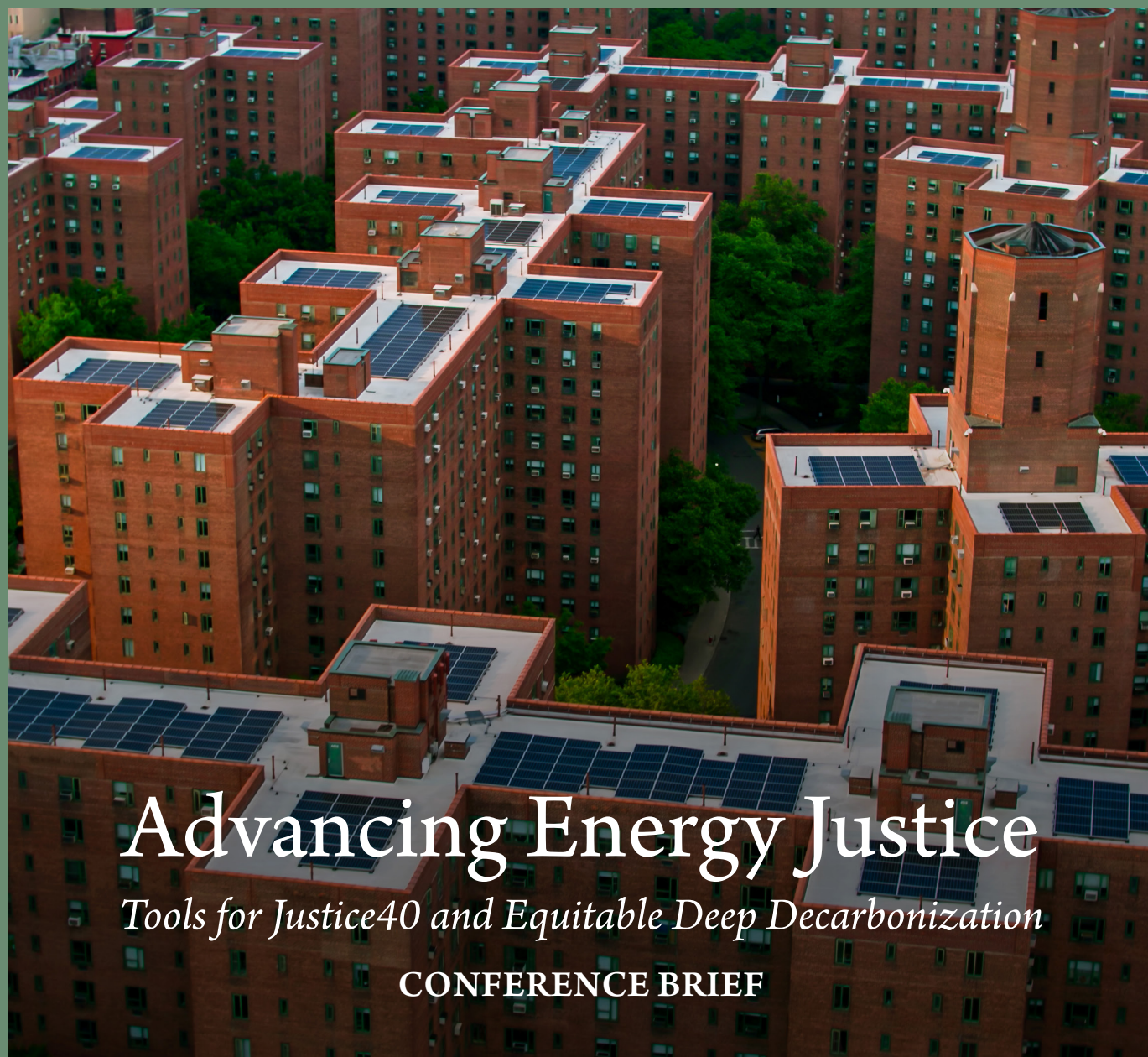


Institute for
Policy Integrity

NEW YORK UNIVERSITY SCHOOL OF LAW



Advancing Energy Justice

Tools for Justice40 and Equitable Deep Decarbonization

CONFERENCE BRIEF

Summary of May 2022 Conference

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This brief summarizes some of the major points of discussion from our May 2022 conference, “Advancing Energy Justice: Tools for Justice40 and Equitable Deep Decarbonization.” The goal of the event was to highlight different perspectives, and not necessarily to seek agreement on particular policy, economic, or legal issues. Accordingly, this brief merely summarizes the varied views expressed by conference participants and is not intended to be a consensus or recommendation document.

We would like to thank the organizing committee for the May 2022 “Advancing Energy Justice” conference:

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I. Conference Summary

“We have a climate crisis,” **Shalanda Baker** noted in her opening statement at the conference, “Advancing Energy Justice: Tools for Justice40 and Equitable Deep Decarbonization.” The Bipartisan Infrastructure Law, the Inflation Reduction Act, and many ambitious state policies will speed up the clean energy transition in the United States. Yet, Baker explained, unless we rethink our existing tools, models, and procedures, these historic opportunities also threaten to exacerbate existing inequities in the nation’s energy system or create new ones. As Baker put it, it is not possible to “decarbonize equitably on top of a system that was designed to fundamentally produce inequality.”

Research shows that communities of color disproportionately bear the burdens created by the energy system, such as pollution (Tessum et al., 2021). They also have limited access to the economic benefits created by it, or to clean, reliable, and resilient electricity (Sunter et al., 2019, Cavallo, 2021). Energy burden and energy insecurity are far too common in communities of color (Hernández, 2016). Moreover, the communities most affected by energy system policies are often not at the decision-making table.

The Biden-Harris Administration’s **Justice40 Initiative** aims to direct certain federal investments so that 40 percent of the overall benefits flow to disadvantaged communities (Biden, 2021). The type of investments covered include clean energy and energy efficiency; clean transit; affordable and sustainable housing; training and workforce development; the remediation and reduction of legacy and ongoing pollution; and the development of critical clean water infrastructure. This framework can help transition our energy system without exacerbating historic inequality—and can, ideally, correct it.

In other words, Justice40 is a policy initiative that aims to eradicate injustices currently embedded in our energy system and ensure equitable deep decarbonization. To put Justice40 in context and explain how the initiative could help achieve energy justice, Dr. C. Anna Spurlock reviewed the preliminaries of energy justice in her keynote.

A. Energy Justice Preliminaries

Energy justice is the goal of achieving equity in both social and economic participation in the energy system, while also remediating social, economic, and health burdens on those historically harmed by the energy system (Heffron and McCauley, 2017). Scholars have described and framed the concept of energy justice in different ways, but one description holds that energy justice consists of four tenets: recognition, procedural, distributional, and restorative justice.

