U.S. HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON ENERGY
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
HEARING CHARTER

Fostering Equity in Energy Innovation
Friday, July 16, 2021
10:00AM ET

Purpose

The purpose of this hearing is to examine best practices in clean energy research, development, demonstration, and commercial application activities to pursue an equitable energy transition for frontline and marginalized communities. Witnesses and members will discuss how to ingrain equity within early research processes to enable the development of equitable energy solutions. The hearing will also examine ways that Congress and the Administration should consider directing the Department of Energy's role in fostering equity within the agency's energy innovation activities and programs.

Witnesses

- **Dr. Dan Kammen**, Distinguished Professor of Energy, University of California, Berkeley
- **Dr. Myles Lennon**, Professor of Environment and Society and Anthropology, Brown University
- **Dr. Shobita Parthasarathy**, Professor of Public Policy and Director, Science, Technology, and Public Policy program, University of Michigan
- **Mr. Bruno Grunau**, Regional Director of NREL's Cold Climate Housing Research Center (CCHRC) in Fairbanks, Alaska

Background

To contain climate disruption, reduce pollution, and facilitate substantial health improvements, it is vital for the world to transition from high emission energy systems.[1] However, as the U.S. adopts lower carbon systems and cleaner energy technologies, actions are needed to ensure that race and class inequalities do not persevere within future energy systems. Without attention to energy and resource inequalities, tensions between "green/clean" and "just" can potentially erode public trust. [2]

[1] Finley-Brook, M.; Holloman, E.L. Empowering Energy Justice. *Int. J. Environ. Res. Public Health* **2016**, *13*, 926. https://doi.org/10.3390/ijerph13090926
[2] https://climatejusticealliance.org/cja-history/

Clean energy solutions such as solar panels, electric vehicles, and intelligent data management systems are often perceived as solutions that will benefit all communities and lead the U.S. to a low carbon energy economy.[3] However, for marginalized and frontline communities, these technological pathways are not currently compatible with their socioeconomic, institutional, and environmental realities and can disproportionately burden some communities while benefiting others, worsening inequality and injustice.[4]

For example, due to historical housing segregation that has resulted in the unfair distribution of quality housing stock, low-income African American families suffer disproportionately higher energy burdens.[5] In addition, housing in rural communities have a higher median energy burden than urban households, and the disparities increase substantially for minority, elderly, and renting households.[6] Recent studies also 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.[7]

Energy is an important social and public health concern. As costs for residential heating, cooling, and other household energy needs steadily increase, they account for a higher percentage of household budgets and represent increasing disparities between richer and poorer communities.[8] Clean energy technologies alone are unable to achieve social equity, as energy interventions do not historically tackle the structural dynamics rooted within socio-cultural and socio-economic contexts. If existing energy irregularities related to access and resource distribution are not addressed early on, the U.S. risks the same structural inequalities that persist in current energy systems will be replicated and transferred to the future cleaner energy economy.[9]

A just energy transition refers to achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on frontline communities.[10] Energy justice centers the concerns of marginalized communities and pursues policies to make energy more accessible, affordable, clean, and justly managed for all communities.[11] A "just" energy system is thus inclusive, recognizing low-income populations

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[3] https://www.nrel.gov/state-local-tribal/blog/posts/nrel-draws-on-experience-to-expand-equitable-energy-access-to-state-local-and-tribal-communities.html
[4] Ibid.
[5] 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
[6] https://www.aceee.org/sites/default/files/publications/researchreports/u1806.pdf
[7] https://www.nature.com/articles/s41893-018-0204-z/?mkwid=c
[8] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5114037/
[9] https://www.nrel.gov/state-local-tribal/blog/posts/nrel-draws-on-experience-to-expand-equitable-energy-access-to-state-local-and-tribal-communities.html
[10] https://iejusa.org/section-1-defining-energy-justice/#section1_4
[11] Ibid.

and people of color are vital sources of knowledge and solutions and are indispensable to the planning and development of our country's clean energy future.[12]

The hearing will examine how negative inequality impacts of energy and climate solutions should be mitigated, if not fully prevented, through conscious and concerted efforts, cautious planning, and multi-stakeholder engagement. Scholars believe the best results for a just energy transition can only be achieved when potential inequality impacts are taken into consideration in all stages of the RD&D process to address the following common energy equity concerns:

- **energy burden** – the percentage of gross household income spent on energy costs;[13]
- **energy insecurity** – the hardships households face when meeting basic household needs;
- **energy poverty** – refers to individuals, households, or communities that are unable to access and afford adequate energy for basic necessities of life, such as heating and cooling;[14]and
- **energy democracy** – the belief that communities should have a say and agency in shaping their energy future[15]

Integrating social science in energy research

Social dimensions are frequently under-examined in applied energy research, as the human elements of energy systems and their consequences are frequently overlooked. Integrating social science allows researchers to look for solutions for the non-economic barriers that historically thwart the early adoption of economically and environmentally efficient technologies, and what interventions could potentially help to remove such barriers.[16]

The likely contribution of the social science is viewed by some scholars as imperative to the value of most new energy technologies, particularly those that are counter-intuitive or not easy to understand.[17] For example, research has shown that without social scientific partners to translate the relative advantages of energy innovations for individual and organizational decision-makers, their value is evident only to a narrow community of scientists, innovators, and policymakers. Further, without early social science input, applied energy researchers often must make assumptions of human behaviors that drive current decision-making and will inform selection, adoption, and continued use of new energy technologies.[18]

Achieving an Equitable Energy Transition

[12] Ibid.
[13] https://www.energy.gov/eere/slsc/low-income-community-energy-solutions
[14] https://www.homelesshub.ca/povertyhub/basic-needs/energy-poverty
[15] http://unionsforenergydemocracy.org/wp-content/uploads/2014/05/resistreclaimrestructure_2013_english.pdf
[16] Sovacool, Benjamin & Ryan, Sarah & Stern, P & Janda, Kathryn & Rochlin, G & Spreng, Daniel & Pasqualetti, Martin & Wilhite, Harold & Lutzenhiser, L. (2015). Integrating social science in energy research. Energy Research & Social Science. 6. 95-99. 10.1016/j.erss.2014.12.005.
[17] Ibid.
[18] Ibid.

