Exh. JES-4
Docket UE-210795
Witness: Jennifer E. Snyder

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of **PUGET SOUND ENERGY** **Clean Energy Implementation Plan Pursuant to WAC 480-100-640**	**DOCKET UE-210795**

EXHIBIT TO
TESTIMONY OF

JENNIFER E. SNYDER

STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

Energy Equity Project Report

October 10, 2022

SEAS SCHOOL FOR ENVIRONMENT AND SUSTAINABILITY
UNIVERSITY OF MICHIGAN

Energy Equity Project Report

2022

Energy Equity Project Report

Contents

Energy Equity Project Framework Report, v1.0

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Join us at the Energy Equity Hive on Slack

INTENDED USAGE

The Energy Equity Project Framework (EEP Framework, "the Framework") is an open source document available at no cost to the general public. All of its contents may be freely used and shared for non-commercial purposes.

When referencing the document or a concept, idea, or other content that is drawn specifically from the Framework in printed or static website materials, please attribute the work as detailed in the suggested citations. Informally, as in blogs, social media posts, and video interviews, we appreciate a shoutout, too.

The framework is a holistic guide to measuring and advancing energy equity. Our goal is that the framework is used to directly benefit Black, Brown, Native, frontline, and low-income communities. If your purpose in using the framework conflicts with these goals, we kindly ask you to reconsider.

The framework has numerous potential uses, which we discuss in detail in the EEP Overview chapter.

This work was made possible by the generous support of:

Energy Foundation

Joyce Foundation

Crown Family Philanthropies

Suggested citation:
Energy Equity Project, 2022. "Energy Equity Framework: Combining data and qualitative approaches to ensure equity in the energy transition." University of Michigan – School for Environment and Sustainability (SEAS).

Acknowledgments and Authorship

DEDICATION

The Energy Equity Project is dedicated to all people who have been systemically excluded from the benefits of clean energy and saddled with the burdens of an unjust energy system. We stand in solidarity with leaders who have stood up for energy justice—first and foremost from grassroots organizations in frontline communities—but also with outspoken advocates within government, academia, non-profits, and energy providers.

LAND ACKNOWLEDGMENT

No words can sufficiently acknowledge what Indigenous peoples across North America have endured from White European colonizers. Indigenous peoples have faced genocide, massacres, forced relocations and death marches, land theft and despoilment, and residential boarding schools that sought to "kill the Indian to save the man."

Words alone do little to bring justice. And yet, they are a necessary starting point. All of our "non-Indigenous" partners and colleagues occupy unceded lands that are the ancestral and contemporaneous homes of Indigenous peoples. The University of Michigan was founded in 1817 from a supposed gift of 1,900 acres of land by the Anishinaabeg and the Three Fires Confederacy of the Potawatomi (Bodéwadmi/Bodowadomi), Ottawa (Odawa) and Chippewa (Ojibwe/Ojibwa). Its founding came with the promise of free education for their children, which was never fulfilled. University of Michigan also occupies land that belonged to the Burt Lake Band in Northern Michigan, which was taken in 1900 and the homes of 19 families were systemically burned.[1]

We call for recognition of crimes against Indigenous people that have happened continuously throughout colonial history in North America. These acknowledgments must be the beginning of real remedies that repatriate land, compensate to the greatest degree possible for the immeasurable losses and suffering caused by European colonizers, and invest in a future in which Indigenous history, sovereignty, culture, and material wellbeing are deeply honored and uplifted.

[1] For more about the University of Michigan's complicity in abuses of Native peoples, please see: https://healingmnstories.wordpress.com/2019/03/09/burt-lake-burnout-a-story-of-land-theft-and-indigenous-perseverance/

ACKNOWLEDGMENTS

We thank the hundreds of colleagues and listening session participants who have contributed their time and feedback and posed critical questions, all of which have sharpened the focus of the Framework. In particular, this framework would not have been possible without the extensive contributions of the 45 Workgroup Members, who stuck with an intense and at times evolving process over seven months.

The six lead authors in particular demonstrated extraordinary leadership in convening and motivating their teams, bringing different personalities and stakeholder perspectives toward consensus, and synthesizing a web of inputs into something seamless and usable. We extend our deepest gratitude to Aditi Bansal, Moah Christensen, Lamisa Chowdhury, Pamela Fann, Anna McCreery, Shahed Shafazand, and Akiya Simms.

Many others were influential in our understanding of the task at hand: Mark Orlowski, Suzanne Russo, Ariel Drehobl, Julie Michals, Julia Eagles, Isaac Sevier and the team at the Initiative for Energy Justice.

EEP was sharpened in many ways by additional contributors. The folks at Earthrise and Shift7: in particular Dan Hammer, Mason Grimshaw, Susan Alzner, Megan Smith, were instrumental in taking our vision and our data and turning it into the EEP map.

A University of Michigan stats team comprised of Dr. Michael Craig and graduate students An Pham, Claire McKenna, Kent Ratliff, Michael Storch, Pam Wildstein, Srihari Sundar, and Larson Lovdal were instrumental in working with our data sets and proposing a methodology for creating equity scores for each census tract. We are grateful for the many hours they invested in this project.

EEP would not exist without the vision and leadership of Dr. Tony Reames. From creating the Urban Energy Justice Lab at University of Michigan to advocating for an energy equity track at the 2018 ACEEE Summer Session and securing funding for developing and launching the project, Dr. Reames has been a leading thinker, convener, and champion for energy justice broadly and for EEP in particular. He is the heartbeat of this work.

EEP was the vision of its founding advisors, who invested the time to secure funding, write white papers that envisioned the project's future, and supported the project through its launch. Thank you Michael Colgrove, Marti Frank, Emily Levin, Jamal Lewis, Carlos Martín, and Elizabeth Palchak for bringing this to life.

EEP began under the wing of Dr. Tony Reames, professor and founder of the Urban Energy Justice Lab at University of Michigan's School for Environment and Sustainability (SEAS). Dr. Reames took the baton at a critical time, nurturing EEP into fruition before stepping up to serve the Biden Administration and passing the reins of Principal Investigator to Dr. Kyle Whyte. Dr. Whyte has been an outspoken advocate for the project and taken the lead on securing resources, facilitating sessions, supporting communications and thought leadership, and being a deeply engaged champion for the work.

To the team at SEAS: Dean Overpeck, Carole Love, Lori Atherton, Scott Culver, and the many others who provided ongoing administrative, financial, and communications support: thank you for making EEP a success.

And finally, a special thank you to our funders:

Oregon Energy Trust

Energy Foundation

Joyce Foundation

Crown Family Philanthropies

You made this collaborative work possible.

AUTHORSHIP

The framework was collaboratively written by members of the EEP workgroups. Workgroup members, their affiliations and roles (lead author, contributing author, or advisor) are listed below. Author contributions are as individuals and do not necessarily represent the positions of their organizational affiliations.

Some additional people participated on workgroups but either were unable to continue or were not comfortable being included in the authors list. We thank them for their contributions.

The introductory materials and EEP chapter were written by EEP Project Manager Justin Schott, who also served as the editor of the framework. The content of each of the workgroup chapters are the research, ideas, and framing of the workgroup members with limited edits for clarity and consistency.

SUGGESTED CITATIONS

Suggested citation: Energy Equity Project, 2022. "Energy Equity Framework: Combining data and qualitative approaches to ensure equity in the energy transition." *University of Michigan – School for Environment and Sustainability (SEAS).*

Individual chapters on the equity dimensions may also be cited:

1. Fann, Pamela (lead author), Das, Runa; Drehobl, Ariel; Green, Shelby; Harris, Garry; Lee, Maddie; Russo, Suzanne; Schwartz, Suzanne and Tillman, Gayla;, 2022. "Recognition Equity – Principles, Metrics, Qualitative Approaches and Best Practices." In *Energy Equity Project Framework,* University of Michigan.

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Executive Summary

To bolster a just transition to cleaner, more resilient energy systems, the Energy Equity Project (EEP) developed the first standardized national framework for comprehensively measuring and advancing energy equity. The Energy Equity Project (EEP) is a collaborative initiative housed at University of Michigan's School for Environment and Sustainability and supported by more than 40 authors and advisors who represent community grassroots organizations, non-profits, research institutions, regulatory agencies, utilities and independent energy consultants.

Energy equity recognizes the historical and cumulative burdens of the energy system borne by frontline and low-income communities and by Black, Brown and Native people in particular. To eliminate these disparities, energy equity centers the voices of frontline communities in energy planning and decision-making and ensures the fair distribution of clean energy benefits and ownership.

"We intentionally took a human-centered approach, acknowledging the inequitable impacts that past and current processes have on communities, and collaboratively imagined pathways towards deep systems change and energy democracy. The data, and lack thereof, tells an unsettling story—we simply do not have a history of inclusive, equity-centered processes in the energy space. Communities of color have continued to be harmed by and excluded from energy decision-making processes, and categorically denied the benefits of energy programs and investments."

LAMISA CHOWDHURY, LEAD AUTHOR – PROCEDURAL WORKGROUP

For decades, Black, Indigenous, and People of Color (BIPOC), frontline and low-income communities have borne the brunt of the negative impacts of the energy system while receiving a negligible slice of benefits from the clean energy transition. With the EEP Framework, we are both illuminating these inequities and establishing a process for reversing them. The ability to define guiding principles and adopt a range of quantitative metrics and qualitative best practices is essential for tackling the numerous energy inequities that persist. With dozens of states considering equity in energy policy and planning and trillions of dollars in new federal infrastructure and climate investments, the EEP Framework arrives at a critical moment that will affect frontline communities for decades.

We can hope for the day when energy equity is the norm, but until then, this Framework to Measure and Advance Energy Equity is a powerful tool for accountability and ensuring measurable progress.

New Contributions of the EEP Framework

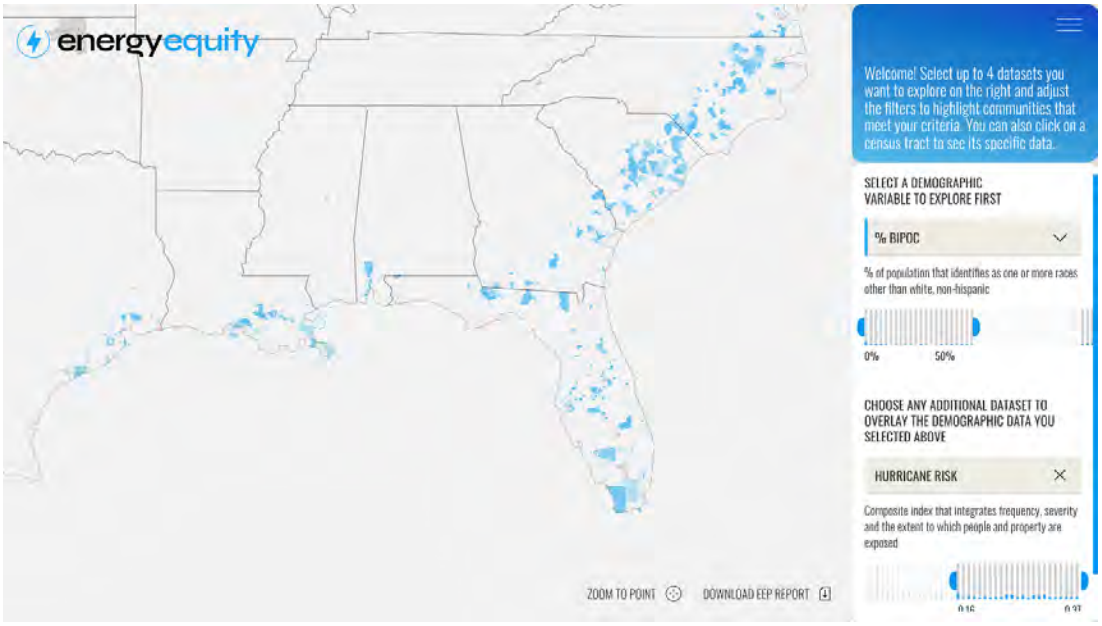
EEP builds on the longtime contributions of energy justice leaders and frontline environmental justice communities by synthesizing existing resources and compiling dozens of data sets and best practices. Over 15 months, EEP developed two foundational resources:

1) Framework for Measuring and Advancing Energy Equity (this document)
2) Energy Equity Interactive Map (access the map from www.energyequityproject.com)

Designed to be accessible for the public, these two complementary, open-source resources fill critical gaps in efforts to advance energy equity.

New contributions of the Framework to Measure and Advance Energy Equity:

- **Makes a bold case for energy equity** and what energy equity requires (EEP Overview chapter). This chapter provides detailed context and objectives for creating the framework, and a summary of the equity dimensions, sub-dimensions and associated metrics (p.15.) A guide to getting started (pp.16–22) includes equity prompts and considerations for different audiences and templates for creating an energy equity plan.
- **Describes guiding principles** for each of the four dimensions of energy equity (Recognition, Procedural, Distributional and Restorative chapters).
- **Assesses 148 potential energy equity measures** in depth—the status of data, whether they should be included as a quantitative metric or qualitative best practice, and a collection of resources and case studies for implementation. Each chapter aims to help users adopt a particular set of metrics and best practice to address local energy equity needs.
  1. **A highly transparent, collaborative process.** The Origins of EEP (pp.23–28) and the appendices tell the story of the 15-month EEP effort. Readers will find how each measure was scored by workgroups, community engagement summaries, and a conceptual framework by the University of Michigan statistics team for developing a standardized energy equity score.



A snapshot of the Energy Equity Interactive Map. This image identifies census tracts that are majority BIPOC (Black, Indigenous, and other People of Color) and face high risk from hurricane impacts. With no prior knowledge or expertise, users of the interactive map can choose any combination of EEP datasets and use sliders to easily filter by criteria that are important to their communities.

New Contributions of the Energy Equity Interactive Map:

- **Compiles 26 national, census-tract level data sets.** Some of the data may be familiar, but this compilation is unique to energy equity.
- **Enables users to explore the intersection of two data sets.** For instance, users can identify neighborhoods that both face a risk of hurricanes or heat waves and have a high proportion of older adults who live alone and are particularly vulnerable.
- **Encourages customization.** Behind the scenes, the Earthrise-Shift7 team of developers built a site that can be accessed by novice coders and tailored to community needs. The data and platform can be replicated and new local data sets can be added to supplement the baseline provided by the Energy Equity Project.

Applications of the EEP Framework for Different Audiences:

Frontline communities: Use data to communicate their lived experiences, advocate for remedies that protect against future harms and disparities, and effectively engage in formal planning and decision-making processes.

Government agencies: Track the benefits of their investments and prioritize communities that have historically been excluded from clean energy benefits.

Philanthropists: Support capacity-building of frontline community organizations. Invest in rectifying energy equity data gaps that government, regulators, and utilities do not address.

Policymakers: Define energy equity and frontline communities in statute and set a requirement that new investments and benefits prioritize these communities and measurably reverse existing disparities and inequities.

Regulators: Define energy equity metrics and targets for utility energy efficiency and integrated resource plans. Increase data transparency and make formal proceedings more accessible.

Researchers and practitioners: Review priority data gaps and develop approaches to collect, report, and mobilize new data.

Utilities: Track energy equity impacts among different groups of customers, improve customer engagement, promote distributional equity through workforce investments and community ownership of distributed renewables and storage, and invest in programs that address the root causes of energy poverty and insecurity.

With a massive transition to clean energy underway, the Framework to Measure and Advance Equity is primed for immediate adoption by government agencies, community organizations, regulators and utilities. We hope that widespread adoption will lead to a host of equitable policies, programs, and institutional structures. Most importantly, we hope it enables frontline communities to advance their visions of an equitable energy future.

FEATURES OF THE FRAMEWORK:

- Quantitative, comparative scores by Census Tract for nationally available datasets.
- Guidance on how to approach qualitative data.
- Guidance for best practices that represent outputs or strategies for advancing equity but are not themselves measurable outcomes.

FEATURES OF FUTURE VERSIONS:

- Addition of new and updated national datasets as they become available.
- Platform for accepting and hosting user-provided data, including state and local data.
- Creation of quantitative, user generated scales to assess qualitative elements. For instance, users might create a dataset by rating a utility or government agency on how effectively they engage frontline communities in climate planning and implementation.

AN INVITATION:

Work with The Framework and receive technical support from EEP

Tools like the EEP Framework are only valuable to the extent they meet the needs of users and empower them to meet their own goals. EEP staff are seeking interested users to partner with and explore how the Framework can be useful and where improvements can be made. We seek to work with potential partners such as:

- Grassroots BIPOC and frontline organizations that are organizing a campaign to promote policies that enable community-owned solar
- Public utility commissions that are tasked with implementing legislation that requires the creation of energy equity metrics or indicators

EEP technical support is primarily available for non-profit and public sector partners at this time. We will consider partnering with for-profit entities that align with the EEP vision and values on a fee-for-service basis and as EEP staff capacity allows.

Contact us: energyequityproject@umich.edu

In every moment lies an opportunity to advance energy equity.

Historically, the energy system has consistently (though not exclusively) been a source of inequities. The present inequities that accrued over many decades will grow and persist without actions to actually reverse inequities. The energy savings from energy efficiency, solar, and electric vehicles, for instance, continue to provide financial returns and generate wealth for those households, disproportionately white and higher income, that were able to take advantage of special government and utility incentives that were mostly not accessible to people of color and lower incomes.

Reversing energy inequities is possible at any time, provided there is a willingness to shift the underlying structures.

THE PURPOSE OF THE ENERGY EQUITY FRAMEWORK

- **To shift and expand how we think about equity.**
  - *Equity is a journey, not a destination.* In recognition of this, we try to use verbs and phrases like advancing equity, achieving greater (but not ultimate) equity, and more (but not perfectly) equitable.
  - *Equity is complex and multi-dimensional.* We organize our thinking and representation of equity into four dimensions, but there are related frameworks that use different language (e.g. structural instead of recognition) or different concepts, like intergenerational equity. Considering multiple dimensions of equity is important to ward off tendencies like reducing equity to a handful of key metrics. An equity goal to ensure no household faces an energy burden above 6% of income is laudable, but is just one consideration of *distributional equity* that must be considered alongside procedural elements, historical discrimination, and opportunities for marginalized households and communities to own the means of clean energy production and distribution in the future.
  - *Exemplary performance in one dimension while other dimensions lag is not a vision of equity.* What good is a body that is muscular if the heart is not also strong? How can someone live in a community with abundant clean air and affordable housing but no water to drink? What use is a high end bicycle if it doesn't have a seat, or handlebars, or pedals? In these cases, as in equity, most people would prefer to have something usable then to have the gold standard in some areas while being totally deficient in others. Equity is about lifting all boats, starting with those that have been ignored and shunned to the greatest degree. Defining equity is a multi-dimensional journey reminds us to work on all types of equity together, focusing on our greatest deficiencies first.

- **Equity in, equity out.** This parallels familiar adages like "you reap what you sow" and, framed negatively, "garbage in, garbage out." We don't believe it is possible to deeply embrace and advance equity without working to root out inequities internally. This kind of equity work has been developed by organizations focused on anti-racism or racial justice, anti-oppression, combating white supremacy culture, and decolonization. The number of new circumstances where equity concerns will arise is nearly infinite. The EEP Framework speaks to the most well-known and commonly encountered equity issues—like unaffordable energy burdens or the need to have materials available in multiple languages. But ultimately, we believe the strongest, most durable form of energy equity is when agencies, organizations, and individual staff have embraced equity and can apply it to a variety of new situations.

  What does it mean to embrace equity internally? It means adopting guiding principles that can be applied to any activity or situation, especially those that are not anticipated. It means asking the right set of questions and understanding that all dimensions of equity must be considered together. Embracing equity means shifting our focus from particular projects, policies, and dockets to the everyday and mundane: our ongoing relationships with community organizations, how we prioritize and structure our own work.

  Embracing equity will permeate recruiting, hiring, and job promotion practices, salaries and benefits, training and formal job responsibilities, organizational culture that rejects the norms of white supremacy, performance goals and expectations, transparent reporting, relationships with each other and community, and accountability structures to stakeholders we engage with and impact. Recommendations for how to embed and practice equity internally are too broad for a full examination here but is discussed in greater detail in the Procedural chapter. Additional resources are included in the Appendix.

- **To urge immediate action.**

  "But there is no neutrality in the racism struggle…One either allows racial inequities to persevere, as a racist, or confronts racial inequities, as an antiracist. There is not in between safe space of 'not racist.' The claim of 'not racist' neutrality is a mask for racism."

  DR. IBRAM X. KENDI, *HOW TO BE AN ANTIRACIST*

  Every day our actions and decisions have equity implications. As Dr. Kendi astutely notes, there is no such thing as sitting on the sidelines—either we are part of the solution, or, even if we are "neutral", we are complicit in the perpetuation of the problem, which is the status quo. In the case of racial justice, Kendi's primary focus, our actions are either actively advancing justice—they are anti-racist—or they are enabling the continuation of racism. Even if most people would not consider an action to be actively racist, it doesn't take a policy that blatantly discriminates to disproportionately impact people of a certain race. This is apparent in the justice system, for instance, which purports to have "colorblind" approaches but because of implicit and explicit bias, these are disproportionately punitive toward Black, Brown, and Native people.

  In recognition that we cannot suspend judgment or be bystanders without advancing inequity, the Framework advises that equity be considered in all decisions and actions of the energy system immediately. This doesn't mean that those decisions

and actions should move so quickly that they exclude people, water down important engagement processes, or make rash decisions. Our efforts still need to be inclusive, and thoughtful and, as adrienne maree brown says, to move at the speed of trust.[2]

But what does not make sense is to delay the process. If we know a decision is mandated by law before our ideal process is in place or before we have all of the datasets we desire, we still need to employ the most equitable processes and tools available to us in the moment, even when they are imperfect. We should always be striving to do more, and we cannot revert to inaction or not considering equity at all. Something thoughtful and somewhat inclusive is better than the default of no consideration for equity at all, provided it is not the endpoint. We need to step forward holistically and in good faith today, knowing that equity is iterative and we can continue to do better tomorrow, the next day, and all the days after that. This is what makes the practice of internal equity so vital—we are called on not just at specific moments like designing a new clean energy program or enacting policy, but to continuously improve how equity is embodied in all our relationships and all of our work.

- **To offer an adaptable process for advancing equity.** No single organization or decision-making body has control over all aspects of energy equity. All organizations and agencies connected to the energy system, however, do have opportunities to advance energy equity, beginning with their own internal HR and data reporting processes. Because advancing energy equity is not linear, the Framework is intentional in offering multiple approaches—quantitative and qualitative, regulatory and policy, near-term and long-term—for advancing equity where the needs and the opportunities are greatest.

- **To propose an agenda for collectively measuring and advancing energy equity.** Throughout our extensive research and collaborative development of the Framework, we often found ourselves wishing: "Wouldn't it be great if…." or "I really wish there was a data set that represented…." We asked these questions of ourselves and colleagues across our personal and professional networks. Sometimes we learned that in fact the data or best practice we were seeking already existed, but more often these pursuits confirmed where there were gaps. Creating a list of priority data gaps and proposing processes for collecting and transparently reporting this data, both quantitative and qualitative, became an important purpose of the Framework.

EEP is Grounded in an Intersectional Struggle for Justice

Too often, the origin stories of marginalized groups have been under- and mis-represented or erased entirely. There is little recognition that all of the Americas were occupied before the arrival of European colonizers, that we still occupy lands that were taken by force or coercion. Our narratives of the energy system rarely include mention that the language and culture of Native children was something colonizers literally tried to beat out of them in Indian boarding schools.[3] Monuments to those who fought for the institution of slavery still stand, although thankfully some have already been taken down. The histories that are taught to our children in public schools are still predominantly presented through a lens of white supremacy, although again, thankfully, this is changing, slowly and in pockets. The erasure and caricatures of Black people, Indigenous people, other People of Color, women and non-binary people, LGBTQ+ people, the disabled, the poor—all of these are stains that must be uncovered and brought into full light.

If this seems extraneous or tangential to a framework about energy equity, it is our small acknowledgement that our work does not and cannot stand in isolation from other movements, other struggles for justice. Efforts to divide and isolate movements and sever their inherent intersectionality weaken each individual movement, as none can advance apart from their independence on others. The principles of EEP's our Restorative Equity dimension call on us to consider our place, first within the full web of justice (racial, social, environmental, economic) and then within our smallest sphere of the energy justice and equity peers and initiatives.

The Roots of Energy Equity

The EEP Framework is one page among an intelligent, diverse, and beautiful volume of contributions. The emergence of energy equity, more commonly referred to as energy justice, is only about a decade old, although struggles not linked to that term have been ongoing for many decades. Energy justice traces its roots in the environmental justice movement, which in turn traces its roots in the civil rights movement and connects to a host of other struggles for social justice. Today, this recognition of intersectionality is increasingly common, readily apparent in statements like "Climate justice is racial justice" and "Indigenous justice is environmental justice".

[2] "Move at the speed of trust" is one the core principles of adrienne maree brown's *Emergent Strategy* (2017). Tiago Forte provides a nice summary here: https://fortelabs.co/blog/emergent-strategy-organizing-for-social-justice/

[3] See Bureau of Indian Affairs, May 2022. Federal Indian Boarding School Initiative Investigative Report. Retrieved June 1, 2022 from: https://www.bia.gov/sites/default/files/dup/inline-files/bsi_investigative_report_may_2022_508.pdf

WHAT TO EXPECT IN THE ENERGY EQUITY FRAMEWORK

- **An effort to consider and represent equity holistically** in the context of energy systems and efforts to combat climate change.
- **A series of high-level guiding principles** that establish the rationale for assessing and establishing goals for certain elements of equity
- **The framework distinguishes between three elements:**
  - quantitative data,
  - qualitative data,
  - best practices, which are output measures that affect both qualitative and quantitative outcomes (e.g. providing documents, marketing materials and interpretive services to serve non-native English speakers)
- **Multi-dimensional**, considering four pillars of energy justice: recognition (aka structural), procedural, distributional, and restorative and a total of 11 sub-dimensions. *A summary view of the EEP dimensions is available here.*
- **A compilation of energy equity best practices**, including measurement tools, community engagement and procedural processes, program design, policies and communications
- **An extensive source of resources** and organizations and individuals leading on energy equity and justice
- **A combination of national data sets** by census tract, which are visualized on the EEP Map. In all, EEP workgroups scored, assessed, and categorized 148 potential energy equity measures. The map enables users to compare multiple variables and filter by user-selected criteria.
- **An analysis of priority data gaps** and limitations of existing data

NOTE: EEP's data and back-end coding can be publicly accessed below:

Google Colab | Github | EEP Summary of Metrics

To explore the EEP Map, visit
www.energyequityproject.com

- **A tool for establishing state and local equity metrics and targets.** The Framework can serve as a starting point. We also offer guiding principles for each dimension to help users establish a "true north" prior to assessing and selecting metrics.
- **Iterative.** The beta version has established our process for creating and updating the Framework, a platform for data reporting and visualization, and . Future versions will attempt to fill high priority data gaps and to integrate feedback from groups that work with the Framework to advance their state and local energy equity initiatives.

The Framework is not:

- **A one-size-fits all approach** to energy equity (we believe that sentence is an oxymoron)
- **A target or check box** for equitable energy and climate initiatives. While the framework suggests considerations for equitable program design and delivery, it is not intended to offer passing or failing grades or for a particular entity to claim that its activities or goals are sufficiently equitable
- **A universal scorecard** (though we offer quantitative metrics that users can use to assess their local energy equity shortcomings, needs, and progress)
- **A universal set of equity targets** (though we suggest approaches to setting local targets)
- **A substitute for deep, authentic, inclusive community-led** planning, decision-making, and implementation
- **For partial or selective application.** An organization or agency that performs well in three dimensions of equity but dismally in the fourth is not performing equitable overall. The framework should not be used to demonstrate equitable practices in one of the dimensions in order to ignore or counteract shortcomings in another
- **An end point;** achieving a certain score is only valuable to the extent that it aligns with community-driven priorities. Equity is not a goal to be accomplished, but an on-going pursuit that continues to assess and reduce disparate benefits and burdens between populations, unequal access and power in design and decision-making processes, rectifies past inequities, and ensures that community standards for holistic well-being are honored and protected
- **Restricted for use** by a particular audience
- **A source of blame for energy inequities**—we emphasize historical context, accountability and reparations *for the purpose of advancing future remedies* that are sufficient to address past harms and disparities.[4]

[4] As we discuss in the Restorative Equity chapter, accountability and reparations are critical considerations to meaningfully advance equity and remedy historical disparities and marginalization. The framework encourages documenting and telling the story of these historical legacies and integrating them when considering the scope and scale of future investments. Energy equity is absolutely concerned with accountability; we offer best practices for addressing inequities primarily to inform present and future investments and programming, rather than to ascribe blame or suggest approaches to justice to address historical wrongs.

Figure 1. Final EEP Framework Structure – 4 dimensions and 12 sub-dimensions

DIMENSION	INDEX	DESCRIPTION	SAMPLE METRICS
RECOGNITION	Historical	Captures historic disinvestment, discrimination, disenfranchisement, and environmental justice burdens that continue to impact present circumstances.	· Proportionate disparities in historic program spending and savings by race, income · Historic presence of toxic facilities/superfund sites/cancer clusters · Anti-equity/anti-clean energy lobbying expenditures · Redlining and housing discrimination
	Identity	Captures demographic, social-economic, and geographic variables that are closely correlated with energy and climate vulnerability and disproportionately high burdens and low benefits from the energy system.	· Climate vulnerability score · Housing access/stress · Demographics · Pollution burden · Health measures (e.g. asthma rates) · Economic indicators (e.g. % HH below 50% AMI)
	Security	Captures data that indicate how continuously, safely, and reliably one has access to energy without interruption or compromising other basic needs or comfort.	· Power outage frequency and disparities · Shutoffs/shutoff policies · Arrearages · Energy as human right declarations
	Affordability	Considers rate structures, payment plans, financial assistance, household financial benefits from clean energy programs, and disparities in energy costs among different demographic groups.	· Presence of progressive/lifeline rate structures · Maximum limits on energy burdens · Rate disparities between residential, commercial, industrial · Size of overall safety net (per capita) · % of safety net spent on longterm afforability, vs bill assistance
PROCEDURAL	Procedural	To what extent are BIPOC, frontline, and low-income residents able to engage in PUC cases, decarbonization planning, and have a meaningful voice in how plan and policies are created and designed. To what extent are they the architects of their energy future?	· Presence/extent of intervenor funding and resources · PUC commissioner selection process and representation · Mandatory equity training for PUC (and utility?) staff · Data disclosure requirements · Utility performance incentives and penalties tied to equity targets
	Access	How easy is it for people to learn about, qualify for, and enroll in programs?	· Multi-lingual ads, program materials, enrollment, and participation · Marketing representing and to BIPOC, frontline audiences · Disparities in participation rates · Financing availability and eligibility requirements · Access for renters · Auto- and co-enrollments, ease of enrollment
DISTRIBUTIVE	Household benefits	Captures immediate financial and health benefits that participating households receive.	· Proportion of high impact programs received by BIPOC, LI, frontline households · % BIPOC households achieving >25% energy savings · Reduction in unhealthy/unsafe housing conditions among BIPOC; improved indoor air quality · Reductions in negative health conditions among BIPOC
	Community benefits	Captures medium- and long-term community level or indirect benefits including health, wealth-building, jobs, and environment.	· % of new jobs held by BIPOC, frontline, low-income · % of work for BIPOC-owned businesses; supportive policies · Wages and job quality for BIPOC, disparities · Reduction in heat islands, localized flooding · Improved outdoor air quality · Community health outcomes
RESTORATIVE	Reparations & Accountability	How do we liberate data and ensure transparency? How do we rectify and compensate for past harms and ensure they are not perpetuated in the future? How do we ensure that all dimensions of equity are considered holistically, with no dimensions ignored?	
	Power to the People	Who owns clean energy and receives the economic and environmental benefits? How do governance structures benefit or harm frontline communities? Who designs the systems? Who are the ultimate decision-makers?	
	Indigenous Sovereignty	How can a just transition promote visibility, healing, and a different relationship with energy? How are we connecting Indigenous justice and environmental justice and elevating the landback movement? How can clean energy and climate programs respect and honor Indigenous Sovereignty and traditional knowledge? How can we ensure that we are not perpetuating the language and practices of colonizers and move beyond a capitalist mindset? How do we measure/evaluate progress towards Indigenous Sovereignty in the realm of energy and climate?	
	Restoring Our Relations	How are we protecting and restoring ecosystems holistically and not merely transferring impacts to far away sacrifice zones? How can we shift our language and cultural practices to recognize non-human kin? How do we recognize and uplift the right of other species and ecosystems to exist? How can we ensure a habitable planet for future generations?	

GETTING STARTED

Creating an energy equity plan:

1. **Review equity prompts** – these foster a mindset for how each group of actors can advance equity. Participating in equity training is another valuable pathway for focusing on the process of creating and energy equity plan.

2. **Map a robust process of co-creation (a.k.a. community engagement) with frontline communities** – the opportunities for community engagement should be clear and transparent from the beginning, rather than being invited to weigh in after the initial process is already established. Organizers of equity initiatives should consider how and when frontline communities can have maximum voice and influence throughout the process. This will entail considering how much authentic power, decision-making, and design ability frontline communities have at each stage and how it can be increased toward the far right end of "The Spectrum" or a similar community engagement framework.[5]

3. **Define equity dimensions** – co-creators do not need to create their own unique definitions for each of the four dimensions; straight adoptions or minor adaptations of existing definitions are perfectly fine. Definitions are intended to create shared understanding and language, to guide the development of equity targets and best practices.

4. **Co-create principles for each dimension** – guiding principles establish an equity initiative's true north. By qualitatively describing what equity should look like, these principles anchor potential equity targets to a shared vision. Once established, guiding principles help assess questions about equity targets and measurement:
   - Is this target or program budget sufficient to meet our guiding principle that all households can access the benefits of energy efficiency?
   - Have we really heard from all frontline communities, including Tribal communities, about how they would like the program to operate?
   - How long will it take the current program to correct the historical disparities that have accumulated since the inception of the program? Is this an adequate pace of change?
   - The four EEP workgroups each begin their chapter with a discussion of guiding principles which can serve as models.

5. **Set equity targets** – some examples include: 1) Reducing the number of households spending more than 10% of their income on energy by 50% each year and eliminating energy burdens above 10% within 7 years, 2) Increasing the number of frontline community organizations that participate in PUC proceedings each year and providing financial resources (aka intervenor compensation) for each community organization.

6. **Establish metrics needed for accountability** – to determine whether an equity target has been achieved.

7. **Develop a process for collecting and transparently reporting data** – in developing the process, the following questions should be addressed:
   - What data already exists and where are the gaps?
   - Who will hold and share the data?
   - What protections are in place to protect data and personal identities?
   - What format and timing is needed to collect the data?
   - What resources are needed—staff time, funding, server capacity, etc.?

8. **Establish best practices and use of qualitative data** – qualitative data is generated by subjective assessment. For instance, a rating scale may be developed to determine the extent to which PUC meetings are inclusive and accessible.

9. **Define roles and responsibilities for implementation** – once a comprehensive energy equity plan is in place, it should provide clear guidance for how the plan will be implemented and progress will be assessed and communicated. Each stakeholder needs clarity on their roles in the process.

[5] Movement Strategy, 2021. https://movementstrategy.org/wp-content/uploads/2021/08/The-Spectrum-of-Community-Engagement-to-Ownership.pdf

Equity prompts for different audiences:

Frontline communities:

- What guiding principles do we want to see established in the energy system?
- What is the extent of energy inequities we face? What data is available to help us quantify these inequities? How can we compliment this data with the stories of our lived experiences?
- What are the structural issues in the energy system (financial, regulatory, policy) that have and continue to contribute to these inequities? How would we remediate them?
- Power mapping – who are making energy decisions that impact us? What specific powers do they have and what maintains those forms of power? What levers do we have to intervene?
- What tools, tactics, and narratives would inspire our community members to action?

- What do we want from people in power? What are our asks? If we must start somewhere, what are our highest priorities?

RECOMMENDED RESOURCE:

- Rivera et al, 2021. A People's History of Utilities. The Energy Democracy Project

Regulators:

- What does our mandate say about our ability to advance energy equity? Where do we have opportunities to center equity in our interpretation of statutes, policies, and rules? If some would argue we "go too far" to advance energy equity, what are the likely and potential consequences of our actions? How can we minimize the risks?
- How can we make our work more transparent and accessible to people who have traditionally been excluded from regulatory processes? How are we providing accessible opportunities to learn how the process works?
- How are we practicing equity internally? Consider hiring and promotion processes, tracking and reporting staff demographics, representation of staff leadership, mandatory equity trainings and integrating equity in job responsibilities and performance evaluations. How are we communicating these efforts publicly?
- How are we supporting people with the full array of resources they need to meaningfully and effectively engage in our processes and proceedings?
- How are we valuing local forms of knowledge, such that the lived experiences of community have equal or greater weight to technical arguments presented by experts?
- How can we proactively deepen authentic relationships with frontline communities so that we are already in dialogue when there is an opportunity to collaboratively engage in program design and decision-making?
- How can we move more of our proceedings along "The Spectrum" of Engagement, so that frontline communities are more often in roles of decision-making and co-creation rather than merely being informed of having feedback sought after the fact?
- What examples of moral and political courage can we draw on when facing pressure to act in ways that negatively impact energy equity? What arguments have our peers made successfully to defend energy equity?

Program administrators, including utilities and utility contractors:

- What are the end goals (outcomes) of the program? How do those align with principles of equity?
- How are we measuring progress toward these goals? Do we need to collect additional data or collect it in a different way?
- Why is this program designed the way that it is? How did it come to be that way?
- Who is the intended audience and who is actually participating?
- How have participant interests, needs, backgrounds, and concerns shaped the program?
- How are members of the impacted communities involved in implementing the program (e.g. program managers, outreach and technical staff, etc)?
- Are there sufficient program slots or resources to meet the demand and achieve the end goal (consider waiting lists, time needed to serve all clients, etc.)?
- What level of investment is needed to reverse cumulative energy inequities accrued over many years?