- **Recognition justice** – recognizing the needs, rights, and experiences of different groups, particularly local and indigenous communities
- **Procedural justice** – ensuring access to and meaningful participation in the energy decision making process
- **Distributional justice** – ensuring fair distribution of benefits and costs of energy systems across society
- **Restorative justice** – repairing historical harms communities have borne

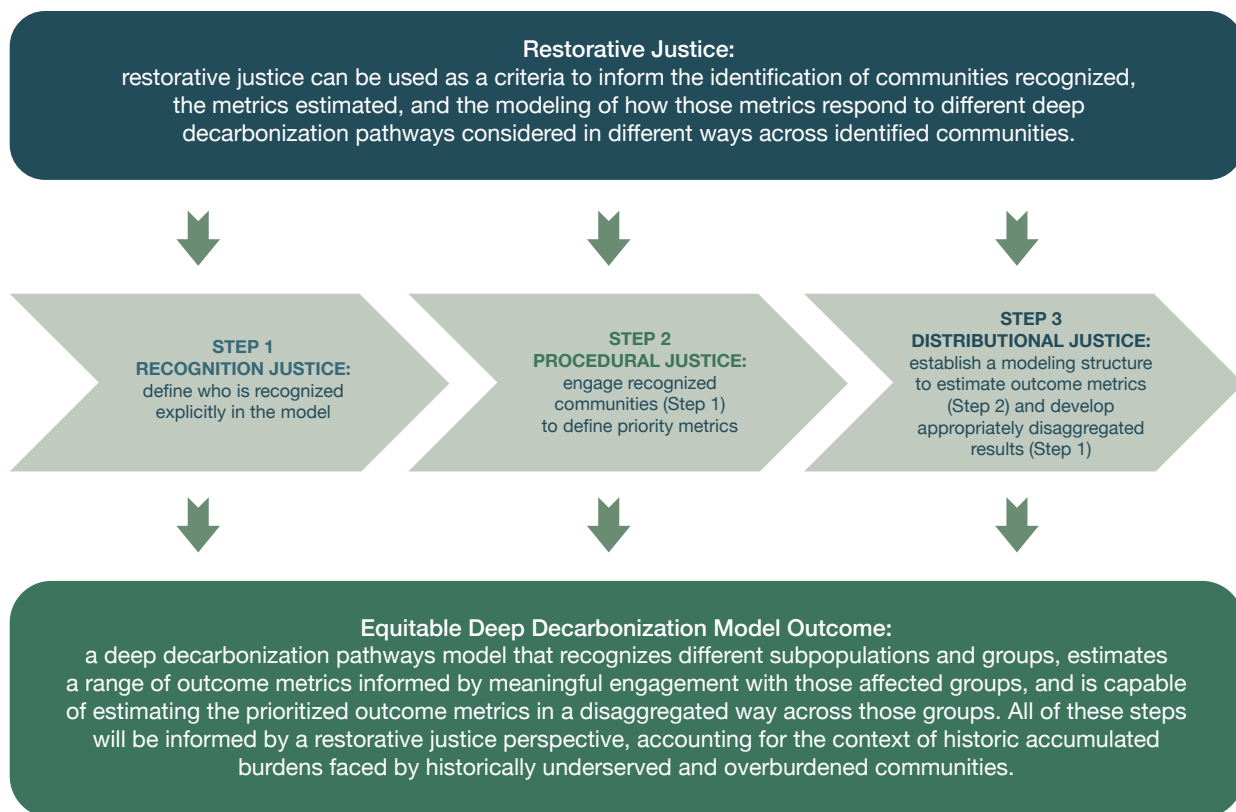
These four tenets of energy justice shape the Equitable Deep Decarbonization Framework that Dr. Spurlock presented in her keynote.

B. Equitable Deep Decarbonization Framework

The **Equitable Deep Decarbonization** (EDD) framework, laid out in Spurlock et al. (2022), maps the four tenets of energy justice onto the process of developing a deep decarbonization pathways model. At the conference, **Dr. Anna Spurlock** provided an overview of this framework in her keynote address. The framework creates a shared language to better enable interdisciplinary work, justice-driven principles, and practical steps to codify equity into deep decarbonization pathways modeling (See Figure 1).

The EDD framework consists of three steps: recognition, procedural, and distributional justice, with each step informed by restorative justice. Explicitly incorporating restorative justice into each step of the framework recognizes not only the cumulative burdens underserved communities face, but also the reality that these burdens might limit both communities' capacity to adapt to climate change and the benefits they receive from climate mitigation. Incorporating restorative justice is also necessary to analyze the extent to which different climate mitigation measures can ameliorate historic inequities. The EDD framework encompasses many of the critical factors that experts from a range of perspectives underscore when discussing a just energy transition, equitable decarbonization, and Justice40.

Figure 1. Equitable Deep Decarbonization Framework



The EDD framework holds parallels to the process by which Justice40 is being implemented in practice. The steps of the framework are summarized below, highlighting how each step relates to a parallel step in the Justice40 implementation landscape.

Step 1: Recognition Justice

Recognition justice must be part of how communities are identified and recognized at a technical level. To model differential outcomes for different subpopulations, those different subpopulations must first be defined. This step is critical to understand the impacts of potential decarbonization strategies on different communities. The EDD framework advocates for a restorative justice lens to inform the identification of factors in the development of this definition. There are many other factors that need to be considered when defining communities that should be recognized in the modeling, and many of these overlap with metrics that should be modeled as outcomes, such as health and wealth.

During the two-day conference, many panelists spoke to the importance of the ideas in the EDD framework and how to identify disproportionately burdened communities. For example, **Dr. Andrew Curley** provided a sobering historical picture of the repeated ways in which native peoples have been excluded from the benefits of energy transitions throughout history: first uranium mining, then coal, now oil—even as their lands have suffered irreparably from the extractive infrastructure produced by each transition. He highlighted that these repeated colonial and extractive practices have left these communities without critical resources, a sense of autonomy, or a pathway to reclaiming traditions related to use and treatment of their lands.

Dr. Destenie Nock provided another example of a way to define and identify households and communities with disproportionate accumulated historic burdens or vulnerabilities. She argued that, while the energy justice field has highlighted the importance of energy burden, that metric is not sufficient to capture the type of vulnerability that different communities will experience in the face of increasing climate change damages. She argued that it is important to work to uncover hidden forms of energy poverty, such as energy limiting, and use those measures to help guide spending and policy design.

Moving from the specific examples provided by Dr. Curley and Dr. Nock, **Dr. Susan Anenberg** provided a “bird’s-eye-view” perspective by explaining how satellite data and associated processing methods can be used to identify historic inequity by categorizing regions of disproportionate environmental exposure, e.g., green space, air quality, heat, and disasters. The benefit of this innovative approach is the ability to achieve full geographic coverage with relatively high spatial resolution. In addition, this kind of data can be used to build a long-term temporal record, enabling the tracking of progress in mitigating these disparities over time.

In the context of Justice40 implementation, many U.S. federal agencies have recently undertaken exercises to define disadvantaged communities (DACs). This DACs designation is how recognition justice plays out in practice in this policy space. Agency representatives who presented in the Justice40 in Implementation session discussed specifics of this process (described in Section II). They noted that DAC definitions for each agency must be aligned with the mission of the agency. This alignment would drive meaningful environmental justice work in each agency in the long term, beyond Justice40. Panelists also noted that efforts to implement Justice40 were making available publicly and transparently a wealth of data being generated that can help decisionmakers in all spaces make equitable and just decisions.

Step 2: Procedural Justice

This step aligns the process of defining outcome metrics designed to understand the varied costs and benefits of alternative pathways to decarbonization with the practice of procedural justice. For this step, it is critical to embrace the knowledge and priorities of underserved groups in academic and policy planning to achieve energy justice and EDD, as their priorities may not align with policy preferences or historic practices in academia.

Procedural justice and the critical considerations associated with engaging in this process were a major theme addressed by many of the panelists throughout the event. Importantly, every presenter in the Community Partnership panel spoke to this. Four key themes emerged from the conference pertinent to this step.