The Biden administration has stated that it wants 40 percent of federal climate spending to reach poorer communities and communities of color, known as the Justice40 Commitment.[19] The commitment makes environmental justice a part of the mission of every agency by directing federal agencies to develop programs, policies, and activities to address the disproportionate health, environmental, economic, and climate impacts on disadvantaged communities.[20] Advocates believe the following principles are essential to achieving such a commitment in support of an equitable energy transition:

There is no one size fits all solution

The required scale and speed of the energy transition will require multiple types of energy policies to adequately support frontline communities, and understanding that communities differ widely in their histories, demographics, geographies, politics, and more. As a result, researchers will need to use different tools in different contexts to find solutions that are applicable to marginalized communities.

Engagement with communities and intergovernmental coordination is critical

Local stakeholders typically have an excellent understanding of what their unique communities need. Therefore federal policy leaders must engage early and often with local leaders, businesses, civil society, and other stakeholders. This engagement will help to ensure early research is guided by local priorities, and local stakeholders in turn have a clear understanding of clean energy technologies. In addition, consistent engagement with frontline communities will be essential to overcome any distrust that stakeholders may feel toward federal intervention.

Adaptive management informed by research

The energy transition will affect different communities in the decades ahead. To effectively address new challenges and to seize new opportunities, research will need to adapt as new information becomes available. To facilitate this adaptation, federal funding for applied energy research, including data gathering and socioeconomic analysis, will be a critical input to guide policy changes over time.

Ongoing Equity Efforts at The Department of Energy

The Department Energy recently established a new energy justice office within the Office of Economic Impact and Diversity, currently led by the Deputy Director for Energy Justice. The 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.

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[19] https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/

[20] Ibid.

In addition, the Office of Economic Impact and Diversity (ED) administers the Equity in Energy Initiative[21], which was developed to expand the participation of underrepresented groups throughout all DOE programs and in the energy sector.[22] The Initiative includes the following areas of focus:

- *STEM Enhancement*: ED collaborates with Minority Serving Institutions (MSIs) and minority businesses to provide education, networking, and employment opportunities for diverse students.

- *Technical Assistance*: ED provides mentorship to minority businesses and researchers interested in applying for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grant programs.

- *Supplier Diversity*: ED engages in outreach and partnerships with the Minority Business Development Agency to improve access to training, advanced manufacturing specialty centers, and other business opportunities for minority businesses. It is also developing a working group to strengthen the collaboration between National Laboratories, MSIs, and Minority Business Enterprises.

- *Workforce Development*: ED hosts workforce readiness and entrepreneurship webinars, with an emphasis on making the energy industry more accessible to women, veterans, and formerly incarcerated persons.

- *Energy Affordability*: ED stewards the Energy Affordability Resource Map to connect people to resources with the goal of helping them keep their energy costs low.[23]

DOE also seeks to incorporate equity into end-user considerations. In May 2021, the department launched new programs investing $15.5M to support solar energy deployment and provide technical assistance in low- and moderate-income communities.[24] This included a Request for Information (RFI) on how to ensure equitable access to community-based solar projects and the convening of various stakeholder roundtables to determine how these projects can address energy challenges in underserved communities. DOE also issued an RFI to solicit information on how best to frame future workforce funding so that it ensures a diverse, skilled, and supported solar workforce.

Lastly, DOE's Energy Transitions Initiative Partnership Program (ETIPP)[25] focuses on energy resilience in predominantly rural communities. ETIPP, which is supported by both the Water Power Technology Office and Solar Energy Technology Office, supports energy system transformation to reduce economic risk in remote and islanded communities. Through ETIPP,

[21] https://www.energy.gov/diversity/equity-energytm#:~:text=The%20Equity%20in%20Energy%20initiative,in%20the%20private%20energy%20sector.
[22] https://www.energy.gov/sites/default/files/2021/01/f82/Equity_in_Energy_Booklet_1_11.pdf
[23] https://www.energy.gov/diversity/maps/energy-affordability-resource-map
[24] https://www.energy.gov/articles/doe-launches-initiatives-accelerate-solar-deployment-underserved-communities
[25] https://www.energy.gov/eere/about-energy-transitions-initiative-partnership-project

the Energy Efficiency and Renewable Energy program leverages 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.[26]

Equity efforts at DOE National Laboratories

Several of DOE National Laboratories are developing the groundwork for advancing energy equity through research to develop an innovative energy system that benefits all communities. For example, the Pacific Northwest National Laboratory draws on existing interdisciplinary research to expose equity gaps by: calculating and mapping electricity rate affordability; researching pathways to strengthen community resilience through rural and island grid cohorts; and identifying potential impacts of energy resource siting on minority and low-income populations by conducting environmental justice reviews.[27]

DOE's National Renewable Energy Laboratory (NREL) also works with communities, utilities, and businesses within state, local, and tribal jurisdictions pursuing equitable clean energy pathways. The research, analysis, and technical assistance NREL provides through these partnerships informs community-driven energy and infrastructure solutions that incorporate policy, technology, economic, and social issues.

[26] Ibid.

[27] https://www.pnnl.gov/projects/energy-equity