Considerations by equity dimension for specific audiences:

AUDIENCE	RECOGNITION CONSIDERATIONS	PROCEDURAL CONSIDERATIONS	DISTRIBUTIONAL CONSIDERATIONS	RESTORATIVE CONSIDERATIONS
Frontline communities	Data gaps, undercounts/ underrepresentation, misrepresentation of local realities	Understanding of complex regulatory processes; resources, partners and expertise to engage effectively	Workforce development and clean energy business benefits, health, energy savings, wealth creation, climate resilience	Defining and communicating a vision of an equitable energy and climate future that centers frontline communities
Non-profits and researchers	Authentic, non-extractive relationships with frontline communities	Decisions made by or with frontline community, not for them; making space for narratives and qualitative data; reaching groups that have historically not participated due to access or trust issues	Documenting actual vs "deemed" savings; measuring and accounting for non-energy benefits	Advocating for durable, longterm solutions that address deep structural issues vs. band-aid solutions that do not address systemic or root causes; addressing lack of internal equity and representation
Regulators and government agencies	Community definitions; documenting historical legacies on the record; staff and commissioner representation	On-going engagement; decision-making and co-creation; informal opportunities to participate; range of supports and compensation to participate	Use of most inclusive societal cost tests; support for decentralized and cooperatively owned and managed systems; establishing mandatory targets for specific benefits (energy savings, jobs and wages)	Ensuring basic human rights and needs/ protecting human health and well-being; considering historical legacies and cumulative impacts; precautionary approach to infrastructure investment
Philanthropists	Representation of frontline communities among grantee staff, leadership, and boards	Accessibility of the grant application process; sufficient payoff for time required to apply; offering meaningful feedback and supporting organizations time to apply (e.g. capacity-building benefits for non-grantees); transparent reporting	Documenting recipients and beneficiaries and increasing funding to frontline communities; plugging gaps	Equity in endowments; community decision-making power; being an ally/aligning with frontline communities in advocacy work
Policy-makers	Community definitions and prioritization methodologies	Meeting with frontline communities	Mandating equitable targets for investments and benefits with strong implementation and accountability	Exceeding the proportionality/Justice40 standard
Utilities and contractors	Tracking and prioritization beyond income factors; outreach to most vulnerable, historically impacted, and underrepresented communities	Transparency and public data reporting; community led program design and evaluation; abstaining from lobbying and campaigns against the interests of frontline communities	Coordinating with and leveraging multiple service providers; maximizing investment in deep retrofits and lasting benefits; measuring and minimizing disparities; mechanisms to enable participation by all; affordability structures (e.g. percentage of income payment plans, on-bill financing)	Supporting community ownership; lifting caps on participation; holistically and deeply valuing resilience and distributed generation benefits to the grid

For the **distributional and procedural dimensions**, we recommend starting with a small subset of metrics and best practices for each dimension. The subset should be small enough for real progress to be made and that progress can be concisely communicated without losing people in a sea of action items.

The measures should be selected through an inclusive process in which members of BIPOC, frontline and low-income communities are leading or co-leading the selection. For each measure selected, there should be a clear tie back to the guiding principles and a definition of what success looks like. This definition

GETTING STARTED WITH METRICS

A first objective of the framework was to catalogue the status of potential metrics to be used at a census tract level, nationally. From an initial compilation of 148, we pared down to 80 that our workgroup members deemed valuable. But for metrics to be meaningful and guide energy equity work, there must be a much smaller number that are consistently evaluated and reported in each community.

Recognition: As with other screening tools, these metrics are useful for identifying communities that have been harmed by the energy system and deserve a larger share of benefits and investments in the future. While we did not include a final index of these variables that would result in a single score for recognition equity, the 23 recognition data sets that were included in the map can be used in this way. Users of the framework can choose to select and weight a subset of these metrics to identify and prioritize specific, historically marginalized and vulnerable communities.

Recognition variables offer descriptive data about different neighborhoods and communities. Because changes in the energy system will typically have limited impact on recognition metrics, at least in the near-term. For instance, energy efficiency retrofits and electrification may improve indoor air quality and ultimately reduce asthma among an entire population, but this will take time to observe. Radical changes in the energy system that enhance affordability and wealth generation opportunities can reduce evictions and unemployment, but the energy system is just one of dozens of societal factors to consider.

Most often, we are interested in combining recognition data with distributional data. Are there disparities in energy burden and program participation? Which specific populations are benefitting and which are burdened? How can we use census tract level data to target the most vulnerable households for participation in clean energy programs?

TAKEAWAY: SELECTING ENERGY EQUITY MEASURES

- **Select a feasible initial set of 3–7 distributional and procedural measures:**
  - How well do the proposed metrics align with priorities of historically marginalized communities? Members of these communities should have an opportunity to shape the metric selection process and decision-making.
  - Start with data that is readily available. You can always add complexity or consider more advanced measures in the future.
  - Simplify whenever possible. Think about why you are considering a measure and how this reflects your guiding principles.
- **Make a plan for measurement:**
  - What specifically needs to be tracked and reported?
  - How will the data be collected and analyzed? At what geographic resolution and how often? Who is responsible?
  - Which recognition variables (e.g. race, income, home occupancy status) are being considered to look at population disparities?
- **Establish a baseline and set targets:**
  - Ensure targets are specific in defining outcomes (whether qualitative or quantitative) and timeframes
  - Targets can be applied to different communities. For instance, the goal of the percentage of renters with high energy burdens may be different from the goal for households in single-family homes or mobile homes. Be specific.
- **Share the results transparently.**
  - How will these assessments be made accessible and communicated to the public? Focus on simple visuals that tell a story about how progress is being made toward an equitable energy system.

could be a quantitative target or qualitative: changes in how programs are designed, outreach is conducted, or participation in PUC dockets is enabled, for instance.

For measures that are not selected but are still considered meaningful by frontline communities, their underlying concepts and purpose can still be incorporated in planning and decision-making. If a state-wide equity plan does not decide to formally measure disparities in shutoff rates by race, for instance, it can still address the overarching concern by improving its outreach of energy efficiency and affordable payment plans to BIPOC communities and examine whether there are differences in energy savings or spending in majority BIPOC census tracts.

Below, we identify potential measure selections for the procedural and distributional dimensions, from core or baseline measures to intermediate and more advanced selections, based on the write ups of the workgroups. We note that in most cases, these measures are not exclusive. For instance, both energy burden by census tract (distributional core measure #2) can be complimented by making percentage of income payment plans available (advanced measure #2).

These tables are not intended to be used to rank one locale above another for their equity measurement efforts. Furthermore, what one locale finds easy to measure and report (core level) another may find to be of intermediate or advanced difficulty, depending on available data and existing data collection and analysis procedures.

NOTE: The suggested lists of measures below include both quantitative metrics and qualitative best practices or rating scales. This list is a set of measures to assess, but does not aim to set goals or targets, which are best established by local stakeholders. In other words, even if the current state of performance in the measures below is far from the goal, selecting measures at this stage is simply about identifying which outcomes are most important to track and report.

Sample Distributional Metrics Selection

CORE	INTERMEDIATE	ADVANCED
Exceeding the E3b metric – spending	Exceeding the E3b metric – savings	Exceeding E3b at the program level
Average energy burden by census tract	Energy burden disparities among BIPOC, low-income and frontline communities	Percentage of income payment plans and/ or arrearage management plans
Disparity in energy savings	% frontline participants achieving substantial energy savings (>20%)	Time to serve all frontline households with significant retrofits
% Contracts awarded to frontline-owned businesses	% jobs to individuals from frontline communities	% total economic benefits (including wages, wealth generation) to priority communities
Reductions in asthma or respiratory distress	Indoor air quality improvements	Climate and resilience benefits to frontline communities

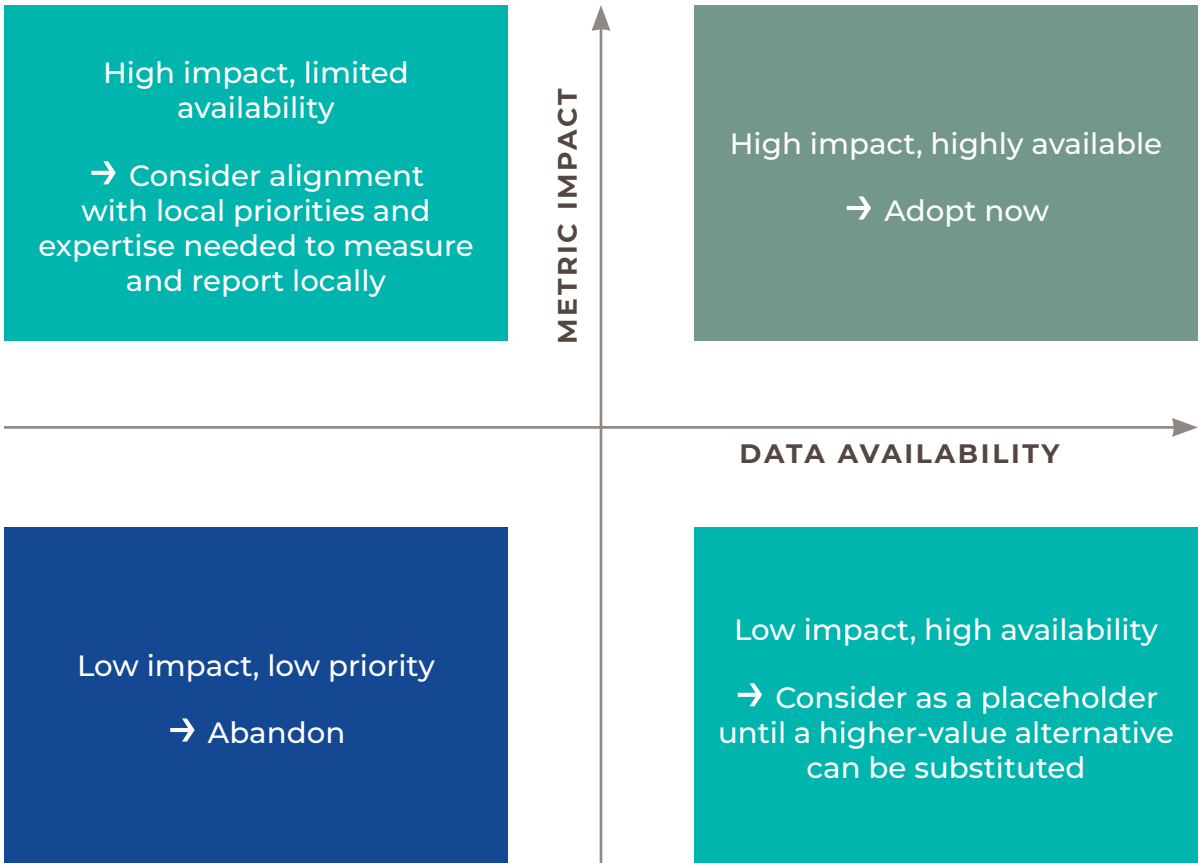
Sample Procedural Measure Selection

CORE	INTERMEDIATE	ADVANCED
Ease of access to participate	Marketing materials are culturally appropriate and in multiple languages	Access for renters
Stated energy equity principles and goals	Regulatory disclosures	Utility disclosures and reporting
PUC commissioner/ decision-maker representation	Regulatory agency/utility/ contractor mandatory equity training/internal practice of equity/ diversity reporting requirements	Utility penalties for failing to hit equity targets in clean energy plans and program commitments
Financing access	Funding for home repair	Access for renters

Implementing the principles of **restorative justice** require a more qualitative approach. Restorative equity, which aims to remedy past harms from the energy system and prevent future harms from occurring, holistically considers whether each of the other three dimensions has been sufficiently addressed. For the restorative dimension, we recommend focusing on a series of questions, such as:

- How is the energy system honoring and not honoring the Native peoples of this land?
- Who holds the power to shape the energy system and its impacts? How can we shift power so that frontline communities have greater self-determination of their energy future?
- How will we acknowledge and reconcile harms that have been inflicted on certain people and communities in the past? What is needed to make them whole and repair harm done? How do those historically marginalized and impacted communities want past injustices to be addressed?
- What systems will we put in place to protect frontline communities from future harm and hold entities that have been responsible for past harms accountable?
- Are we thinking holistically about equity? Are there loopholes or equity dimensions that lag? How are we thinking about our actions and decisions today in relation to the needs of human and non-human kin seven generations into the future?

Approach to Metric Impact vs Availability



Ideally, many of the measures selected in an energy equity plan will be both high impact and highly available.

Template for proposing measures for each dimension:

ENERGY EQUITY DIMENSION	CORE MEASURES	INTERMEDIATE MEASURES	ADVANCED MEASURES
Recognition			
Procedural			
Distributional			
Restorative			

Use this chart to identify a few metrics or best practices for each equity dimension. Core measures should be ones that are achievable you are 100% committed to. Intermediate measures represent stretch goals, and advanced measures are longterm aspirations or increasing community ownership of solar and storage.

A proposed process and template for establishing the basic details of an energy equity plan:

PLAN ELEMENT	STAKEHOLDERS INVOLVED	TIME TO DEVELOP	LENGTH AND FORMAT	ANTICIPATED BENEFITS	PITFALLS TO WATCH FOR
Review equity prompts					
Map a robust process of engagement					
Define equity dimensions					
Co-create equity principles					
Set equity targets					
Establish accountability measures					
Develop a process for collecting and reporting data					
Establish roles and responsibilities for implementation					
Establish evaluation practices					

Origins of EEP

DEVELOPING THE EEP FRAMEWORK

The Energy Equity Project was originally conceived following a special equity session at ACEEE's Summer Session in 2018. With initial funding from Energy Trust of Oregon, founding advisors[5] came together to develop the vision for the project, wrote three white papers that defined key considerations and models of assessment frameworks both within and outside the energy sector. Dr. Tony Reames agreed to host the project at University of Michigan and secured initial funding from Energy Foundation and Joyce Foundation. One full-time project manager and two part-time graduate students were hired in spring 2021, and the project publicly launched that May. 215 people attended two kickoff sessions.

From the white papers by the founding advisors and early research by EEP staff, EEP developed a guiding vision for the framework and assessed how this fit within the existing landscape of energy equity and justice metrics and tools. The team identified specific gaps that the framework might fill, namely that it could compile data sets to provide census-tract level energy equity scores, much like Department of Energy's (DOE's) Low-income Energy Affordability Tool (LEAD) Tool offers an interactive map to explore energy burdens.

OUTREACH & ENGAGEMENT

One of the earliest and most important decisions was that the framework would not be agnostic—its explicit aim would be to drive meaningful benefits to Black, Indigenous, and People of Color (BIPOC), frontline, and low-income communities. EEP would pursue a robust and defensible methodology for developing the framework, ensuring that collaborative stakeholder engagement was central to the process.

EEP spent the summer of 2021 building relationships with energy equity and justice leaders through dozens of 1-to-1 meetings, by participating in a series of events and workgroups (e.g. ACEEE's Leading with Equity Initiative and Institute for Market Transformation's (IMT) Utility Regulatory Transformation Advisory Group). We convened 9 sector-specific listening sessions to solicit feedback on our proposed equity

Figure 1. Examples of tools to measure and advance energy equity that existed prior to EEP.

SCORECARD/TOOL	ORGANIZATION	DETAIL
Justice in 100 Scorecard	Initiative for Energy Justice	User-assessed rating scale for state 100% clean energy laws (not regulation), focusing on process, restoration, decision-making, benefits, and access.
Justice in 100 Metrics	Initiative for Energy Justice	Review of utility actions and equity indicators for energy access and affordability, procedural justice and democracy, economic participation and community ownership, and health and environmental impacts.
State Energy Scorecards	ACEEE	A mix of objective and user-scored metrics on state energy policies and performance.
Utility Scorecards	ACEEE	A mix of objective and user-scored metrics on utility energy investments and performance.
Community Energy Scorecard	Institute for Local Self Reliance	An assessment of state-level policies that enable or restrict community ownership of clean energy.
Electric Co-Op Scorecards (Southeastern U.S.)	Energy Justice Y'All	A ratings-based assessment of cooperative utility governance and operating practices.
Utility Disconnection Protections	Indiana University Energy Justice Lab	State-level of tabulation of 16 shutoff protection measures.
California Energy Equity Indicators	California Public Utilities Commission	Series of metrics adopted for evaluating energy equity and redistributing CA cap and trade funds. A mix of objective and user-scored metrics on energy.

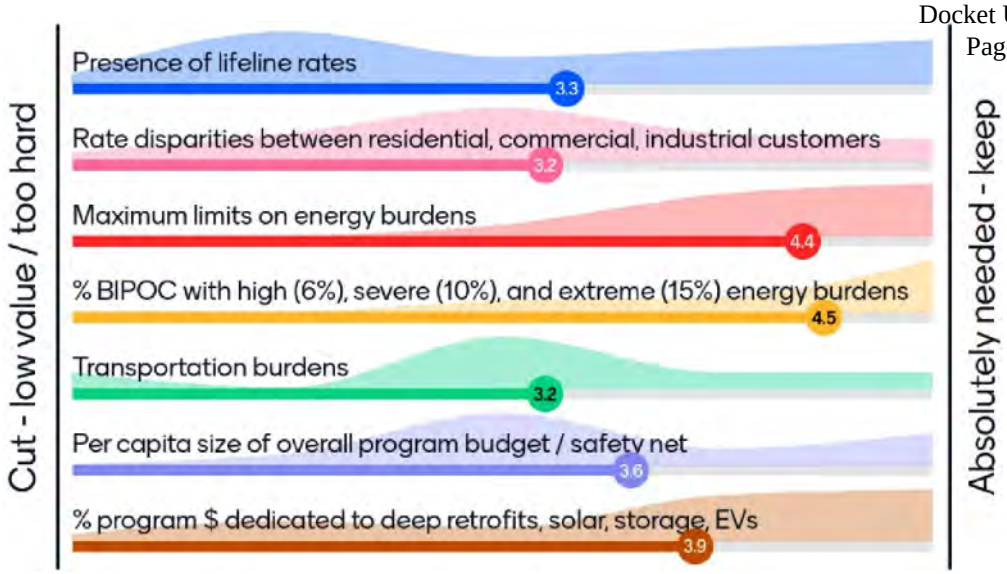


Figure 2. Example of live polling results from an EEP listening session.

dimensions, sub-dimensions, and individual metrics. Listening sessions included both live polling and lively discussion. The listening session feedback was maintained confidentially; an extensive summary that included both narrative feedback and rating scores of metrics and indices, by stakeholder type, was shared with the workgroups; highlights of the listening sessions can be found in the Appendix.

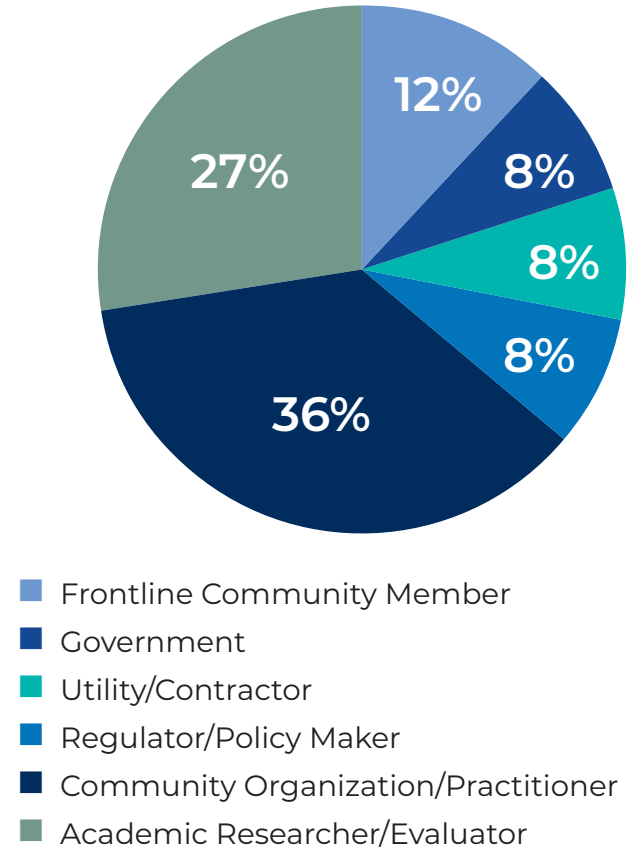
EEP WORKGROUPS

After completing summer listening sessions, EEP requested nominations for workgroups: one aligned to each of the four dimensions of energy equity. Prospective members identified their expertise, preferred workgroup and workgroup role: lead author, contributing author, or reviewer. 50 workgroup members were initially selected; 43 completed the framework development process with EEP. Workgroup members received a stipend based on their role and expected time commitment:

Advisors:	**12–15 hours, $625**
Contributing authors:	**30–40 hours, $1,250**
Lead authors:	**60+ hours, $2,000**

EEP offered workgroup members an opportunity to request an alternate, equitable stipend, which ranged from $0 (a full, pay it forward donation to future EEP participants) to twice their original stipend, based on personal need. About ⅓ of workgroup members participated in this alternative structure, with many foregoing stipends which in turn were leveraged to compensate participants in a future listening session that was convened to hear from Indigenous leaders across the U.S. and Canada in February, 2022.

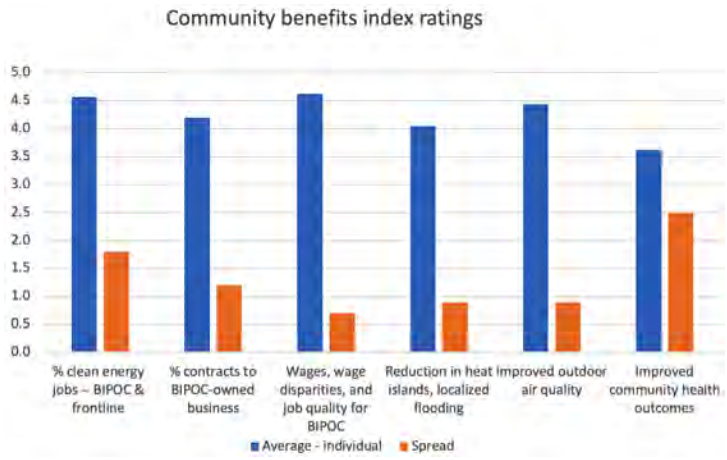
Figure 3. Composition of EEP Workgroups.



COMMUNITY BENEFITS INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	5
Practitioner	6
Utility	11*
Regulator	
Philanthropy	

* Utilities did not rate wage disparities.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
% clean energy jobs — BIPOC & frontline	4.6	4.1	3.2	5.0	1.8
% contracts to BIPOC-owned business	4.2	3.8	3.0	4.2	1.2
Wages, wage disparities, and job quality for BIPOC	4.6	4.7	4.3	5.0	0.7
Reduction in heat islands, localized flooding	4.0	4.2	3.7	4.6	0.9
Improved outdoor air quality	4.4	4.2	3.7	4.6	0.9
Improved community health outcomes	3.6	4.0	2.5	5.0	2.5

Community Benefits Index – Discussion

Highlights:

Economic benefits and improved community health benefits rate highly among most stakeholder groups (although averages were lowered by utility ratings, which was a common theme).

Key Questions & Staff Reflections:

Achieving greater equity in health and economic benefits has traction in many places, including from some utility partners. Diverse coalitions with interests including labor, civil rights, environmental justice, and other constituencies have advocated for their inclusion in program design. And yet, for some metrics (e.g. EJSCREEN pollution scores), there are major disparities by race and income. Because these metrics are affected by factors outside of any one agency's control, regulators and utilities may understand their value but be reluctant to take responsibility for achieving better outcomes.

If the Community Benefits Index identifies inequities, how should those be addressed by different stakeholders? As a starting point, they may be used for identifying disadvantaged communities and targeting program investments. But there may be more nuanced, stakeholder specific guidance. If a community action agency notes a household is located within an urban heat island and has numerous heat vulnerability factors, what agencies and organizations does it need to coordinate with to reduce the risk of heat illness and mortality? A local non-profit might be available to plant shade trees; if the household did not have air conditioning it might be prioritized to participate in an air source heat pump program, which would also provide cooling. The layers of action that might emerge from this index will require significant thought and guidance.

On another note, it is unclear where data for many of these metrics would live. Are these held by state agencies? Are there universal metrics we can identify or will this require more user input?

EQUITY DIMENSION	MEASUREMENT SUMMARY	FUTURE NEEDS AND APPROACHES
RECOGNITION	Extensive data availability for demographic sub-dimension, especially through U.S. Census and American Community Survey datasets.	i) Develop historical dimension to: a) Measure cumulative disparities in benefits and burdens when possible (e.g. receipt of financial incentives). b) Suggest a process for integrating narratives of historical concerns into equity assessment. ii) Secure energy insecurity data for every census tract. Shutoff data is already held by utilities but infrequently disclosed.
PROCEDURAL	Numerous best practices have been identified in guides and reports, but almost none are measured quantitatively.	i) Create quantitative rating scales to assess qualitative performance in procedural and program access sub-dimensions.
DISTRIBUTIONAL	A limited number of national data sets exist; some of these are state-wide scores that need to be applied.	i) Pursue priority data gaps in affordability, household benefits (e.g. energy savings by race, health benefits) and community benefits (e.g. job creation and quality.)
RESTORATIVE	Primary approach is qualitative best practices; majority does not lend itself to quantitative measurement.	i) Develop an overarching process for setting standards in the other three dimensions that must be met from a restorative perspective. ii) Continue to hone conceptual development of sub-dimensions and identify applications specific to the energy system. iii) Compile and develop new resources that promote holistic consideration of restorative equity in energy planning, programming and decision-making.

In reality, most workgroup members invested significantly more time than the projected amount, as EEP staff significantly underestimated the number and frequency of workgroup meetings that were necessary to develop guiding principles of their equity dimension, review and select metrics, and coordinate a collective writing process.

Bringing people together from different sectors proved challenging and tensions arose during the workgroups orientation meeting in October. There were questions about whether the existence of investor-owned utilities (IOUs) could be compatible with the goals of increasing community ownership and sovereignty of energy generation, for instance. We used Google Jamboard to collectively brainstorm norms and expectations, ranging from non-negotiable (necessary practices for someone to commit to be a part of EEP) to “no fear”, which we prompted with: “let’s embrace a radical understanding of equity and challenge the status quo.” While we did not officially adopt a particular set of norms, we compiled an extensive document to foster a shared understanding of EEP values (see Appendix A) and provide a basis for consensus-based decision making and writing. The document also indicated specific tensions that workgroups had to navigate, a task that was taken on primarily by lead authors. Although the spirit of workgroup meetings was mostly collaborative, in hindsight, we received feedback that devoting more time initially to formally defining core values, workgroup member expectations, and governance structures would have been valuable.

The elements of the framework process that were clearly mapped from the beginning were more

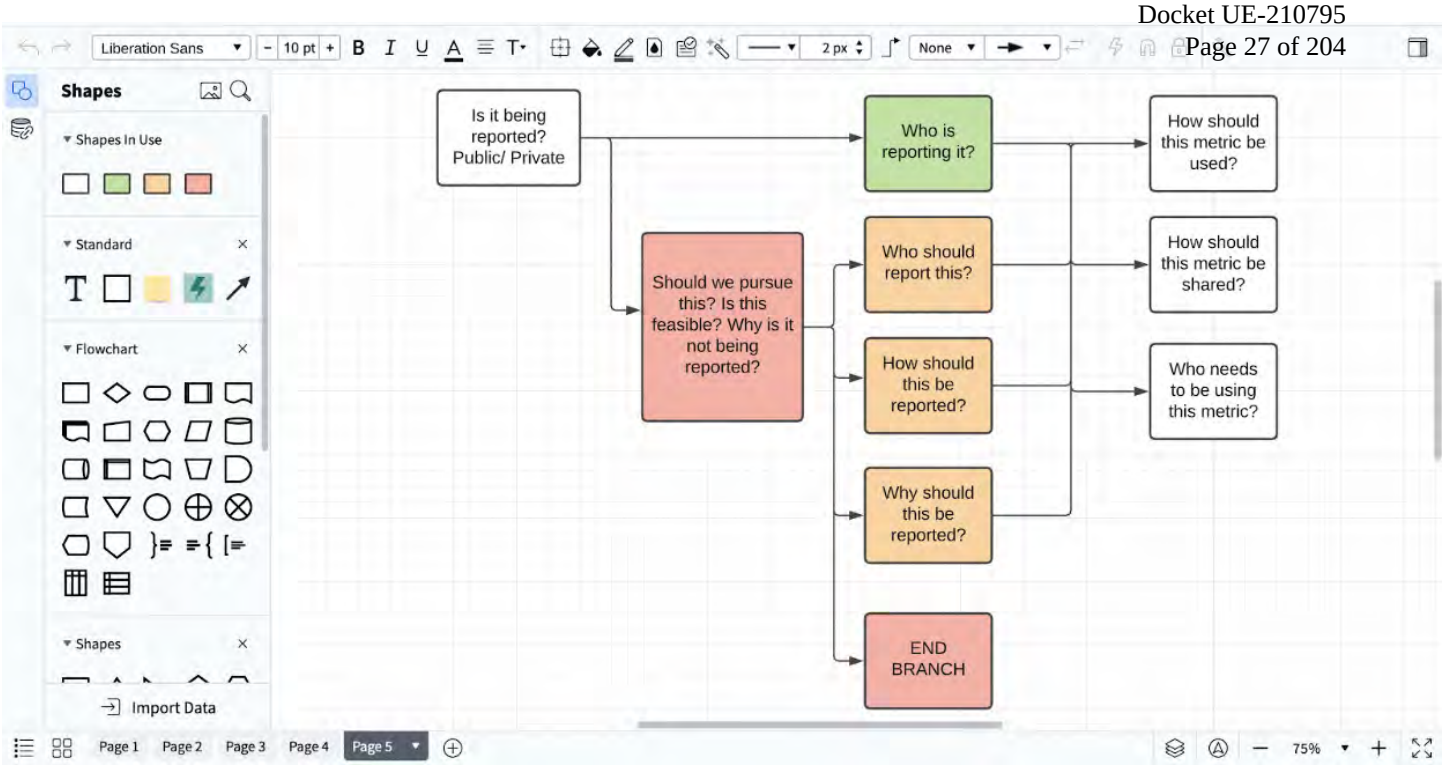


Figure 4. Flowchart workgroups received for how to assess proposed energy equity measures.

successful than those that evolved over the course of the work. Workgroups needed to invest sufficient time in reaching a holistic, shared understanding and language of their particular dimension before they could achieve consensus about guiding principles, which quantitative metrics and qualitative best practices to recommend. Time to explore existing resources and scholarship and to muddle forward to the particular contribution for EEP required 3–5 meetings, instead of the 1–2 EEP staff budgeted.

WHAT WE FOUND

Initially, with inspiration from other census-tract level data maps like the Opportunity Atlas and DOE's Low-Income Energy Affordability Database (LEAD) Tool, we envisioned creating a similar visualization. We had proposed nine different sub-dimensions, or indices; for each we hoped a unique score could be generated for each census tract, based on available metrics and user-selected weighting of those metrics. We had

Figure 5. Final catalogue of proposed energy equity measures.

Dimension	Total # Proposed Metrics	Included	Priority Data Gap	Desire to Create Rating	Shift to Best Practice	Unlimited Coverage or Unreliable Data	No Potential, Not Requested, Abandoned
Recognition	55	26	10	0	9	4	6
Procedural	40	0	1	8	10	5	16
Distributional	47	3	5	0	6	8	25
Restorative	6	0	0	0	2	4	0
TOTALS	**148**	**29**	**16**	**8**	**27**	**21**	**47**

	Metric	Included Status	Dimension	Sub Dimension	Resolution	Workgroup Initial Rating
4	Defining "disadvantaged" / target populations	Included	Recognition	Identity	State	5.00
5	Relative poverty (% of AMI)	Included	Recognition	Identity	Census Tract	5.00
6	Age of housing (affects efficiency and exposure to toxics)	Included	Recognition	Identity	Census Tract	5.00
8	disconnections disproportionately impacting BIPOC	X - priority data gap	Recognition	Security	Census Tract	5.00
9	disconnection suspensions during extreme circumstances	Secured - late additior	Recognition	Security	State	5.00
4	# of disconnections	X - priority data gap	Recognition	Security	Census Tract	4.86
5	Change in air quality in BIPOC-F-LI communities.	X - priority data gap	Distributional	Community E	Census Tract	4.80
6	% BIPOC	Included	Recognition	Identity	Census Tract	4.78
7	Deep poverty rate	Included	Recognition	Identity	Census Tract	4.78
2	Energy burden disparities	Included	Distributional	Household B	Census Tract	4.75
4	% renters	Included	Recognition	Identity	Census Tract	4.67
5	Trend in disconnections	X - priority data gap	Recognition	Security	Census Tract	4.63
6	outages (frequency, duration, restoration time) disproportionately affecting FL-LI-BIPOC	Included	Recognition	Security	Census Tract	4.57
7	Poverty rate	Included	Recognition	Identity	Census Tract	4.56
8	Housing burden	Included	Recognition	Identity	Census Tract	4.56
0	disconnections policies protecting vulnerable populations	Secured - late additior	Recognition	Security	State	4.50
1	Ease of restoration	X - priority data gap	Recognition	Security	State	4.50
4	% contracts awarded to BIPOC-F-LI-owned businesses	X - priority data gap	Distributional	Community E	State	4.45
5	Climate vulnerability - heat exposure	X - priority data gap	Recognition	Identity	Census Tract	4.44
6	Incarceration rate	Included	Recognition	Identity	Census Tract	4.44
7	Educational attainment	Included	Recognition	Identity	Census Tract	4.44
8	Air quality	X - priority data gap	Recognition	Identity	Census Tract	4.44
2	access for renters	X - priority data gap	Procedural	Access	Utility Service	4.44

Figure 6. Assessment tool used by EEP workgroups to score and evaluate equity measures.

envisioned 5-7 metrics would represent each of the 9 indices (~50 total), and scores could be tracked over time and compared to national averages.

Our final framework diverged considerably from this original vision. Ultimately, we found that we did not have sufficient data to represent the new indices as intended, with the exception of a demographic index under recognition, which primarily relies on well-known variables from the U.S. Census. A smattering of datasets infrequently used in EJ screening tools adds value to the beta version of the framework. These include monthly eviction rates,[6] median income of households installing rooftop solar,[7] the home energy affordability gap,[8] Community Power Scorecard,[9] and average energy savings per low-income household by investor-owned utilities.[10] In all, 26 national datasets were included at the census tract level.

[6] Eviction Lab
[7] Lawrence Berkeley National Lab
[8] Sheehan, Fisher and Colton
[9] Institute for Local Self-Reliance
[10] ACEEE

CLOSING INSIGHTS ABOUT ENERGY EQUITY

In this section, we offer some broad thoughts for those who work in the energy system or are working to advance energy equity. These insights are intended to invite framework users to develop a lens for thinking about and evaluating energy equity. The insights should prompt questions and focus readers on frequent issues and tensions that arise. This is a guest blog post written by Justin Schott in April, 2022 and graciously published by Pecan Street.

WHEN IT COMES TO ENERGY AND EQUITY, METRICS AREN'T ENOUGH

GUEST BLOG by Justin Schott, Project Manager of the Energy Equity Project at the Urban Energy Justice Lab
The University of Michigan School for Environment & Sustainability

Note: *Justin Schott is project manager for the Energy Equity Project at the Urban Energy Justice Lab in the School for Environment & Sustainability. EEP was founded by Dr. Tony Reames and is working to create a standardized framework for equity measurement, reporting, and tracking that drives clean energy investment and impact for Black, Indigenous and People of Color (BIPOC) and frontline communities.*

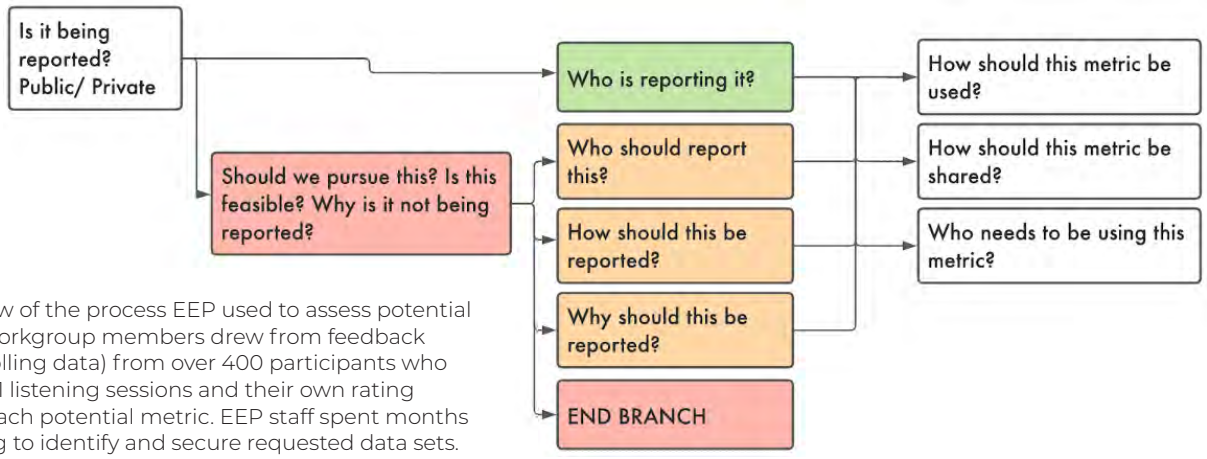
Energy justice is now a requirement for acceptance of federal funds, such as the infrastructure bill, and part of the standard formula for awards by at least 21 agencies. Requirements are proliferating at the state and even the municipal level, too, and various players are tracking these developments, including The New School's Tishman Environment and Design Center, Illume Advising, and a collaboration between E9 Insight and Yale's Center for Business and the Environment.