First, for EDD, researchers and policymakers need to embrace the knowledge and priorities of underserved groups. **Dr. Erin Mayfield** noted that transitioning to a net-zero energy system is inherently a multi-objective planning process, involving multiple goals such as air quality, climate, land-use politics, social equity, labor, economics, and technology. It is critical that communities set the priorities for the inclusion and weighting of these multiple objectives. For example, **Dr. Len Necefer** noted that he found in his past research that Navajo peoples' risk perception and resource valuation required different methodologies than traditionally used by economists and revealed different priorities than policymakers and developers assumed the Navajo people would have. Many community members prioritized environmental and cultural preservation above the creation of jobs and revenue from economic development. Necefer found that the traditional willingness to pay methodology used by economists was highly upsetting to Navajo people, who did not want to place a dollar value on their environmental and cultural heritage.

Similarly, **Dr. Cecilio Ortiz Garcia** and **Dr. Marla Pérez-Lugo** spoke to the importance of valuing local knowledge in the disaster relief context. **Felicia Davis** emphasized that the priority in her community was not decarbonization but rather cost-cutting energy efficiency and adaptation measures, and noted that decarbonization was seen as a later step. As noted by **Dr. Ana Baptista**, the potential set of benefits communities might prioritize could include climate justice and resilience, healthy communities, just transitions, and respect for community self-knowledge and advocacy. **Dr. Daniel Carrión** also highlighted how the energy transition can be leveraged to counteract health disparities.

Second, community engagement in research is not inherently anti-racist and can be highly extractive. **Donele Wilkins** and **Dr. Amy Jo Schulz** noted the importance of researchers thinking explicitly about the unequal distribution of knowledge production power and financial resources between academia and underserved communities. They underscored that while it is essential that community members shape the research questions and the broader strategy for translating the research to action, it is also important to allocate grant funding directly to communities and invest in the development of community members as leaders and researchers to avoid this process being extractive and exploitative. Others, such as **Felicia Davis**, **Dr. Richard D. Gragg III**, and **Carolyn Ford Quincy** spoke to the fact that the current academic incentive structure, where academics are pressured to publish quickly and frequently, makes it difficult to build the long-standing relationships with potential community members required to establish a partnership that transcends extractive relationships, often resulting in researchers "parachuting in" and communities experiencing "research fatigue." Similarly, Dr. Nock noted that researchers must practice discernment when determining whether to do a participatory-action project to avoid being extractive.

Third, there are methodologies for constructive engagement, including the use of "non-monetary ordinal indexes" of ranked preferences to create a decision aid used by Dr. Necefer with the Navajo community. **Dr. Bonnie Keeler** highlighted several other possible approaches, including participatory mapping, social media analysis, and focus groups.

Fourth, there is a need for the flow of information to be bidirectional, so that knowledge products can be created to share back with the communities to inform their own decision making. Dr. Keeler highlighted this point. Additionally, **Dr. Ishan Nath** described the Climate Impact Lab's work on improving the public accessibility to their research work through collaborating with news organizations, publishing interactive maps of climate impact, and providing analysis of regional climate risks.

In the context of Justice40, there is a parallel step of defining the metrics of “benefits” that will be tracked and assessed in the Justice40-covered investment programs. Federal agencies with programs covered by Justice40 are each working to define those metrics. Many of them have attempted to conduct stakeholder engagement with organizations and individuals representing disadvantaged communities in this process and in the way that DACs themselves are being defined. The federal agency representatives who spoke in the Justice40 in Implementation panel spoke to these processes.

Step 3: Distributional Justice

This step focuses on ensuring the model structure and specification can estimate the varied benefits identified in Step 2 to the different communities or subpopulations identified in Step 1. Filling data gaps and improving transparency in tracking investments and benefits are critical to ensuring more equitable and just outcomes. Capturing sufficient diversity of benefits at the necessary granularity is critical to distributional justice. Yet, agencies charged with implementing Justice40 are facing gaps in data at a granular geographical level to track benefits of Justice40 distribution.

However, there are important strides being made on this dimension. For instance, the Climate Impact Lab, represented by Dr. Ishan Nath at the conference, has improved the ability to model a range of climate impacts at a high level of spatial granularity. Others, such as Dr. Daniel Carrión also highlighted how the lack of data can impact this type of modeling, noting that there is a lack of information on non-respiratory health outcomes of potential transitions, such as reduced heat-related mortality and improved mental health from reduced energy burdens.

Multiple researchers discussed methodological ways to grapple with the fact that modeling multiple objective problems can be challenging when trying to use traditional methodologies and tools. Dr. Daniel Carrión noted the importance of how metrics are defined and the need for common metrics across health outcomes, such as quality-adjusted life years, to make outcomes on this dimension consistently comparable across models or scenarios. **Dr. Jessica Boakye** presented on an approach for measuring and quantifying aspects of wellbeing to see how they will be impacted by energy transition, the “capabilities approach.”

She also spoke to how to approach modeling when using these alternative approaches. **Dr. Danae Hernández-Cortés** argued that understanding causal pathways is essential for devising policies that repair past harms and prevent future disparities, and that it is also important to analyze the policy incidence. Dr. Erin Mayfield additionally advocated for a modeling framework that embodies multiple social, environmental, political, technical, and economic objectives and constraints, and takes an approach of constructing a national-to-local scale, long-term energy systems planning model that explicitly accounts for multiple objectives, and building a network of sustainable transition clinics at research clinics.

While it will be critical for agencies to leverage or develop tools for estimating the distribution of benefits (as defined by their Justice40 benefits frameworks) across DACs and non-DAC communities, most of the federal agency speakers did not go into detail on this part of Justice40 implementation. It is likely that agencies are still developing their approaches to this, which will likely be highly program-specific.

II. Discussion and Next Steps

Overall, many of the panelists at the conference highlighted the need for decarbonization pathways models or evaluation models for Justice40 that can capture multiple pathways and reveal the equity implications and tradeoffs inherent in each alternative. Being deliberate about understanding the multiple outcomes associated with a set of policy choices is critical. **Dr. Catie Hausman** underscored this by providing examples of how energy policies that are not expressly designed to reduce injustice can ameliorate or exacerbate it.

Shalanda Baker highlighted that achieving energy justice and the intended results of Justice40 need collective action from government agencies, academia, and movements. The tools to tackle these challenges might already exist but they are disconnected. Disciplines should leverage data and methods of other disciplines, Baker said. The conference speakers agreed that academic research is done in siloes but interdisciplinary and transdisciplinary interventions are needed. There are many tools available in different disciplines, but they need to be updated to reflect equity dimensions. This is the outcome the EDD framework is designed to facilitate.

Importantly, there is a need for the research community to recognize the voices of those most affected by historical injustices. Historically, the government, higher education institutions, and researchers more broadly have regularly failed marginalized communities. To build trust and move forward with equitable deep decarbonization, government agencies and researchers must critically evaluate their actions (e.g., programs, projects, and incentives) designed to support these communities and dismantle the systems that create and sustain injustice.

The conference was a successful venue to enable researchers to start conversations about developing methods, interdisciplinary connections, and frameworks to make deep decarbonization efforts more consistent with energy justice, and to take a step towards breaking research silos and more interdisciplinary and inclusive research. The discussion throughout the two days revealed gaps in energy justice analysis and a path forward. It also highlighted the need for building a platform for inclusive and interdisciplinary research, with meaningful community outreach and partnerships.

