state energy storage policies that can support decarbonization of the electricity sector and complement federal energy storage initiatives in BIL and IRA. Topics included long-duration storage, equity, and case studies of current challenges. This session's panelists were: Imre Gyuk, Director of Energy Storage Research at DOE's Office of Electricity; Will McNamara, Grid Energy Storage Policy Analyst at Sandia National Laboratories; and Todd Olinsky-Paul, Senior Project Director at CESA.

Imre Gyuk discussed how decarbonization will entail a vast reorganization of the entire electricity industry and the importance of not proliferating an "energy divide," which finds less affluent communities left behind. Gyuk noted that energy distressed communities can be found throughout the US, ranging from 1% of the population in Vermont to 40% of the population in Mississippi. He also highlighted US communities partnering with DOE and the national labs to obtain energy storage and receive technical assistance while achieving social equity. Projects highlighted included ones with the Navajo Nation in Arizona and the Atrisco Heritage Academy in Albuquerque, New Mexico.

Will McNamara presented on the current status of energy storage policy in the US, including the following major considerations: while 22 states (plus DC) have adopted decarbonization goals, not all have set policy for energy storage deployment; state activity is still driven mostly by utility procurement mandates, targets or goals, financial incentive/subsidies, and demonstration projects; about 15 states have adopted some form of energy storage policy,

which in all cases exists along with a renewables policy; and how the policy approaches of states are far from homogenous, partially because some have vertically integrated markets while others have restructured markets. McNamara noted two major challenges for energy storage policy: aligning storage deployment to scale within the state's decarbonization timeframe, and interconnection and permitting processes (e.g., delays and questions about approval authority, for example, in Massachusetts). He also highlighted several opportunities, including: Long-Duration Energy Storage (LDES); energy equity policies such as community solar plus storage and mandates for storage development in disadvantaged communities; and storage as a transmission asset, which allows for the system's costs to be recovered through FERC-approved transmission rates.

Todd Olinsky-Paul presented case study findings focused on five key states: California, Illinois, Massachusetts, New York, and Oregon. He noted that the most important and pressing barriers facing energy storage include: interconnection barriers, valuation questions, and insufficiently developed markets. Olinsky-Paul underscored several solutions for interconnection barriers, including updating and revising interconnection processes to incorporate storage operational characteristics, socializing required grid upgrade costs (i.e., reforming the "cost causation" model), and planning grid upgrades in a proactive, integrated, and system-wide manner. In regard to storage valuation, Olinsky-Paul discussed several solutions, including that states can incorporate non-energy and non-monetizable benefits into storage benefit-cost analyses and assign values. Finally, he explained that states and the federal government need to develop the storage industry ecosystem (including via raw materials sourcing, reusing and recycling, and standardizing financing and contracting).

The second available session, ***Communicating the Decarbonization Story***, featured a discussion with communication specialists considering strategies for educating the public on federal and state efforts to decarbonize. Panelists considered successful tactics for communicating with consumers about tax credits and other federal incentives. Attendees heard from the following panelists: Jessica Ennis, Director of Public Engagement at the White House Council on Environmental Quality; Tinselyn Simms, Co-Executive Director at the new communications nonprofit We Make the Future; and Courtney St. John, Senior Director of Science and Energy at Climate Nexus.

Speakers noted that most people/the public at large have little idea what IRA is or how it affects their lives. They explained that states have an important role to play in educating the public, especially helping people learn about IRA incentives and opportunities they can benefit from. Jessica Ennis discussed the White House's outreach and messaging around the IRA, while Tinselyn Simms and Courtney St. John provided a range of effective communications solutions, including supporting and commissioning participatory research and narrative development around clean energy success stories, celebrating success stories and showing people in a community their fellow residents' excitement about what is being done around clean energy and what is to come, and lifting community members who are the most impacted and will benefit from these governmental actions.

Session 3:

In ***Implications of Recent Federal Legislation for State Clean Electricity Standards***, attendees heard presentations by Galen Barbose, Research Scientist in the Electricity Markets and Policy Department at LBNL, and Jenny Sumner, Modeling and Analysis Group Manager at NREL, with findings from new analysis about the implications of IRA and BIL for state clean electricity standards.

Barbose and Sumner's report highlighted how IRA and BIL funding provides new rationale for states to do the following: adopt more ambitious RPS/CES policies; sync up provisions between their RPS/CES programs and IRA/BIL to stretch funding dollars further, reduce market confusion, and streamline administration; ensure broad and robust assessment of resource options in future RPS/CES planning and procurement; reduce the costs customers bear in meeting aggressive RPS/CES targets; and address key challenges in accessing federal funds to expand past 80% clean energy in their state.

Session 4:

Day two concluded with a large group conversation with Summit attendees titled, ***Where Do We Go from Here?*** In addition to closing comments from DOE, the national labs, and CESA, attendees had the opportunity to identify takeaways, states' needs, and observations about where states are on the road to equitable decarbonization.

State representatives highlighted a crucial need for more data and analyses, and they noted that they found the information presented at the Summit this year fascinating and important to their work. States expressed relief at the fact that DOE's Office of State and Community Energy Programs (SCEP) is becoming a key dissemination point for information about federal funding opportunities. They noted the importance of and requested more help with workforce development and equity, and they also asked for more opportunities to coordinate with one another and meet again both in person and through virtual settings. States expressed a large interest in future sessions where they would have access to DOE officials working on IRA programs, as these sessions proved very helpful to them and their understanding of these programs. When asked whether they would like a session for states to share their plans for CPRG planning grants, a large show of hands indicated support for that idea. Finally, states expressed feelings of being overwhelmed by their limited capacity to respond to opportunities; they asked for additional support on that front.