On one hand, this rapid shift to quantitatively define and measure equity is what many have been working toward—it is a victory we need to celebrate. No longer can an agency or a utility simply say it cares about equity or will "work closely with community partners." Having measurable equity requirements gives mandates teeth and supplants the potential for equity washing with measurable accountability.

But measurement alone is only part of the journey, and in isolation, it may even be dangerous. In a post last year, Meredith Fowlie wrote "What gets measured will get managed. And possibly manipulated."

Last May, the Energy Equity Project set out to create a national framework for measuring and advancing equity in clean energy programs and investments. Working with 45 energy equity leaders across a range of disciplines, from grassroots environmental justice advocates to regulators and utility staff, we identified a universe of 148 potential energy equity metrics. Our goal was to evaluate the value of each metric across four dimensions of equity:

- Recognition – Who is vulnerable, who is privileged, and how?
- Procedural – Who is at the table and what voice and power do they have in influencing planning, decision making, and implementation?
- Distributional – Who bears the brunt of the burdens, and who benefits, and how?
- Restorative – How can we rectify past injustices caused by the energy system and prevent future harms?



An overview of the process EEP used to assess potential metrics. Workgroup members drew from feedback (e.g. live polling data) from over 400 participants who attended 11 listening sessions and their own rating scores of each potential metric. EEP staff spent months attempting to identify and secure requested data sets.

Dimension	Total # Proposed Metrics	Included	Priority Data Gap	Desire to Create Rating	Shift to Best Practice	Unlimited Coverage or Unreliable Data	No Potential, Not Requested, Abandoned
Recognition	55	26	10	0	9	4	6
Procedural	40	0	1	8	10	5	16
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TOTALS	**148**	**29**	**16**	**8**	**27**	**21**	**47**

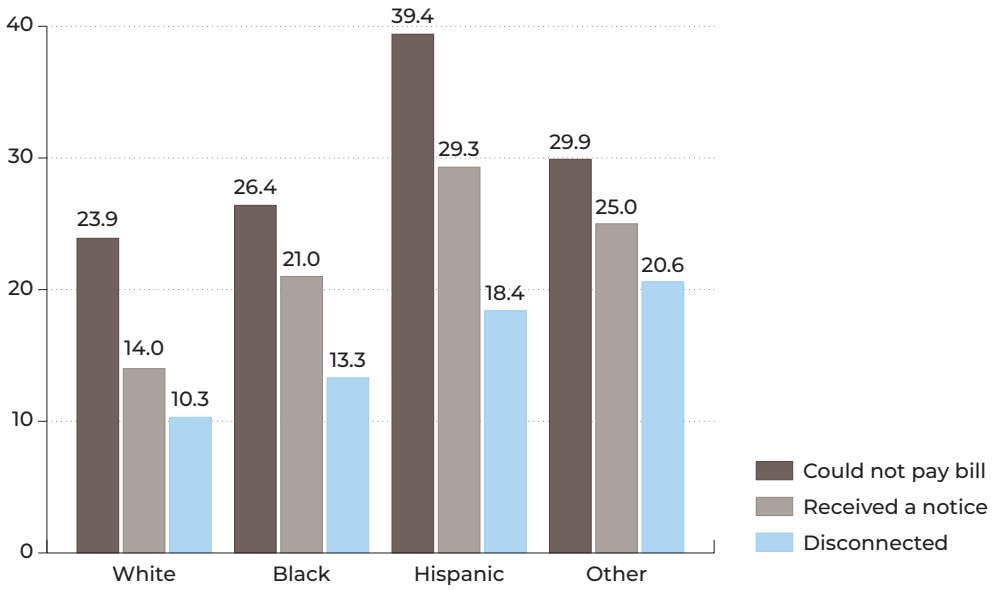
We assigned each metric to one of six categories:

- Included in the final EEP framework (data exists at the census tract level, nationally)
- Priority data gap
- Desire to create a rating scale based on qualitative assessment
- Shift to qualitative approach or best practice
- Abandon – limited or no potential due to spotty data, issues with geographic resolution or frequency of updating, or would require additional data procurement and manipulation
- Abandon – not an important reflection on energy equity

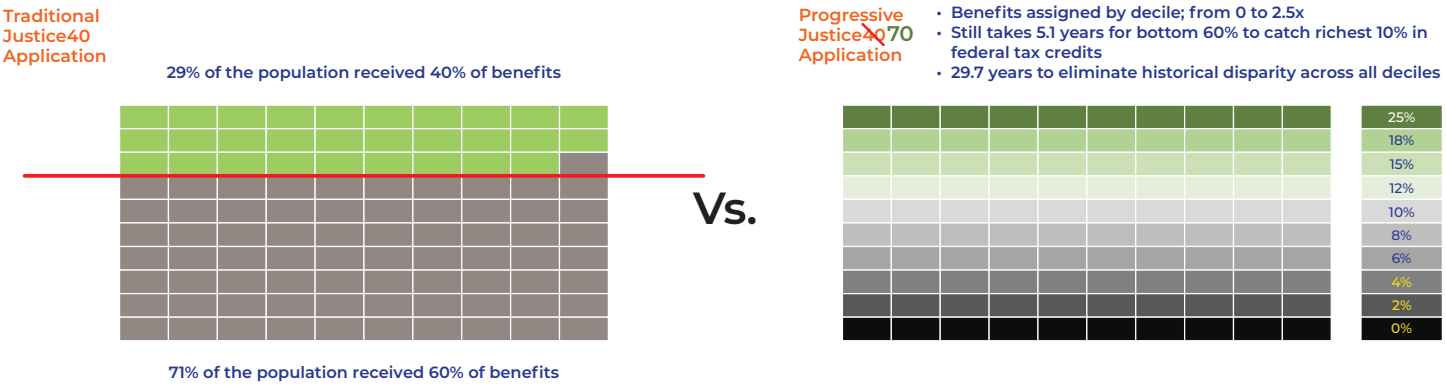
You can review a Google Sheet of our full matrix, but here's a quick view and some takeaways:

- Only 29 of the proposed 148 metrics will be included in the quantitative database and national map with census tract scores. This means that the vast majority (87%) of potential metrics do not currently lend themselves to rigorous and consistent quantitative measurement.
- Most of the metrics included are demographic and fall within the recognition dimension; no procedural or restorative metrics were identified.
- For eight of the procedural metrics, there is a desire to create a rating scale. These include concepts like the ability to access a range of programs regardless of income and owner vs. renter status.
- 16 priority data gaps remain—these represent metrics like the rate of shutoffs by utility and by demographic variables like race. Some of this data exists, but there is not a comprehensive national dataset.
- We identified 27 proposed metrics that we reclassified as best practices.
- And finally, about a third of our proposed metrics were abandoned, either because they were not deemed of significant value by workgroup members or we see no future pathway to obtaining reliable and useful data.

Energy Insecurity by Race Last Three Months (November 2021–January 2022)



Shutoffs put people's lives at risk, yet no national shutoff data exists. Source: Indiana University's Energy Justice Lab, February 2022.



Is the Justice40 standard, applied to all federal energy, climate, and infrastructure investments, really the best way to advance energy equity? Above, EEP considers a smoother curve of benefits allocation in a Justice70 scenario.

EEP will release the beta Energy Equity Framework and map this summer, including full write-ups of our assessment of each of these potential metrics and accompanying resources.

At their best, metrics mirror reality. After a year of intensive investigation, we now know that the mirror we can produce will always be blurry to a degree. We will continue to work on securing priority national data sets at the census tract level like shutoffs to add clarity, but this leaves us rethinking the ultimate role of equity metrics vs. best practices.

Even when high-quality metrics are available, the data itself is silent on how we should proceed. What are equitable targets for investments in energy efficiency, solar, and electric vehicles? What is an acceptable maximum percentage of income for people to pay (energy burden) to ensure energy is affordable? Is the Justice40 standard—ensuring 40% of the benefits are received by the 30% most disadvantaged communities—a sufficient target or does it not go far enough? Metrics are only useful for tracking progress once we establish targets determined by our values, policies, and institutions.

Equity metrics are most appropriate for the recognition dimension of energy equity— they can help us identify BIPOC, low-income, and frontline communities that historically have borne the highest burdens of fossil fuel energy systems. These communities deserve the lion's share of the benefits of the clean energy transition, which we can measure using distributional metrics like who receives tax credits and financial incentives for solar and electric vehicles.

Metrics won't, however, address concerns of procedural and restorative justice or the fundamental need to ensure that those most impacted by energy system and climate impacts have prominent seats at the decision-making table. Metrics won't ensure that we are holistically considering utility accountability, community-owned energy generation and storage, or the importance of centering Indigenous communities and sovereignty in the future of our energy system. Indeed, we believe in the power and potential of data to advance equity in the clean energy transition. The process of developing the Energy Equity Framework has also highlighted the importance of focusing on guiding principles and qualitative best practices, particularly given the data limitations that emerged. We look forward to more discussion, feedback, and applications of the framework when we release in the coming months.

Recognition Justice

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TO THE POINT

Recognition justice emphasizes the need to understand different types of vulnerability and specific needs associated with energy services among social groups (especially marginalized communities).
(Lee & Byrne, 2019)

The past injustices of systemic racism in communities of color and lack of investment in marginalized communities, have greatly contributed to the disparities in energy equity. Black, Brown, Indigenous and lower income communities continue to take on much of the impact of pollution, climate change, and high energy burdens that contribute to health issues while widening disparities in household wealth and financial stability. It's important that we recognize how these factors have led to unjust and unethical practices that have negatively impacted specific communities.

Recognition justice is most often associated with who is impacted and who benefits from the energy system. We adopt the definition put forth by Lee & Byrne (2019): "Recognition justice emphasizes the need to understand different types of vulnerability and specific needs associated with energy services among social groups (especially marginalized communities)."

Recognition justice is sometimes referred to as "structural", indicating that factors such as identity and demographics which are largely beyond a household's or community's immediate control play a role in determining the distributional outcomes they experience. The recognition dimension both identifies historical disparities and, if the structures that created those disparities continue, suggests disparate likelihoods of future burdens and benefits.

Our workgroup considered three sub-dimensions of recognition: 1) Demographics, 2) Historical, and 3) Energy Security. A synopsis of each is below; we discuss the conceptual basis and applications of each in more detail.

First and foremost, recognition is concerned with demographics, or community characteristics, that are more likely to be associated with disproportionate outcomes, both benefits and burdens. Recognition is concerned with demographic variables that are predictive of, or at least correlated with, outcomes that include energy affordability and security, health, jobs and economic development.

Second, we organized recognition to include a historical sub-dimension, which is concerned with the magnitude of cumulative disparities and how such disparities came to be.

Finally, our recognition dimension includes energy security as its third sub-dimension. Energy security could be considered under either the recognition or the distributional dimension, as either a semi-independent or a dependent variable. Because continuous access to energy is both closely tied to demographic factors and influences other outcomes, such as household health and wealth, we chose to include it under recognition. Energy insecurity is also an outcome of unaffordable energy and limited access to the benefits of energy efficiency and clean energy.

Demographic Sub-dimension

We considered 39 potential demographic metrics, the majority of which are represented by national, census-tract level datasets. Many of these are available through federal government sources including the U.S. Census (American Community Survey 5-year estimates), U.S. Housing Survey, U.S. EPA, and CDC. Ultimately 22 of these metrics are included. Five metrics were classified as priority data gaps, housing and transportation burden and housing inspection scores were shifted to qualitative best practices, and the remaining 10 proposed metrics were excluded because they were deemed to be lower value, duplicative, or because a clear path to securing national data was not apparent.

Across hundreds of studies, the same demographic variables are shown to be associated with a host of environmental and energy burdens. Race stands out even when controlling for income (Bullard, 2001); with Black, Native, and Latinx households faring worse across distributional impacts than white, and sometimes Asian households. Lower incomes are also tied to greater pollution burdens (Miranda et al, 2011), higher energy burdens (Drehobl and Ross, 2016), and lower access to incentives like federal tax credits for rooftop solar and electric vehicles (Borenstein and Davis, 2016). Because of the close associations between certain demographic variables and distributional outcomes, recognition justice calls for a deep understanding of demographics at the community—or census tract—scale. This understanding can yield improvements in how programs, community engagement, and regulatory proceedings are designed to include and serve frontline and marginalized communities. Metrics from the recognition dimension can also be used to ensure a high share of benefits flow to frontline,

BIPOC, and low-income communities. This approach is widely employed by states that require defining environmental justice or disadvantaged communities,[1] and now by the federal Justice40 initiative,[2] a whole-of-government approach that requires at least 40% of the benefits be received by disadvantaged communities (which include about 29% of the U.S. population).

Historical Sub-dimension

Although the disparities in recognition metrics are structural in nature and the result of historical policies and practices, a historical analysis of the factors that created the underlying disparities is, regrettably, rarely considered within the scope of recognition justice. This absence, or failure to explicitly identify and quantify root causes of recognition disparities, can lead to programs and investments that merely strive for parity going forward, without remedying decades of structural barriers, marginalization, and underinvestment.

Justice40, for instance, first appears to be a restorative approach, in which each disadvantaged census tract would receive about 1.35x the standard share of benefits (40% of the benefits divided among 29% of the population). This factor, however, is arbitrary and will not fully remedy historical disparities in a reasonable timeframe. Imagine that these disadvantaged census tracts representing 29% of Americans historically received only 0.3x of their share of the energy benefits annually, or 9% of the total benefits, and this structure has been in place for at least the last 50 years. This means these communities have been accruing a 0.7x annual deficit of benefits. When that deficit is multiplied by 50 years, it results in a cumulative deficit of 35x of the annual program or investment budget. (This assumes no interest, that the advantage of owning energy efficient homes does not widen the disparity in energy affordability, for instance.) Under Justice40, disadvantaged communities will receive 0.35x above proportional investment each year. In this hypothetical but realistic scenario, Justice40 would be on pace to fully close the 35x cumulative gap in benefits in 100 years (35x / 0.35x = 100), or four generations.

If the hypothetical Justice40 scenario is instructive, it informs us that even marginally exceeding proportional investment in communities of historical underinvestment is not sufficient to close the cumulative gaps in a timely fashion. The historical narratives of how communities have been harmed or excluded from the energy system should be part of the record and told in their own words. **A best practice is to dramatically exceed proportional investments to account for decades of historical disparities.** Justice50 (1.7x of proportional benefits) would be significantly better than Justice40 (1.35x); Justice70 (2.4x benefits) could close the historical gap in less than 15 years, instead of 100.

Dr. Tony Reames and graduate students at University of Michigan's Urban Energy Justice Lab,[3] where EEP was founded, conducted a similar analysis of the energy efficiency program investments of 11 investor-owned utilities (Reames et al, 2019). The analysis looked at whether low-income households were receiving a proportionate share of investments relative to the percentage of customers who were low-income. They defined this proportion as the Energy Efficiency Equity Baseline, or E3b metric.

The analysis spanned 2012-2021; data is readily accessible to the public for only a small number of investor-owned utilities. The researchers found a cumulative gap of about $500 million in underinvestment in programs serving low-income households during this period, with a single utility's gap exceeding $100 million. While the overall trend is reducing the annual deficit and coming closer to the E3b metric, we are not aware of any utility or PUC that is entertaining a path to rectify the total cumulative gap that was created by an entire decade of underinvestment. This "going forward" approach does not align with typical American practices of correcting for financial errors. If a worker has been paid less than the salary in their contract, additional compensation is not merely due with the next paycheck. Payments are owed retroactively, and typically for a period that looks back at least several years.

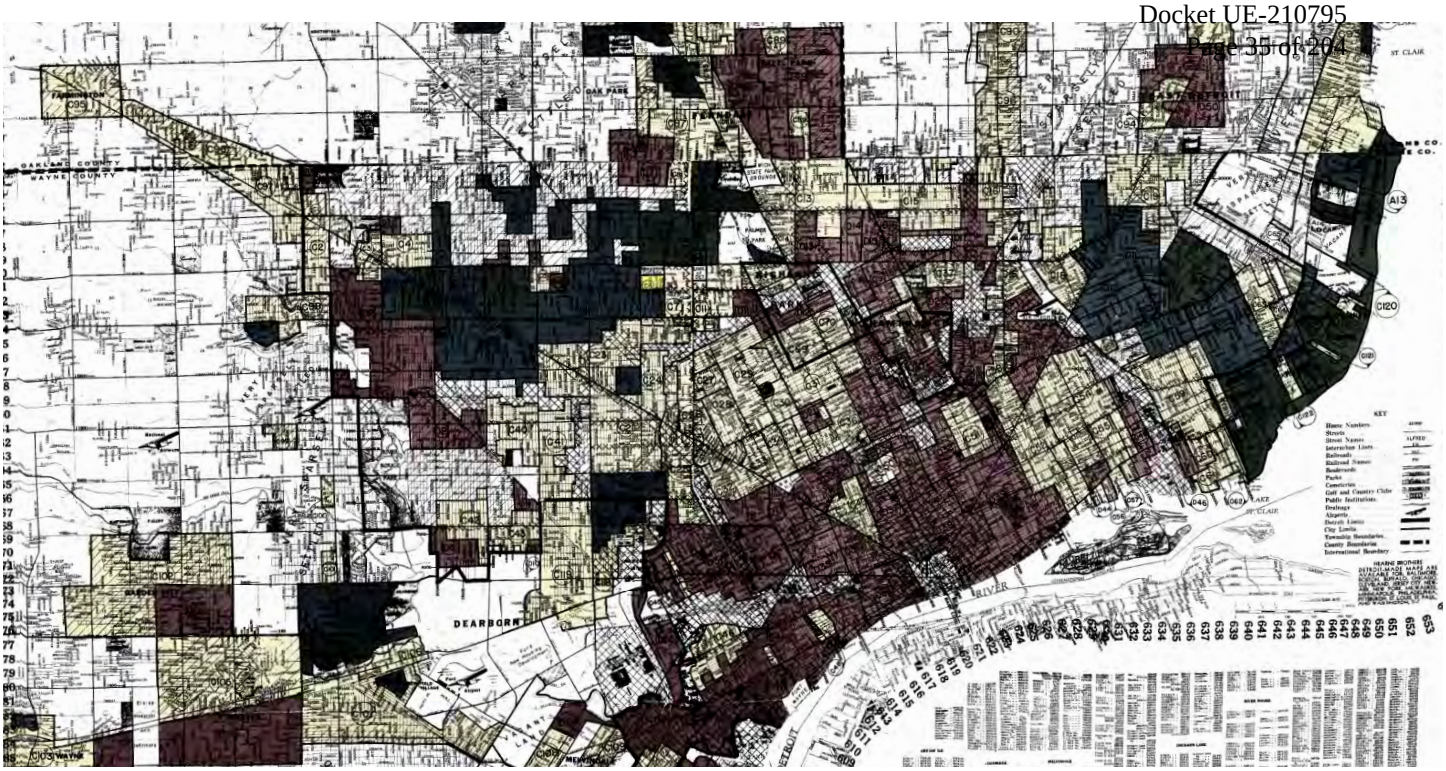
The underlying sources of historical disparities are wide ranging, from extensive housing discrimination and redlining, which had a particularly damaging impact on Black households in cities (Rothstein, 2017), to the intentional siting of polluting facilities in communities of color (Bullard, 2001), to the challenge of promoting weatherization in lower-income or rural communities (Raissi and Reames, 2020).

The workgroup identified seven potential metrics that comprised the historical sub-dimension. Disparities between residential and commercial and industrial electricity rates were included; four metrics were recommended as a qualitative best practice (e.g. adding historical narratives, reparations, accounting for Indigenous land sovereignty violations) and two,

[1] For example, those cataloged by the New School's Tishman Environment and Design Center: https://docs.google.com/spreadsheets/d/1TgwZAAlmLlBYJciXSpUfOOZifuk8MJUU4_NagVnulU8/edit#gid=2096559860

[2] Learn more about the basics of Justice40 at: https://www.whitehouse.gov/environmentaljustice/justice40/#:~:text=What%20is%20the%20Justice40%20Initiative,underserved%2C%20and%20overburdened%20by%20pollution.

[3] https://urbanenergyjusticelab.com/



A map of 20th century redlining in Detroit neighborhoods. Image source: dsl.richmond.edu

including the E3b metric, were not included due to limited data availability.

Quantifying and addressing cumulative deficits in full is central to the historical sub-dimension, yet precise historical data are extremely hard to obtain. Even though accessing data and calculating estimates are difficult does not obviate the pressing need to rapidly correct for large, multi-year disparities. Those considering cumulative disparities may need to work with back-of-the-envelope estimates to ensure some value is considered in decisions and funding allocations. Frontline communities have been largely shut out of the benefits of energy efficiency and clean energy and burdened by the negative impacts of the fossil fuel industry. These histories, regardless of limitations in rigorously quantifying them, should factor significantly into future energy planning and investments.

The historical sub-dimension links closely to the restorative dimension, which calls for greater community ownership of energy assets. In the absence of clean energy resources provided seamlessly to all customers, the "prosumer" strategy places the burden of investment in energy procurement on individual households, subscriber groups, and businesses. This approach to market animation has disproportionately favored affluent populations with significant financial incentives and tax credits as well as personal benefits of bill and carbon footprint reduction. Many of these benefits are actually subsidized by non-solar and low-income customers.

Energy Security Sub-Dimension

EEP affirms that safe, affordable and continuous access to energy is a basic human right. This is a premise of the United Nations Sustainable Development Goal 7 (Shyu, 2021) and backed by a host of coalitions, researchers, and community leaders and advocates.

We considered 11 potential energy security metrics, with 10 relating to shutoffs and one addressing households that keep their homes at an unsafe temperature (a standard question in the Residential Energy Consumption Survey by EIA). Five of these were shifted to priority data gaps. Two related to statewide shutoff protections were secured but EEP is reviewing these further and not including them in the first version of the map. The others were shifted to qualitative best practices.

Energy insecurity, and shutoffs in particular, have a profound effect on households' health, well-being, and financial stability. A study by Kay Jowers and colleagues at Duke estimated that had a national moratorium on utility shutoffs for non-payment been in place from the beginning of the pandemic, total deaths from COVID-19 would have been reduced by 14.9% (2021). Recent survey data from Indiana University's Energy Justice Lab found that 13.5% of all U.S. households had their service disrupted sometime between November 2021 and January 2022 (the height of Omicron). Rates were even higher for Hispanics (18.4%) and households with children under five (28.8%).

Despite these trends, timely and comprehensive disconnection data are still hard to come by. Only 20 states require some degree of reporting; those that do typically apply only to regulated, investor-owned utilities and focus on average frequency of disconnections, duration of outages, and time to reconnect. Even in states where data exists, it is usually not sufficiently granular to be of maximum benefit for studying equity issues: data is not available by race, cannot be cross-referenced with participants in energy efficiency or assistance programs, or is not available at the census tract level.

This dearth of detailed data on disconnection patterns is the highest priority data gap for EEP, based on feedback from many of our community partners. In keeping with the aspiration that energy be recognized as a human right and all people should have continuous access to some basic level of service, we note that 33 states did establish moratoria on shutoffs for non-payment for at least some period during the pandemic. When such moratoria are in place, studies and metrics can emphasize the true cost and impact of maintaining universal reliability.

Demographic Index

D1. Defining "disadvantaged"/target populations

METRIC STATUS: Recommended to be developed as a qualitative rating scale

Rationale: In addition to the Justice40 initiative, a number of states are defining "disadvantaged" or "disproportionately impacted" communities for the purposes of correcting for past injustices and allocating a certain percentage of clean energy investments and benefits. This proposed measure presents an unusual challenge because it is commonly used to describe varied concepts:

- Income qualified consumers.
- Physical neighborhoods that have not experienced investment or environmental protections comparable to other locations.
- Communities of people with shared political, spiritual, or other interests that experience disparate treatment independent of their place of residence.
- Racial or ethnic groups that historically have been excluded from access to home ownership, education, and clean energy.

We see value in defining communities that are due significantly greater clean energy investments and benefits. For standardizing national evaluation at the state level, we recommend considering a qualitative rating scale such as:

0 = No definition exists
1 = Non-quantitative definition
2 = Definition but no associated equity targets
3 = Definition plus moderate targets
4 = Definition plus robust equity targets

NOTES:

All reviewers rated this metric highly because it was viewed as central and foundational to any discussion of equity including access to clean, affordable energy and sage environments needed to maintain good health for residents.

RESOURCES:

- Tishman Center for Environment and Design Analysis – New School
- Illume Advising – EJ Community Definitions
- NY Climate Justice Working Group (see June 15, 2021 meeting presentation)
- Drehbol, A., & Tanabe, K. (2019, November 13). *Extending the Benefits of Nonresidential Energy Efficiency to Low-Income Communities November 13,*

2019. ACEEE. Retrieved January 2022, from ACEEE identified some good examples here: https://www.aceee.org/research-report/u1910

Image source: climatejusticealliance.org

D2. Social Vulnerability Index (SVI)

METRIC STATUS: Included as quantitative metric

Rationale: "Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or disease outbreak, or a human-made event such as a harmful chemical spill. Several factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in a disaster. These factors are known as social vulnerability."(CDCe, 2021)

The CDC and the Agency for Toxic Substances and Disease Registry (ATSDR) SVI[4] uses U.S. Census data to determine the social vulnerability of every census tract. Quantitative data and maps are readily available. The index scores 15 data sets across four themes: 1) Housing/transportation, 2) Household composition, 3) Socio-economic status, and 4) Race/ethnicity/language.

NOTES:

This metric originally had a range of responses from the group but ultimately, we decided to include it after discussion.

RESOURCES:

- CDC Social Vulnerability Index, SoVI University of California

D3. Presence of toxic facilities

METRIC STATUS: Identified, but not yet included in the final EEP map

One common characteristic of frontline communities is significant exposure to nearby sources of air, groundwater, and soil pollutants that adversely impact families' health (particularly children). Exposures may be the result of highways and major traffic arteries cutting through residential areas, locally sited garbage incineration, diesel-fired peaker plants, or chemical and other industrial facilities. These hazards disproportionately harm communities of color (e.g. Donley et al, 2022). To overcome these common hazards, new investment will be needed in electric vehicles (EVs), trucks, charging stations, community solar and storage, replacement of aging water distribution systems, and advanced green technologies for bioremediation and solid waste management.

Multiple data sets exist for the presence of toxic facilities. Notably, the EPA's EJScreen tool offers a census tract-level index and quantitative data for 12 different environmental indicators. CEJST also offers data on proximity to different types of polluting facilities.

Which data would best represent this metric prompted a lot of lively discussion about whether to track superfund sites vs other sources of local pollution. The group recommended adjusting the original definition to include an energy-centric focus, and a final selection of the most relevant and appropriate data sets is still being assessed.

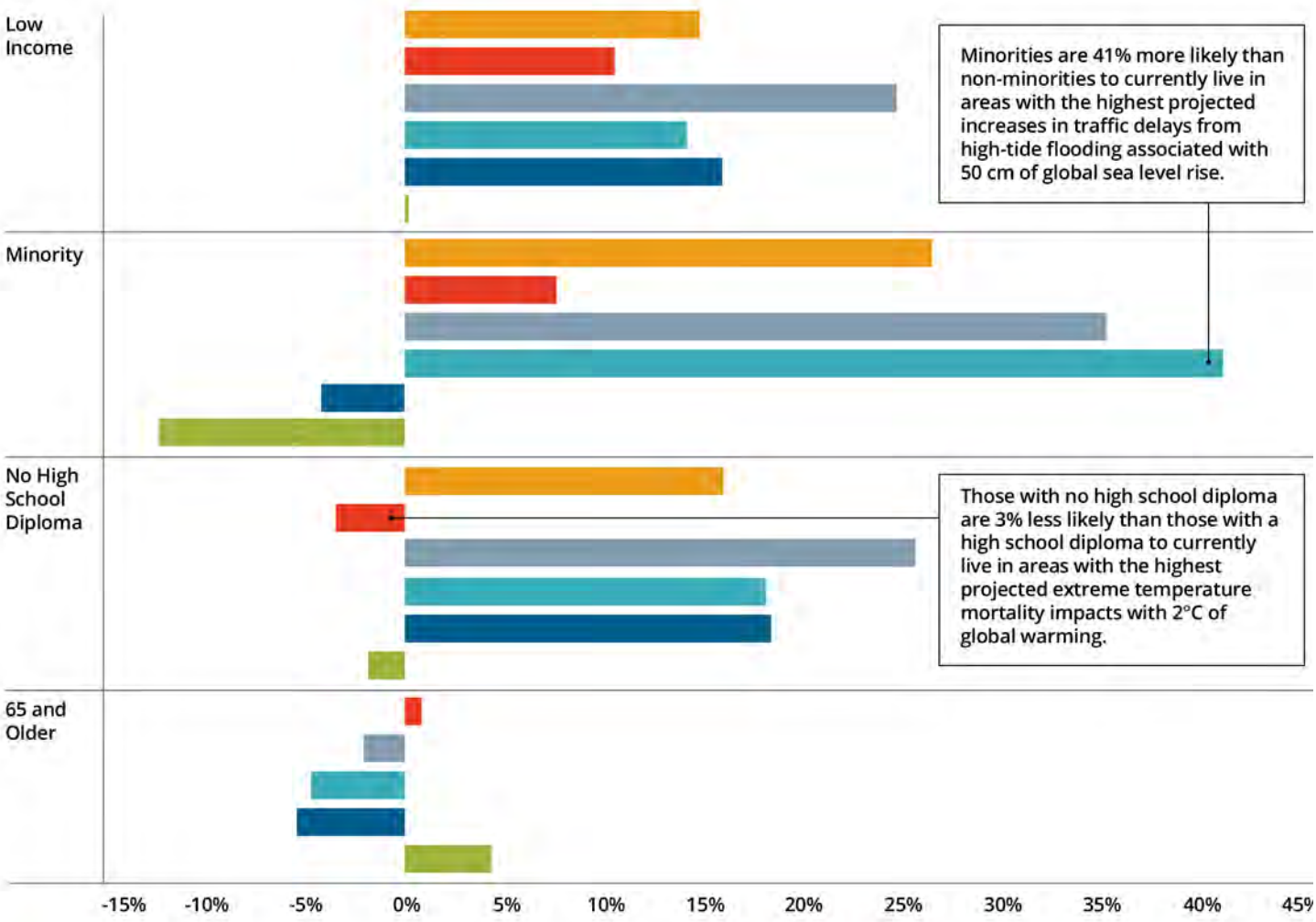
SUPPORTING RESOURCES:

- Partnership for Southern Equity (data on peaker plant locations and replacements in multiple states)
- EPA EJ Screen

[4] https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html

Differences in Risks to Socially Vulnerable Groups Relative to Reference Populations with 2˚C of Global Warming or 50 cm of Global Sea Level Rise

The estimated risks for each socially vulnerable group are relative to each group's "reference" population, defined as all individuals other than those in the group being analyzed. The estimated risks presented in the chart are for scenarios with 2˚C of global warming (relative to the 1986–2005 average) or 50 cm of global sea level rise (relative to 2000). For the inland flooding analysis, the baseline is 2001–2020. Image source: www.epa.gov



AIR QUALITY AND HEALTH*
New asthma diagnoses in children due to particulate air pollution.

EXTREME TEMPERATURE AND HEALTH
Deaths due to extreme temperatures.

EXTREME TEMPERATURE AND LABOR
Lost labor hours for weather-exposed workers.

*Impacts not estimated for 65 and Older.

COASTAL FLOODING AND TRAFFIC
Traffic delays from high-tide flooding.

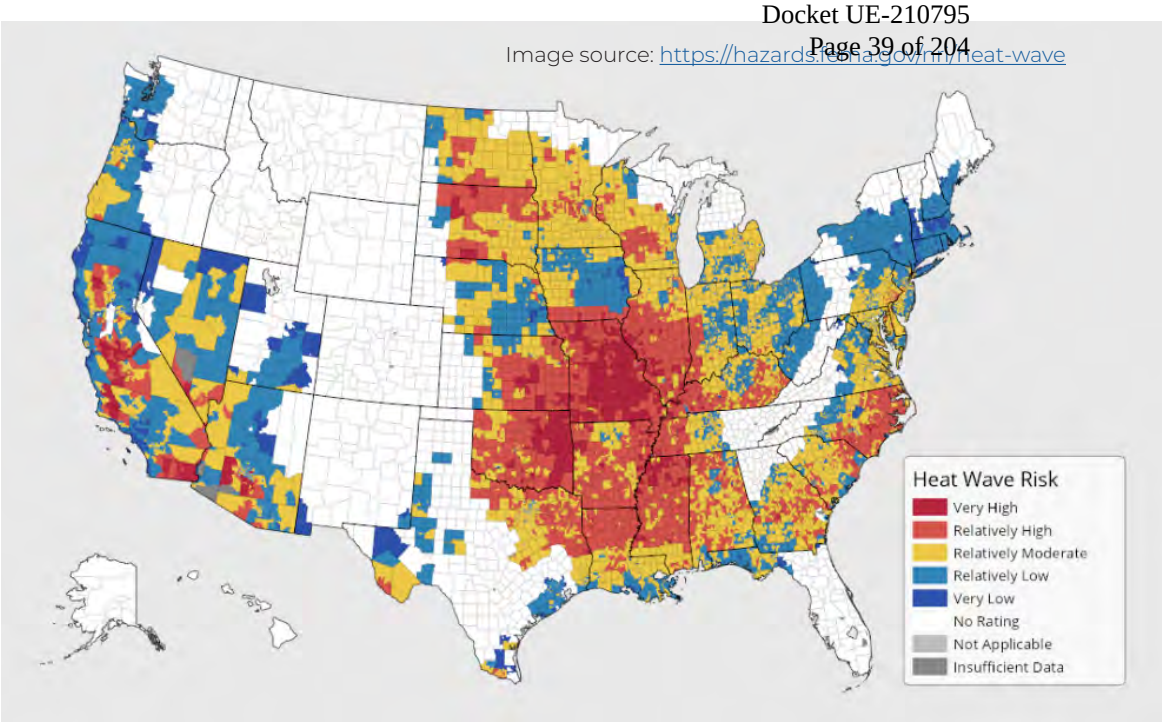
COASTAL FLOODING AND PROPERTY
Property inundation due to sea level rise.

INLAND FLOODING AND PROPERTY
Property damage or loss due to inland flooding.

D4. Climate vulnerability – heat exposure

METRIC STATUS: Priority data gap—recommend local data collection; closest proxy metric included is FEMA National Risk Index (NRI) Expected Loss data. In our conversations around the climate vulnerability topics, we discussed how these might be consolidated given that the data sources are found in a common set of tools and resources.

Image source: https://hazards.fema.gov/nri/heat-wave



Rationale: Heat exposure is a combination of climate and surface cover, including tree cover and impervious surfaces. Tree canopies in affluent neighborhoods provide cooling and protection for residents. Trees are noticeably absent in nearby underserved neighborhoods with the same weather and climate (Cusick, 2021). Heat exposure negatively affects air quality and energy use, requiring more air conditioning and higher bills in summer months. Trees and vegetation are also carbon sinks which provide general environmental benefits. Tree canopy and impervious surfaces are available through the National Land Cover Database managed by U.S. Geological Survey (USGS).

Some excellent local heat mapping studies have shown temperature disparities within the same city of up to 18 F on a summer day. CAPA Strategies, for instance, provides volunteers with real-time temperature monitors to drive or bike transects within a city during morning, afternoon, and evening hours, ensuring every area has an accurate reading. While this data can illuminate heat exposure at the block level, there is not a national dataset that effectively assesses heat exposure at the census tract level.

National climate risk maps, including the NRI, incorporate heat exposure projections. The NRI assesses heat exposure on a 1–100 scale, based on anticipated days/year above 95 degrees F, combined with other social vulnerability data sets. For local scale planning and decision-making, we recommend conducting high resolution local heat mapping to assess vulnerable neighborhoods in urban areas.

RESOURCES:

- National Land Cover Database, USGS
- Heat Watch, CAPA Strategies

D5. Climate vulnerability – flooding/sea level rise exposure

METRIC STATUS: Included as a proxy through FEMA's NRI

Rationale: Communities are impacted by different types of flooding, including extreme precipitation events and sea level rise. As climate impacts, flooding can exacerbate a number of energy equity concerns. Communities with significant Black and Latinx populations and low-income communities are more likely to live in more flood-prone areas, often due to a history of housing segregation and redlining (Mittan, 2020; Bakkensen & Ma, 2020). Without tree cover to reduce erosion, roots from vegetation to soak up excess water, and higher percentages of impervious surfaces, these communities are also more susceptible to flooding.

Beyond the primary impacts of flooding that include risk of life, displacement, and the costs of clean up, flooding can directly affect the energy situations of households. In Detroit, for instance, hundreds of households lost furnaces and water heaters due to basement flooding; many have been unable to find the resources to replace these and live without heating and/or hot water after the floods (Allnutt, B., 2021). FEMA grants and other recovery support may be limited. Floods also create mold and mildew problems, and homes with poor ventilation are more likely to

experience hazardous indoor air quality after a flood. Households that are flooded may also lose power or need expensive back up generators or sump pumps until power is restored. Renters, in particular, may face the expensive and disruptive task of relocating if flood damage is not quickly remediated.

RESOURCES:

- FEMA National Risk Index
- Rush, E. (2022, April 11). *I Would Have Never Bought This Home if I Knew It Flooded*. The New York Times. Retrieved April 2022, from https://www.nytimes.com/2022/04/11/opinion/climate-change-flooding.html?referringSource=articleShare

D6. Climate vulnerability – severe storm/hurricane exposure

METRIC STATUS: Included as part of NRI expected loss data set

Rationale: While all residents of a given region will be affected by storms, some people are less likely to be able to self-evacuate and afford temporary lodging in a safe area. Older adults, households with young children, people with disabilities, and people with limited economic resources are more vulnerable. From an energy equity perspective, communities that face the greatest vulnerability and these other demographic risk factors may warrant additional climate resilience investments. These include emergency support services and centers available to residents who are left behind using microgrids and long-duration energy storage.