As the organizers of the conference, we intend to plan additional events, workshops, and in-person gatherings to facilitate this kind of work. We will announce these efforts as more details materialize.

III. Panel Summaries

The conference featured five panels and four breakout sessions over two days.¹ The summaries of these panels are below. These summaries highlight some of the major points of discussion from the conference. The goal of the event was to highlight different perspectives, and not necessarily to seek agreement on particular policy, economic, or legal issues. Accordingly, this brief merely summarizes the varied views expressed by conference participants and is not intended to be a consensus or recommendation document.

A. Justice40 Implementation

This panel brought together representatives from federal agencies including the Environmental Protection Agency (EPA), the Department of Energy (DOE), the Department of Health and Human Services (HHS), the Department of Transportation (DOT), the Department of Housing and Urban Development (HUD), and the Department of Agriculture (USDA). Moderated by the University of Michigan's **Dr. Parth Vaishnav**, the agencies shared their own structural frameworks that guide their programs under Justice40. The discussion centered around three topics: how agencies are approaching Justice40 implementation; what tools, models, datasets, and methods they are using; and what gaps or challenges they are facing that resources from the broader research community might be able to address.

Dr. Tony Reames, the Senior Advisor of the Office of Economic Impact and Diversity from DOE, shared DOE's methods and metrics for implementing Justice40. He identified three elements as key to implementing Justice40: how to define disadvantaged communities (DACs), how to measure and track the benefits of J40 investments, and what programs are covered by the J40 initiative.

To define DACs, Reames explained, DOE [measures](#) the cumulative burden by the sum of 36 equally weighted indicators covering energy burden, fossil dependence, vulnerable populations, and environmental and climate hazards, using data from sources such as [the EPA EJScreen environmental justice screening and mapping tool](#), and [the Center for Neighborhood Technology tool](#). By DOE's working definition, 13,581 Census tracts qualify as DACs, which have at least 30% low-income households and rank in the 80th percentile of the cumulative burden in a state.

Based on this definition, DOE has developed eight policy priorities for Justice40 implementation:

- Decrease energy burden in DACs;
- Decrease environmental exposure and burdens for DACs;
- Increase parity in clean energy technology access and adoption in DACs;
- Increase access to low-cost capital in DACs;
- Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs;
- Increase clean energy jobs, job pipeline, and job training for individuals DACs;
- Increase energy resiliency in DACs;
- Increase energy democracy in DACs.

¹ For agenda and video recordings, see <https://policyintegrity.org/news/event/advancing-energy-justice-tools-for-justice40-and-equitable-deep-decarbonization>.

These policy priorities can be translated into specific metrics based on the category of benefits flowing into DACs. For example, reduced energy burden can be measured by the annual energy expenditures in DACs before and after program intervention; increased clean energy access can be measured by the percentage of local electricity generation mix from clean energy that serves DACs.

Dr. Matthew Tejada, the Director of the Office of Environmental Justice from EPA, discussed EPA's Justice40 implementation and the challenge of tracking benefit flows. Tracking investments and benefits involves technical, legal, and logistical challenges. Tejada noted that while tracking capital and benefit flows is easier for place-based programs, e.g., [EPA's Brownfields Program](#), it is more challenging for programs that need to track large amounts of money and transactions outside of EPA. Currently, EPA has created an internal draft of the Investment Tracking Map that will allow Justice40 dollars to be tracked more explicitly.

Christopher Coes, the Principal Deputy Assistant Secretary for Transportation Policy from DOT, discussed DOT's approach to Justice40 and equitable decarbonization. DOT has designated 40 programs, representing \$207 billion in DOT funding as part of the clean transportation programs under Justice40, and has taken steps to embed Justice40 and equity standards into these programs. DOT defines *transportation disadvantage* as communities and places that spend more, and longer, to get where they need to go, said Coes, noting that transportation's benefits and costs lie not only in mobility but also environmental and social impacts.

DOT uses the [Transportation Disadvantaged Census Tract Map](#) to identify disadvantaged communities geographically for outreach, project development, and grant applications. To measure Justice40 benefits, DOT defines five indicators: safety, economic competitiveness, resilience, access, and emissions reduction. DOT will use a phased approach to measure new and existing covered programs with an estimated completion date for Phase 1 by June 2022. However, data gaps still exist in measuring the local distribution of Justice40 benefits, noted Coes. These include lack of investment data at the Census tract level, an incomplete nationwide catalog of fixed-guideway and fixed-route transit service, lack of demographic profiles of transportation network users and beneficiaries, lack of fleet electrification data, and lack of transportation cost burden data.

Crystal Bergemann, the Senior Advisor for Climate from HUD, spoke about the data sources the Department uses to direct its investments in affordable housing and legacy pollution to DACs, which HUD defines both geographically and non-geographically. She shared three data tools meant to complement the EJ screening tools. First, the [Community Assessment Reporting Tool](#) displays HUD's investments in communities across the United States using Geographic Information Systems. Second, the [eGIS Storefront](#) is a geospatial dataset with ten categories such as disaster response and recovery, rental assistance programs, and location affordability. Third, the [Picture of Subsidized Households](#) provides information about HUD-assisted tenants' characteristics by geography and program.

Bidisha Bhattacharyya, the Senior Advisor for Climate and Conservation from USDA, described USDA's approach to Justice40 and the data sources the Department uses to direct investment. Currently, she noted, USDA has over 65 programs under Justice40; these target dispersed populations rather than specific locations and are not always strictly related to energy and infrastructure topics but cover any programs benefitting underserved populations.

Bhattacharyya provided details on the data and methodologies USDA uses to target their programs to DACs. USDA Rural Development has developed mapping tools to identify underserved communities based on a variety of datasets such as the [CDC Social Vulnerability Index](#), the [Distressed Communities Index](#), and [the Persistent Poverty Communities](#). USDA also has access to abundant research agencies, e.g., Agricultural Research Service, National Agricultural Statistics Service,

Economic Research Service, and National Institute of Food and Agriculture. Exploiting the data and methodology resources, USDA is seeking to understand how their programs could influence communities downstream by using a place-based approach in the future. Bhattacharyya noted that future research should pay particular attention to the rural United States.

Arsenio Mataka, the Senior Advisor for Climate and Health at HHS, briefly discussed three Justice40 programs of HHS, [one program that brings sanitation and construction projects to American Indians and Alaska Natives](#), [the Low Income and Home Energy Assistance Program](#) that assists families with energy costs, and [the Worker Training Program](#) intended for environmental worker training. As the largest grant maker in the federal government, HHS is currently learning from other departments' work and is expecting to play an important role in the near future. At the same time, HHS believes that each agency needs its own definition of DAC and framework that will promote environmental justice even beyond Justice40.

A consensus among the panelists was that the first step to ensuring more equitable and just decisions is to improve transparency in tracking investments and benefits. As noted by multiple speakers, agencies are still facing gaps in data at a granular geographical level to track benefits of Justice40 distribution, which has played a huge role and will still have a large contribution to make in advancing Justice40 implementation moving forward. In the next step, it is equally imperative to engage with communities to ensure that their voices are heard, that they have the capacity to implement the programs, and that the resources are actually being deployed on the ground.

B. Community Partnerships

Moderated by **Dr. Gabriel Chan** (University of Minnesota) and **Dr. Diana Hernández** (Columbia University), this panel discussed how researchers could facilitate partnerships with communities to better align their energy-transition-related research with communities' priorities. Overcoming traditional silos of academia and movements, community partnerships can make research more effective in furthering policy and systems change. Leaders of different community research partnerships shared best practices for this kind of research.

1. Valuing Knowledge of Underserved Groups

Dr. Len Necefer, [CEO of Natives Outdoors](#), spoke about the need to embrace the knowledge of underserved groups in academic and policy planning spaces. Presenting his research on the Navajo nation's views on energy development projects, he highlighted that garnering data on Navajo people's risk perception and resource valuation required different methodologies than traditionally used by economists and revealed different priorities than policymakers and developers assumed the Navajo people would have. Necefer explained that these groups assumed the Navajo community prioritized job creation and economic development and therefore claimed they would support projects. However, Necefer's survey of Navajo people—which he noted required years of relationship building and collaboration with native colleges to be permitted by the local community—revealed that many community members prioritized environmental and cultural preservation above the creation of jobs and revenues from economic development. During his research on how the community valued these various resources, Necefer found that the traditional willingness to pay methodology used by economists was highly upsetting to Navajo people, who did not want to place a dollar value on their environmental and cultural heritage. In response, Necefer devised “non-monetary ordinal indexes” of ranked preferences to create a [decision aid](#) to inform developers that better captured the community's valuation of economic and environmental outcomes.

Dr. Cecilio Ortiz Garcia and **Dr. Marla Pérez-Lugo**, University of Texas at Rio Grande Valley professors and co-founders of the [RISE Network](#), expanded on the importance of valuing local knowledge in the disaster relief context. Sharing their experiences as both researchers and locals in Puerto Rico during Hurricane Maria, they described how the Puerto Rican government dismissed the capacity of local universities and researchers in the recovery efforts and instead invited non-Puerto Rican researchers who lacked cultural awareness and seemed to prioritize the collection of perishable data over understanding or addressing people's needs. Garcia and Pérez-Lugo created the National Institute of Energy and Island Sustainability at the University of Puerto Rico (INESI), which brought together energy and sustainability experts at their university and promotes local knowledge. They urge academic institutions that serve communities of color to create a network to share and advance local knowledge marginalized in other academic spaces.

2. *Redistributing Power and Resources*

Based on their collaboration between the [Green Door Initiative](#) and [Community Action to Promote Healthy Environments](#) (CAPHE) in Michigan, **Donele Wilkins** and **Dr. Amy Jo Schulz** shared further recommendations for community research partnerships. They emphasized that community engagement in research is not inherently anti-racist and can be highly extractive, making it important for researchers to think explicitly about the unequal distribution of knowledge production power and financial resources between academia and underserved communities. Wilkins and Schulz recommend addressing this imbalance by sharing decision-making power and resources equitably with community partners. To share decision-making power, community members should have formal leadership roles (such as co-PIs and co-authors) and informal avenues for input, such as meetings in accessible community spaces.

It is essential that community members shape the research questions and the broader strategy for translating the research to action. Community research partnerships must have a tangible action component to create value for communities, noted Wilkins. To redistribute resources, academic researchers should allocate grant funding directly to communities and invest in the development of community members as leaders and researchers. Community members must also have full access to any results from research in which they have engaged.

Felicia Davis ([HBCU Green Fund](#)), **Dr. Richard D. Gragg III** (Florida A&M University), and **Carolyn Ford Quincy** ([North Florida Educational Development Corporation](#)) expanded on how researchers can help build the research and leadership capacity of underserved communities. They identified historically Black colleges and universities (HBCUs) as some of the most effective institutions for scaling up capacity-building due to their deep connections to underserved communities. Justice40 funds could be directed to HBCUs for research training and workforce development programs as well as clean infrastructure upgrades. To best target investment among HBCUs, Davis called for site-specific research to gather data on the current environmental profiles and energy burdens of HBCUs and to measure the environmental and economic benefits of different upgrade options (such as renewable energy, LED lighting, improved insulation, etc.). Davis emphasized that the priority in her community was not decarbonization but rather cost-cutting energy efficiency and adaptation measures and noted that decarbonization was seen as a later step.

All speakers agreed on several underlying, structural challenges to community research partnerships. They noted that the pressures on academics to rapidly publish made it difficult to build the long-standing relationships with potential community members required to establish a non-extractive partnership. This results in researchers “parachuting in” to gather data and then disappearing without sharing resources or results with the community. As a result, underserved communities develop “research fatigue,” making it more difficult for future community research partnerships to be established. Dr. Gabriel Chan proposed that academic institutions would have to change their demands on researchers to value slower and more fairly produced output.

C. Resources for Justice40, Equitable Deep Decarbonization, and Key Gaps

This panel discussed data sources and innovative methodologies that could be leveraged for Justice40 or Equitable Deep Decarbonization research. Moderated by DOE Justice40 Fellow **Dr. Natalie Popovich** of Berkeley Lab, four panelists shared their thoughts about two questions: what academic resources could be useful to government initiatives and what data or resource gaps federal agencies could help fill to advance academic work pertaining to Justice40 and Equitable Deep Decarbonization.

Dr. Susan Anenberg, an Associate Professor of Environmental and Occupational Health and of Global Health at the George Washington University, discussed how to use satellite data to identify overburdened communities and address environmental justice issues. As decarbonization is closely linked with environmental quality, health, and equity, many U.S. cities now highlight equity and environmental exposure, e.g., green space, air quality, heat, and disasters, in their climate action plans. It thus becomes increasingly critical to make use of space-based observations from satellites to inform better policy decision-making. Taking air quality data as an example, Anenberg believes that [ground monitors](#) are limited in countries and regions outside of the United States, leading to insufficient information at the neighborhood scale regarding who is overburdened by air pollution. By contrast, space-based observations of air quality can help calculate ground-level surface concentrations of air pollutants, which are advantageous in full geographic coverage, relatively high spatial resolution, and the ability to build a long-term temporal record. So far, Anenberg and her research team have combined the satellite data with the EJSCREEN mapping tools to understand a series of important research questions, [intra-city inequities in air pollution-related health risks](#), and [racial disparities in exposure to nitrogen dioxide](#). In particular, a NASA-supported research team, Satellite Data for Environmental Justice (SD4EJ), has been dedicated to integrating satellite data with the EJ mapping tools to improve the geographic granularity and coverage of existing air pollution data. In the future, there is still a need for analytical tools and health and pollutants data with high spatial resolution to further explore who receives the benefits of reduced air pollution.

Dr. Bonnie Keeler, an associate professor in the Humphrey School of Public Affairs at the University of Minnesota, discussed the limitations of existing toolkits of policy analysis to achieve the goal of Justice40. While current policy analysis methods are built upon the classical assumptions of economic analysis, some of the assumptions are not valid for estimating the benefits of proposed policy regulations. For example, not all benefits can be quantified due to data limitations, preferences of the rich receive more weight than the poor, and historical and social contexts are usually missing in the analyses. Keeler also shared three observations. First, in addition to traditional non-market evaluation methods, different alternative methods, e.g., [participatory mapping](#), social media analysis, and focus groups, could lead to different decisions in policy analysis. Second, the bottom-up approach and the top-down approach may generate different priorities in environmental issues. Third, community priorities do not always align with research expertise. To improve regulatory review processes, Keeler recommended policy analysts to always define the decision context first and select the appropriate method specifically targeting the relevant audience and the value to be estimated. She also recommended to consider creating community-facing knowledge products to prioritize community needs.