D7. Climate vulnerability – fire exposure

METRIC STATUS: Included as part of NRI expected loss data set

Rationale: The hazards and equity implications of exposure to wildfire is similar to the concerns for exposure to hurricanes and severe storms. Sensitive groups face the greatest risk and require additional support to mitigate vulnerability. Wildfire impacts extend well-beyond direct loss of structures; air quality impacts are becoming increasingly problematic in fire-prone regions even if flames never approach community borders. Wildfire risk should prompt greater investment in healthy homes measures that improve indoor air quality, including air sealing, duct cleaning, and air filtration.

D8. Climate vulnerability – adaptive capacity/ resilience

METRIC STATUS: Included as part of NRI expected loss data set

Rationale: Community resilience is a community's ability to prepare for, withstand, and recover from the effects of natural hazards and disasters. Low-income communities of color have historically received less money from the federal government in the event of natural disasters, limiting their ability to both rebuild after a disaster and prepare for future events. Communities that are identified as having limited resilience should be prioritized for clean energy investments.

RESOURCES:

- NAC. (2020). National Advisory Council Report to the FEMA Administrator. FEMA | Department of Homeland Security. https://www.fema.gov/sites/default/files/documents/fema_nac-report_11-2020.pdf
- Flavelle, C. (2021, June 7). *Why Does Disaster Aid Often Favor White People?*. The New York Times. Retrieved January 2022, from https://www.nytimes.com/2021/06/07/climate/FEMA-race-climate.html
- FEMAd. (n.d.). *The National Risk Index*. FEMA.gov. Retrieved March 2022, from https://hazards.fema.gov/nri/, Georgetown Climate Center

D9. % BIPOC

METRIC STATUS: Included. U.S. census data sets for all non-white populations (including Hispanic, non-white) were included in this measure.

Rationale: Race is one of the strongest indicators of disproportionate outcomes for energy costs (Drehobl et al, 2020). Communities of color spend a disproportionately higher amount of their income on household energy costs. Black households spend 43% more than white households, Native American households spend 43% more, and Hispanic households spend 20% more.

D10. Low birth weight

METRIC STATUS: Not requested. The group prioritized other demographic variables that indicate energy and climate vulnerability and historic marginalization

Rationale: Low birth weight is defined by the World Health Organization as weight of birth below 5.5 pounds.[5] Low birth weight, similar to maternal

[5] WHO. (n.d.). *Low birth weight*. World Health Organization | Nutrition Landscape Information System (NLiS). Retrieved February 2022, from https://www.who.int/data/nutrition/nlis/info/low-birth-weight

mortality, disproportionately affects newborns of color. It is included in a number of other indices, including the Opportunity Atlas, CalEnviroScreen, and the Deep Disadvantage Index.

D11. Maternal mortality

METRIC STATUS: Not requested. The group prioritized other demographic variables that indicate energy and climate vulnerability and historic marginalization

Rationale: Black and American Indian/Alaska Native women have pregnancy-related mortality rates that are over three and two times higher, respectively, compared to the rate for White women (40.8 and 29.7 vs. 12.7 per 100,000 live births; Artiga et al, 2020).

RESOURCES:

- CDC data on maternal mortality

D12. COVID Case and Death Rates

METRIC STATUS: Not requested—highly significant but temporal. We strongly urge local consideration as a qualitative measure or best practice.

Rationale: COVID-19 has disproportionately affected Black, Brown, and Native households, who have higher rates of cases, hospitalization, and death (CDC; Magesh et al, 2021). These disparities have roots in a host of racial and socio-economic disparities in access to and quality of medical care, housing characteristics, and types of employment. COVID-19 disparities were exacerbated by severe distributional inequities in the energy system, illustrating the two-way relationships between the metrics of the recognition and distributional dimensions. Jowers et al (2021) found that had a national moratorium on utility shutoffs been in place, the total number of COVID deaths in the U.S. would have been reduced by 15%. Florida Power and Light and Georgia Power, alone, shut off electricity to more than 650,000 households–10.5% and 8.4% of their customers respectively–between February 2020 and June 2021, more than double the rate of 16 investor-owned utilities that were required to disclose data (Su and Kuveke, 2021; calculated using utility customer data provided by PowerSuite).

RESOURCES

- CDC COVID-19 Dashboard
- Powerless in the Pandemic Data and Calculations
- PowerSuite

D13. % Without Health Insurance

METRIC STATUS: Included

Rationale: Health insurance is a key measure of one's risk to a variety of health problems and exposures. Populations without health insurance receive insufficient care and are thus especially vulnerable to respiratory distress, poor indoor air quality, and shutoffs. Communities where the many are without health insurance warrant both affordability and energy security investments.

D14. % of Seniors Living Alone

METRIC STATUS: Included

Rationale: While we thought this was important, and is particularly relevant if you consider income, with many older adults relying on low fixed incomes. ACEEE research found older adults have higher energy burdens: https://www.aceee.org/energy-burden (ACEEEb, 2020).

D15. Income Mobility

METRIC STATUS: Not requested. Represents income for people who grew up in this census tract at age 35. Available in the opportunity atlas: https://www.opportunityatlas.org/ (TOA, n.d.)

D16. Incarceration Rate

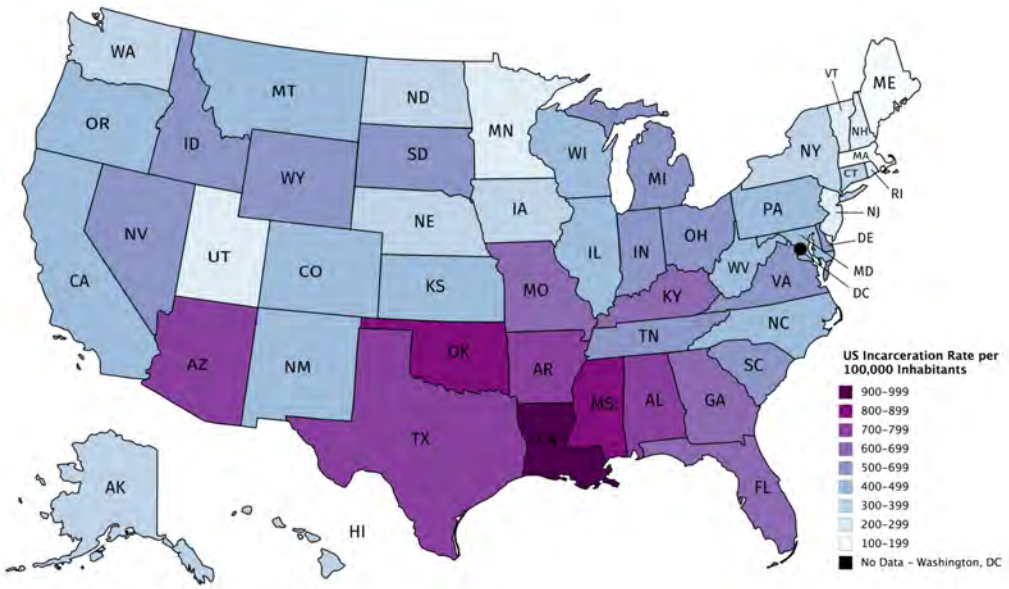
METRIC STATUS: Included; available as percentage of the population incarcerated by census tract from: https://www.opportunityatlas.org/ (TOA, n.d.)

Rationale: Incarceration is often an indicator of how criminal justice policies and practices target marginalized communities, particularly Black, Latinx and Native communities (Mauer and King, 2007.) Incarceration through racially biased policing, targeting, and prosecutions is a particularly severe form of social and economic marginalization that disadvantages BIPOC communities across a range of sectors, including energy.

D17. Educational attainment

METRIC STATUS: Included (American Community Survey data).

Rationale: Educational attainment impacts one's ability to access and adopt energy efficiency and clean energy programs and their associated energy savings (Sart et al, 2022). Second, it affects participation in green jobs and the clean energy economy (Yi,



US Incarceration Rate per 100,000 Inhabitants by State. Image source: Prisoners in 2016. US Bureau of Justice Statistics. January 2018, NCJ 251149.

2014). Users can consider multiple options within this variable, such as percentage without a high school degree, with some college, etc.

D18. Poverty rate

METRIC STATUS: Included (American Community Survey data). See Census information on poverty line and guidelines: 2021-poverty-guidelines (USDHHS, 2017).

Rationale: According to a census.com publication in 2021, the In 2020 the official poverty rate was 11.4%, up 1.0 percent from 2019. This is the first increase in poverty after five consecutive annual declines (Shrider et al., 2021).

Reported in 2020 by ACEEE.org, nationally 67% (25.8 million) of low-income households <200% of the federal poverty level (FPL) face a high energy burden above 6% and 60% (15.4 million) of low income households with a high energy burden face a severe energy burden above 10% (ACEEEa, 2020).

D19. Deep poverty rate

METRIC STATUS: Included (American Community Survey data). See Census information on poverty line and guidelines and divide by two to calculate deep poverty thresholds based on household size: 2021-poverty-guidelines (USDHHS, 2017).

Rationale: The U.S. Census Bureau defines "deep poverty" as living in a household with a total cash income below 50 percent of its poverty threshold (UC Davis), which equates to about $11,000 in annual earnings for a household of three. About a third of the people with below-poverty resources—**14.5 million Americans (4.4 percent of the population)**—are in deep poverty (Giannarelli et al, 2021).

Households in deep poverty need a different level and kind of support than those who can be adequately helped with existing energy assistance programs. Program designers and administrators need to ask: how can people surviving at chronic poverty levels ever get their heads above water with utility bills? What deep supports will it take for them to achieve energy security and affordability?

D20. Relative poverty (% of AMI)

METRIC STATUS: Included

Rationale: Relative poverty is sometimes described as "relative deprivation" because the people falling under this category are not living in total poverty, but they are not enjoying the same standard of life as everyone else in the country. It can be TV, internet, clean clothes, a safe home (a healthy environment, free from abuse or neglect), or even education.

Relative poverty can also be chronic, or permanent, meaning that certain families have scant chances of enjoying the same standards of living as other people in the same society currently have access to. These households are effectively trapped in a low relative income box.

TEAM NOTES:

Area Median Income (AMI) is a better indicator than FPL because the cost of living can vary so widely in different places (e.g., folks living in NYC vs. Alabama) as well as minimum wage; if we were choosing one income metric, think this would our preference.

RESOURCES:

- Habitat for Humanity

D21. Employment rate

METRIC STATUS: Included

Rationale: Among people in the labor force for 27 weeks or more, **2.8 percent of those usually employed full time were classified as working poor**, compared with 11.1 percent of part-time workers (see table 1., U.S. Bureau of Labor Statistics, 2020). Women were more likely than men to be among the working poor (5.3 percent and 3.7 percent, respectively).

About 38.1 million people, or 11.8 percent of the nation's population, lived below the official poverty level in 2018, according to the U.S. Census Bureau.[6] Although the poor were primarily adults who had not participated in the labor force during the year and children, 7.0 million individuals were among the "working poor" in 2018, according to data from the Bureau of Labor Statistics (BLS). Importantly, the unemployed are more likely to experience energy insecurity (Graff et al, 2021).

RESOURCES:

- US Bureau of Labor Statistics

D22. Job access score

METRIC STATUS: Low potential, not included. Favor unemployment rate.

Rationale: The Redfin Opportunity Score is a rating from 0 to 100 that measures the number of jobs within a 30-minute, car-free commute from a given address. An Opportunity Score of 100 represents a home with the most job access, and scores are weighted by population. Opportunity Score is currently available in more than 350 cities across the country. This metric considers the number and type of available jobs and commuting distance.

D23. % Households without internet access

METRIC STATUS: Included

Rationale: Vast inequities in technology access—which, together, have come to be known as the *digital divide*—have intensified and worsened (Broom, 2021). Roughly half of low-income families have struggled to pay their internet and cell phone bills (Vogels et al, 2020).

A report by Phela Townsend (2020) finds that approximately 19 million Americans—6 percent of the population—still lack access to fixed broadband service at threshold speeds. In rural areas, nearly one-fourth of the population —14.5 million people—lack access to this service.

More and more utilities and other service providers are moving most of their customer operations to web-based tools. This leaves those not connected with significant access problems.

KEY FINDINGS:

Number of US households without internet

- 27.6 million (22.5%) of US households don't have home internet.
- Over a quarter million (265,331) households use dial-up internet at home.
- Utah, Colorado, and California are the most-connected states.
- Mississippi, Arkansas, and Alabama are the least-connected states

The number of households without internet is greater than the total number of households in 13 states combined.

RESOURCES:

- Reviews.org article
- The Century Foundation article
- COVID has exposed digital divides article, World Economic Forum
- Federal Communications Commission (FCC)

D24. % Households where English is not the primary language spoken

METRIC STATUS: Included

Rationale: This metric is an energy equity issue because without access to accurate information, it is difficult for these families to make informed choices regarding energy efficiency and access to clean energy.

D25. Average age of building

METRIC STATUS: Included

Rationale: Older homes, especially those built before 1940, but even those built before 1980 are significantly less energy efficient than newer homes, due to improvements in building codes and degradation over time (Jeunesse, 2017). Members of the group shared their own lived experiences wrestling with this problem. One member recently wrote a report for the Smart Energy Consumer Collaborative on the subject of renters and energy use.

Older, substandard multifamily buildings and houses tend to have more affordable rents. This means their

[6] See A Profile of the Working Poor by U.S. Bureau of Labor Statistics and the technical notes section for examples of poverty levels.

tenants are likely to live with less energy efficient structures, appliances, HVAC systems, and exposure to toxic materials like asbestos, lead or poor-quality septic systems. If landlords and property owners are persuaded or compelled to retrofit older units to bring them up to current energy-efficient standards or add green amenities, rents are likely to rise—often pushing them out of reach of low-income renters.

RESOURCES:

- American Housing Survey
- Joint Center for Housing Studies, Harvard University (JCHS)
- America's Rental Housing (JCHS, 2022)

D26. Housing burden

METRIC STATUS: Not included; similar information provided by % renters, income and poverty data.

Rationale: Housing is the single largest expense for households, and far too many pay too much for housing, particularly low-income renters (National Low Income Housing Coalition, 2020). High housing costs squeeze family budgets, leaving few resources to pay for other expenses, save for emergencies, or make long-term investments. The Housing Burden indicator measures the share of households that are cost-burdened (spending more than 30 percent of gross income on housing costs) and "severely" cost-burdened (more than 50 percent). The group saw this as a comparable metric to energy burden.

RESOURCES:

- National Equity Atlas
- National Equity Atlas – Tableau
- National Low-Income Housing Coalition

D26. Housing inspection scores (HUD multifamily)

METRIC STATUS: Shift to qualitative/best practice

Rationale: Age is not the only indicator of a building's energy efficiency or housing quality. The physical condition of the building envelope, quality of windows, doors, and HVAC systems all have a great deal to do with how livable a space feels to the family that resides within. No one wants to live in a drafty space at the mercy of the elements, but too often those living in poverty or facing discrimination in housing opportunities have little choice when seeking shelter.

In the review of this metric, a deep distrust of HUD's practices was expressed. From a data perspective, the HUD data tends to be organized by municipality (a reasonable approach based on community awareness and local zoning policies and building codes) instead of census tract data used by other data sources for EEP.

A home's insulation and drafty spots viewed through an infrared camera. Image source: https://www.energy.gov/energysaver/thermographic-inspections

The data is not uniformly organized and formatted, based on differences in local reporting, and would take extensive work to clean and organize into a more usable form. It's not clear that local reporting is sufficiently uniform or accurate to draw out disparities in housing quality, though it remains an interest. Given the limited quality of data, we suggest moving this to a best practice to be considered locally or at the state level.

RESOURCES:

- HUD inspection scores

D27. Availability of affordable housing

METRIC STATUS: Not included—no reliable source available nationally.

Rationale: A large and growing share of US households cannot find housing they can afford (Joint Center for Housing Studies, Harvard University), and every state has lost low-rent units since 2011.[7] The lack of affordable and subsidized housing has become a national crisis based on trends affecting inventory and pricing:

- High income renters are driving growth in the rental market.
- "Affordable housing" doesn't just refer to subsidized or below-market-rate housing anymore.
- AirBnB and other short-term rentals take many units off the market.
- Remote work (promoted by COVID) drove high paid professionals to previously low-cost regions.
- Second and third homes (urban homeowners looking for extra space during pandemic)
- Corporate and international investors are dominating housing purchases.

[7] JCHSa. (n.d.). Every State has Lost Low-Rent Units Since 2011. Joint Center for Housing Studies. Retrieved January 2022, from See JCHS map, https://www.jchs.harvard.edu/loss-low-rent-units

GROUP NOTES:

This is a critical need that does not necessarily correlate with housing burden. An approach similar to the home energy affordability gap would be useful here. We suggest continuing to seek examples of best practice data collection or better proxies than housing burden. An appropriate metric might be the number of available affordable housing units per eligible household (e.g. households living below 80% of AMI).

RESOURCES:

- American Housing Survey
- Harvard Joint Center for Housing Studies (JCHS)
- https://www.jchs.harvard.edu/research-areas/affordability
- Washington Post analysis of investors in major housing markets

D28. % Renters

METRIC STATUS: Included

Rationale: According to the U.S. Census Bureau, in 2020, more than a third of American households rented rather than owned their homes. Unlike property owners, tenants often lack authority to make physical upgrades to their residences. As a result, control over their energy consumption is relegated to behavior changes, simple improvements, and service provider program participation. This metric is also needed for distributional outcomes (e.g. percent of program energy savings among renters vs percentage of renters in the population).

RESOURCES:

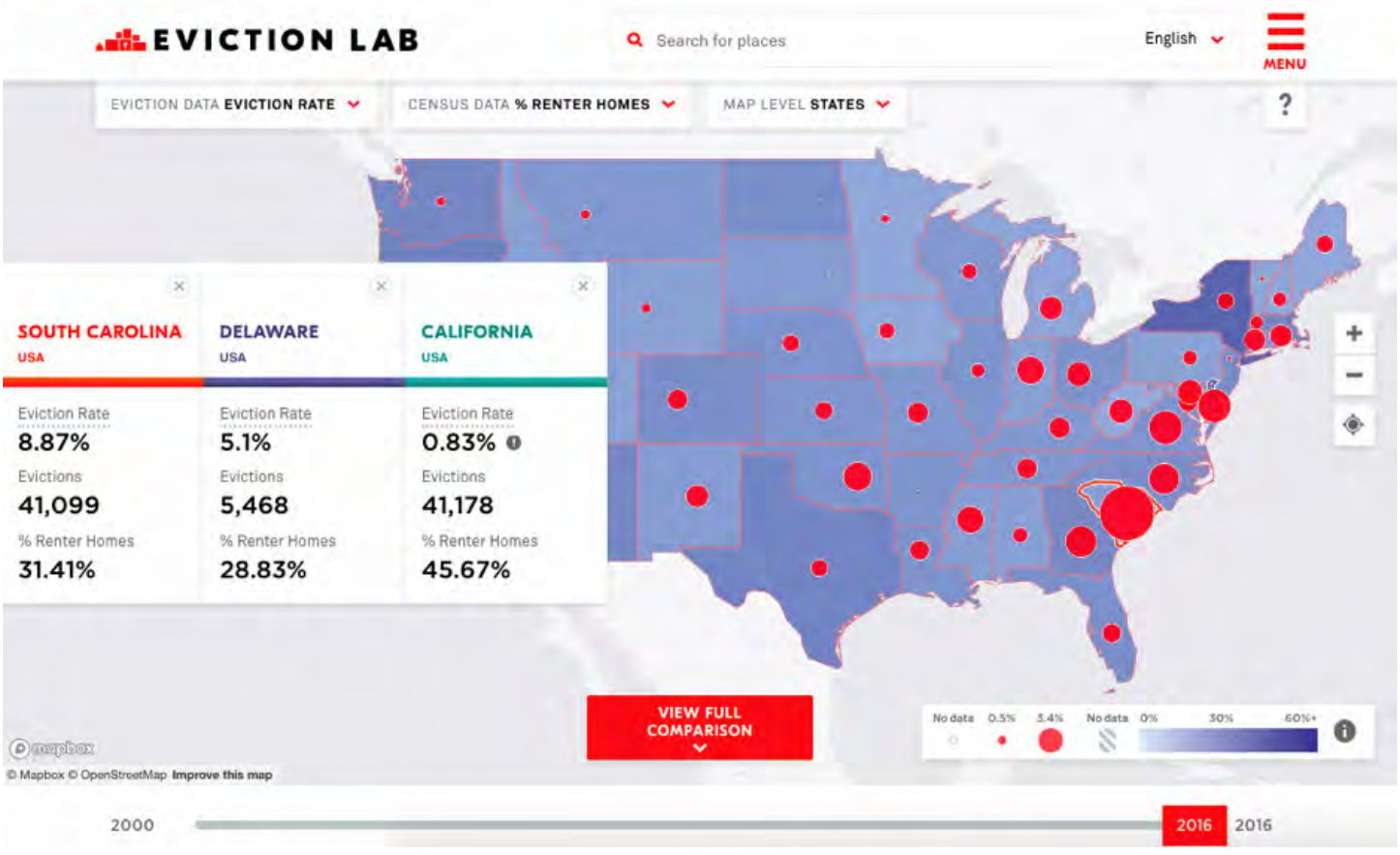
- American Housing Survey
- Harvard Joint Center for Housing Studies (JCHS)

D29. Eviction Rate

METRIC STATUS: Included. According to the National Eviction Lab at Princeton University, eviction rate is the number of eviction judgments divided by the renter population. When an eviction filing is ruled in favor of the plaintiff an eviction order is issued. "The eviction rate is the best measure of the number of eviction occurring during a given time period and those persons removed by court order." (Eviction Lab, n.d.)

Rationale: Groundbreaking research by Kay Jowers and colleagues (2021) revealed that evictions had a stunning and deadly impact during the pandemic. Reviewing counterfactual data retrospectively in states that employed different timings to begin and

Image source: Eviction Lab



end eviction moratoria, Jowers et al conclude through that had a national eviction moratorium been in place from March to November 2020, overall COVID cases would have been reduced 14.2% and *overall COVID deaths* would have been reduced by 40.7%. The CDC concurred; Dr. Walensky signed "an order determining the evictions of tenants for failure to make rent or housing payments could be detrimental to public health control measures to slow the spread of SARS-CoV-2, the virus that causes COVID-19." (August 3rd, 2021). The order, however, lasted only a matter of weeks in summer 2021 and applied only to counties experiencing high levels of transmission. Many states ended temporary eviction moratoria long before new waves of Delta and Omicron fueled record numbers of COVID cases in late 2021 and early 2022 (Johns Hopkins University, n.d.)

Although energy and housing insecurity are closely intertwined, we find eviction data is rarely used in the definition of environmental justice or disadvantaged communities by states or in federal tools such as CEJST or EJSCREEN. Evictions are not the mere result of high housing burdens, they are the outcome of decades of discriminatory housing policy and sometimes violent enforcement by both law enforcement and local mobs (Rothstein, 2017.) Housing discrimination mechanisms extended far beyond redlining, or cordoning off minorities, Blacks in particular, to certain sections of a city. Real estate agents were notorious for "block busting", threatening whites to sell low and then doubling prices on those same homes for potential Black buyers. Loans were not provided, requiring Blacks to purchase homes on land contract, in which a single missed payment resulted in the total loss of the house and all of the potential financial equity it had accrued. Those that persisted were often subjected to broken windows and even firebombing, often while police stood by passively observing or even encouraging the mob. Rothstein notes 213 incidents of racially motivated intimidation and violence in Philadelphia in just the first six months of 1955. One city, half a year, not an outlier.

Data from the National Eviction Lab confirm this (quoted from www.evictionlab.org):

- Black individuals made up 19.9% of all adult renters in the counties for which we had data, but 32.7% of all eviction filing defendants.
- One in every five adult renters was Black, yet one in every three eviction filings were served to a Black renter.
- Black renters experienced the highest average rates of eviction filing (6.2%) and eviction judgment (3.4%).
- By contrast, the average eviction filing rate among white renters was 3.4% and the average eviction rate was 2.0%.
- Nearly one in four black renters lived in a county in which the black eviction rate was more than *double* the white eviction rate.

The vast investment that made homeownership available to a huge middle class of whites typically skipped over people of color, who today are much more likely to be renters and to live in poorer quality housing stock. As white flight from the suburbs reversed to an influx into many of America's cities, neighborhoods that were historically Black and Brown faced gentrification. The gulf between housing stability enjoyed by whites and housing instability suffered by people of color was drawn over many decades and persists today.

EVICTION DIVERSION PROGRAM

Economic challenges caused by the COVID-19 pandemic have caused an increasing number of renters to fall behind on their rent payments, which raises the potential for widespread evictions (HUD User, 2021a). In September 2020, the Centers for Disease Control and Prevention issued a temporary eviction moratorium to mitigate the spread of the coronavirus and protect tenants at risk of eviction during the pandemic (HUD User, 2021b). Although the eviction moratorium has slowed the spread of COVID-19, it expired at the end of June 2021 with the lifting of COVID-19 restrictions around the nation and the resumption of economic activity to pre-pandemic levels. To prevent a wave of evictions, states and cities have created eviction diversion programs and expanded existing programs intended to deter formal legal proceedings by offering landlords and tenants opportunities for negotiation and mediation. Eviction diversion programs may also include supports such as legal assistance for tenants and financial compensation to landlords for past-due rent.

RESOURCES:

- Local and state eviction reduction strategies for responding to COVID, HUD User
- Eviction Prevention and Diversion programs, Urban Institute
- Benefits of Eviction Diversion, HUD User

D30. Eviction Protections Score Card

METRIC STATUS: Shift to qualitative/best practice or limited local use where data sources are robust. This was not included in the final map due to inconsistent coverage and insufficient time to review methodology.

Rationale: Although not used in the EEP map, the Eviction Lab also offers a scoring methodology for eviction moratoria that could be adopted locally as a best practice. Five scores are derived from a formula that "groups measures by stage in the process or type

of support, awarding points based on which measures states have enacted. Because some interventions have a greater impact on housing stability, the formula weights certain categories heavier than others." The breakdown of points within the total score is as follows:

- Initiation of Eviction: 40% of total score.
- Court Process: 15% of total score.
- Enforcement of Eviction Order: 15% of total score.
- Short-Term Supports: 10% of total score.
- Tenancy Preservation Measures: 20% of total score.

Although moratoria have been lifted, states and municipalities seek remedies to reduce evictions and ensure strategies to ensure safe, and stable housing, after the pandemic. Eviction lab provides a wealth of resources and background about the impact of evictions and steps that can be taken to minimize them. We recommend that programs to reduce energy costs, either through affordable payment plans or investments in energy efficiency and solar be concentrated in areas where evictions and eviction filings are high.

D.31 Transportation Burden

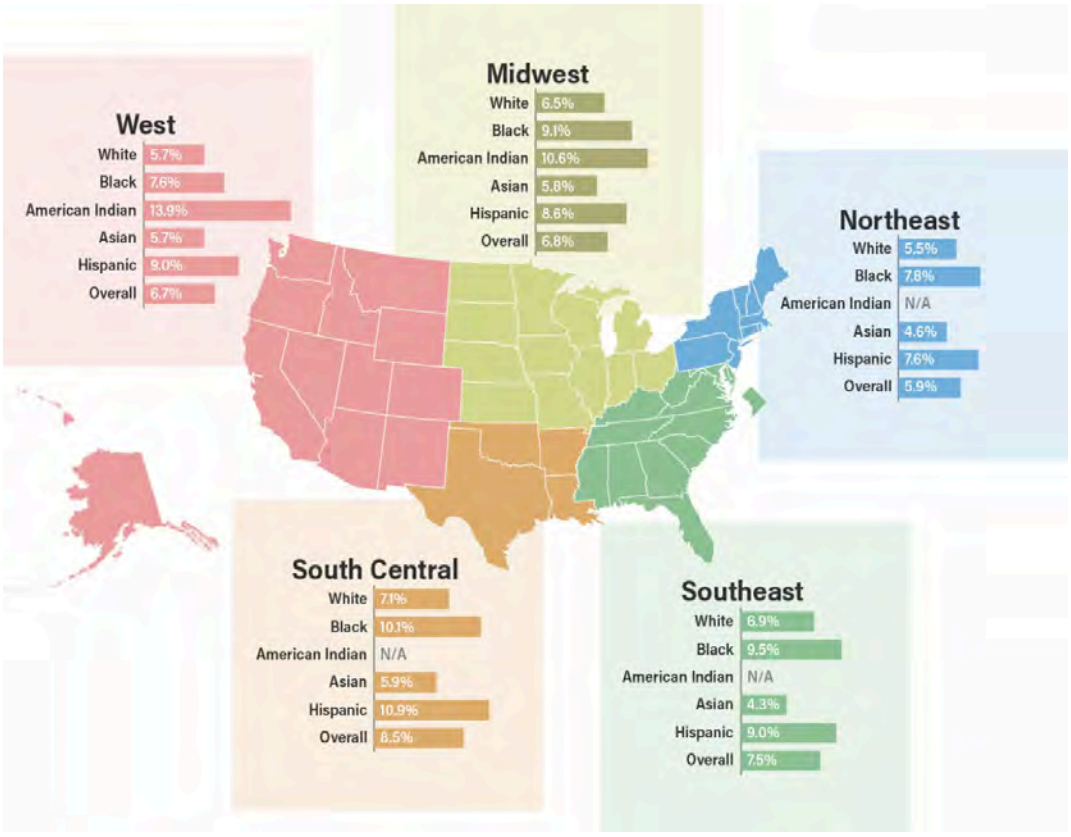
METRIC STATUS: Priority data gap. While rated as important by the workgroup, data is not available with sufficient frequency through the American Community Survey (Vaidyanathan and colleagues at ACEEE noted in 2021 that it relied on a 2013 snapshot to assess transportation burdens) or sufficiently fine resolution (census tract level instead of metro statistical area). Gas prices, too, now more than $5 per gallon at the time of this writing, will result in a rapid surge in transportation burden that is not reflected in the data. The overall patterns observed, however, are informative. We recommend local analysis and estimation of transportation burdens (e.g. average commutes, use of public transit, local gas prices) and consideration of how energy policies, such as supporting public transit and electric vehicles, can be directed to benefit BIPOC, frontline and low-income communities.

Rationale: Urban sprawl, land use planning, and uneven transportation investments have displaced many low-income households and communities of color into the suburbs or exurbs and left them without adequate access to affordable and efficient transportation.

Next to housing, transportation costs are the second-largest expense for households in the United States. The average household in the United States spends approximately "13% of its total income on expenses for vehicles, fuel, insurance, and maintenance" (Vaidyanathan et al, 2021) For low-income households, this average transportation burden (percentage of income spent on the costs mentioned above) can be "as high as 30%" (Fulton et al, 2018). Residents of sprawling urban areas and rural areas do more driving than those in urban cores with quality public transit systems and have higher transportation burdens.

Additional key insights from Vaidyanathan include the following:

- Gasoline cost burdens for low-income households are more than three times larger than burdens for higher-income households.



Transportation energy burden by region, race, and ethnicity. Note: Insufficient data exists for American Indian households in South Central, Southeast, and Northeast regions. Image source: ACEEE 2021.

- Among low-income households, these burdens are higher for Black, Hispanic, and American Indian households than for white and Asian households.
- Metropolitan areas in the Northeast have some of the United States' lowest average burdens, while those in the Sunbelt have some of the highest.
- Households outside key metropolitan areas have gasoline cost burdens that are 25% higher than those borne by households located within metro regions.
- Burdens are higher for households living in apartments and mobile homes.

There is not an official threshold for an affordable transportation burden. While not currently available, EEP supports the concept of developing a combined affordability metric that accounts for housing, utility (including energy, water and internet), transportation, and potentially food burdens. Affordability is deeply intersectional and at minimum, clean energy programs and investments should account for multiple cost burdens for all basic needs, not just those of the energy system itself.

Within the energy system, much of the emphasis on reducing transportation burdens has been on supporting growth of electric vehicles. This approach, however, has resulted in a great deal of taxpayer and ratepayer funded incentives being diverted to the wealthiest households (Bornstein et al) and typically those who own their own homes (Borenstein and Davis, 2016). A $7,500 federal tax credit on a new $40,000 EV may be a huge draw for a household earning more than $100,000, but it does nothing to make that purchase more accessible for a household earning $30,000.

An equitable approach would focus investments on public transit. Los Angeles offered 22 months of fare free public transit; and advocates note that only 6% of the system's revenues are sourced from rider fares (Divinity, 2022). More broadly Governor Newsome has proposed universal free public transit statewide.

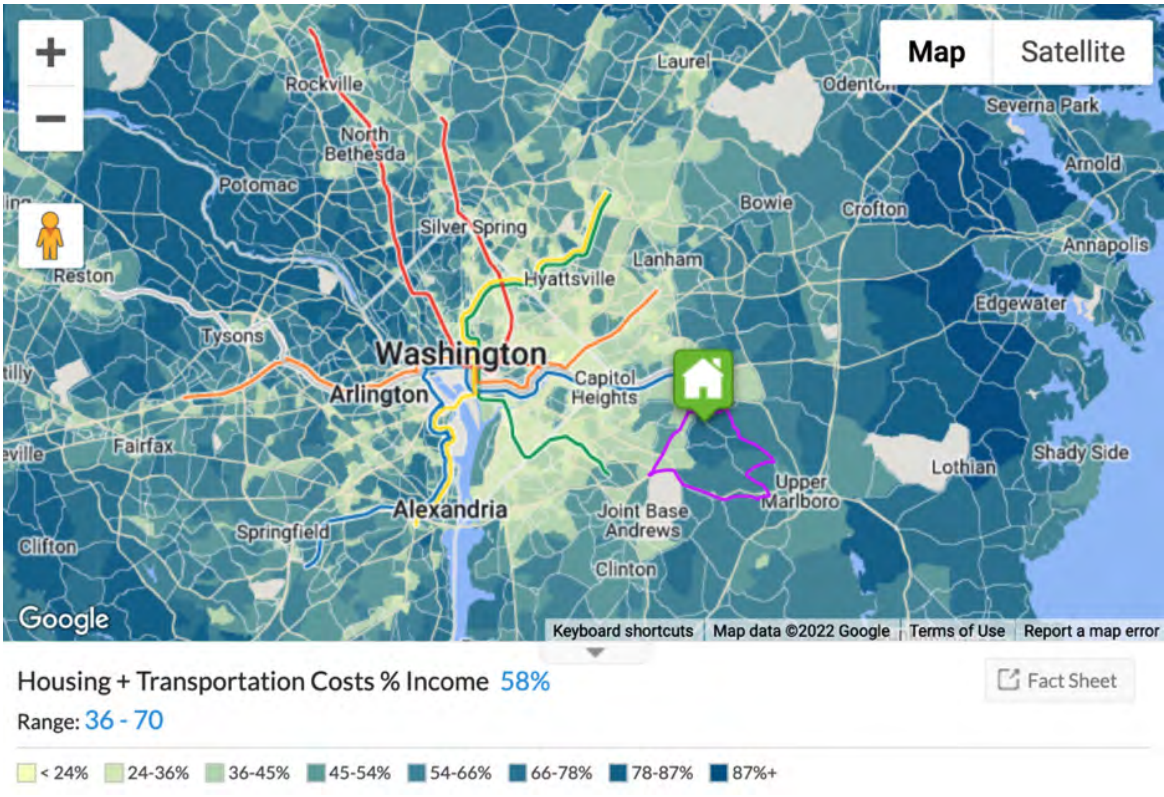
D32. Housing and Transportation Affordability Index

METRIC STATUS: Priority data gap. The Housing & Transportation Affordability Index was identified as a potential high quality source (although data may be several years old), but it was identified too late to vet and consider for inclusion in the first version of the EEP map. We will revisit this source when we update the map data in 2023.

Rationale: Traditional measures of affordability for housing do not take into account transportation costs. According to HUD, affordable housing costs should be no more than 30% of household income.

The Housing and Transportation Affordability Index provides a comprehensive view of both the cost of both housing and transportation at the neighborhood level. This index sets a benchmark of "no more than 45% of household income" (Center for Neighborhood Technology, 2022).

According to the Center for Neighborhood Technology: "The H+T presents housing and transportation data as maps, charts and statistics for 917 metropolitan and micropolitan areas—covering 94% of the U.S. population. Costs can be seen from the regional down to the neighborhood level. The Index shows that transportation costs vary between and within regions depending on neighborhood characteristics."



A sample map of the H&T Affordability Index in the greater Washington, DC area. Burdens average 58% of income and typically range from 36-70%. Image source: Housing and Transportation Affordability Index.

"When transportation costs are considered the amount of available affordable housing drops to 55% to only 26%, resulting in a net loss of 59, 738 communities and neighborhoods where individuals can afford to live." (Center for Neighborhood Technology, Housing and Transportation Index, 2022)

D33. Air Quality

METRIC STATUS: Priority data gap. While multiple measures of air quality exist at the Census Tract from sources such as EPA's EJScreen tool and the Climate and Economic Justice Screening Tool (CEJST) used for Justice40, the group was not able to decide upon a single metric or set of metrics for inclusion. We suggest users of the EEP map and framework cross reference one of the high quality existing screening tools to account for air quality impacts.

Rationale: Researchers have long demonstrated that pollution in general, and air quality specifically, has disproportionate impacts on people of color, especially Black people, and the poor.

For decades, this body of research has continued to amass more and more robust data on the scope and impact of these disparities. In summarizing general conclusions about air quality exposures and impacts here, we drew on studies and reviews by Cushing et al (2015), Daouda et al (2021), Newkirk II (2018), Tessum et al (2021) and Weaver et al (2021).

The burden of air pollution hits the poor and people of color in a disproportionate manner. These groups face disproportionately high exposure to an array of pollutants, such as ozone, nitrous oxides, and PM 2.5 (particulate matter smaller than 2.5 microns in diameter). Regarding pollution exposure, Black households in particular face 50% more exposure to particulate matter than whites (Newkirk II, 2018), and in California, Latinx households are 7 times more likely to live in the most polluted census tracts than whites (Cushing et al, 2015). That exposure is the source of increased rates of asthma, cancer, and even preterm births (Daouda et al, 2021).