Dr. Erin Mayfield, Hodgson Family Assistant Professor of Engineering at Dartmouth College, contributed to the conversation with a focus on the computational research gap in terms of decarbonization. Specifically, the presentation was centered on the question of how to employ computational tools to inform decision-making regarding future energy transitions. Mayfield talked about a conceptual model of energy systems with three components: First, *macro-energy systems optimization*, i.e., selecting the least-cost set of technologies over time to achieve net-zero emissions; Second, *spatial planning and infrastructure deployment*, i.e., selecting the location of technologies based on least-cost or other simple

heuristics; Third, *equity impact modeling*, i.e., determining the cumulative and distributional impacts of technology and planning decisions. When it comes to whether this model reflects the way transition planning decisions will be made or should be made, Dr. Mayfield believed that transitioning to a net-zero energy system is inherently a multi-objective planning process. Instead of focusing on the least-cost objective only, this process involves multiple goals in terms of air quality, climate, land-use politics, social equity, labor, economics, and technology. We thus need a modeling framework that embodies multiple social, environmental, political, technical, and economic objectives and constraints. As a promising research front, future research is called for regarding how to integrate multiple non-cost objectives into energy systems modeling and transition planning. The research community are encouraged to exploit the available computational tools and data to contribute to equitable deep carbonization by conducting national or state-level assessments of historical and systemic inequities, constructing a national-to-local scale, long-term energy systems planning model that explicitly accounts for multiple objectives, and building a network of sustainable transition clinics at research clinics.

Dr. Ishan Nath, a postdoctoral fellow from Princeton University, shared the efforts made by the Climate Impact Lab, in quantifying disparities in climate impacts. This team analyzes climate impacts based on hyper-local climate data. Nath first demonstrated their work on the historical evidence and projected change in climate change effects in U.S. counties. He showed that climate risk is geographically concentrated in coastal regions and areas that are already hot, e.g., the southern areas of the U.S. The evidence also shows that the climate risk will exacerbate existing income inequality as poorer populations are much more vulnerable to extreme climate events. In addition, this analysis has been expanded to the rest of the world at a granular level and explored additional potential outcomes of global warming such as heat and cold deaths, crop yields, energy and elasticity demand, labor supply effects, and sea-level rise and storm damages. In recent years, with the goal of raising public awareness of localized risks, the Climate Impact Lab has worked to improve the public accessibility to their research work through collaborating with news organizations, publishing interactive maps of climate impacts, and [providing analysis of regional climate risks](#). In terms of tool development, the team has designed an interactive platform for better assessments of the social costs of greenhouse gases. The team has also increasingly partnered with policy-based institutions such as the International Rescue Committee and the UN Development Programme. Nath also shared other resources for climate impacts such as the [Environmental Inequality Lab](#) and [emLab](#).

D. Research Threads Relevant to Justice40 and Equitable Deep Decarbonization

Moderated by **Dr. Burçin Ünel** of the Institute for Policy Integrity at New York University School of Law, this panel discussed data sources and innovative methodologies that could be leveraged for Justice40 or Equitable Deep Decarbonization research, exploring what academic resources could be useful to government initiatives and what data or resource gaps federal agencies could help fill to advance academic work pertaining to Justice40 and Equitable Deep Decarbonization.”

Dr. Ana Baptista, The New School, discussed guidance emerging from the frontlines of the environmental justice movement regarding how best to ensure that communities benefit from Justice40 investments. This guidance included how to engage with Justice40 communities and pursue procedural justice, predict and address challenges in providing benefits, and create accountability throughout each stage of engagement. Baptista amplified environmental justice organizations’ entreaty that Justice40 efforts be centered on the relevant communities’ sets of values and principles while prioritizing the benefits they seek. These benefits include climate justice and resilience, healthy communities, just transitions, and respect for community self-knowledge and advocacy. Baptista also emphasized that while many agencies seek community participation, they must also make opportunities for such participation accessible by establishing anchor institutions and building community capacity.

Dr. Joan Casey, Columbia University, discussed the shift from coal for electricity generation but also the diminishing reliability of the electric grid, which is a growing concern with climate change. Casey highlighted that there are disproportional power outages for certain communities. Casey then argued that increasing use of clean and renewable energy “makes sense” because it can “slow climate change,” “reduce inequitable exposure from fossil-fuel generating sources,” “improve population health,” “improve energy security,” and “enhance our resilience to extreme weather events.”

Dr. Catie Hausman, University of Michigan, discussed that environmental and energy policies that are not expressly designed to reduce injustice can ameliorate or exacerbate it. Hausman shared examples to help illustrate that policy objective matters in environmental and energy policy. The first example related to the findings that environmental policy designed to reduce overall particulate matter has had the additional benefit of ameliorating, though not eliminating, particulate matter exposure inequity (Colmer et al., 2020; Currie et al., 2021; Hernandez-Cortes and Meng, 2022). Hausman also discussed the result in Borenstein and Davis (2016) to demonstrate that the converse can also occur; namely, policy designed to reduce overall energy use – such as energy tax credits – can disproportionately benefit high-income households and exacerbate inequity. Hausman also discussed the conclusion of Davis and Hausman (2022) that green policies in the utility space can disproportionately benefit high-income people at the expense of low-income people. For this final case, Hausman expressed that preventing these policies from being regressive requires further research, careful consideration of context, and likely an interlocking array of policies.

Dr. Destenie Nock, Carnegie Mellon University, discussed the importance of uncovering hidden forms of energy poverty and, in light of the many forms it takes, advocated for expanding who receives energy assistance. Nock emphasized that energy burden does not give the full story and that there could be increasingly significant welfare impacts associated with an underdeveloped grid system in a context of increasing heat events. Nock highlighted that overlooking energy limiting behaviors can contribute to this underdevelopment.

Justice40 engagement and efforts to assist communities in transitioning to clean and renewable must be intentionally coordinated in relational accountability with the communities, centering their core values and goals while supporting their decision-making power. This can imply that the entire research agenda is community requested, informed, and guided. However, researchers must practice discernment when determining whether to do a participatory-action project to avoid being extractive. All co-production and collaboration on research with communities must rest on a foundation of trust and humility with acknowledgment of power dynamics and positionality. From a project’s genesis, researchers must involve not only the community but participatory-action and other experts.

Fostering interdisciplinary collaboration will require increasing opportunities like those presented at Justice40 for these conversations, supporting interdisciplinary scholars from marginalized communities, and correcting incentives in academic institutions. If energy and environmental policy does not expressly seek to address injustice, it can intensify inequity. We have much to learn about hidden forms of poverty and how best to make programs accessible to marginalized communities.

Panelists’ priority research projects include community energy planning, assessing the distributional health effects of decarbonization efforts, uncovering additional hidden forms of poverty, as well as identifying and addressing critical safety thresholds in energy access.

E. Restorative Justice in Different Research Frameworks

The panel discussed how different academic fields frame and grapple with restorative justice and how those frameworks interplay with approaches to Equitable Deep Decarbonization. Moderated by DOE Justice40 Fellow **Dr. C. Anna Spurlock** of Berkeley Lab, a particular focus was identifying frameworks that both account for the differential costs and benefits of decarbonization-related investments and address historically accumulated burdens and historical differences in baseline conditions.