Globally, a new study (Greenstone et al, 2022) found that PM 2.5 alone shortens the life expectancy of *all people* by an average of 2.2 years, which is 17 billion collective life-years. The World Health Organization (WHO) recently cut the safe level in half from 10 to 5 micrograms per deciliter, which means over 97% of the world's population is regularly subjected to unsafe levels of PM 2.5.

Recent studies have revealed that there is a higher rate of death from African Americans exposure to particle pollution than among whites and confirmed race is a more powerful predictor of exposure than income: "Even African American Americans with higher incomes still faced the same threat from particle pollution. Therefore other factors such as race and constant pressures of discrimination may be a factor. Redlining and other segregation factors place African Americans closer to places where pollution exists". (US EPA 2021, reviewing Tessum et al, 2021)

"Several studies show a direct correlation between poverty, lower home values, large urban inner city populations, use of public transportation" and exposure to pollution (US EPA, 2021). These all contribute to environmental racism, the disproportionate siting of environmental justices in communities of color, even when accounting for income.

These disparities may exist due to three factors: proximity to sources due to racism and class bias, housing dynamics and land costs. Pollution sources tend to be located near disadvantaged communities. "Second, low social positioning makes some groups more susceptible to health threats because of factors related to their disadvantaged status. Lack of access to health care, grocery stores and good jobs, poorer job opportunities, dirtier workplaces and higher traffic exposures. Lastly, existing health disparities [like diabetes, Weaver et al, 2021] tend to increase risk." (US EPA, 2021).

The effects of transportation related pollution is greatly exacerbated by closer proximity to a major roadway. According to the EPA, the number of people living next to busy roads may include 30 to 40 percent of the urban population. The Health Effects Institute (2010) published a major review of the evidence put together by a panel of expert scientists. The panel examined some 700 studies from around the world, and concluded that traffic pollution causes asthma attacks in children and is most dangerous for those living within 0.3 miles of major roads. For those very close to roads—within 50 meters—COPD and poor cognition were apparent.

D34. Blood Lead Levels in Children

METRIC STATUS: Not included; not requested by the workgroup.

Rationale: Lead exposure has major impacts on health, particularly on the cognitive abilities of children. Lead exposure and poisoning disproportionately affects the Black community, in particular, which reflects historic housing segregation and poor quality housing. While lead is a major environmental and justice concern in many communities, it was not recommended for inclusion, in part due to the inconsistent data availability which is often held by local or county health departments. As noted in the Distributional chapter, remediating household health and safety

issues, including lead, is a best practice that should be taken up locally and by designing and targeting utility programs to have maximum benefit.

RESOURCES:

- Several CDC references are noted in the References section of this chapter
- Things parents can do to prevent and mitigate lead exposure (CDC)
- Health Impact Project, Pew Charitable Trusts

Protecting children from exposure to lead is important to lifelong good health. No safe blood lead level in children has been identified. Even low levels of lead in blood have been shown to affect learning, ability to pay attention, and academic achievement. While the effects of lead exposure may be permanent, if caught early there are things parents can do to prevent further exposure and reduce damage to their child's health (CDCf, n.d.).

The most important step that parents and caregivers, healthcare providers, and public health professionals can take is to prevent lead exposure before it occurs (CDCc, 2021; CDCed, 2021; CDCe, 2021).

CDC supports primary and secondary lead exposure prevention.

- Primary prevention is the removal of lead hazards from the environment before a child is lead exposed. It is the most effective way to ensure that children do not experience harmful long-term effects of lead exposure.
- Secondary prevention includes blood lead testing and follow-up care and referral. It remains an essential safety net for children who may already be exposed to lead (CDCa, 2019).

D35. Opportunity scores

METRIC STATUS: Not included—using composite scores and indices within a new index is not a best practice.

The Opportunity Scores index is comprised of 16 metrics in economy, education, health, and community (e.g. youth disconnection, voter registration, access to healthy food) by region.

RESOURCES:

- https://opportunityindex.org/
- https://opportunityindex.org/, https://careshq.org/map-room/

Image source: Getty/Bettmann Collection

Historical Index

H1. Adoption of historical narratives/root causes of disparities in the energy system

METRIC STATUS: Shift to qualitative/best practice

Rationale: The recognition group believes these first-person accounts are critical to developing a coherent and holistic understanding of the experience of energy inequity, and to providing a foundation for the various metrics proposed by the EEP working group. We are not aware of an existing template or guide to compiling narratives as told directly by frontline communities. Whatever form they take, they should stand on equal footing with the stories told in data; lived experience is powerful and needs to have a significant impact on how policies and programs are shaped.

RESOURCE:

- SEEA Storyboard about Energy Insecurity in the South

H2. Historical rate & billing changes relative to 1) National average, and 2) Commercial & industrial sector

METRIC STATUS: Secured, late edition (not included in beta version of the EEP map). The data that exists is primarily for investor-owned utilities, so the ~30% of U.S. households served by cooperative and municipal utilities or using distributed fuels for heating are not included. The data requires further analysis and calculation to provide historical perspective and may not be feasible as a national dataset. We provide information on how this data could be used below.

Rationale: Although there is value to utilities for having larger commercial and industrial (C&I) users as baseload consumers, this metric would consider the relative change between C&I users over time, rather than the absolute disparity. If residential and

commercial rates were both $0.10 / kWh in 2010, but by 2020 residential rates are $0.15 and commercial rates are $0.08; what were once equal rates now have a disparity with residential rates being 87.5% higher than commercial rates. This scenario could be scored as -87.5%, with the negative sign indicating residential rates have moved away from parity. This metric could also consider change in residential rates in a particular state or utility to other states or utilities.

This metric will be challenging to use accurately in unregulated markets where households in the same area will have different utility service providers and different rate plans. Data sources include EIA historical billing data and published utility rate plans.

H3. Reparations

METRIC STATUS: Not included, no existing data

Rationale: We are not currently aware of any area providing reparations for harms caused by the energy system, so the metric score would be zero. If reparations are in place in even a few locations, the recognition group believes it is important to track this to show disparities and benefits across regions. *Reparations are addressed in depth as an important concept of the Restorative Dimension chapter.*

From a housing perspective, maps are available for many cities that show historically redlined neighborhoods. Because discriminatory housing policies and practices like redlining had a direct negative impact on the quality and energy efficiency of homes (Hoffman et al., 2020) and limited home ownership (Lynch et al. 2021), formerly redlined neighborhoods should be prioritized for clean energy investments. We also note that while housing segregation and discrimination was experienced by multiple racial and ethnic groups, the problem was particularly acute for Black Americans and warrants particular consideration when considering reparations or other remedies (Rothstein, 2017).

Even without a formal reparations policy or mechanism, energy efficiency and clean energy programs could be targeted to communities that were historically marginalized as one form of reparations.

RESOURCES:

- Redlining in New Deal America – University of Richmond
- The Case for Reparations – TaNehisi Coates
- Community Solar as Energy Reparations – Nikki Luke and Nik Heynen, 2020

H4. Energy efficiency equity baseline (E3b) metric

METRIC STATUS: Not included, limited coverage. The concept is valuable for local calculation and determining historical deficits.

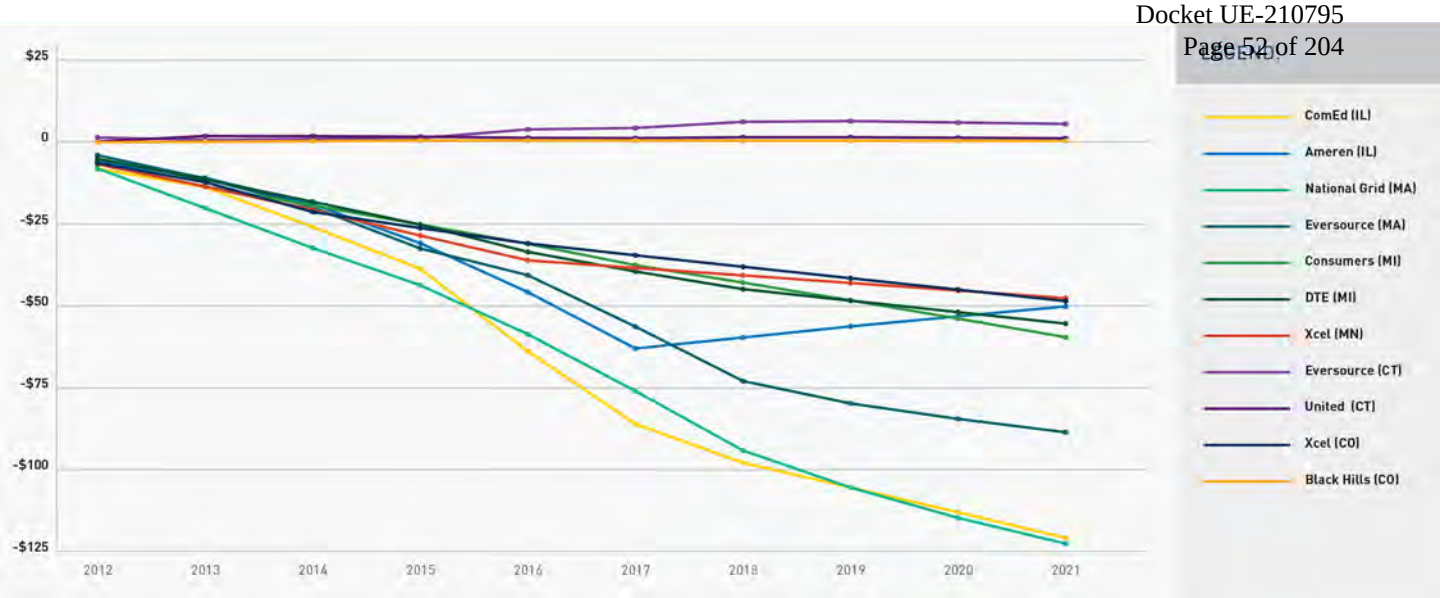
Rationale: The Energy Efficiency Equity Baseline (or "E3B") map visualizes investor-owned electric utilities' investments into energy efficiency programs for low-income customers. Intended to be an interactive tool for both state and utility policy-makers, and energy justice advocates, the E3B map provides a comparative framework to examine the equity of utilities' investments into low-income energy efficiency measures against a novel standard: the E3B.

NOTES:

This parallels the concept of Justice40. It establishes proportionate spending and energy savings between different groups (first done between low-income and non low-income) compared to the percentage of the population in a program service territory. For instance, if 35% of a utility's customers are low-income, the E(3) b would be 35% of the total program budget and total energy savings. This metric would be reflected as a % of E(3)b achieved, with 100% being exactly proportional. In the example above, $35 million in LI spending out of a $100 million budget would yield an E(3)b score of 100%. $28 million for LI programs would score 80%, while $42 million would score 120%. The same calculation can be applied to energy savings. This metric could have multiple permutations by income, race, EJScreen score, between residential and commercial spending, etc.

Also note that even the Justice40's target that 40% of benefits flow to disadvantaged communities is a *floor*, because shifting to proportional investments does not remedy historical disparities or marginalization that Black, Indigenous, Latinx, poor, and frontline environmental justice communities have been subjected to.

Dr. Tony Reames and students at U of M's Urban Energy Justice lab applied the E3b metric to cumulative energy efficiency program funding deficits for low-income households. Analyzing eleven investor-owned utilities, they found a total cumulative (historical) gap of $585 million, and as much as $123 million (Reames et al, 2019). EEP contends that *before* proceeding with proportionate investments suggested by E3b or Justice40, the historical gap must first be closed. Once the gap is closed, we achieve a fresh starting point for all communities within that particular funding source for energy efficiency programs. Because of other historical inequities, from pollution burdens to access to tax credits and financing to redlining and housing.



This image visualizes the cumulative impacts of underinvestments in utility programs over time. In this case, investments in low-income energy efficiency programs by IOUs are well below the proportion of the low-income population in their service territory. (Reames et al, 2019). Image source: Poverty Solutions, University of Michigan.

RESOURCES:

- Urban Energy Justice Lab (University of Michigan) publications
- E3b map
- E3b presentation

H5. Residential energy consumption disclosure/ benchmarking

METRIC STATUS: Not included due to very limited data and adoption. Shift to qualitative/best practice.

Metric definition note: Similar policies require buildings, generally large commercial and industrial above a certain square footage, to disclose energy consumption. These are frequently referred to as benchmarking ordinances and may require annual or bi-annual disclosures. These metrics are used primarily to support carbon reduction initiatives. We are speaking of a related but different form of energy disclosure, one that informs potential renters or buyers of the energy bills they would be likely to inherit in a potential new home.

Rationale: Energy costs can rival those of mortgage payments, depending on the climate, the size and efficiency of the home, and the usage patterns of the household. This form of energy consumption disclosure would be mandated with real estate listings, ideally for both homes for sale and for rent. The existing Home Energy Score, created by the Department of Energy, provides a 1-100 score that would enable prospective renters and buyers to compare properties. Similar labeling tools exist for vehicles (EPA fuel efficiency/MPG ratings), for water heaters, and for other appliances (e.g. EnergyStar).

As of 2020, about 12 cities and states required home energy consumption disclosures (Gerdes, 2020). As this metric is novel in its adoption and availability, we do not recommend it for inclusion in the national EEP map, but suggest it as a best practice for municipalities and other jurisdictions seeking to give households information about what they can expect to pay in energy costs. Potential buyers and renters might see a home energy score or energy use index for the property. This might be a qualitative spectrum — 0 = does not exist, 1 = limited disclosure, 2 = full transparent, accessible disclosures.

WORKGROUP NOTES:

ACEEE tracks this a bit in the city and state Scorecards but only for the 100 largest cities. RMI has a tool that's tracking this.

RESOURCES:

- RMI's Residential Energy Performance work
- Lessons from Developing and Deploying the Nation's First Mandatory Home Energy Score Policies (Presented at ACEEE 2018 Summer Study)
- Valuing efficiency in real estate listings: an experiment (ACEEE)
- Home Energy Score – DOE Office of Energy Efficiency and Renewable Energy (EERE)
- City of Portland Home Energy Score

H6. Historical violations of land sovereignty – general

METRIC STATUS: Not included—see discussion on Indigenous Sovereignty in the Restorative Chapter. Indigenous groups should have the ability to tell the story of violations and have that included in the public record. These documents should influence decision-making. We would include this because it closely connects to Indigenous Allyship.

WORKGROUP NOTES

"There are a lot of examples out there that could be the basis for a very important study. Whether these abuses could be presented as a metric seems like the wrong tool to me."

"I would love to see a study on this that we can cite. Without that, it would likely be really difficult to include, as there's so much history that would need to be explored. We could focus it in on more specific violations (such as the metric below for the energy industry), but even then it would be a massive undertaking to unearth all that's been taken over the last 300+ years."

H7. Historical violations of land sovereignty by the energy industry

METRIC STATUS: Not included—see discussion on Indigenous Sovereignty in the Restorative Chapter.

WORKGROUP NOTES

"You would really need to distinguish between the utility sector and oil and gas sectors to extract useful and actionable information."

"I think this is super important, yet again would need a study to unearth all the violations that need to be brought to light. I'm giving it a 5 though because I believe it does need to be included and we should strive to collect this data."

Energy Security Index

ES1. # of shutoffs

NOTE: *Shutoffs are a word choice used by EEP. To us, they are more indicative of an active, avoidable, and punishing response to block households that cannot afford to pay their energy bills from access to a basic and universal human right. Many advocates for ending shutoffs emphasize the use of this term. The word disconnections, while more popular among regulators and utilities, connotes a passive action that is a natural, unpreventable and unfortunate consequence of poverty. We cannot speak to the intent or awareness behind these terms by others, but we note a significant nuance in how we perceive and use them.*

METRIC STATUS: Priority data gap. Some data exists, but varies widely by state and utility type.

Rationale: Despite the acute risks of living without power during the pandemic, just sixteen investor-owned utilities conducted nearly 1 million shutoffs from February 2020 to June 2021 (Su and Koveke, 2021). More than any other metric, we hear requests from grassroots community organizations and advocates for more reliable data on shutoffs. Regardless of the reasons for the shutoffs, they represent the greatest threat to life and well-being within the energy system. A recent study by Indiana University's Energy Justice Lab found that 13.5% of households were shut off between November 2021 and January 2022, during the height of the Omicron surge (Carley et al, 2022).

Shutoff data is THE highest priority data gap for EEP. It is most sought by grassroots organizations and nonprofit practitioners, and shutoffs can have immediate life and death ramifications during extreme weather events or among individuals with disabilities and chronic medical conditions. Remarkably, data on shutoffs are not mandated in many states, and even those that do require data typically only require it from IOUs, giving no indication of how those served by co-ops, municipal utilities, and distributed fuel utilities are impacted.

Despite the severe human toll of shutoffs, most utilities are not required to, and do not, publicly report on this. More regulation is needed for this type of data to be publicly available.

RESOURCES:

- Power in the Pandemic Report – Center for Biological Diversity and the Bailout Project

ES2. Trend in shutoffs

METRIC STATUS: Priority data gap. This would entail further calculations by researchers, whether local or at an initiative like EEP.

Rationale: Centering energy as a human-right calls into action the need to protect people from being shut-off from access to energy. This aligns with United Nations Sustainable Development Goal 7 (SDG7). Research also indicates that pre-payment might not be the best solution, with those pre-paying often paying more, and at risk of energy poverty (O'Sullivan et al., 2011). As a best practice this metric would take into account: 1) change by year and 2) requirements to reduce over time.

Utilities that have higher levels of shutoffs might be required to more aggressively curtail the practice, as was ordered by the California Public Utilities Commission in 2020 (see p. 173 of CPUC, 2020):

ROLLING METHODOLOGY FOR THE DISCONNECTION CAP

TARGET DATE	PG&E	SDG&E	SCE	SoCal-Gas
07/01/2020	4%	3%	8%	2%
01/01/2021	4%	3%	7%	2%
01/01/2022	4%	3%	6%	2%
01/01/2023	3.5%	3%	5%	2%
01/01/2024	3.5%	3%	4%	2%

Source: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M340/K648/340648092.PDF (p.173)

RESOURCES:

- Academy4SC video on SDG7
- Lights Out in the Cold report – NAACP
- Flaherty, M., Carley, S., & Konisky, D. M. (2020). Electric utility disconnection policy and vulnerable populations. *The Electricity Journal,* 33(10), 106859.
- O'Sullivan, K. C., Howden-Chapman, P. L., & Fougere, G. (2011). Making the connection: The relationship between fuel poverty, electricity disconnection, and prepayment metering. *Energy Policy,* 39(2), 733-741.

ES3. Shutoffs disproportionately impacting BIPOC

METRIC STATUS: Priority data gap. This would entail further calculations by researchers, whether local or at an initiative like EEP.

Rationale: Data demonstrates that shutoffs impact those who are vulnerable and/or marginalized differently than those who are not (Brown et al., 2020). There are two approaches to determining this metric: 1) The utility collects and directly provides customer data on race (which customers could opt out of providing). This method would have higher accuracy but many utilities we have heard from are averse to collecting customer data, particularly on race. Or, 2) Estimate shutoffs based on the racial composition within geographic boundaries, ideally at the census tract level or even the block level. This method doesn't require collecting any additional information, but requires the additional step of matching census tract populations to utility shutoffs. Additionally, in heterogeneous census tracts (which average about 4,000 residents nationwide), this method could miss disproportionate impacts to a particular group (e.g. if less proficient English speakers are being shut off at higher rates).

The workgroup rated this metric as a high priority to include in the EEP map. As a best practice, the group strongly recommends collecting and reporting as much data as possible at frequent intervals to enable analysis of trends and potentially disproportionate impacts.

RESOURCES:

- Brown, M. A., Soni, A., Lapsa, M. V., Southworth, K., & Cox, M. (2020). High energy burden and low-income energy affordability: Conclusions from a literature review. Progress in Energy, 2(4), 042003.
- DEFG. (2022). Struggling Utility Customers on the Road to Recovery in 2022. Retrieved from: https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/workgroups/eaac/DEFG-22-01-19-LIEIF-Consumer-Survey-Road-to-Recovery.pdf?rev=bcbc7f5c523d43398f753a12b4d2ae7e&hash=A8BE728A7F209789D009117982A9DF4F

ES4. Shutoff policies protecting vulnerable populations

METRIC STATUS: Secured—late addition, shift to qualitative (currently). Data from Indiana's Energy Justice Lab addresses multiple types of shutoff protections and policies at the state level (Flaherty et al, 2021). Any additional protections offered by individual utilities are not widely available through a single data set. EEP is exploring the potential to use

the shutoff policy data to create a rating scale and a new quantitative metric.

Rationale: Each year, millions of people in the U.S. have their utilities shut off for non-payment. Further, shutoffs can be associated with mental and physical harm, but can also lead to death from exposure to extreme heat or cold (Flaherty et al., 2020). This metric was rated highly by the workgroup.

Innovative methods are needed to conceptualize policies that have the potential to protect vulnerable populations. One possible assessment is a weighted checklist that users would score on the basis of: mandatory notifications and time to rectify; mandatory enrollment in efficiency programs; mandatory enrollment in affordability programs; protections for vulnerable populations (seniors, young children, people with medical conditions); and decreasing caps on the number of allowable shutoffs.

While shutoff protection policies are today considered a best practice and take numerous forms, we note that in the presence of shutoff moratoria, such as those in place in 33 states during COVID-19, **the design of specific shutoff protections becomes moot when a single, overarching protection is in place.**

RESOURCES:

- Flaherty, M., Carley, S., & Konisky, D. M. (2020). Electric utility disconnection policy and vulnerable populations. *The Electricity Journal,* 33(10), 106859.
- LIHEAP (n.d.). Disconnect policies. Retrieved from https://liheapch.acf.hhs.gov/Disconnect/disconnect.html
- Resolution on Disconnection Data Disclosure – NASUCA (National Association of State Utility Consumer Advocates)
- National Consumer Law Center (NCLC, 2021). Protecting Seriously Ill Consumers from Utility Disconnections: What States Can Do to Save Lives Now. Retrieved from: https://www.nclc.org/issues/energy-utilities-a-communications/protecting-seriously-ill-consumers-from-utility-disconnections.html
- Utility Service Principles – NCLC
- Utility Bill of Rights – NCLC

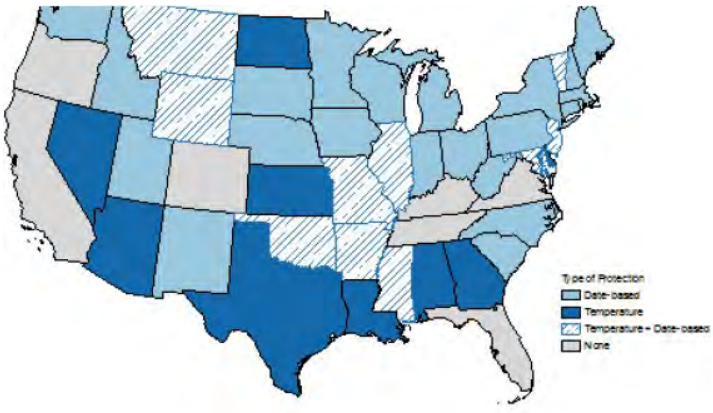
ES5. Shutoff suspensions during extreme circumstances

METRIC STATUS: Secured, late addition—see ES4 status; the details are the same.

Rationale: In addition to disconnections being problematic for vulnerable groups, this is doubly problematic when disconnections occur during extreme circumstances such as heat waves, a pandemic, and natural disasters. Furthermore, many jurisdictions have imposed moratoriums on shutoffs during Covid but it is unsure if these will remain and/or for how long (e.g., Das et al., 2022). This metric was rated a high priority by the workgroup. Data collection should include: tracking shutoffs, the timing of lifting of shutoff suspensions and moratoria, the circumstances under which they are used, and who they serve.

RESOURCES:

- Das, R. R., Martiskainen, M., & Li, G. (2022). Quantifying the prevalence of energy poverty across Canada: Estimating domestic energy burden using an expenditures approach. *The Canadian Geographer/ Le Géographe canadien*. https://doi.org/10.1111/cag.12750



Panel A. Cold Weather Protections

Panel B. Hot Weather Protections

While many states have shutoff protections for cold weather, heat-related protections are uncommon, even though far more people die each year from heat illness than cold exposure. Source: Flaherty et al, 2021.

- LIHEAP (n.d.). Seasonal termination protection regulations. Retrieved from https://liheapch.acf.hhs.gov/Disconnect/SeasonalDisconnect.htm

ES6. Ease of restoration

METRIC STATUS: Priority data gap

Rationale: In the absence of improved shutoff protections or moratoria, the process of restoring service is an important consideration. Currently, there is not a clear model of how to address this need. Considerations should include time to be restored, fees required, and if there are disparate impacts in restoration service by demographic group. We recommend that those who are impacted are involved in attempts to better understand this issue. For example, utilities could work with householders to understand the experience of disconnection followed by restoration and be accountable by asking users to provide a rating with respect to the "ease" of restoration. Finally, we note that with AMI meters, restoration of electric service should be nearly instantaneous and incur hardly any expense, since no staff are dispatched to the home.

RESOURCES:

- Utility Disconnection Protections – Indiana University Energy Justice Lab

ES7. Outages (frequency, duration, restoration time) disproportionately affecting frontline, low-income, and BIPOC households

METRIC STATUS: Included; EIA data sets for "SAIDI" and "SAIFI"[8] is at the utility service territory scale, which can cover an entire state, and is applied equally to all census tracts in that service territory. More fine-grained data at the census tract level should be a priority and would reflect disparities in infrastructure age and quality, resilience, and overall grid vulnerability.

Rationale: Outages may be felt differently by those belonging to vulnerable, marginalized, or BIPOC groups. Existing inequities have and continue to contribute to housing segregation, which can then contribute to disparities in energy service reliability and power outages (Bouzarovski and Simcock, 2017; Ko et al., 2014). Outages are an increasing risk as a result of climate impacts; outages that occur as a result of severe storms, hurricanes, or wildfires in summer leave households vulnerable to extreme heat and loss of refrigeration, while outages due to winter storms, as in Texas and Oklahoma in February 2020, leave households without heat.

Inequities can also be spatially driven given the "geographical assemblage" of energy flows, production, distribution infrastructures, characteristics of the built environment, and social and economic networks (Harrison and Popke, 2011). For households, heating systems, energy carriers used with them, and the energy efficiency of dwellings create certain ways of accessing and affording energy (Maxim et al., 2017). Environmental features such as climate conditions also interact with the geographical assemblage. Taken together all these features can put some in more vulnerable positions than others (Yenneti et al., 2016).

RESOURCES:

- EIA reports
- EIA national outage statistics
- Outage Data Initiative
- Catalyst Cooperative

ES8. Data transparency for outages and shutoffs

METRIC STATUS: Shift to qualitative/best practice

Rationale: It might be difficult to address data transparency without first knowing what available data exists. From here, the concept of "transparency" would need to be conceptualized (see the Procedural chapter). This is critical for being able to address the various metrics this group has considered. And for utilities and stakeholders to consider for best practice going forward.

RESOURCES

Significant overlap with shutoff protection metrics:

- Resolution on Disconnection Data Disclosure – NASUCA (National Association of State Utility Consumer Advocates)
- Powerless in the Pandemic Data and Calculations
- Utility Service Principles – NCLC
- Utility Bill of Rights – NCLC

ES9. Energy as a human right policy/declaration guaranteeing access/permanent moratorium on shutoffs

METRIC STATUS: Shift to qualitative/best practice

Rationale: The concept of "right to energy" was first introduced in the 1950s by the United Nations and although it is not explicitly stated in Sustainable Development Goal 7 (SDG7), it is implied that access to affordable, reliable, sustainable, and modern energy is a fundamental need for human development, and that this need reflects principles of human rights (Shyu,

[8] See the footnotes and a link to a 5-minute YouTube tutorial on the EIA website: https://www.eia.gov/electricity/annual/html/epa_11_01.html#:~:text=SAIDI%20%3D%20System%20Average%20Interruption%20Duration,year%2C%20the%20average%20customer%20experienced.

2021). Furthermore, SDG7 is an important international policy agenda that emphasizes the necessity of energy services for human capabilities (Hesselman et al., 2021).

RESOURCES:

- Draft House Resolution: Human Rights to Utility Services
- Sustainable Development Goal 7 – United Nations

ES10. % Households keeping homes at unsafe temperature

METRIC STATUS: Shift to best practice and monitor regularly

Rationale: This is reported in EIA's Residential Energy Consumption Survey (RECS); but only every ~5 years and not in every state. Best practice is to monitor regularly across jurisdictions. The last RECS survey data is from 2015; new data is due out in 2023. More than 10% of households in 2015 reported keeping their homes at an unhealthy temperature. The Census Pulse Survey, administered every 1–2 weeks during COVID-19, identified nearly 20% of households keeping their homes at a temperature that felt unsafe or unhealthy (U.S. Census, 2022).

Dr. Destenie Nock and colleagues at Carnegie Mellon University led an innovative study to create the Energy Equity Gap, which looks at disparities in when households turn on their air conditioning as a proxy for energy poverty.

RESOURCES:

- EIA. Residential Energy Consumption Survey (RECS). (n.d.). Retrieved from: https://www.eia.gov/consumption/residential/
- https://www.eia.gov/consumption/residential/reports/2015/energybills/
- Energy Equity Gap – Nock et al, Carnegie Mellon

RECOGNITION MEASURES SUMMARY

Demographic Index

- D1. Defining "disadvantaged"/target populations
- D2. Social Vulnerability Index (SVI)
- D3. Presence of toxic facilities
- D4. Climate vulnerability – heat exposure
- D5. Climate vulnerability – flooding/sea level rise exposure
- D6. Climate vulnerability – severe storm/hurricane exposure
- D7. Climate vulnerability – fire exposure
- D8. Climate vulnerability – adaptive capacity/resilience
- D9. % BIPOC
- D10. Low birth weight
- D11. Maternal mortality
- D12. COVID Case and Death Rates
- D13. % without health insurance
- D14. % of Seniors Living Alone
- D15. Income Mobility
- D16. Incarceration Rate
- D17. Educational attainment
- D18. Poverty rate
- D19. Deep poverty rate
- D20. Relative poverty (% of AMI)
- D21. Employment rate
- D22. Job access score
- D23. % Households without internet access
- D24. % Households where English is not the primary language spoken
- D25. Average age of building
- D26. Housing burden
- D26. Housing inspection scores (HUD multifamily)
- D27. Availability of affordable housing
- D28. % renters
- D29. Eviction Rate
- D30. Eviction Protections Score Card
- D.31 Transportation Burden
- D32. Housing and Transportation Affordability Index
- D33. Air Quality
- D34. Blood Leads Levels in Children
- D35. Opportunity scores

Historical index

- H1. Adoption of historical narratives/root causes of disparities in the energy system
- H2. Historical rate & billing changes relative to 1) National average, and 2) Commercial & industrial sector
- H3. Reparations
- H4. Energy efficiency equity baseline (E3b) metric
- H5. Residential energy consumption disclosure/ benchmarking
- H6. Historical violations of land sovereignty – general
- H7. Historical violations of land sovereignty by the energy industry

Energy Security Index

- ES1. # of shutoffs
- ES2. Trend in shutoffs
- ES3. Shutoffs disproportionately impacting BIPOC
- ES4. shutoff policies protecting vulnerable populations
- ES5. Shutoff suspensions during extreme circumstances
- ES6. Ease of restoration
- ES7. Outages (frequency, duration, restoration time) disproportionately affecting frontline, low-income, and BIPOC households
- ES8. Data transparency for outages and shutoffs
- ES9. Energy as a human right policy/declaration guaranteeing access/permanent moratorium on shutoffs
- ES10. % Households keeping homes at unsafe temperature

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Procedural Equity

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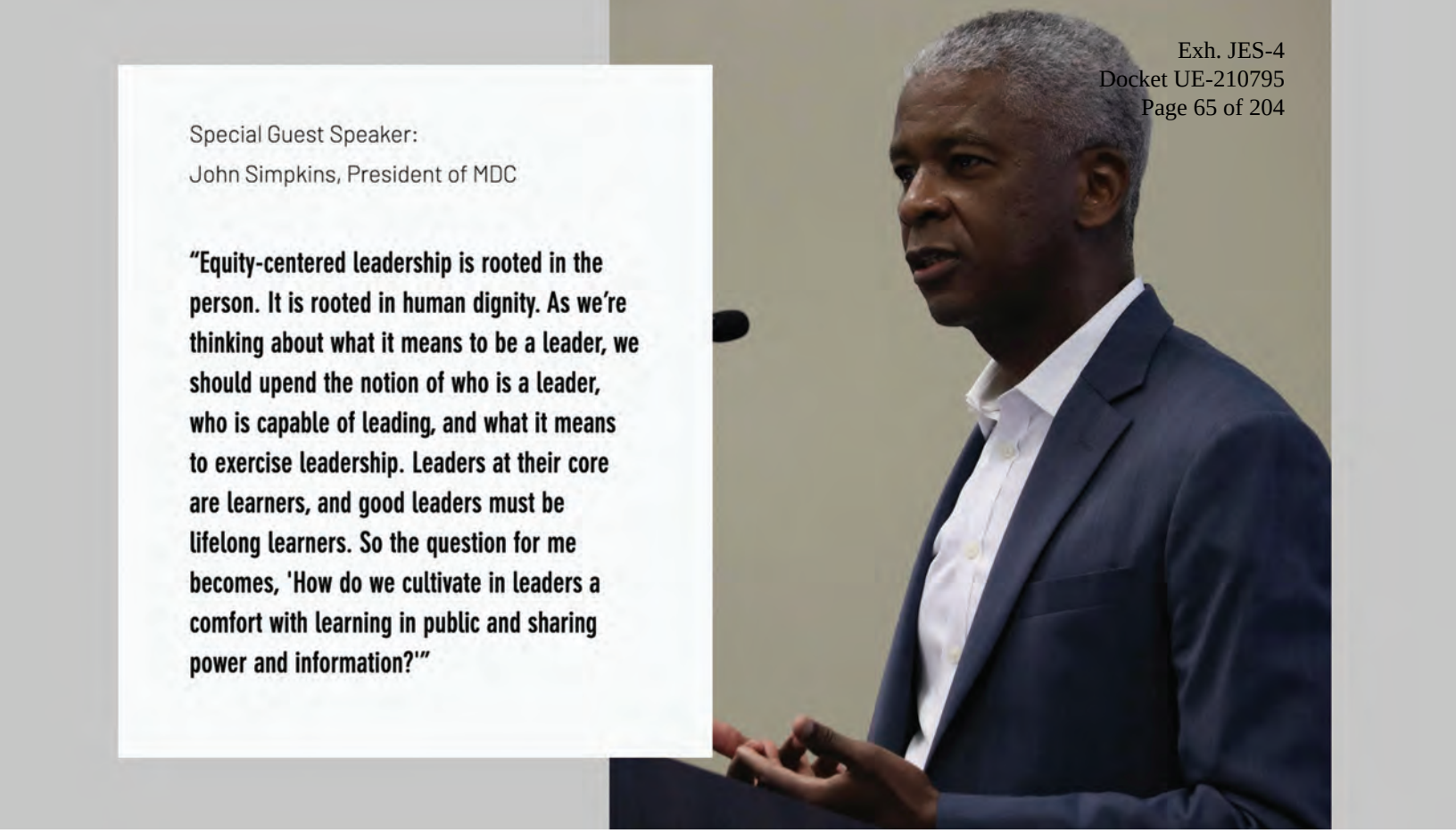
Historically, energy decision making processes have been inaccessible for individuals and communities to participate in meaningfully. This is due to both the complex, judicial nature of energy decision making processes and to the legacy of systemic racism embedded in many of our policies and procedures (Kowalski, 2021). The ***procedural equity dimension*** *is a critical piece of the EEP framework because it reveals who is at the decision-making table and promotes diverse representation of impacted communities among decision makers and energy service providers. The measures in this section outline a framework to ensure that community voices are heard throughout the design, implementation, and evaluation of energy programs and policies; we outline enforcement and accountability mechanisms that tie these principles to the internal practices of an organization.*

Themes of trust, credibility, and power emerged as vital components in procedural equity; these principles lean on ethics and social licenses to operate (The Ethics Center, 2018). These themes guided writing and research into how utilities and regulators can shift current processes and build new frameworks to better engage communities. The workgroup also explored how to ensure current and future programs and procedures are truly accessible to all communities, especially those most heavily impacted by climate change. A key finding is that procedural equity is



deeply intertwined with systems change, and this chapter highlights strategies to shift existing systems and processes for long term, transformative change.

With **trust**, we emphasized that *equitably shifting energy systems must: 1) ensure long term investments (time, financial resources, capacities, staff) that build community power and authentic relationships with communities, 2) create inclusive listening sessions that uplift and value community wisdom, 3) ensure a consistent process of sharing transparent information with communities (including demographic backgrounds of staff and commissioners), and 4) expand the depth of racial, economic, and social equity knowledge that utility and PUC staff must maintain in order to continue their role.*

With **credibility**, we underscored that *equitably shifting energy systems must change the current explicit and implicit norms of the utility and PUC sector, including but not limited to: 1) pivoting away from white supremacy cultural characteristics (Okun, 2021), ensuring flexibility to respond to arising concerns from communities, 2) providing trauma-informed and accessible decision-making and meeting spaces, 3) targeting outreach and trust building with historically marginalized communities, 4) enstating more authentic and representative decision-makers, 5) ensuring transparent communications and materials, and 6) being accountable to community inputs within IOU, PUC, and other agency processes.*

15 Characteristics of White Supremacy Culture

1. Perfectionism
2. Sense of Urgency
3. Defensiveness
4. Quantity Over Quality
5. Worship of the Written Word
6. Only One Right Way
7. Paternalism
8. Either/Or Thinking
9. Power Hoarding
10. Fear of Open Conflict
11. Individualism
12. I'm the Only One
13. Progress is Bigger, More
14. Objectivity
15. Right to Comfort

Tema Okun and Kenneth Jones, Dismantling Racism Workbook, 2001.