Dr. Danae Hernández-Cortés, an Assistant Professor in the School for the Future of Innovation in Society and the School of Sustainability at Arizona State University, posited that causal inference is needed to understand which of the many possible causes (Banzhaf et al., 2019; Currie et al., 2021) are responsible for documented disparities, and that understanding causes is essential for devising policies that repair past harms and prevent future disparities. Once policies are devised, it is crucial to analyze the policy incidence – how the impacts of potential policies are distributed. She pointed to case studies as a way to gain insight on restorative solutions. Her work examined with high geographic granularity how different energy transition policies in the Los Angeles oil and gas sector would affect equity outcomes (Deschenes et al. 2021).

Hernández-Cortés then identified questions for further research. For documenting disparities, she flagged the questions “What are the main pollution sources and where are they located with respect to underserved communities?” and “What are the cumulative and long-run impacts of pollution exposure?” For identifying causal mechanisms, she asked “How are historical discriminatory policies shaping current disparities?” and “How does procedural justice improve environmental outcomes?” Finally, for analyzing policy incidence she suggested further studying how energy policies can exacerbate existing inequalities and the role of policy design on influencing disparities.

Shifting from the distribution of pollutants to their human impacts, **Dr. Jessica Boakye**, Lecturer in Civil Engineering at the University of Massachusetts at Amherst, presented on how to measure and quantify aspects of wellbeing to see how they will be impacted by energy transition. As a framework for defining wellbeing, Boakye proposed the capabilities approach developed by Amartya Sen and Martha Nussbaum, in which capabilities are the genuine opportunities people have to achieve valuable doings and beings (Nussbaum, 2000; Sen, 1989). Capabilities include things like being educated and being employed and can be defined as dimensions of wellbeing. To measure these capabilities, Boakye proposed indicators as proxies, such as the United Nations’ Human Development Index; to measure these indicators, she suggested scenario modeling using existing models, digital twins, and probabilistic methods. Indicators measured from existing data can be used to evaluate the effectiveness of interventions over time, while scenario modeling could be used to test possible interventions and choose one that maximizes wellbeing (as opposed to simply reductions in cost or emissions). To apply the capabilities approach to restorative justice, Boakye noted that it must – and can – accommodate group analysis even though it has traditionally focused on the individual (Stewart, 2005). This requires defining groups of interest to analyze capabilities across groups to locate attainment disparities. Several challenges for the capabilities approach are disagreements among scholars on which capabilities to select and ensuring transparency and community participation in the choice of capabilities and indicators. Another issue is uncertainty in the process and where it comes from; this can be addressed with risk analysis methods. Finally, noted Boakye, while the capabilities approach has traditionally focused on the well-being of the current generation, it must also consider future generations to advance restorative justice.

Dr. Daniel Carrión, Assistant Professor of Epidemiology at the Yale School of Public Health, continued the theme of wellbeing, focusing on achieving restorative justice through the “double mitigation” of emissions and health disparities. Carrión noted that much of the environmental health literature on justice has focused on distributive justice, resulting in few explicit frameworks for restorative justice. His research examines how the energy transition can be leveraged to counteract health disparities; in particular, it asks: to what extent can residential electrification reduce health disparities? Carrión identified several gaps in this research. Much of the research has focused on the health impacts of gas stoves (which are known to exacerbate asthma, disproportionately high among Black and Latine children), but we also need more information on those of electrifying the heating and cooling of space and water (Lebel et al., 2022). Second, the research has focused on indoor air pollution impacts of residential emissions, but more must be done to understand their ambient impacts when vented. Third, many of the studies focus on respiratory health issues (particularly asthma) (Lin et al., 2013), but we lack information on non-respiratory health outcomes of potential transitions, such as reduced heat-related mortality and improved mental health from reduced energy burdens. Finally, there is a need for common metrics across health outcomes, such as quality-adjusted life years, in order to compare interventions with different health targets. We have sufficient evidence from emissions modeling combined with exposure modeling and health impact assessments to help target transitions, said Carrión, suggesting that we add research components to the interventions already in place in order to evaluate their effectiveness.

Dr. Andrew Curley, an Assistant Professor at the University of Arizona’s School of Geography, Development, and Environment, dove deeper into what restorative solutions might look like, examining the history of extractive development within the Navajo nation and other native lands. Through overlaid maps of extractive facilities and power plants and native lands, Curley showed that tribes bear a disproportionate share of extractive development and what he called its “colonial infrastructure,” which takes resources such as energy, water, and land from tribal peoples. By studying past energy transitions, Curley observed that development came in waves: first uranium mining, then coal, now oil. With each shift, native people were left jobless while the extractive infrastructure and its legacies remained in place. Tribes don’t know whether they will ever be able to safely repurpose these lands for subsistence use, he said, arguing that the restoration of life-sustaining natural resources, lands, and legal rights over the lands (e.g. to veto project development) must be returned to native peoples to move toward restorative justice. Any future energy transitions would have to respond to the existing infrastructure and its legal underpinnings in federal and local tribal law.

F. Breakout Sessions

On the second day of the conference, there were four breakout sessions for topic-specific discussions: Labor impacts, Energy poverty, Transportation, and Place-based research. These breakout sessions had multiple expert facilitators, including agency staff. The goal of these sessions was to discuss data gaps and research priorities.

1. Labor Impacts

Facilitated by **Dr. Mijin Cha** (Asst. Professor of Urban and Environmental Policy at Occidental College), **Michael Fishman** (President of the Climate Jobs National Resource Center), **Betony Jones** (DOE Senior Advisor on Jobs and Workforce), and **Dr. Clark Miller** (Director of the Center of Energy and Society at Arizona State University), the labor impacts breakout discussion identified key knowledge gaps concerning the energy transition’s labor impacts. Speakers agreed on the need for local and regional energy transition plans to allocate resources for promoting job accessibility (e.g. training workers, driving job growth in targeted locations) and improving job quality. Fishman called for “worker by worker, community by community” planning, citing Germany’s granular [plan to transition coal-workers](#) as an example.

Speakers identified key knowledge gaps facing just transition labor planning, falling broadly into five categories:

1. Data about jobs that will be created: Statistics about the new jobs are not granular enough because they tend to be aggregate sectoral growth numbers; this does not tell us where the jobs are, what skills they require, and what their quality is in terms of pay and working conditions, noted several speakers.
2. Data about jobs that will be lost: Similarly, more granularity is needed for data on jobs that will be lost to understand the distribution of job and municipal tax revenue losses. We need to understand where displaced workers go and how far they live from their jobs, noted Cha. We must also trace job impacts beyond the fossil fuel sector, said Miller, because the loss of fossil fuel jobs ripples across the economy, from jobs at metal companies that supply fossil fuel operations to jobs in the public sector that rely on tax revenue from displaced jobs. This involves studying not only how people will respond to the transition but private and public organizations. This information will let policymakers know where to create jobs where they're being lost, which Cha identified as necessary to a just transition.
3. Skills-mapping: To direct training programs and job creation, we need more comprehensive data on the current geographical and professional distribution of skills that jobs in a transitioning economy will require.
4. Data on current renewable energy workforce: We need to know who is currently working in renewable energy jobs: generally low-paid people of color, often immigrants, who are not unionized, said Fishman. Policymakers should not focus myopically on job prospects for the relatively privileged fossil fuel workers who will lose their jobs but also for the people who never had access to those jobs, said Cha.
5. How to raise the quality of renewable energy jobs: Research can support policy levers like labor agreements and tax incentives that can raise the quality of new jobs. However, we should also note when we have enough knowledge and simply need to act, said Cha; for instance, unionizing the renewable energy workforce could raise job quality across the sector, noted Fishman.