And with **power**, we aimed for communities to gain power in decision-making spaces through better representation and accessibility to these spaces to ultimately make their own energy decisions. We highlighted that *equitably shifting energy systems must support and facilitate community influence over utility outcomes, including 1) the impacts of utility actions and regulatory decisions, 2) access to meetings, data, funding, and technical assistance, and 3) ensuring community leadership in the design, implementation, and evaluation of programs, facilities, and procedures. When communities can exercise these forms of power, they are more likely to result in a more representative, accessible, and transparent energy sector.*

Given the three guiding themes, the workgroup determined that metrics for procedural equity can be organized into two sub-dimensions: procedural and program access. Procedural measures focus on pathways to implement equitable processes, and program access focuses on expanding accessibility for communities to engage meaningfully. We acknowledge that some aspects of procedural equity are more ripe for implementation than others. While some potential metrics are very straightforward, others require more exploration and co-creation. We also acknowledge that procedural equity alone cannot achieve the transformation necessary for the clean energy sector, and each dimension in the framework is interrelated.

We discuss potential metrics and why they were recommended for inclusion in the EEP framework or not. Please note that we selected metrics to create a baseline for this work, develop longer-term goals, and to offer a pathway to more inclusive and transparent procedures that shift power and do not perpetuate further harm. Given the complexities of the energy sector, we discussed how to target the multiple parties involved (i.e., environmental and consumer advocates, legislatures, commissioners, governors) in these opaque and quasi-judicial regulatory spaces. Importantly, we explored the feasibility and impact of our recommendations, and how to decipher what is a best practice versus a qualitative metric.

The workgroup also examined the most appropriate language to utilize when discussing procedural equity. We believe that communities should have a voice in how they are portrayed and communicated about, and not dehumanized as part of our advocacy in the movement for energy justice. Within our workgroup, a smaller team coalesced to identify terms that are often used interchangeably and explore the implications of their use. We then researched their historical usage, defined them, and collectively decided which terms best fit our chapter and principles. This work formed the glossary of terms and guidance for community descriptors which are used throughout the EEP framework (see Inclusive Language Review, at the end of this chapter).

All procedural equity workgroup members were instrumental in co-creating our process, values, goals, and metric narratives by providing thoughtful insights, expert guidance, and pertinent data and resources they had firsthand experience in developing. Each member showed a true commitment to energy justice that inspired innovative solutions and generative dialogue.

LEAD AUTHOR'S ACKNOWLEDGEMENTS:

It is with deep gratitude that I acknowledge the working group members who wrote this chapter collaboratively. Thank you to Anjali Patel of David Gardiner and Associates, Anne Junod of Urban Institute, Cecelia Bolon of Sunwealth Power, Jasmine McAdams of National Association of Regulatory Utility Commissioners, Justin Schott of University of Michigan, Marguerite Behringer of E9 Insight, Megan Aki of Browning the Green Space, Quinn Parker of Encolor, Shelley Beaulieu of Dragonfly Consulting LLC, Toyosi Dickson of University of Michigan. *Please note that the information we gathered and recommended does not reflect the official position of the contributor's organization or leadership of that organization.*

A NOTE ON RATING SCALES

Many of the measures in the procedural index do not lend themselves to pure quantitative assessment, as there are not straightforward or consistently used standards for reporting data. A more appropriate and familiar practice for procedural equity is using qualitative information to create a quantitative tool for comparative assessments. Scorecards in particular establish a methodology for assigning scores or letter grades, often developing an evaluation rubric to improve consistency across different reviewers and to establish consistent expectation or thresholds at each rating level. The procedural dimension of equity, in particular, lends itself to the development of such rating scales. However, for such rating scales to be both equitable and robust, they require input and review from numerous groups and an evaluation of the rating framework after a trial run to verify that it closely aligns with the lived experience of people with firsthand knowledge of the local context. If done right, the iterative process of developing a rating scale takes several months; it was beyond the scope of EEP to develop these scales for particular proposed metrics at this stage, but new scales will be considered for inclusion in v 2.0 of the EEP framework. For now, we have identified eight potential metrics that would benefit from a new rating scale. States, communities, and individual institutions (e.g. regulatory agencies, utilities) might also embark on an inclusive process of developing rating scales for their own service areas. Below, we present a sample of energy justice rating scales that have been developed and may offer guidance for new ones; Brookhart (2018) provides an outstanding review of approaches to developing rubrics.

Instructions:

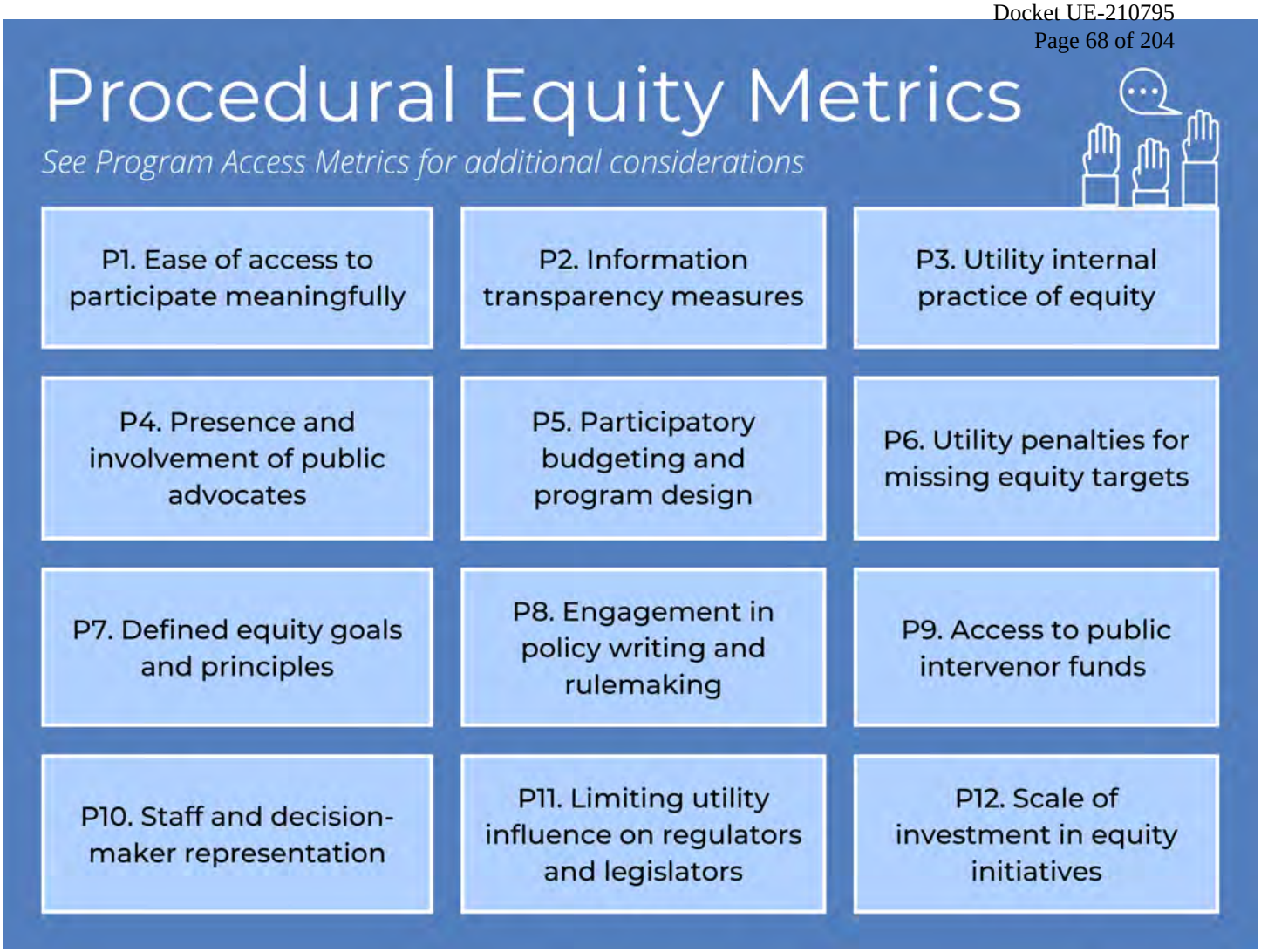
Use the Worksheet below to give points for elements that exist in the law being scored. Each item has further explanation, sources, and notes in the Guidance section that follows. Indicate partial credit where the answer is not quite yes (1) or no (0). For example, 0.25 or 0.5 indicates a quarter or half of the requirements are met, respectively. This is not an exhaustive list of important elements for 100% laws, nor a rigid point system. The total points from each Part in the Worksheet is a guide for answering the five scorecard questions on page 3.

Part 1	**Process:** Have marginalized communities participated meaningfully in the policymaking process with sufficient support?	
LINE	ELEMENT	POINTS (0 = No 1 = Yes)
Drafting Legislation		
1	Community leaders report that direct outreach and meaningful participation in law-making effort occurred for the public and marginalized communities, including accessible meetings	
2	Community leaders report that relevant information and other resources were provided to the public and marginalized communities to sufficiently evaluate the proposed legislation	
Procedural Elements in Enacted Law and Rule-making		
3	Commits to principle of free, prior, and informed consent; requires consultation with Indigenous communities	
4	Mandates significant outreach for public and marginalized community participation in rule-making efforts, including accessible meetings	
5	Provides relevant information, financial compensation, and other necessary support to participate in rule-making proceedings	
6	Incorporates a mandatory and funded structure of governance, oversight, evaluation, accountability, and follow-up in response to public engagement	
7	Creates dedicated program(s) for advancing diversity, equity, and inclusion in hiring and other operational practices within energy rule-making agencies	
8	**Part 1: Process - Total Points** (add lines 1-7 and enter total)	

An example of a high quality rating scale is the Justice in 100 Scorecard from the Initiative for Energy Justice (page 13 shown above).

Sample rating scales:

- 2021 Community Power Scorecard (Institute for Local Self-Reliance)
- 2021 Foundation & NGO Transparency Report Card (Green 2.0)
- Electric cooperative scorecards (Energy Democracy Y'all – states in the Southeast)
- Energy Democracy Scorecard (Emerald Cities)
- Justice in 100 Scorecard (Initiative for Energy Justice)
- State and City Energy Efficiency Scorecards (ACEEE) – the State and Local Policy Database also contains a link to a local self-assessment tool; ACEEE also puts out a Utility Scorecard



Procedural Index

P1. Ease of access to participate meaningfully

METRIC STATUS: Desire to create a rating scale using qualitative assessment

Rationale: Community members need easy access to information about how to participate in clean energy programs and decision-making processes. This access is essential for demonstrating program credibility and generating public trust. Changes in the management or implementation can result in changes in public support, and loss of public support can result in project or program failure (Vanclay & Hanna, 2019).[1] We recommend conducting a suite of qualitative assessments for program information access and ease of meaningful community stakeholder participation.

Future metrics could be assessed as a simple presence or absence (0 or 1) and combined into an index of information availability and access ease. Alternatively, an index could evaluate the content of publicly available sources such as public comments, hearing and meeting minutes, and public-facing project, program, or utility reporting materials, and supplemented by periodic stakeholder interviews or focus groups.

It is important to continually assess information access and ease of participation over time and whether there are changes in communication, engagement efforts, community perceptions and participation levels.

Some indicators that could be assessed qualitatively include:

- **Specific, measurable, and thorough public-facing communication** about public engagement activities and opportunities, including processes and steps for participation. These communications should be accessible to those in impacted communities, including, for example, by translating to the

[1] Vanclay, F. and P. Hanna. 2019. Conceptualizing Company Response to Community Protest: Principles to Achieve a Social License to Operate. Land 8(6),101: https://www.mdpi.com/2073-445X/8/6/101/htm

languages spoken by the community and providing communications accessible to those with hearing and visual impairments.

- **Presence and recurrence of community stakeholder meetings** or hearings where public comments are solicited and publicly responded to in a timely matter, with language translation and interpretation services available
- **Availability of flexible planning and support services** or resources to ensure that meetings or hearings are accessible to underrepresented and historically marginalized community groups, such as:
  - holding meetings at different times of day and different days of the week to accommodate different schedules;
  - offering in person as well as remote attendance options;
  - holding meetings and hearings in different neighborhoods across a community to ease access;
  - providing onsite childcare;
  - supplementing transportation costs or directly providing transportation services;
  - providing refreshments, snacks, or meals depending on the time of day meetings are held;
  - compensating attendees for participation
- **Availability and ease of submitting public comments** for the official record during all phases of the proceeding and resulting project—including in planning, implementation, and closeout project or program phases—that allows for: comments to be submitted in languages appropriate to community stakeholder populations, e-filing options, transcribed community hearings, availability of midnight filings, and adequate review and consideration of public comments as part of the final regulatory decision
- **Availability and communication of planning, budgeting, and outcome reporting materials,** written in accessible language and available in multiple languages
- **Quality of available data,** including completeness, accuracy, and timeliness
- **Dedicated outreach and engagement efforts** to underrepresented or historically marginalized groups; these efforts should receive additional resources to go above and beyond standard levels of outreach and engagement

P2. Information transparency measures

METRIC STATUS:

Rationale: Regulatory bodies (e.g. utility commissions, licensing agencies) are the final arbiter on whether a program, infrastructure project, or rate is "just and reasonable".[2] But just and reasonable decision-making requires a balancing of: (1) the utility or business interest, with (2) ratepayer or public interest.[3] As customers and the public are captive to the rates and impacts of the impacts authorized by the regulatory bodies, it is important that regulatory processes have sufficient transparency that all members of the public, regardless of their level of sophistication with respect to energy issues, can understand the benefit, impacts, and rationale for the proposed project, and can participate meaningfully in the agency's decision-making process.

Currently, there are several barriers to needed transparency:

- The utility or business that is proposing the project or rate also control the data and information needed to understand and verify the need for their request, and may be reluctant not provide any information unless and until directed to do so by the regulator;
- The regulated industry has long operated similar to an ivory tower in which the public has been asked to trust that the decisions being made are in the public's best interest;
- Regulators do not always agree with public representatives as to the data and information that the utility or project proponent needs to share;
- While the legal standards usually assign the project proposer with the burden to justify their request as just and reasonable, if a party raises a concern or complaint, the burden shifts to the complainant to demonstrate with evidence that the concern or complaint is valid. Public representatives may not have the resources or the expertise needed to make technical requests for information needed to support their concerns and complaints, or they may face regulatory hurdles in obtaining necessary information.
- Even though Commissioners at regulatory agencies are usually subject to *ex parte* laws, these laws do not always extend to staff at the agencies. Moreover, there is a lack of transparency about when and why commissioners and agency staff meet with utility and business representatives.

These barriers result in regulatory decisions that are, or that can appear to be, skewed in support of the proposer and against the public.

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[2] See, e.g. Federal Power Act, Sec 205, 16 USC sec 824; Natural Gas Act, 15 U.S. Code § 717c (the just and reasonable language codified in the Federal Power and Natural Gas Acts are also reflected in many state utility laws); see also Isser, Steve N., Just and Reasonable: The Cornerstone of Energy Regulation (June 30, 2015). Available at SSRN: https://ssrn.com/abstract=2625131 or http://dx.doi.org/10.2139/ssrn.2625131

[3] See FPC v. Hope Natural Gas, 320 U.S. 591, 601 (1944)(The rate-making process under the Act, i.e., the fixing of "just and reasonable" rates, involves a balancing of the investor and the consumer interests.)

In order for the public to have the opportunity to understand the actions being proposed and to participate meaningfully in the processes that determine whether those actions are appropriate, we recommend that regulators adopt transparency measures for I) Regulatory agencies, II) Independent organizations, and III) Utilities and businesses. We further recommend that each of these entities maintain sufficient staff to support the needed transparency measures.

These sets of measures relate to Trust, Power, and Credibility and consist of a suite of disclosures and reporting requirements. Metrics may need to be mandated by the regulatory agency to the extent the relevant entity does not have processes in place to voluntarily disclose the information required by the transparency measure.

We recommend that this metric have both a quantitative and qualitative aspect. Each transparency measure could be scored on a scale of 0 to 2 points: 0-the measure is non-existence, 1-measure exists but is difficult to navigate and or use, 2-measure exists and is easy to navigate or use.

❶ The transparency measures that apply to the regulatory body:

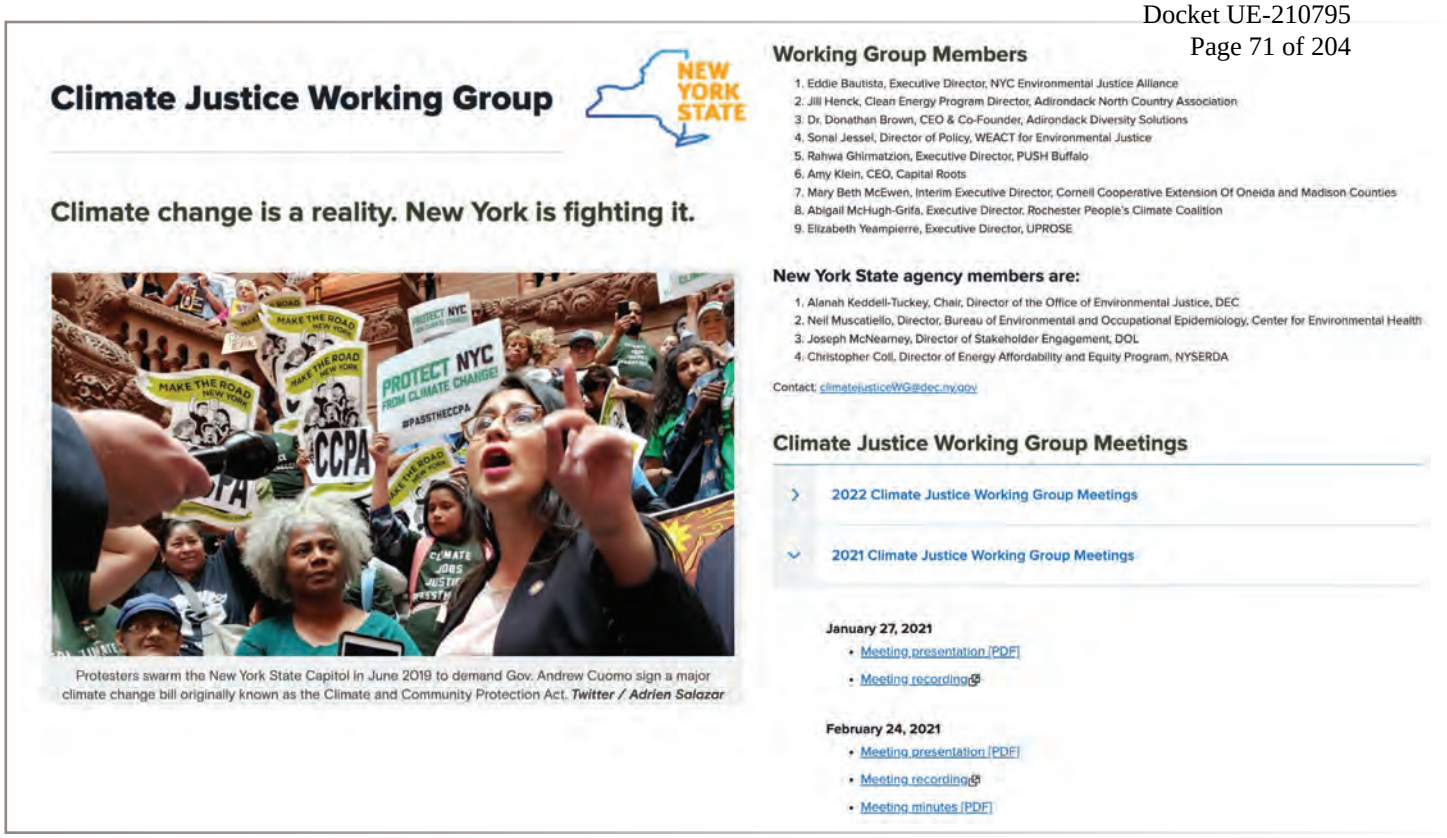
1. Accessible Public docket
   - Docket is electronic and is updated with 8 business hours of filings being made/orders being issued
   - Docket is easily located online and from the regulator's home page, is publicly accessible and does not require an account to access
   - Docket entries are searchable by docket number, party, date, document titles, and document contents
   - Docket entries can be sorted by docket number, party, date, document title, and document type (eg pleading, brief, intervention, motion, order, comment
   - Docket provides links to historical documents
   - Docket provides link to excel spreadsheets
   - Docket entries are downloadable
   - Training materials are provided explaining what the docket is used for, what materials are available, how to file comments and pleadings, and how to search and download materials from the docket; training materials should be accessible to the public (e.g. in the form of webinars, include screenshots, and be translated into the languages of the impacted public.)

2. Accessible Tariffs
   - Regulator's website provides access to current and previous utility tariffs and a summary of changes between each tariff
   - Regulator's website provides access to proposed tariffs
   - All tariffs are text searchable and downloadable
   - Instructions are provided on how to review the tariffs

3. Access to proposed projects and rates
   - The regulator should maintain a website listing pending project and rate proposals that includes:
     - A neutral description[4] of the proposal that does not purport to provide public benefits unless such benefits have been verified through an evidentiary process
     - A map of communities that could be affected by the project (e.g. identifying communities where the project is currently or will be located and communities that will be impacted by the cost recovery mechanisms or proposed tariff change)
     - A list of the parties to the proceeding and contact information for the individual designated for service
     - A calendar of upcoming intervention and filing deadlines, hearings, public meetings, etc. concerning that project
     - A link to the public docket in which materials regarding that filing can be found
     - A publicly available and accessible notice explaining the change in rates and impacts on communities should the proposed project or rate be authorized as submitted. The notice should be made available on the Commission's website and in a format that best reaches the impacted communities (e.g. bill insert, social media posting, newspaper posting, etc.)
   - The regulator should maintain a website that provides access to utility grid modernization plans, transmission and/or distribution system plans, and if applicable, climate policy plans
   - Each of the communications above should meet accessibility best practices and should be translated into languages used by the impacted communities

4. Decision-making Transparency
   - Website provides a list of non-public meetings and discussions between: (1) regulators or regulatory staff and (2) any third-party entities. The list should note the date of the meeting, subject matter discussed, the individuals present, and the name of the company, agency or organization that each

[4] See FERC OPP's Project descriptions: https://www.ferc.gov/projects



individual represents, and the reason why the meeting and minutes are not public.

- With respect to contested cases and regulatory proceedings, emails between regulator or regulatory staff and third parties are docketed in the proceeding to which they apply to; all communications not covered by the preceding sentence, between a regulator or regulatory staff and any employee of the regulated entities should be docketed in a communications docket.
- Transparency with respect to the Regulators (e.g. Commissioners, Board Members, etc.).
  - Website provides a full resume for each Regulator
  - In addition to conducting a conflict of interest check for individual proceedings, regulators complete annual conflict checks that addresses their spouses and immediate relatives' financial interests;
  - For regulators that were elected to their positions, the website provides a list of campaign contributions;
  - Website provides a list of speaking engagements that each regulator plans to attend or has attended over the past year that identifies: the topic of the engagement, whether the meeting was private or open to the public, and whether the regulator received any remuneration for the engagement.
- Website provides educational materials regarding the role of the regulatory body, including[5]
  - A description of the issues under the regulator's jurisdiction
  - A description of related issues that are not under that regulator's jurisdiction and who the public should refer to for questions on those issues
  - Contact information for organizations that can assist with disputes with or concerns about utility and energy businesses, including, but not limited to, interconnection, billing, and service disputes or concerns
- Website should provide information about enforcement proceedings and history, searchable by entity

5. Agency Information and Annual Reports

- Regulatory body files annual reports identifying:
  - The number of proceedings filed in the past year disaggregated by the type of filing
  - The number of proceedings pending
  - A list of active working groups and members
  - A summary of major issues decided
  - A list of parties that participated in working groups and proceedings before the regulatory body
  - A list by regulator of conferences attended
  - A list by regulator of speaking engagements over the past year

[5] See https://pubs.naruc.org/pub/F358864A-0EC2-9185-D0B5-5A6B9C13BEA6

❷ The set of transparency measures that apply to **independent organizations** that provide a planning or market operations function (e.g. Independent System Operator and Regional Transmission Organizations)

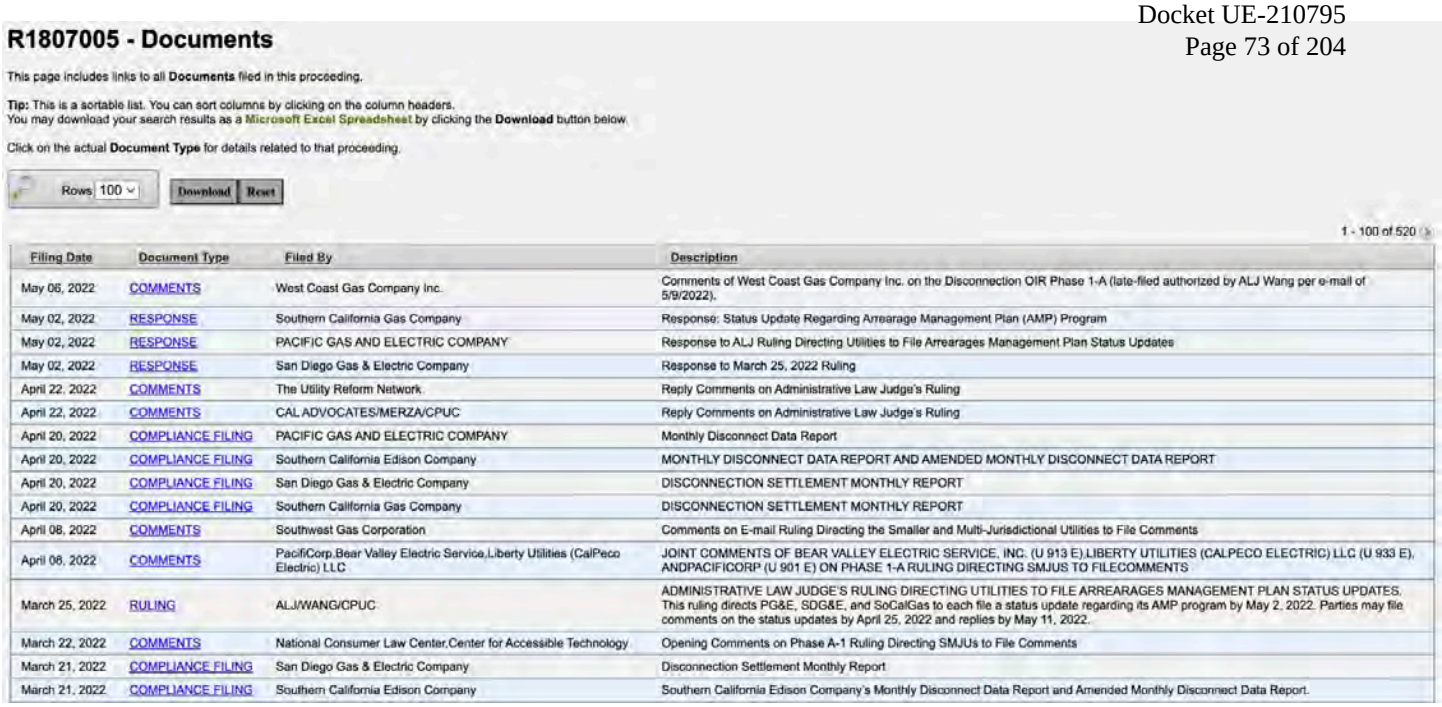
1. Decision-making Transparency
   - Website provides a list of non-public meetings and discussions between: (1) the organization staff or board members and (2) any third-party entities. The list should note the date of the meeting, subject matter discussed, the individuals present, and the name of the company, agency or organization that each individual represents. Similar to government freedom of information acts, the organization should have a method for the public to seek access to non-privileged documents and communications
   - Website should provide access to educational materials describing the role of the organization in the energy industry, the process by which decisions are made (e.g. the role of boards, staff, and stakeholders in making decisions), and a description of issues that are not under the organization's purview and an identification of which body to refer to for assistance on those issues (e.g. licensing and siting decisions)

2. Publicly accessible calendar of upcoming trainings and stakeholder meetings
   - Calendar should include instructions on who may attend and how to attend
   - Meetings and trainings should provide log-in/call-in options

3. Access to market information
   - Website should provide access to educational materials written in layperson's language on each of the markets that are run by the organization and should include an explanation of the purpose of the market, descriptions of the market rules and market design, and definitions for market terms
   - Website should provide access to market information, including where relevant, clearing prices for capacity auctions, real-time prices for day ahead and real time energy markets, prices for ancillary services, and real time locational marginal pricing maps
   - Website should provide access to any modeling that has been conducted to examine the impact of rule or industry changes to the market
   - Access to GHG emission data by zone
   - The organization should maintain a website which provides access to information about proposed market changes, including
     - A description of the proposal that discusses the current market rules (if any), the purported justification for the change, and the impact on the public and stakeholders if the proposal is made effective
     - A calendar of upcoming stakeholder meetings regarding the proposed changes
     - When applicable, deadline dates for interventions and comments

4. Access to information about transmission projects and planning
   - The organization should maintain a website which provides access to information about generation and transmission projects that have been proposed to be sited in that organization's footprint, including
     - A neutral description of the proposal that includes: an identification of the problem the project proposes to solve, an identification of project costs, an identification of purported benefits, an identification of alternative solutions considered and reasons as to why the alternative solutions are less cost-effective as the chosen solution
     - A map of communities that could be affected by the project (e.g. identifying communities where the project is currently or will be located and communities that will be impacted by the proposed cost recovery mechanisms)
     - A calendar of upcoming filings, hearings, and public meetings concerning the project
     - Information about how to comment on the project including contact information for the relevant siting and licensing authorities
     - A link to the public docket in which materials regarding that filing can be found.
   - The organization should maintain a public queue consistent with best practices outlined by the Interstate Renewable Energy Council
   - The website should provide general information and information about the dispute resolution process related to interconnection

5. Access to tariffed rates
   - Website provides public access to links to tariffs for utilities in the organization's footprint. Tariffs should be searchable by zone, utility name, and zip code serviced
   - If any utilities in the organization's footprint operate under formula rates, the website should provide public access to the formula rate, formula rate protocols, and annual updates. These materials should be searchable by utility name, and year
   - All tariffs should be text searchable and downloadable
   - Instructions are provided on how to review and respond to the tariffs and formula rate updates



R1807005 - Documents

This page includes links to all **Documents** filed in this proceeding.

Tip: This is a sortable list. You can sort columns by clicking on the column headers.
You may download your search results as a Microsoft Excel Spreadsheet by clicking the **Download** button below.

Click on the actual **Document Type** for details related to that proceeding.

Rows 100 | Download | Reset

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Filing Date	Document Type	Filed By	Description
May 06, 2022	COMMENTS	West Coast Gas Company Inc.	Comments of West Coast Gas Company Inc. on the Disconnection OIR Phase 1-A (late-filed authorized by ALJ Wang per e-mail of 5/9/2022).
May 02, 2022	RESPONSE	Southern California Gas Company	Response: Status Update Regarding Arrearage Management Plan (AMP) Program
May 02, 2022	RESPONSE	PACIFIC GAS AND ELECTRIC COMPANY	Response to ALJ Ruling Directing Utilities to File Arrearages Management Plan Status Updates
May 02, 2022	RESPONSE	San Diego Gas & Electric Company	Response to March 25, 2022 Ruling
April 22, 2022	COMMENTS	The Utility Reform Network	Reply Comments on Administrative Law Judge's Ruling
April 22, 2022	COMMENTS	CAL ADVOCATES/MERZA/CPUC	Reply Comments on Administrative Law Judge's Ruling
April 20, 2022	COMPLIANCE FILING	PACIFIC GAS AND ELECTRIC COMPANY	Monthly Disconnect Data Report
April 20, 2022	COMPLIANCE FILING	Southern California Edison Company	MONTHLY DISCONNECT DATA REPORT AND AMENDED MONTHLY DISCONNECT DATA REPORT
April 20, 2022	COMPLIANCE FILING	San Diego Gas & Electric Company	DISCONNECTION SETTLEMENT MONTHLY REPORT
April 20, 2022	COMPLIANCE FILING	Southern California Gas Company	DISCONNECTION SETTLEMENT MONTHLY REPORT
April 08, 2022	COMMENTS	Southwest Gas Corporation	Comments on E-mail Ruling Directing the Smaller and Multi-Jurisdictional Utilities to File Comments
April 08, 2022	COMMENTS	PacifiCorp,Bear Valley Electric Service,Liberty Utilities (CalPeco Electric) LLC	JOINT COMMENTS OF BEAR VALLEY ELECTRIC SERVICE, INC. (U 913 E),LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U 933 E), ANDPACIFICORP (U 901 E) ON PHASE 1-A RULING DIRECTING SMJUS TO FILECOMMENTS
March 25, 2022	RULING	ALJ/WANG/CPUC	ADMINISTRATIVE LAW JUDGE'S RULING DIRECTING UTILITIES TO FILE ARREARAGES MANAGEMENT PLAN STATUS UPDATES. This ruling directs PG&E, SDG&E, and SoCalGas to each file a status update regarding its AMP program by May 2, 2022. Parties may file comments on the status updates by April 25, 2022 and replies by May 11, 2022.
March 22, 2022	COMMENTS	National Consumer Law Center,Center for Accessible Technology	Opening Comments on Phase A-1 Ruling Directing SMJUs to File Comments
March 21, 2022	COMPLIANCE FILING	San Diego Gas & Electric Company	Disconnection Settlement Monthly Report
March 21, 2022	COMPLIANCE FILING	Southern California Edison Company	Southern California Edison Company's Monthly Disconnect Data Report and Amended Monthly Disconnect Data Report.

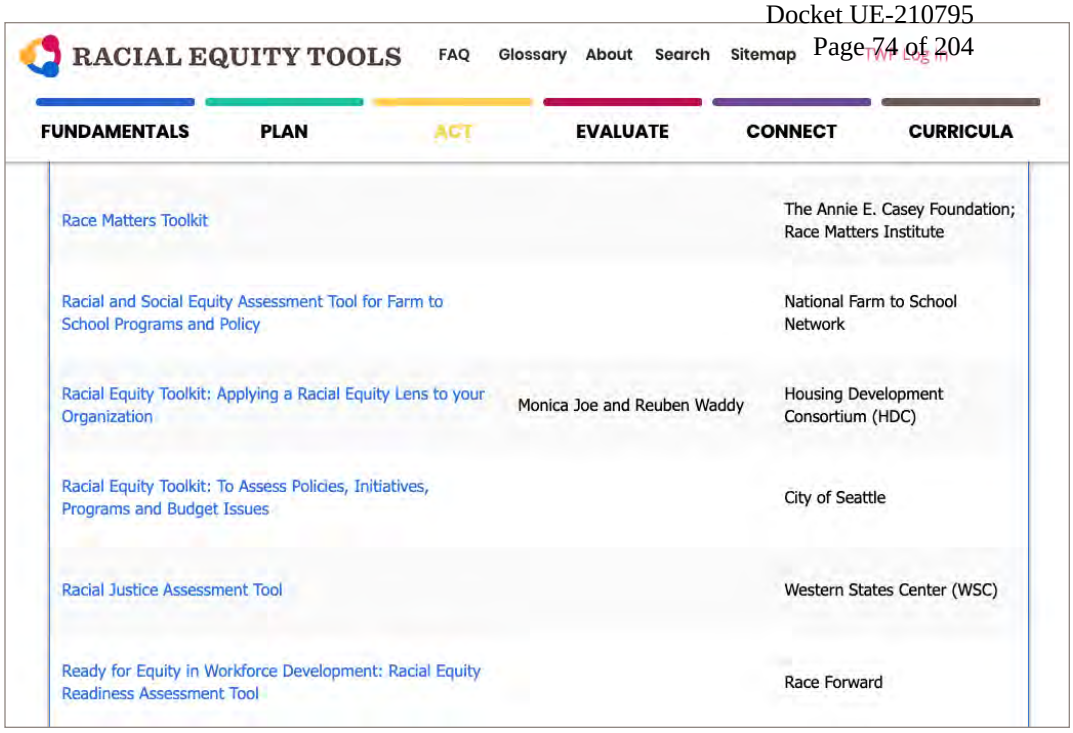
There are 520 records totaling tens of thousands of pages in this single California PUC docket about disconnections that was initiated in 2018 and continued through 2021. If even professional staff at intervening organizations struggle to track and digest this volume of information, how is an individual member of the public supposed to stay informed enough to meaningfully engage in the process? A relevant, accessible summary page, series of FAQs, visual timeline, etc would all be valuable resources PUCs could provide as part of their dockets. Source: CPUC Public Docket R1807005 Image source: https://apps.cpuc.ca.gov/apex/f?p=401:1:0

❸ The set of transparency measures that apply to utilities and infrastructure developers

1. Transparency related to proposed projects or tariff changes
   - Initial filing should include access to workpapers that support the filing in native file format in order to avoid delay in seeking workpapers through discovery
   - Filing should include a map identifying the communities that could be affected by the project (e.g. identifying communities where the project is currently or will be located and communities that will be impacted by the proposed cost recovery mechanisms)
   - Prior to filing, the applicant should hold a pre-filing meeting with the consumer advocate and other stakeholders in that jurisdiction that routinely intervene in infrastructure project or rate proceedings on behalf of public entities
   - Filing should identify both: (a) the costs of project or tariff change, and (b) an independently conducted analysis of the full range of purported public and societal benefits that includes an equity analysis that maps the costs and benefits across the footprint of consumers that will be impacted by the project
2. Transparency related to utility operations
   - Utilities should provide quarterly reports on utility earnings, and on safety, reliability, affordability, and quality of service metrics that are set by the regulator
   - Where applicable, third-party suppliers should be required to file annual reports on their customers and sales
3. Transparency related to planning and integrated resource plans (IRPs)
   - Utilities should be required to maintain and make publicly accessible grid modernization plans and load forecasts that are revised on a regular basis. Such plans and forecasts should be accompanied by an explanation of the methodology and assumptions used to develop the plan/model
   - Utilities should be required to maintain a public interconnection queue consistent with best practices outlined by the Interstate Renewable Energy Council[6]
4. Transparency related to rates and programs
   - Utility should be required to maintain a publicly accessible link to current and proposed tariffs
   - Utility should be required to provide educational materials explaining how to read a bill

[6] See https://irecusa.org/resources/irec-model-interconnection-procedures-2019/

- Utility should be required to provide educational materials on how a customer may dispute a charge or service
- If the utility offers any alternative rate program (e.g. demand response, time of use, dynamic), their website should provide an explanation of the different rates, an explanation of which programs can be subscribed to simultaneously, and a calculator for the customer to use to determine the impact electing one or more of these programs would have on their bill



A snapshot of a few of the dozens of resources available at www.racialequitytools.org. Image source: https://www.racialequitytools.org/resources/plan/informing-the-plan/organizational-assessment-tools-and-resources

- If it is a retail choice state:
  - The utility's website must explain the utility's role in generation supply, and how the customer may access a retail choice supplier
  - Third party suppliers should maintain a website with publicly accessible terms and conditions, and an explanation of the difference in their rate compared to the utility rate

P3. Utility internal practice of equity

METRIC STATUS:

Rationale: This checklist is intended to provide a framework for guidance and assessment of internal best practices related to equity, specifically within utilities. However, this tool can be used by regulatory agencies, contractors or consultants as a guide to support equity within any organization. While this guide is focused on internal processes and procedures, it is logical to assume that organizations that lack internal equity practices will have difficulty developing equitable products and services for their customers. This internal assessment can be the first step towards the development of more comprehensive internal and external equity initiatives and can be adapted to address the unique context of each organization. Organizations may add or remove questions, or use a rating scale rather than select from 'Yes or No' options.