The above information will need to be gathered in every locality, stressed Miller: it is not helpful to decision-makers for research to simply produce theoretical findings.

2. *Energy Poverty*

This discussion was led by **Dr. Dominic Bednar** from Arizona State University, **Crystal Bergemann** from HUD, **Dr. Diana Hernández** from Columbia University, and Michael Reiner from DOE. In the Energy Poverty session, participants shared their answers to a series of questions related to energy poverty, i.e., the lack of access to sustainable modern energy services and products, and energy insecurity, i.e., the inability to adequately meet household energy needs.

The participants first shared their thoughts about the most pressing issues related to energy poverty and insecurity. One of the priority issues raised was to find a widely accepted definition and solutions targeting disparities. It is also imperative to identify the root causes of the phenomenon by situation the discussion on energy poverty and insecurity in the context of historical experience. In addition, it is important to realize how the adverse consequences of energy poverty could be amplified by a changing climate. Some participants believed that the key solution to energy poverty hinges on how to address the housing, health, poverty, and employment issues in disadvantaged communities.

Participants thought that the concepts of energy poverty and insecurity aligned with Justice40 as both acknowledge disparities in energy access and the clean transition. The two concepts meanwhile differ in terms of the intersection of multiple forms of poverty involved.

Participants generally agreed that increased access to micro-level utility data and improved information transparency are the most useful methodologies for pursuing energy poverty and insecurity research via the Justice40 initiative. Meanwhile, qualitatively understanding how people have experienced energy insecurity could inform quantitative methods. In addition, community-based research and engagement are particularly helpful to explore effective housing decarbonization strategies for disadvantaged communities.

Participants also discussed the important milestones in eliminating energy poverty and achieving the goal of Justice40. These goals include guaranteed affordable energy for residential use, reduced disparities in accessing low-carbon energy homes, improved energy resilience, increased transparency in tracking federal spending targeting disadvantaged communities, and long-term policy changes around energy affordability and resilient power.

In discussing practical measures that could be taken to reduce energy poverty, participants suggested both individual engagement (e.g., renewable energy installations and energy efficiency retrofits) and government efforts (e.g., coordinated increase in funding for energy bill assistance, weatherization, and disconnection protections). In particular, agencies may consider reevaluating the eligibility criteria to improve the access to subsidy programs for disadvantaged communities.

In addition to the topics discussed above, participants showed strong interest in health disparities associated with energy inequality; communication with the public to support social movements and political actions; actions to promote equitable access to clean energy; public awareness of energy burden; and the intersection of energy equity, housing affordability, and food security.

3. *Transportation*

Moderated by **Dr. C. Anna Spurlock** of Berkeley Lab, **Dr. Torrey Lyons** of Idaho National Laboratory and DOE-DOT Joint Office of Energy and Transportation, **Dr. Monisha Shah** of National Renewable Energy Laboratory and DOE-DOT Joint Office of Energy and Transportation, and **Dr. Corey Harper** of Carnegie Mellon University, the discussion focused on the importance of considering equity in the context of the transportation energy transition.

Two major themes emerged in the breakout discussion. First, the speakers focused on the critical need to account for, correct, and certainly not repeat mistakes of the past. Past land-use and infrastructure investments, policies, and practices have created or reinforced structural inequalities still felt acutely by many communities today. Examples include redlining practices dating back to the 1920s, and the fracturing of neighborhoods and communities resulting from highway and freeway expansion resulting from the Federal Aid Highway Act of 1956. Discussants posed the question of whether we, as a society, will be able to address inequities built up for centuries through the current influx of infrastructure and decarbonization investments. Critical to this question is how progress is measured in the context of policy implementation and infrastructure planning analyses and evaluation. It is not uncommon to observe cases where there is a trade-off between aggregate economic outcome metrics, like gross national product (GDP), and decarbonization. And while there may be cases where decarbonization investments could potentially disproportionately benefit historically disadvantaged communities, it is also the case that policymakers often face tradeoffs between decarbonization and equity. It is critical to consider a wide range of well-being metrics beyond traditional economic indicators such as monetary costs when considering how we assess and measure the outcomes of different policies or investments. How can we think about economic well-being in a way that represents more people around the country? Can a sufficiently careful accounting of these diverse tradeoffs and outcomes really be accomplished in the timeframe for current transportation decarbonization investments currently coming down the pipeline?

The second theme focused on the role of the privately owned vehicle in the context of U.S. transportation system decarbonization. In the current federal policy landscape, private vehicle electrification tends to be the face of a decarbonized future. However, this is a case where the current thrust of transportation decarbonization policy may stand at odds with considerations of equity. It was noted that many community-based voices, especially in urban environments, have tended to voice concern about the degree of investment focused on private vehicle electrification at the expense of investments in potentially more equitable and accessible alternatives, such as public transportation. However, historically, investment in public transportation infrastructure has not been a priority in the U.S. compared to many other countries where it is often difficult to even own a car in urban areas. The cultural and political context in the U.S. has reinforced investment in private resources, such as accommodation of private vehicle ownership, instead of collective public resources. However, in many U.S. cities around 50% of trips are only between zero and three miles in length. With a continued lack of will to sufficiently invest in public transportation, what role can transportation innovations such as shared micromobility have in reducing vehicle miles traveled associated with these types of trips? Replacing even a fifth of the car-based trips falling in this distance range with another form of transportation would significantly reduce transportation sector emissions. However, it was pointed out that in contrast to the urban setting where micromobility or public transportation might be more viable alternatives, in rural settings solutions must account for the specific nature and diversity of challenges and needs in these environments. Indeed, it was noted that many current models and tools designed to assess alternatives with respect to system design, policy design, or infrastructure investment planning are developed for urban settings and there is a dearth of tools to adequately assess solutions for rural environments.

4. *Place-Based Research*

Moderated by **Dr. Alyse Taylor-Anyikire** of DOE's Office of Policy, **Dr. Tianna Bruno** of the University of Texas at Austin, and **Dr. Gabriel Chan** of the University of Minnesota, the discussion focused on how to conduct place-based research to advance Justice40. For the participants in the place-based breakout session, the foundation of place-based research is made up of mutually trusting relationships between communities and researchers. It centers community situation, knowledge, and goals. Research agendas are formed in collaboration with and responsibility to the community with clear consideration for power differentials and intersectional issues.

When conducting place-based research, session participants emphasized that researchers must be cognizant of power dynamics between agency and academic communities but also between members within communities. When engaging with community members, in addition to suggesting that researchers build naturally from existing networks and relationships with community members, participants emphasized that researchers must ask critical questions like, "Who has access to participation?" and "Are there voices that are being silenced?" "Does this individual have any incentives to act out of alignment with the highest good for this community?"

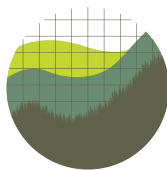
To improve participation accessibility, many in the breakout session advocated for compensating individuals fairly for their time. Several reiterated that researchers must make every effort to engage with individuals who are trusted by the community and are fluent not only in the spoken but the cultural language of the community. DOE representatives shared that they work to combat language barriers by translating materials.

To help sustain benefits from Justice40 interventions after a project has concluded, session participants discussed the importance of the Department of Energy making benefits resilient to administration change and community capacity building. Capacity building efforts discussed include workforce development programs, an influx of funds at the beginning of an effort to help a community undertake the project, improving the ability of community members to access education that allows them to sustain it, and flexibility of agency-provided analytical tools to fit the unique goals of each community.

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