In assessing equity in internally, utilities and energy organizations should consider the following:

- Has the organization clearly articulated what equity means? [Y/N]
  - Has the organization shared this definition with internal and external stakeholders? [Y/N]
- Does the organization define and measure success? [Y/N]
  - How does the organization define and measure success? [description]
- Has the organization used the equity definition to develop a Diversity, Equity and Inclusion Plan that clearly outlines a strategy to increase equity within the organization? [Y/N]
  - Did the organization create goals and are they reported on regularly? [Y/N]
  - Does the organization seek input from employees across the organization in the development of the plan? [Y/N]
  - How frequently do they report on these goals? [frequency]
- Does the organization offer DEI resources to employees, including education tools or trainings? [Y/N]
  - Are there required trainings? [Y/N]
  - Are trainings facilitated by an external organization? [Y/N]
  - Are the trainings customized based on the level and role in the organization? [Y/N]
  - Are trainings assessed frequently to ensure relevance? [Y/N]

- Have internal processes and procedures been audited to identify any potential unintended inequities? [Y/N]
  - Are all new process and procedures developed with an equity lens? [Y/N]
- Has the organization created spaces for equity and inclusion conversations? [Y/N]
  - What are the forums for open DEI dialogues (listening sessions, employee resource groups, etc.) [description]
- Does the organization include the community in product development or decision making process? [Y/N]
- How well does the organization's workforce represent the community being served?
- Does employee diversity increase annually? [Y/N]
- Does the organization report on diversity? [Y/N]
  - How granular is their reporting? [description]

RESOURCES:

- National Utilities Diversity Council
- Suggested Best Practices, Advisory Council on Utility Supplier and Workforce Diversity, Public Service Commission of the District of Columbia
- The Diversity, Equity and Inclusion (DEI) Metric Inventory, Gartner
- Racial Equity Tools
- Justice in 100 Scorecard, Initiative for Energy Justice

P4. Presence and involvement of public advocates

METRIC STATUS: Shift to best practice

Rationale: The presence and meaningful oversight of a public advocate, board, or council is essential to ensuring program accountability to diverse public interests. Public advocates can also enhance transparency in decision making and resource allocation, demonstrate credibility, and elicit public trust.

The needed scope and structure for oversight will vary with community and program contexts, but it is imperative that oversight authority be more than titular. Representatives must hold meaningful authority and funding to investigate complaints and work with program representatives to resolve them.

We recommend that oversight roles be tailored to the type of program and community interests. This may take the form of a public oversight board, public advocate, ombudsman, attorney general, consumer advocate, or nonprofit intervenor. We recommend that:

- Their investigative and oversight duties are specific, measurable, codified, and publicly available;
- If a board or committee structure is chosen, it is reflective of impacted community demographics, especially race and income characteristics; and
- They are able to produce binding recommendations in response to solicited or gathered community stakeholder complaints, input, or other information.

P5. Participatory budgeting and program design

METRIC STATUS: Shift to best practice

Rationale: Currently, decision-making power around budgeting is held by a handful of individuals—members of PUCs or equivalent regulatory bodies. We recommend that some portion of the PUC's budget be open to participatory budgeting, which puts decision-making power about how to spend public funds into the hands of constituents. Fines and other funds received from compliance violations or community benefits agreements could also be considered for participatory budgeting.

PARTICIPATORY BUDGETING HAS A LONG TRACK RECORD OF SUCCESS—IT WORKS!

An excellent case study from World Resources Institute details the origins and benefits of participatory budgeting:

"Porto Alegre is hailed as the birthplace of participatory budgeting. The practice has since been adopted by more than 2,700 governments throughout the world.

"Participatory budgeting contributed to a more equitable distribution of city services. [From 1990 to] 1997, sewer and water connections went up from 75 percent to 98 percent; health and education budgets increased from 13 percent to about 40 percent; the number of schools quadrupled; and road building in poor neighborhoods increased five-fold. Importantly, participation in budgeting meetings grew from fewer than 1,000 people per year in 1990 to about 40,000 in 1999." (Gelman and Votto, 2018)

Source: https://www.wri.org/insights/what-if-citizens-set-city-budgets-experiment-captivated-world-participatory-budgeting

Given the challenges that constituents face when they try to engage in energy regulatory proceedings (limited information, terminology/language barriers, lack of time/energy to participate meaningfully, etc.), participatory budgeting is an effective way to allow more inclusive and democratic decision-making. When all constituents have the power to participate in allocating budgets, their priorities will be more fairly and equitably represented in the budget. This is especially important given the lack of socio-economic, racial and ethnic diversity in decision-making bodies (PUCs, etc.).

Some potential uses of participatory budgets include community-owned solar arrays, tree plantings to reduce both heating costs and buffer outdoor air pollution, deep retrofits for households with the highest energy burdens, and home retrofit parties, where residents join and learn each other in basic air-sealing and insulation measures, with materials and party refreshments provided through the participatory budget. Regardless of what constituents choose to pursue, the idea behind participatory budgeting is that constituents decide how participatory budgeting funds are allocated.

EXAMPLE:

Set aside for residents to determine how program investments are spent. If a state IOU program has $20 million dedicated to impacted communities, this could include $2 million for community-determined participatory budgeting.

Source: Participatory Budgeting Project

See the following guide for Participatory Budgeting best practices and case studies:

- https://www.participatorybudgeting.org/
- Exploring participatory energy budgeting as a policy instrument to foster energy justice (Capaccioli et al, 2018).

P6. Utility penalties for missing equity targets

METRIC STATUS: Desire to create a qualitative scale

Rationale: Utility performance incentives are emerging as a tactic to shift clean energy plans and programs toward the achievement of more equitable outcomes. Penalties are a necessary instrument to ensure that the targets and commitments outlined in the plans and policies are actually being met rather than being treated as a "bonus" for performing well. This metric assesses whether or not penalties are being administered in relation to clean energy plan and program commitments as a measure of procedural equity. The presence of utility penalties is most closely associated with the guiding principle of increasing credibility.

Qualitative assessment of this metric requires data to be collected on states where there are penalties in place. As a starting point, this could be scored on a simple yes/no scale of there being penalties in place. Additionally, data could be collected on the specifics regarding the percent of the budget or reduction in their Return on Equity for shareholders and scored based on the "severity" of the penalty. Because of the difficulty of combing through official dockets for this information, acquiring this data will be up to local parties that are familiar with proceedings.

RESOURCES:

- *Advancing Equity in Utility Regulation* (Farley et al, 2021)

P7. Defined equity goals and principles

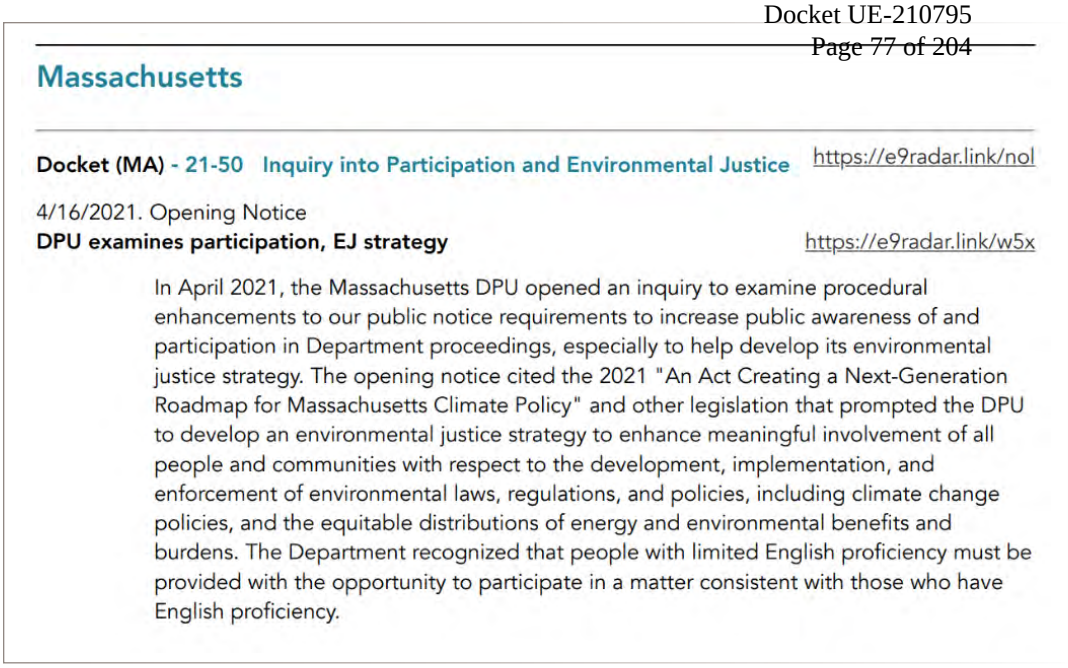
METRIC STATUS: Desire to create a rating scale

Rationale: Legislatures have an important relationship with state agencies and regulators who help design and implement climate programs and policies. Their mandates include outlining structures and goals for agencies, which in turn deeply impact communities. Often, the goals and structures created for agencies and regulators are opaque and lack an equity focus. For instance, in the early 1900s, legislators created PUCs to ensure utilities provide fair and reasonable rates and services for communities. These century-old mandates also provided for meeting shareholder interests and cost recovery requirements.

In 2022, this scope has proven to be too narrow to tackle the pressing and complex issues of our society, including the legacy of systemic racism embedded within many policies and procedures. In the clean energy sector, it is especially important to understand the implications of this legacy and its impacts on communities (Jack-Scott, 2020). Research has shown that Black and Brown communities have been

historically marginalized and overburdened by pollution and high energy/housing costs, underinvestment in clean energy infrastructure, energy-efficient housing and transportation due to the inequitable procedures baked into the energy system and process (Behringer, 2022).

Legislatures have the power to direct PUCs to incorporate equity goals while commissioners articulate how those goals will be integrated into rulemakings and other decisions (Ciulla et al., 2022).



Massachusetts

Docket (MA) - 21-50 Inquiry into Participation and Environmental Justice https://e9radar.link/nol

4/16/2021. Opening Notice

DPU examines participation, EJ strategy https://e9radar.link/w5x

In April 2021, the Massachusetts DPU opened an inquiry to examine procedural enhancements to our public notice requirements to increase public awareness of and participation in Department proceedings, especially to help develop its environmental justice strategy. The opening notice cited the 2021 "An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy" and other legislation that prompted the DPU to develop an environmental justice strategy to enhance meaningful involvement of all people and communities with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies, including climate change policies, and the equitable distributions of energy and environmental benefits and burdens. The Department recognized that people with limited English proficiency must be provided with the opportunity to participate in a matter consistent with those who have English proficiency.

Therefore, it is critical that agencies are required to consider equity within their internal and external policies and procedures, goals, structure, and outcomes to ensure past harm is repaired, further harm is reduced, and future plans are holistic and equitable. Many states have begun to require utilities to consider equity in their resource planning[7] and decision making,[8] including Maine, Colorado, California, Oregon and Connecticut, which can provide helpful examples and lessons for other states.

We recommend a multifaceted approach in advancing equity goals and principles in this sector:

1. Establish an equity assessment framework to evaluate past, present and future equity implications of agency and regulatory investments and programs. This should be developed in collaboration with community members via accessible and transparent engagement opportunities (including compensation granted to community members, virtual meetings, etc.). The framework could draw on lessons from other states, such as Virginia's Senate Bill 851, which requires PUCs to assess whether new or expanding facilities disproportionately impacts historically disadvantaged communities (Farley et al, 2021).
   a. Narratives of historical legacies/impacts could be submitted by community groups and shared to the public record for future proceedings.
   b. Summaries and impacts can be cataloged and linked through the EEP Map and other analyses, uplifting how these agencies are defining and practicing equity.

2. To assess equity goals established by agencies, we recommend a simple rating scale to the extent to which quality equity goals exist within regulatory agencies (i.e., 1 for no, 2 for somewhat, 3 for yes; this is similar to this Energy Democracy scorecard) (Giancatarino & House, 2019).[9]

3. State legislators should work to pass state statutes requiring state agencies (including utilities, PUCs) to define and establish equity goals, principles, and decision making practices (ultimately, broadening their scope) and ensuring clear progress data are shared with the public. For example, Colorado's Senate Bill 21-272, for instance, requires the Commission to "consider equity in all its work." (Colorado State Assembly, 2021).

4. Align PUC rules and decisions with state equity and climate goals. Advocate for internal PUC commitments or administrative initiatives to examine and center equity, including the internal practices mentioned previously in this chapter.

5. In order to understand utility commitments to define and implement equity-centered programs, we recommend tracking which state IOUs, co-ops and other agencies have defined equity and whether other pathways (E9Insight, 2021) to implement equitable procedures for state agencies, regulators, and related parties have been enacted.

[7] For instance, see the Institute for Market Transformation: https://www.imt.org/in-pursuit-of-equitable-clean-energy-the-power-of-coalitions-for-utility-regulatory-transformation/

[8] https://www.nclc.org/images/pdf/energy_utility_telecom/electric_and_gas/Rpt_adv_equity_util_reg.pdf

[9] Giancatarino, A. & House D. (2019). Energy Democracy Scorecard. Emerald Cities Collaborative.

a. See recent utility equity activities as outlined by E9Insight as well as the example below from Page 14.[10]

Additional exploration into the expansion of the Federal Energy Regulatory Commission's scope to better center equity and pave state pathways to FERC's Office of Public Participation may also be useful (FERC, 2022).

P8. Engagement in policy writing and rulemaking

METRIC STATUS: Shift to qualitative/best practice

Rationale: When thinking about how best to serve communities that have been traditionally marginalized by PUCs and other regulatory bodies, ensuring inclusion of these community members in decision-making is a critical first step. Most PUC's and other decision-making bodies do not include diverse representation, which is especially concerning considering the disproportionate energy budens that historically disinvested in communities face. The historic failure to include and center these communities in decision-making perpetuates the disempowerment of these groups, and it is partially to blame for the continued disproportionate harm communities have at the hands of our energy system. We suggest including and prioritizing communities of color and communities with limited incomes in policy making processes. Prioritizing community engagement in policy making can help elevate the issues that are most important to them and create policies that help to address them. This engagement includes, but is not limited to:

- Creating access to meetings (physical access, sufficient notice, outreach/resources/information in different languages, etc.)
- Providing necessary background information, translation, etc.
- Meaningful and continued follow-through/ accountability on the priorities voiced by the frontline, low-income and BIPOC community members (i.e. participation should not be tokenizing, and should lead to action towards desired outcomes)

P9. Access to public intervenor funds

METRIC STATUS: Not included due to limited coverage, only available in about 10 states

Rationale: Diverse and inclusive representation in PUC decision-making processes is fundamental to ensuring that equity is central to utility planning, investments, and rate-making. One way in which parties can participate in commission decision-making processes and influence outcomes is by participating in formal, adjudicatory proceedings as intervenors. Parties must be granted intervenor status in a proceeding to have the right to make legal arguments, conduct discovery, file testimony, cross-examine witnesses, and are subject to cross-examination by other parties in the case if they testify (UCAN, n.d.). As adjudicatory proceedings are the most resource intensive form of commission participation, requiring a substantial amount of time, money, legal resources, and expertise (Harak, et al., 2003), only well-resourced parties such as utilities and large customers have a profound advantage in influencing the course of a proceeding. Further, though many states have utility consumer advocates that participate in proceedings, they may not always be in a position to collect and provide evidence needed to adequately represent perspectives of frontline communities. This is particularly problematic for consumer advocates with fewer economic resources or technical expertise (Duncan & Eagles, 2021).

Intervenor compensation is one mechanism to enable broader access to participate in proceedings and is the practice of providing funds to parties for the costs of their involvement. In 16 states, intervenor compensation is authorized through legislative rules and statutes, but only six state programs are actively being used by intervenors—in California, Idaho, Michigan, Minnesota, Oregon, and Wisconsin. Programs in Illinois and Washington are currently being established (Gavan et al., 2021). While intervenor compensation programs are authorized in these states, they are only effective to the extent that the programs are active and are actively distributing funds.

The structure of intervenor compensation programs varies between states and includes differences in characteristics such as the applicable utilities, plan type, eligibility criteria, eligible costs, and funding limits (ibid). **Table 1** on the following page an excerpt from the NARUC's intervenor compensation report, illustrates the differences in program design across several states (ibid). How these programs are structured ultimately determines their accessibility and influences the balance of power in the decision-making process. Best practices to promote the equitable distribution of and access to intervenor compensation funds include providing grants or awards in advance of a proceeding, enabling intervenor compensation requests for all types of utility proceedings, and providing guidance for new parties requesting intervenor compensation.

[10] See: http://e9insight.com/wp-content/uploads/2021/11/Equity_Activities_Detailed.pdf, page 14

Table 1. FEATURES OF AUTHORIZED STATE INTERVENOR COMPENSATION PROGRAMS

STATE	APPLICABLE UTILITIES	PLAN TYPE	APPLICANTS	ELIGIBILITY CRITERIA	COSTS	LIMITS	PAYS	USED IN PRACTICE
Alaska	Electric	Cost reimbursement	Electric consumer of regulated utility, either intervenor or public witness	I, F, M, J	Reasonable Costs	None	Utility	N
California	Electric, Gas, Water and Telephone	Cost reimbursement	Customer or eligible local government entity; intervenor with conflicts of interest are ineligible	I, F, M, J, O	Reasonable Costs based on Market Rate Study	None	Utility	Y
Colorado	Electric or Gas Utility	Cost reimbursement	Intervenors other than office of consumer counsel; prohibits any intervenor in direct competition with public utility involved in proceeding	I, M, O	Reasonable Costs	None	Not specified	N
Hawaii	Integrated Resource Plans only	Cost reimbursement	Excludes government agencies, for-profit entities, or an association of for-profit entities	F, M, O	Reasonable Costs	None	Utility	N
Idaho	In any case involving electric, gas, water, or telephone utilities with gross Idaho intrastate annual revenues exceeding $3,500,000	Cost reimbursement	Excludes any intervenor who is in direct competition with a public utility involved in the proceeding	I, F, M, O	Reasonable Costs	$40,000 for all intervening parties combined in any proceeding	Utility	Y

I - Granted intervenor status in proceeding; F= Financial hardship; M = Participation materially contributed to decision of commission; R = Represents interest not otherwise adequately represesented in proceeding; J = Intervenors with same or similar interests, may be joined as one party; O = other.

Qualitative and Quantitative metrics that can be used to evaluate the accessibility to public intervenor funds are:

1. Is an intervenor compensation program authorized in the state? [Y/N]
2. Is the intervenor compensation program actively being used? [Y/N]
3. Is intervenor compensation restricted to specific utility proceedings (i.e., electric, gas, water, and telecommunications utilities)? [Y/N]
4. Does the program have a grant structure, providing funding in advance of a proceeding? [Y/N]
5. If a state has a reimbursement structure, what is the timeline for parties to receive compensation? [# of days or average # of days]
6. What is the representation of new parties or one-time parties receiving intervenor compensation? [example, # of parties/proceeding]
7. What is the administrative burden of applying for intervenor compensation? [steps of the application process]
8. What is the funding limit per party? [$/proceeding]
9. What is the total intervenor compensation funding limit? [$/year]
10. What costs are eligible for funding? [list of allowable costs]
11. Does the program provide guidance or support for parties interested in applying for compensation? [Y/N]

DATA AND RESOURCES

- State Approaches to Intervenor Compensation, NARUC

P10. Staff and decision-maker representation

METRIC STATUS: Limited coverage, varies by state. Potential to create rating scales.

Rationale: Energy policy is shaped by the staff and leaders of governmental bodies, who are expected to "accommodate the needs of an increasingly diverse population."[11]

[11] See Newell, Charldean (2004). *The effective local government manager*. Washington, DC: ICMA Press.

The demographics of state and PUC employees—including race, gender identity, class, religion, experience with poverty or homelessness, and other dimensions—intrinsically influence the outcomes of the regulatory process. "Diversity in the utility commission workforce, from analysts and administrative support to senior executives and commissioners themselves, introduces awareness of cultural needs and the impact of utility decisions on customers that may typically be overlooked. Staff bodies that lack diversity may fail to consider how people of various backgrounds are affected by existing policies and programs. This problem is amplified when PUCs are tasked with drafting new policies to support specific populations despite staff's lack of experience living and working with those communities (e.g. low-income, environmental justice, people with disabilities, majority Black, Indigenous and Latinx, immigrant). Historically, the public sector has lacked diversity and prioritized white hires over people of color, and without intentional processes, this inequity will continue (NEOGOV, 2021).[12]

It is inappropriate for regulators to make decisions "for" particular populations without drawing from their own direct experience and from extensive discussion with impacted communities. As one slogan says, "Nothing About Us Without Us."

Diverse staff representation can also introduce innovation, reduce implicit bias and unintended consequences, enhance public trust in government, and attract non-traditional talent to government jobs. Efforts to diversify PUC staffing must be paired with internal strategies (i.e. educational initiatives, training from external organizations, committee creation, surveys) that incorporate local context and demographics. Strategies must ensure that hiring practices are not performative and instead are meaningfully designed to bring representatives from marginalized communities into the decision making process.

Quantitative Best Practices

- Diverse staff and commissioner representation can be measured through quantitative data, especially by comparing the percentage of staff who identify with certain backgrounds, races, experiences, etc. Beyond traditional diversity metrics, additional questions related to energy issues illuminate staff experience with consumer issues. For example, a survey on staff representation may also include questions about one's personal experience with utility shutoffs; receiving low-income rebates or programming; participation in other state low-income programming (i.e. food assistance); and others.
- Staff demographic data should be compared against local demographics both in terms of proportions and by what marginalized communities are represented (i.e., a staff person who lives in an area identified as a marginalized community). Representation should be considered at different levels of the organization to ensure that diversity efforts are visible in leadership ranks, not just among less senior or lower-paid positions.
- To meaningfully diversity PUC processes and representation, change must be monitored over time and strategies must be extended to external contracting.
- Demographics and representation data must be shared with the public in order to enhance transparency and demonstrate intentional efforts to shift cultural competency at the PUC. Commissioner demographic profiles and experiences are especially important to share with the public.

Case Studies and Best Practices

- Following the tragic deaths of Ahmaud Arbery, Breonna Taylor, and George Floyd in 2020, the Michigan Public Service Commissioners asked staff to reflect on these events and how the issue of race and discrimination affect the Commission and the communities it serves (MPSC, 2021). From this conversation, staff led a new Diversity, Equity, and Inclusion (DEI) initiative, and one of the first activities was the issuance of an all-staff survey, followed by five all-staff listening sessions, discussing "attitudes toward DEI in the workplace," "disrcimination and harassment," "recruitment, hiring and retention," and other issues. Staff members participated in a research and methodology committee, which provided educational materials focused on race, discrimination, and feminism (Scripps, 2021). Recruitment of a diverse workforce is emphasized throughout the Michigan PSC's DEI plan, and the commission hired its first DEI officer in 2021. While the internal survey is not available to the public, the Michigan PSC has demonstrated that it is willing to invest internal resources into the exploration of diversity and inclusion, and is also willing to change its policies to address identified problems.
- The Wisconsin Public Service Commission has also taken initial steps to address diversity in its workforce. The PSC's 2021–2023 Equity and Inclusion Plan (Abral et al., 2021) included information on the gender and minority makeup of its staff, sorted by job group and seniority. The publication of this data is an important step for the Wisconsin PSC, though these results do not include information about commissioners, experience with low-income issues, and other dimensions of diversity.

[12] For more on equitable hiring, consider Vu Le's post in Nonprofit AF: https://nonprofitaf.com/2015/04/our-hiring-practices-are-inequitable-and-need-to-change/

RESULTS AND CAVEAT

As presented in the below table, on January 1, 2020 the Michigan Public Service Commission workforce (total 139 employees) was comprised of the following percentages of women and minorities in permanent positions in the below job groups.

JOB GROUP	NUMBER OF POSITIONS AVAILABLE IN THE AGENCY	NUMBER OF WOMEN	PERCENTAGE OF WOMEN	NUMBER OF MINORITIES (ALL GENDERS)	PERCENTAGE OF MINORITIES (ALL GENDERS)
Administrators/Senor Executives	10	7	70.0%	1	10.0%
Mid-Level Supervisors	5	2	40.0%	1	20.0%
Business Supervisors	3	2	66.7%	0	0.0%
Architect Engineer Supervisors	2	0	0.0%	0	0.0%
Fiscal	31	13	41.9%	5	16.1%
Program Specialist	4	1	25.0%	0	0.0%
Business Professionals	1	1	100.0%	0	0.0%
Inspectors, Investigators and Compliance	5	4	80.0%	3	60.0%
Architects and Engineers	20	5	25.0%	4	20.0%
IS Professionals	12	3	25.0%	3	25.0%
Policy, Planning and Research	14	6	42.9%	2	14.3%
Environmental Specialists	6	2	33.3%	0	0.0%
Legal Professionals	8	3	37.5%	1	12.5%
Administrative Support	10	9	90.0%	1	10.0%
Unclassified	8	3	20.0%	2	25.0%

The 2020 service status analysis of the agency's 139 employees found that 70.5% of the Michigan Public Service Commission's workforce is comprised of employees with fifteen (15) years or less seniority.

Philanthropy has become an important weapon in the utilities' arsenal that—when used effectively—can both boost the companies' own media image while also dividing our communities. In EPI's seminal report, they dive into the use of utility philanthropic giving and found four key ways that the utilities use to leverage donations:

1. **Utilities get grantees to weigh in on political issues.**

   In Ohio, FirstEnergy outright asked its grantees to write comments to the regulators in favor of a coal and nuclear bailout. They've also had grantees speak up in favor of rate hikes.

2. **Utilities curry favor with politicians by giving money to causes they care about.**

   In Virginia, Dominion Energy's CEO and the company itself **gave a gift totalling $125,000** to an influential Democrat's nonprofit.

3. **Utilities suppress organizing and dissent by dividing communities or muzzling them with money.**

   In Missouri, Peabody Coal gave money to the St. Louis NAACP branch. When the NAACAP **took a stand** against the pollution in their communities, Peabody pulled their contributions.

4. **Utilities use communities of color and low wealth communities for their own benefit.**

   In Florida, Duke and Florida Power & Light convinced the NAACP chapter to fight against solar in the state by writing opinion pieces and speaking to the media all based on the premise that solar would have a negative impact on low-income ratepayers. As the **chapter leader Adora Nweze described,** "I felt that if we wanted the money, we had to do it [...] The shortcoming on my part was that I didn't have the necessary knowledge to know that it was a problem."

Source: p. 24, Energy Democracy Project (2021). People's Utility Justice Handbook

P11. Limiting utility influence on regulators and legislators

METRIC STATUS: Shift to qualitative best practice

Rationale: Clean energy programs and climate policies are significantly influenced through lobbying, marketing and public relations campaigns, sometimes as much as they are through official regulatory channels. It is critical for the public to understand how these essential policies and programs are being influenced and who is influencing them to ensure accountability mechanisms are followed, possible corruption is monitored and avoided, and communities are safe from deception and harm, especially as the impacts of climate change on communities worsens. As explored in EPI's recent study (Anderson et al., 2019), utility companies can influence politics through their charitable donations to organizations, such as ensuring organizations receiving monetary contributions provide support for controversial proposals (e.g., rate hikes), which also creates a tax shelter where the company can earn greater returns.[13] A recent report produced by EPI delves into four ways utilities wield their influence over utilities, which highlights the deep level of control utilities have institutionalized to stay in control, including manipulating communities of color.[14]

This type of power can lead to utility companies even using customer funds to undermine clean energy programs (Roth, 2020). As shared in the People's Utility Playbook, utility companies utilize public relation firms to keep public opinion on their side, sometimes going as far as hiring actors to protest for the development of a gas power plant in New Orleans.[15]

We recommend assessing utility influence on communities, legislators and regulators at multiple levels, which can be integrated into a rating scale that tracks utility influence and supports stricter limits on utilities, deeper community review, and greater transparency:

- Contributions and conflicts of interest
  - Assess whether the utility company is making contributions to energy trade associations that do not benefit communities or customers, and whether those contribution expenditures are recovered through ratepayer dollars.
  - Advocate for the advancement of a FERC rule making the costs of utility payments made to energy trade associations nonrecoverable through ratepayer dollars (Wilson, 2022).
  - Utility lobbying, marketing, and public relations activities and campaign contributions to political candidates and government agencies should be disclosed to ensure ratepayer dollars are not subsidizing these efforts or being recovered through rate increases.[16]
  - Utilities should be prevented from contributing to campaigns or candidates that affect their regulation. For instance, in states where PUC commissioners are elected, utilities should be prohibited from contributing to or endorsing candidates.

- Disclosures and oversight
  - Assess whether utilities are required to define their use of lobbying, marketing, public relations, clearly with stakeholders and the general public.
  - Assess whether communities have resources to review and scrutinize utility lobbying, public relations, and donation activities and findings are considered part of the public record.
  - Assess availability of third party auditors or consumer advocates office to review utility lobbying, marketing, public relations, and donation activities and have the capacity to share with the general public and establish the use of third party auditors or consumer advocates office to review activities and ensure state and federal guidelines are being followed.
  - Assess whether state and federal lobbying guidelines are aligned and followed at the utility level.
  - Advocate for deeper oversight on lobbying, marketing, and public relations activities as well as their charitable contributions, including requiring utilities to define their use of public relations firms, lobbyists, and marketers, clearly and ensuring avenues for community review and scrutinization as necessary through FERC or state mandates.
    - As noted by the Energy and Policy Institute, "mandatory disclosure can be a key tool for regulators and the public to know when organizations attempting to influence decisions are being paid by utilities with an interest in a proceeding's outcome. The New Hampshire Public Utilities Commission requires utilities to disclose their charitable contributions during rate cases, providing one possible model, though annual filings would allow for more consistent oversight."[17]
  - Assess whether intervening parties in any utility proceeding are receiving any monetary contributions from the utility company and whether they disclose this information.

[13] https://energydemocracy.us/utility-justice-playbook/

[14] https://www.energyandpolicy.org/strings-attached-how-utilities-use-charitable-giving-to-influence-politics-increase-investor-profits/

[15] See page 31, https://energydemocracy.us/utility-justice-playbook/

[16] See recent contribution examples here: https://www.energyandpolicy.org/strings-attached-how-utilities-use-charitable-giving-to-influence-politics-increase-investor-profits/

[17] Ibid.

- As shared by the Energy and Policy Institute, it would be ideal for intervenors to "voluntarily disclose any involvement, of any kind, with charitable organizations by themselves or family members. If a utility is financially supporting a charitable organization with whom the regulator or policymaker, or a family member, is affiliated, then the regulator or policymaker should recuse herself from matters involving that utility."[18]
- Additionally the Energy and Policy Institute recommends to "require all entities making written or oral comments in a proceeding that would impact a utility to disclose whether they are receiving money from the utility, have been in conversations about future funding, or have a utility staff member or board member on the organization's board of directors."[19]

- Historical documentation
  - Assess whether influence has been documented and acknowledged by communities, intervenors/ stakeholders, regulators, and/or the general public and create scorecards where possible. See this example utility scorecard here.
  - Support pathways for communities to conduct historical reviews of utility influence, for instance, providing the extent to which policymakers reach out to utilities first to write a legislation/regulation or inquire confirm position before taking their own, etc.
  - Gather narrative histories of utility corruption, influence and conflict of interests should be documented and submitted to regulators and policy-makers by community groups, including a timeline of stakeholder actions (e.g. utility campaign contributions), and a statement of how such engagement has impacted them. Ultimately, these summaries may be cataloged and perhaps linked to the EEP Map.

P12. Scale of investment in equity initiatives

METRIC STATUS: Shift to qualitative/best practice

Rationale: How much an agency invests in initiatives, programs, and staff that directly supports equitable energy outcomes can be used as an indicator of the agency's commitment to equity and justice, to track progress over time, and foster accountability. In a survey of organizational DEI efforts across organization types in the United States, Traliant found a discrepancy in the extent to which organizations prioritize DEI and whether they had dedicated resources and budget for such initiatives. Despite many organizations indicating

[18] Ibid.

[19] Ibid.

Procedural Index metrics we voted out: This table summarizes additional measures that were considered but not recommended for inclusion in the index.

Utility performance incentives tied to outcomes in frontline communities	Could be % of total budget, absolute amount, amount per customer	Procedural	Qualitative	Not a lot of data out there. Don't keep for now.
Utility complaints rate—frequency and severity	This could be formal cases filed with PUC	Procedural	Qualitative	Don't keep—can be pursued locally if interested
Composite index of 16 metrics in economy, education, health, and community (e.g. youth disconnection, voter registration, access to healthy food). Details here.	Qualitative policy analysis	Procedural	D	Don't keep—more appropriate in Recognition dimension
PUC commissioner/decision-maker selection process (election vs appointment)		Procedural	Best Practice	Don't keep. It is not clear that elections are more democratic than appointments, depending on how districts are drawn.
Philanthropic support for grassroots BIPOC, frontline, and low-income engagement	Thinking about how much public or ratepayer dollars or benefits impacted communities leverage as a result of philanthropy grants	Procedural	Best Practice	Don't keep—too hard to track and impacts are not clearly beneficial.

DEI as a business priority, fewer organizations reported having a devoted budget and allocation of resources (Trailant, 2021).

Because there is no established level of DEI investment that guarantees systemic change, we cannot offer a set percentage of a budget that agencies or organizations should allocate to DEI activities. Agencies should ask whether they have sufficient resources needed to meaningfully advance equity initiatives. A range of quantitative elements can be tracked over time to identify DEI investment allocations and trends, such as:

- Recruiting, hiring, and staff development resources
- External consultants to conduct internal trainings
- Community outreach programs
- The development of a DEI plan
- The development of employee affinity or resource groups

RESOURCES:

- The Society for Human Resource Management
- Diversity Toolkit

PROCEDURAL EQUITY: PROCEDURAL INDEX

Recommendations and Best Practices

MEANINGFUL PARTICIPATION
Create and use indices for information accessibility and ease of procedural participation

TRANSPARENCY
Adopt measures for regulatory agencies, independent organizations, utilities and businesses

UTILITY INTERNAL PRACTICES
Assess internal best practices and initiatives related to equity

PUBLIC ADVOCATES
Adopt tailored oversight roles relevant to program types and community interests

PARTICIPATORY BUDGET
Adopt participatory budget with community involvement and design

UTILITY EQUITY PENALTIES
Assess penalties for clean energy plan and program commitments

DEFINED EQUITY GOALS
Create equity assessment and rating scales to guide eqiuty principles

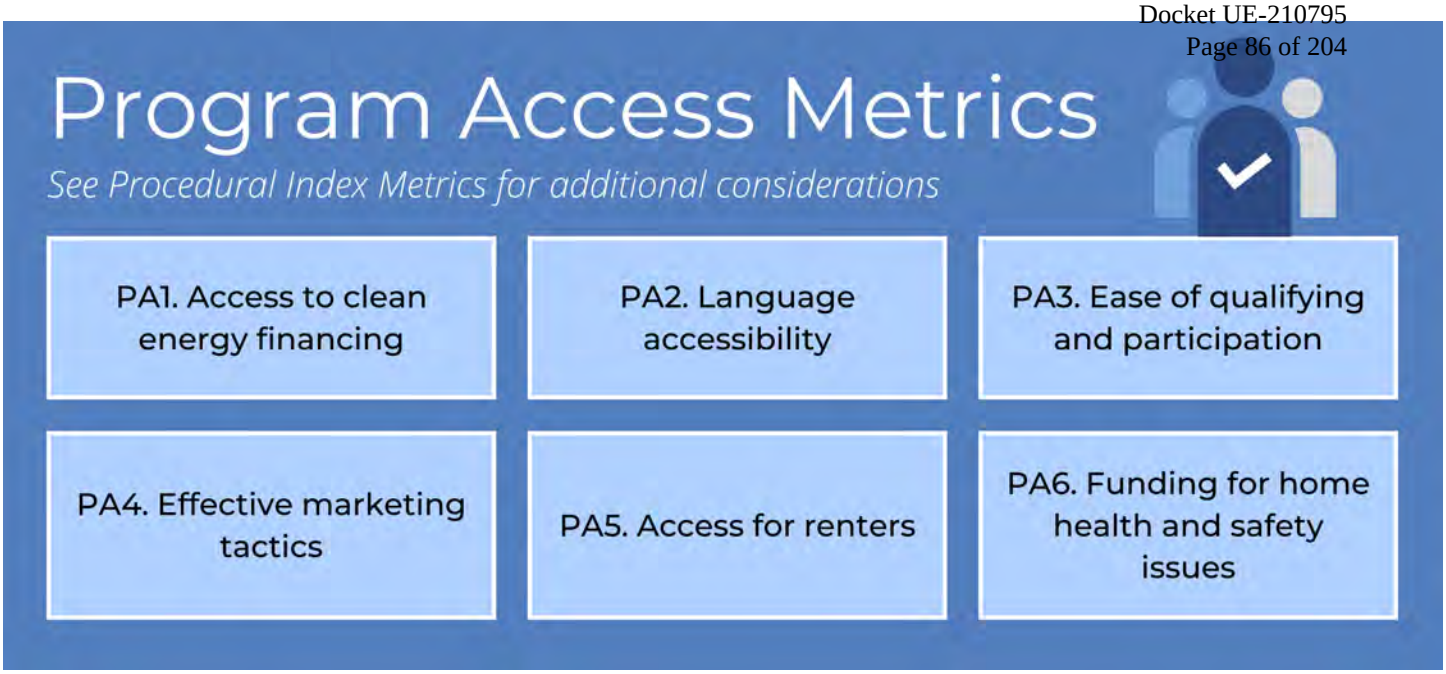
POLICY DESIGN ENGAGEMENT
Prioritize community engagement in policy-making processes

ACCESS TO INTERVENOR FUNDS
Promote equitable distribution of and access to intervenor compensation funds

STAFF REPRESENTATION
Ensure meaningful hiring practices, hire representatives from marginalized communities

LIMIT UTILITY INFLUENCE
Assess, track influence on legislators and regulators, impose strict limits, transparency

INVESTMENT SCALE
Allocate sufficient resources to meaningfully advance/track equity initiatives, DEI trends



Program Access Index

PA1. Access to clean energy financing

METRIC STATUS: Shift to qualitative/best practice

Rationale: To advance equity and address systematic disadvantages in both energy costs and access to clean energy benefits among people of color and populations with low incomes (Carley & Konisky, 2020), both cost reduction and financing access and tools must be expanded, regulated, and targeted to these populations. Examples include:

- Reducing or eliminating credit score and payment history requirements for financing qualifications
- Subsidizing or eliminating interest payments
- Lowering residential utility bills and energy costs through subsidized clean energy programs
- Expanding eligibility requirements for low-income families for cost-effective energy efficiency upgrades through Weatherization Assistance and related programs
- Expanding on-bill financing and repayment programs to pay for improvements or investments in clean energy upgrades

We recommend a range of potential strategies for increased access to clean energy financing, such as:

- A low minimum credit score requirement and preventing participation in clean energy programs from negatively impacting credit scores
- An index or scale combining credit score and payment history requirements, with a good payment history outweighing the need for credit scores
- Tracking the race and income of financing beneficiaries, with accompanying minimum or target threshold criteria.

We also caution against harmful and predatory financing mechanisms, such as household-level energy efficiency improvement loans tied to property ownership, which have been used to target low income property owners. As a best practice, we also recommend cost reduction and access tools as priority interventions first (i.e. fully funded by the program), ahead of financing mechanisms. Although financing can be an important tool for increasing access to energy efficiency, it can also saddle residents with greater household debt and credit damage without sufficient precautions.

PA2. Language Access

METRIC STATUS: Desire to create rating scale

Rationale: The United States has 25.3 million people, or 8.2% of its population, who report that they speak English less than "very well" (U.S. Census, 2020).[20] (As discussed in our Inclusive Language Review section, we chose to use the term non-English speakers to describe this group.) There are even higher concentrations of non-English speakers in certain communities across the country, upwards of 45% in some counties. These people are unable to read, write,

[20] U.S. Census. (2020). DP02-Selected Social Characteristics in the United States. American Community Survey-5 Year Estimates. https://data.census.gov/cedsci/table?q=DP02# (Last accessed May 4, 2022).

speak or understand English at the level necessary to meaningfully and confidently engage with efficiency programs, utilities and regulatory commissions.

Utility programs, utilities and regulatory commissions should design their engagements, community outreach, customer service, program and marketing materials to serve the needs of households in their community, including non-English speakers. Healthcare facilities, court and justice services, and state and local governments commonly use a document called a Language Access Plan that outlines the policies the organization will follow to provide services to non-English speakers. While not as common in the energy industry, several utilities and regulatory agencies do have Language Access Plans, including but not limited to Massachusetts Department of Public Utilities, New York State Department of Public Services and San Francisco Public Utilities Commission (MDPU, 2013; . NYSDPS, n.d; SFPUC, n.d).

This metric evaluates the presence and use of a current Language Access Plan or similar document. A Language Access Plan should include the following five elements:

1. An evaluation of the language access needs of the organization's constituency.
2. A list of the services the organization will provide to assist these constituents such as document translation, interpreters available at public meetings and multilingual call centers.
3. A plan for notifying constituents of these services.
4. A plan for training employees about processes and procedures for providing these services.
5. A framework for monitoring the effectiveness of these services.

We created a draft 1–5 scale to evaluate the language accessibility of engagements, community outreach, customer service and program/marketing materials of utility programs, utilities and regulatory commissions as follows:

- Existence of current Language Access Plan or similar policy document (Up to 2 points)
  - Organization has a policy document that addresses all 5 elements (2 points)
  - Organization has a policy document that addresses some of the 5 elements (1 point)
  - Organization does not have a policy document addressing these elements (0 points)
- Best practice of including basic services (e.g., translation of vital documents, ability to address customer concerns) to support all languages spoken by either 1,000 or more households, or more than 5% of total households, in the service territory (2 point)
- Best practice of having a continuous improvement process to increase access to non-English speakers. (1 point)

DATA/RESOURCES:

- Reference: Developing a Language Access Plan | ULG – Professional Language Translation Solutions
- The National Center for Access to Justice (NCAJ) has developed a comprehensive benchmarking methodology to quantitatively measure language access specifically for the justice system, that could be used if one is looking to delve deeper into improving language access.

PA3. Ease of qualifying and participation

METRIC STATUS: Desire to create a rating scale

Rationale: Evaluating the ease of qualifying for income eligible clean energy programs and overall ease of participation in clean energy programs are both important elements of building credibility with historically underserved communities. It is critical to be specific about whose ease of qualifying and participation is being evaluated (BIPOC, frontline, low-income communities) and how that will be assessed. Additionally, it is important to clarify that while many of the procedural equity metrics identified by the working group will ease participation, this metric focuses on evaluating the specific step where customers qualify for a program and the resulting program participation demographics.

We recommend a threefold approach to understanding this particular metric:

1. collect appropriate demographic data of participants,
2. assess the eligibility practices in place, and
3. conduct targeted customer interviews.

Collecting demographic data is vital to understand how effective clean energy initiatives are at advancing equity. Regulators should require program administrators to establish baseline demographic datasets for their customers in tandem with data collected on program participation, as well as non-participant studies (DNV GL, 2020). We recommend the following best practices associated with the collection of demographic data (Health Research & Educational Trust, 2013).

- The intent and use case for collecting the specific demographic data should be clearly communicated upfront to customers and connected to a compelling case for accountability.
- The language used and structure of the survey matters. Avoid wording and question formats that

may make respondents feel marginalized, such as the use of terms like "other" or not allowing multiple selections for each category to support multi-racial identities.
  - Program administrators should include options such as "I prefer not to say" and "Different identity: [fill in blank]" for every category and, as appropriate, make responses optional.
  - Options for each category should be alphabetical to avoid insinuating hierarchy.
- Practices should be put in place to ensure the data collected is secure and anonymized.
- Follow through is key. Program administrators should make the anonymized data publicly available in a timely manner. Datasets should be available for download by the public to increase transparency and support third-party analysis of program outcomes.

We recommend that ease of qualification be evaluated through qualitative assessment. The assessment should focus two scales (1) rigid to flexible (e.g., very rigid, rigid, netural, flexible, very flexible) and (2) siloed to comprehensive (e.g., completely siloed, somewhat siloed, neutral, somewhat comprehensive, very comprehensive). These scales could be applied to evaluate policies including, but not limited to the following examples: documentation requirements, auto-enrollment availability or opt-out program structures, single point of enrollment for multiple programs, and income threshold flexibility.

Lastly, we recommend the best practice of collecting customer feedback from those who participated in the program and those who did not, with a focus on conversations with individuals representative of historically underserved communities in the service area. Regular assessment of customer feedback on their experience of the enrollment process and participation in the program will identify pain points that quantitative data cannot provide.

DATA/RESOURCES:

- DNV GL Residential Nonparticipant Customer Profile Study (Massachusetts)
- ACEEE: Supporting Low-Income Energy Efficiency: A Guide for Utility Regulators

PA4. Effective marketing tactics

METRIC STATUS: Shift to best practice

Rationale: To effectively reach and engage with communities that have historically been marginalized by utility programs, marketing materials must be intentionally developed and culturally responsive. It is important to identify the specific communities that the utility wants to reach, potentially including frontline communities, Black communities, Indigenous communities and other communities of color. Keeping these specific communities in mind, we recommend all materials developed using public or ratepayer dollars follow these best practices:

- Vet marketing materials with the communities that will be most directly impacted. How well has their feedback been integrated into the process? Were they consulted or were they involved in the development process?
- Ensure representation within the campaigns (e.g., People of Color, women, people with varying abilities). This includes not only representative pictures, but also includes capturing the values, norms and perspectives of the communities. Assess imagery and language. When looking at campaign collateral, does it represent all communities? How intentional were the designers in correctly representing the community? This could be based on an assessment by the community.
- Ideally, include people and case studies from the local communities, not stock images. Evaluate the collateral; are the majority of the images generic? Choose images and words the community is more likely to actually resonate with.
- Ensure the campaign (and program materials) are accessible, including to those with visual impairments, hearing loss and those with limited internet access. Consider conducting an accessibility audit to see how your digital or web-based marketing is being used and better understand access and ease of use by different potential users, including people with disabilities and the visually impaired. Were improvements recommended? Were they implemented?
- Ensure a variety of channels are used to market and engage with the communities, including social media, email, radio, newspaper, etc. Assess your marketing channels and understand which demographics seem to respond better to certain communication methods.
- Ensure the messaging is dispersed geographically. Are certain areas of the service territory receiving more or less information about the program? Do certain areas that have historically not participated need more attention?

Lastly, in order to assess the effectiveness of marketing materials' ability to reach and engage with the identified communities, it will be necessary to collect demographic information on participants. There is no way to accurately measure impact to all communities, especially marginalized communities, without first collecting data. More information on the collection of demographic data can be found in the *PA3. Ease of qualifying and participation for BIPOC, frontline, and low-income households* narrative above.

Image source: GHHI, 2021 (p.16)

DATA/RESOURCES:

- Campaign Monitor: Why Diversity, Inclusion, and Equity is a Key Differentiator in Your Marketing Strategy
- Campaign Monitor: Let's Call It What It Is: Multicultural Marketing not Diversity, Equity and Inclusion
- ProRelevant: How Marketers Can Measure Diversity, Equity and Inclusion

PA5. Access for renters

METRIC STATUS: Priority data gap—considered as best practice for the moment.

Rationale: Renters face greater barriers to accessing clean energy benefits because they typically have far less control over their own energy choices and making changes to their living environment. While landlords or property managers are the ones with control over energy-saving upgrades being made in a building, renters typically are the ones responsible for their energy bills and therefore the ones experiencing the impacts of higher energy costs. This creates what we know to be the "split incentive" challenge (McKibbin, 2013). BIPOC, frontline, and low-income communities typically have higher percentages of renter populations, making renter access to clean energy programs an important measure of procedural equity (Desilver, 2021). This metric is most closely associated with our guiding principle of establishing credibility.

This quantitative metric evaluates the saturation of participation by renters in proportion to the percentage of residents that are renters within a service territory. A baseline understanding of residents that are renters and the characteristics of rental housing can be assessed using American Community Survey data, which is included in the EEP Map as a Recognition metric.

This baseline data should be paired with the best practice of regularly collecting demographic data on the participation and non-participation of residents that are renters in energy efficiency and renewable energy programs (see PA3. "Ease of qualifying and participation for BIPOC, frontline, and low-income households".) We also recommend conducting community-engaged research with individuals and families living in rental housing, and adopting policies to remove barriers identified during engagement (Samarripas & Jarrah, 2021).

ADDITIONAL RESOURCES:

- ACS Data on Housing Tenure, Renter-Occupied and Owner Occupied
- ACEEE's State and Local Policy Database
- ACEEE Energy Equity for Renters Policy Tracker

PA6. Funding for home health and safety issues

METRIC STATUS: Desire to create rating scale

Rationale: One persistent barrier to performing energy efficiency improvements in housing is the presence of health and safety issues. These issues can present potential health and safety concerns for the contractor or resident to perform the work (e.g., faulty wiring or presence of asbestos), can result in increased health and safety issues once the energy efficiency work is complete (e.g., poor indoor air quality exacerbated by air sealing the building envelope), or can prevent the work from moving forward altogether (e.g., insufficient electrical panel). Organizations that participate in the DOE's Weatherization Assistance Program often have to walk away from serving these houses due to insufficient funding to make these repairs; these abandoned projects are referred to as "deferrals" (DOE, n.d.).

A 2018 report by the Environmental Defense Fund found that up to 15 percent of homes, nationwide, have health and safety issues such as mold, leaky roofs, and asbestos that prevents them from accessing weatherization services (EDF, 2018). Per the U.S. Census Bureau, American Housing Survey 2019, Black households are 1.7 times more likely to live in housing that is considered substandard (moderately or severely inadequate) than white households, which contributes to exacerbating racial equity issues in housing and energy (U.S. Census Bureau, 2022). According to the same survey, households below the poverty level are 2.3 times more likely to be living in substandard houses than those at or above the poverty level. "Limited-income households are, on average, 27% less efficient than high-income households. As a result, energy and electricity are more expensive for the poor than for the rich," according to Norton et al., 2021.[21] Electricity isn't the only cost impacting communities. Inefficient homes can lead to conditions such as asthma from mold, dust, and pests. 40 percent of asthma episodes that are caused by housing-based triggers represent $5 billion lost annually in preventable medical costs, which are not easily affordable and can lead to further financial burdens.[22]

A common recommendation among weatherization advocates is that states, utilities and programs identify and provide dedicated resources to address the underlying health, safety and structural issues to enable energy efficiency work in low-income housing. The U.S. Department of Energy Weatherization Assistance Program (WAP) has increased the availability of funding to support health and safety issues in eligible housing through Weatherization Program Notice 22.7, (US DOE, 2021). Previous to this policy change, the Weatherization Assistance Program "primarily support[ed] cost-saving measures, with a limited budget of 15% of project cost available to address necessary health and safety issues. For the average project, the maximum budget for health and safety is just over $700 and is often not enough to address the many health and safety issues present in homes within ESJ communities" (Norton et al., 2021).

In positive news, DOE has allowed grantees to create a separate budget for health and safety funds and does not require that these funds be included in the cost-effectiveness calculation for the energy efficiency work that is enabled by fixing these health and safety issues. And while there are several existing energy efficiency programs that have been able to leverage resources from other organizations and state programs to fund these health and safety issues, including these Pre-WAP programs[23] as well as the Healthy and Lead-Safe Home Program offered by the Vermont Housing & Conservation Board,[24] there is still much more to be achieved to truly meet the needs of communities, especially in the wake of climate change (NASCP, 2019; VHCB, n.d.).

Once homes that were previously deferred are retrofitted, it is important that healthy building materials are used so as to not further exacerbate potential health hazards. According to an Energy Efficiency For All report,[25] "across the United States, homes with insulation containing formaldehyde, a known cancer- causing chemical and respiratory irritant, had significantly higher indoor levels of formaldehyde in the air that were associated with adverse health impacts for occupants (Singla et al., 2018)." In ensuring health and safety issues are resolved for residents, and that they have access to energy efficiency programs and benefits, it remains critical to ensure solutions are not maladaptive.

We created a sample 1–5 scale to evaluate the accessibility of utility run programs and their ability to repair and retrofit homes most impacted by health and safety (H&S) issues as follows:

- Points for percent of program budget allocated to be spent on H&S work (Up to 2 points)
  - 20% or more budget allocated for H&S work (2 points)

[21] Access the Green and Healthy Homes Initiative report at: https://www.greenandhealthyhomes.org/wp-content/uploads/2021-GHHI-Leading-with-equity_wp_Final.pdf

[22] See GHHI: https://www.greenandhealthyhomes.org/hazard/asthma/#easy-footnote-bottom-5-1545

[23] See National Association for State Community Service Programs: https://nascsp.org/wp-content/uploads/2019/08/Pre-WAP-Programs.pdf

[24] https://vhcb.org/our-programs/healthy-lead-safe-homes/program-services

[25] https://assets.ctfassets.net/ntcn17ss1ow9/3Bw3JFqYHgI7xWcvb7unwN/a17352bc9c1162b32729ed866ed98705/NRDC-3084_Guide_to_Healthier_Retrofit_Hi-res_smaller.pdf

  - 15%–19% budget allocated for H&S work (1 point)
  - Less than 15% budget allocated for H&S work (0 points)
- Best practice of not including H&S funds in cost-effectiveness calculations (1 point)
- Best practice of not having per house/per unit funding caps (1 point)
- Best practice of targeting outreach to previously deferred households (1 point)

Additionally, we recommend that agencies collect data and report on health and safety issues identified in potential housing upgrades, including but not limited to:

- Percent of housing units/buildings applicants that had health and safety issues identified that prevented energy efficiency investments to move forward (disaggregate between income-qualified and market rate as well as between single family and multifamily)
- Data on types of H&S issues encountered:
  - Percent of each H&S issue that were addressed with program funding, enabling energy efficiency work to move forward
  - Average cost of H&S repairs, by type
  - For deferred projects, provide an explanation of reasons for walking away
  - Description of types of energy efficiency investments that were enabled through H&S repairs

Lastly, we recommend that when performing retrofits, healthy building materials be used to prevent exacerbating potential health issues.

ADDITIONAL RESOURCES ON THIS TOPIC:

- A Guide to Healthier Upgrade Materials
- Guidance for Specifying Healthier Insulation and Air-Sealing Materials

Program Access Index metrics that we voted out:

No artificial caps on participation (e.g. net metering / energy choice caps)	Qualitative scale—not allowed, severe cap, moderate cap, no cap	Program Access	Qualitative	Don't keep—limited coverage
Multiple enrollments in all eligible programs encouraged and supported	Qualitative policy assessment (1–5 scale)?	Program Access	Best Practice	Don't keep—add to ease of enrollments
Auto-enrollment notification/ opt-out for programs households are eligible for	Qualitative scale? Data on individual household participation (% participating in multiple programs)	Program Access	Best Practice	Don't keep—add to ease of enrollments
Customer satisfaction scores	Utility or state rank	Program Access	Quantitative	Don't keep. There are multiple sources for this, though often require payment for access

Inclusive Language Review

Whenever possible, **we use the most specific language possible** to describe a group of people we are referencing as the experiences of communities differ significantly. Rather than use terms such as **BIPOC** as the default, which broadly refers to individuals who are Black, Indigenous, and People of Color, using specific language can be important for elevating the experiences of a particular group and resisting their erasure from decision-making spaces. This allows us to more adequately consider variations in the lived experiences of people with different identities. For example, Black people have been most impacted by redlining and housing discrimination and by the siting of polluting facilities. Native people have repeatedly had their autonomy as sovereign nations disregarded, and their land taken and misused despite treaty rights. They have been routinely skipped over by federal infrastructure investments like rural electrification and have a dearth of even basic data which perpetuates the cycles of erasure. Residents of Puerto Rico were left largely to fend for themselves after the devastation of Hurricane Maria, while energy shutoffs continue to plague Latinx households more than any other group in California.

When we are speaking of multiple groups that have been similarly impacted by climate change or the energy system, **we use frontline communities as an umbrella term**. For instance, policies that concentrate financial incentives among wealthier and whiter households, as seen in the uptake of federal tax credits for electric vehicles and rooftop solar installations, result in distributional inequities among frontline communities. In this instance, we mean frontline communities to refer to Black, Indigenous, and Latinx households, the rural poor, renters, immigrants, and people with disabilities, to name a few. Because the experiences of being negatively impacted by the energy system, shut out of planning and decision-making processes, and unable to partake in the benefits of clean energy are common among many specific communities, we use frontline communities to reference their shared experience as the "have nots" of the energy system, as compared to the "haves".

Drawing from the definitions of the United Frontline Table and the It Takes Roots coalition (ITR, n.d.) (UFT, n.d.),[26] groups we include under the umbrella of frontline communities include, but are not limited to:

- **Gender & sexual orientation:** Women, gender non-conforming people, trans people
- **Race and Ethnicity:** Indigenous Peoples, and Black, Latinx, Asian, Arab, Immigrant and Muslim communities
- **Household characteristics:** elderly, youth, people with disabilities and medical conditions, single mothers
- **Housing status:** renters, unhoused, historically redlined
- **Geography:** pollution burdens and proximity to polluting facilities, rural, urban, fenceline communities, coal communities
- **Income & wealth:** "low, lower, and low-to-moderate income (LMI)", multiple tiers of absolute (e.g. % of federal poverty level) and relative income and cost burdens (e.g. % area median income, energy and housing cost burdens), ability to benefit from financial incentives (credit scores, sufficient tax burdens)

[26] ITR. (n.d.). About. It Takes Roots. Retrieved April 2022, from https://ittakesroots.org/about/

UFT. (n.d.). *A People's Orientation to a Regenerative Economy.* United Frontline Table. Retrieved February 2022, from https://unitedfrontlinetable.org/report/

See definitions of frontline communities at: https://ittakesroots.org/about/ and https://unitedfrontlinetable.org/report/

Shutoffs vs Disconnections: A Note on Language Usage

In the EEP framework, we deliberately use the word shutoffs to describe when a household has involuntarily had their utility service terminated for non-payment.

The term **disconnections** has now become the dominant term used in regulatory proceedings and by utilities. **Shutoffs** is preferred among the marginalized communities that are disproportionately impacted by shutoffs.

Language choices are often political, and can be used to polarize and weaponize debate. Ensuring people have access to energy, a fundamental human need and, we believe, a fundamental human right, is too important to shut down conversation over word choice.

At the same time, the distinction between shutoffs and disconnections is not mere semantics. To us at EEP, disconnection sounds abstract, far away, benign. It does not conjure the devastating personal impact that losing access to heat and electricity has on families. It does not paint the stark picture of people living in cold, dark homes because they cannot pay more. It does not illustrate the terrible stress of whether to pay the energy bill, go hungry, skip medical care, or let it ride with the rent or mortgage and hope this does not precipitate eviction or foreclosure. Disconnections, to us, has an innocuous connotation; it can make it sound as if the problem is intractable and result of some unnamed external force.

By contrast, the term shutoff is rightly jarring. The word itself makes it harder to look away from the human suffering that results. And because it is a jarring word, it presses the idea that alternatives are both possible and necessary. If shutoffs are so severe and oppressive, what are we doing to reduce and ultimately end the practice?

The Energy Equity Project exists to be in service to Black, Brown and Indigenous communities and allies, to frontline environmental justice communities, to the poor, people with disabilities, and all other marginalized groups that have suffered under the current structure of the American energy system. We have heard from these groups with exceptional clarity and consistency that ending shutoffs is a priority.

We honor the priority of frontline communities in this small way by choosing to use what we believe is both the most appropriate term and the most reflective term that most widely used by those who are most impacted. Our objective is not to correct others who use the term disconnections, but to communicate a choice we made that aligns with our values. Regardless of language, we are eager to partner with any organization that seeks to use data to document and illuminate the issue and most importantly, to work for lasting solutions that ensure everyone has the energy they need to live comfortably and with dignity.

Fenceline communities specifically reference a community's physical proximity to environmental burdens that result from the energy system and its industrial facilities (Lerner, 2012).[27] We will use these when specifically referring to locations such as neighborhoods located adjacent to oil refineries on the Gulf Coast of Louisiana and Texas.

The term **disproportionately impacted community** most commonly references elements of recognition equity-disparities in historical treatment and current demographics that result in distributional inequities of burdens and benefits. Because disproportionately impacted can imply either a common language meaning or reference a specific legal or policy definition, we limit our usage of this term to specific policy references or qualify our usage of the term; e.g. disproportionately impacted by legacy pollution burdens.

A prominent example of the term disproportionately impacted communities is found within Colorado's SB 272.[28] In this case, the definition serves to designate specific Census block groups for additional consideration in energy and climate decision-making and investments. Designation as a disproportionately impacted (DI) community requires meeting one or more conditions, such as exceeding a threshold that 40% households be low-income (<200% FPL or <80% AMI) or housing cost-burdened (not defined). Colorado's use of DI communities is similar to the Justice40 usage of **disadvantaged communities**, by which some census tracts will be designated as

[27] Lerner, S. (2012). *Sacrifice zones: the front lines of toxic chemical exposure in the United States.* MIT Press.

Adams, A. E., Shriver, T. E., Saville, A., & Webb, G. (2018). Forty years on the fenceline: community, memory, and chronic contamination. *Environmental Sociology*, 4(2), 210-220.

[28] SB 21-272, 100, 2021 Reg. Sess. (CO. 2021) https://leg.colorado.gov/sites/default/files/2021a_272_signed.pdf

disadvantaged based on their percentiles across several dimensions and indicators (CEQ, 2022).[29]

Colorado's definition also allows for determining DI communities, perhaps by some process of self-determination (to be developed) by a qualitative assessment of historical systemic racism or redlining or experiencing a range of disproportionate environmental and socio-economic stressors, including cumulative impacts of pollution and procedural inequities.

Impacted communities is another term that can be found in multiple sectors, e.g. AIDS-impacted community, mining-impacted community. To us, impacted community also prompts further questions like: "Impacted in what way? How severely?" Because impacted communities is less common and more ambiguous than frontline communities, we refrain from using it.

Non-English speakers

Per 2013 U.S. Census data, the United States has more than 25 million people, or 9% of its population, over the age of five who reported that they spoke English less than "very well". These people are unable to read, write, speak or understand English at the level necessary to meaningfully engage with efficiency programs, utilities and regulatory commissions.

The term **limited English proficiency (LEP)** is used by both the federal government and those receiving funds from the federal government, notably the healthcare industry, schools and the justice system. A person with LEP is defined as a person who does not speak English as their primary language and has limitations in their ability to read, write, speak or understand English. The federal government, based on the 1964 Civil Rights Act and as reiterated in Executive Order 13166, is required to ensure that their programs, services and information are meaningfully accessible to LEP persons. Specifically, the Executive Order mandates federal agencies to "examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them." While this term is widely used in many fields, this is a deficit-based term that is not commonly used by the communities themselves, and so we choose not to use this term.

The term **non-native English speaker (NES)** is defined as a person who did not learn English as their first language. Non-native English speakers, however, may or may not be fluent in English. As some non-native English speakers may be fluent in English and therefore be able to meaningfully engage with efficiency programs, utilities and regulatory commissions, we choose not to use this term when discussing language access barriers.

While we could not find consistent community support of any specific term, the term **non-English speaker** tends to be the most commonly used term by these communities. As such, we chose to use this term in this document.

Immigrants

Most commonly, an **immigrant** is defined as a person who lives in a different country than their birth country. There are about 50 million immigrants living in the U.S. There are several categories of immigrants, including naturalized citizens, permanent residents, refugees, asylees and undocumented immigrants—each category having varying legal privilege and encountering varying barriers. Undocumented immigrants, who account for about one out of four immigrants per the Pew Research Center, experience the most extreme barriers (Buidman et al, 2020).

Barriers to participating in programs as well as engaging in public meetings for immigrants include, but are not limited to, language barriers, cultural barriers (e.g., some immigrants are unaware that programs such as energy assistance exist as they come from countries that do not have similar programs), lack of documentation (e.g., proof of employment or income due to irregular or nontraditional jobs), and fear of mistreatment and deportation of themselves, their family and their friends. This fear is reinforced by incidents such as U.S. Immigrations and Customs Enforcement (ICE) using utility databases to access personal information about undocumented immigrants, as reported by *The Washington Post*, (Harwell, 2021).

When referencing immigrants, it is important to avoid overgeneralizations and instead recognize the different barriers, immigration statuses and situations of individuals or communities. The term "illegal" is incendiary and dehumanizing and should always be avoided.

[29] At the time of this writing, the final methodology for selecting disadvantaged communities had not been set. CEQ. (2022). Climate and Economic Justice Screening Tool (CEJST): Beta. Council on Environmental Quality, https://screeningtool.geoplatform.gov/en/cejst#3/33.47/-97.5

Historically Disinvested, Disenfranchised, Underserved, Underrepresented Communities

The terms **historically disinvested community** and **historically disenfranchised community** commonly relate to a racially homogeneous group of individuals who have been impacted by the legacy of implicit and explicit activities that systemically devalued and withdrew resources and money from their communities within the United States (e.g., structurally racism). These discriminatory practices, such as, segregation and redlining of Black communities led to higher rates of Black people being denied banking services to buy homes, thus leading Black communities to have lower overall generational wealth and health.[30]

Historically disinvested or disenfranchised can also refer to groups that have limited or no access to resources. These groups may include people who are "socioeconomically disadvantaged; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and older people (FEMA, n.d.)."[31]

Similarly, the term **underserved community** can be defined as "populations that face health, financial, educational, and/or housing disparities, including facing barriers that make it difficult to get health coverage and basic health care services (JHU, n.d.)."[32] However, we recognize that these barriers are interrelated with other critical services people interact with daily, such as housing, energy, and banking services.

We also want to acknowledge the impacts of linguistic choices, especially as they manifest in our state and federal policies, because they can lead to the perpetuation of negative stereotypes, marginalization, and normalizational institutional racism. Terms, such as underserved community, may denote a negative perception of whole groups of people, othering the community, and insinuating people are not enough or unworthy (Williams, 2020).[33]

While the term **"underrepresented community"** is defined as "a group that is less represented in one subset (e.g., employees in a particular sector, such as IT) than in the general population," it can be too broad. For instance, it can also refer to gender, race/ethnicity, physical or mental ability, LGBTQ+ status, and many more (Kutch & Kutch, 2022).[34] It's important to be specific about who we are referring to and convey dignity for all people.

Given systemic policies, procedures and culture that strengthened and perpetuated the marginalization of certain communities across America, under-representation, especially in seats of power, is prevalent. It is critical to use language purposefully and respectfully, and also ensure there are pathways to change current representation. For instance, by the end of 2021, AB 979 (Bell et al., 2020)[35] required all "California-headquartered public companies have at least one director on their boards who is from an underrepresented community, defined as an individual who self-identifies as Black, African American, Hispanic, Latino, Asian, Pacific Islander, Native American, Native Hawaiian, or Alaska Native, or who self-identifies as gay, lesbian, bisexual, or transgender (Bell et al., 2020)."[36]

For all these terms referring to communities, we recommend distinguishing their use cases. While federal and state governments are using overarching terms, we recommend that if you are participating in evaluation and community engagement, being as specific as possible, humanizing, and inclusive in your language is critical.

Individuals/Communities Navigating Low Income

Terms that indicate socioeconomic status such as **low-income communities** have the potential to serve as implicit descriptors for racial or ethnic identities, leading to implicit biases that can conflate racial and ethnic identities with one's occupational, educational or economic situation (APA Style, n.d.).[37] In addition,

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[30] OpenSciEd. (2020). *Reading: Disinvestment in Communities.* OpenSciEd. https://www.openscied.org/wp-content/uploads/2020/09/L6.Reading-Systemic-Racism-and-Disinvestment-in-Communities.pdf

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[32] JHU. (n.d.). *Diversity and Equity Initiatives: Definitions.* Johns Hopkins University. Retrieved February 2022, from https://publichealth.jhu.edu/departments/environmental-health-and-engineering/about/diversity-and-equity-initiatives/definitions

[33] Williams, T. L. (2020, June 19). *'Underrepresented Minority' Considered Harmful, Racist Language.* Communications of the ACM. Retrieved January 2022, from https://cacm.acm.org/blogs/blog-cacm/245710-underrepresented-minority-considered-harmful-racist-language/fulltext

[34] Kutch, B. D. M., & Kutch, J. S. M. (2022). Innovation through diversity and inclusion: A roadmap for higher education information technology leaders. In *Research Anthology on Changing Dynamics of Diversity and Safety in the Workforce* (pp. 1811-1833). IGI Global. From https://www.igi-global.com/chapter/innovation-through-diversity-and-inclusion/224239

[35] Bell, D., Belt, D., & Hitchcock, J. (2020, October 10). New law Requires Diversity on Boards of California-Based Companies. The Harvard Law School Forum on Corporate Governance. Retrieved February 2022, from https://corpgov.law.harvard.edu/2020/10/10/new-law-requires-diversity-on-boards-of-california-based-companies/

[36] APA Style. (n.d.). Socioeconomic Status. American Psychological Association. Retrieved March 2022, from https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/socioeconomic-status

[37] DCFPI. (2017). DCFPI Style Guide for Inclusive Language. DC Fiscal Policy Institute. https://www.dcfpi.org/wp-content/uploads/2017/12/Style-Guide-for-Inclusive-Language_Dec-2017.pdf

socioeconomic terms do not recognize the broader social context such as community disinvestment, racist housing policies, and voter disenfranchisement. We recommended that when writing about communities navigating low-incomes, authors acknowledge the social context as well as the non-economic assets of the community such as its culture, arts, history, and social ties (DCFPI, 2017).[38] Additionally, we recommended that authors refer to specific metrics when talking about low-income individuals, citing specific income levels or categories.

Disabled Communities

When referring to individuals with disabilities, it is generally regarded as best practice to use "people-first language," putting the person before their condition. However, it is of even greater importance to inquire of one's preferred terminology, as identity-first language may be preferred by some individuals. For some, identity-first language allows them to claim and celebrate their disabilities and promotes their autonomy (APA,2015).[39] However one chooses to identify, a respectful approach also means avoiding victimizing, villainizing, sentimentalizing or heroizing language (Thomas & Hirsch, 2016).[40]

In an anti-ableist framework, it is also critical to evaluate the language we use when not explicitly referring to individuals with disabilities. For example, it is best to avoid language that methaphorizes or make a joke of disabilities or mental/emotional health such as "lame," "crazy," or "freak," as well as language that describes individuals without disabilities using descriptors such as "healthy" or "normal."

Environmental Justice Communities

Commonly referred to as "environmental justice communities," the US EPA describes communities that face disproportionate exposure to environmental hazards or exposures as "overburdened" communities, defined as: "minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be the result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities (EPA, 2020)."[41]

Although the label "environmental justice community" is common and useful for shared understanding of the environmental challenges faced by many communities, some social scientists have found that rather than metric-based, outside labeling or definitions based on the satisfaction of criteria—which can useful for allocating resources to address EJ issues—*community*-based identification of their own EJ areas or EJ sub-populations or communities is most effective for assessing EJ outcomes (Rowangould et al., 2016).[42]

Energy Justice Communities

Energy justice applies environmental justice principles to energy production and consumption matters, including related "energy policy, energy production and systems, energy consumption, energy activism, energy security, and climate change (Jenkins et al. 2016)"[43] issues.

Energy justice for communities refers to "the goal of achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on those disproportionately harmed by the energy system. Energy justice explicitly centers the concerns of communities at the frontline of pollution and climate change ("frontline communities"), working class people, indigenous communities, and those historically disenfranchised by racial and social inequity. Energy justice aims to make energy accessible, affordable, clean, and democratically managed for all communities (IEJUSA, 2019)."[44]

[38] Kutch, B. D. M., & Kutch, J. S. M. (2022). Innovation through diversity and inclusion: A roadmap for higher education information technology leaders. In *Research Anthology on Changing Dynamics of Diversity and Safety in the Workforce* (pp. 1811-1833). IGI Global. From https://www.igi-global.com/chapter/innovation-through-diversity-and-inclusion/224239

[39] APA. (2015). Choosing Words for Talking About Disability. American Psychological Association. Retrieved March 2022, from https://www.apa.org/pi/disability/resources/choosing-words

[40] Thomas, H. & Hirsch, A., (2016). A Progressive's Style Guide. Sum of Us. https://s3.amazonaws.com/s3.sumofus.org/images/SUMOFUS_PROGRESSIVE-STYLEGUIDE.pdf

[41] EPA. (2020). EJ 2020 Glossary. EPA. Retrieved March 2022, from https://www.epa.gov/environmentaljustice/ej-2020-glossary#:~:text=Overburdened%20Community%20%2D%20Minority%2C%20low%2D,disproportionate%20environmental%20harms%20and%20risks

[42] Rowangould, D., Karner, A., & London, J. (2016). Identifying environmental justice communities for transportation analysis. Transportation Research Part A: Policy and Practice, 88, 151-162. https://doi.org/10.1016/j.tra.2016.04.002

[43] Jenkins, K., McCauley, D., Heffron, R., Stephan, H., & Rehner, R. (2016). Energy justice: A conceptual review. Energy Research & Social Science, 11, 174-182. https://doi.org/10.1016/j.erss.2015.10.004

[44] IEJUSA. (2019). What is Energy Justice? Initiative for Energy Justice. Retrieved April 2022, from https://iejusa.org/#:~:text=Energy%20justice%20refers%20to%20the,harmed%20by%20the%20energy%20system

Energy justice communities exist on the spectrum of the energy production-consumption continuum, with different but interconnected environmental justice challenges. On the consumption end of the energy spectrum, energy justice communities are communities that experience higher rates of energy poverty, higher rates of energy insecurity, and higher energy costs, and these are disproportionately people of color and people with low incomes.

On nomenclature, the Initiative for Energy Justice reviewed literature, practitioner products, and statements from advocacy, "frontline," and community groups, and found that "With a few notable exceptions, practitioners and advocates tend to rely less on "energy justice" and more on terms like "energy equity" and "energy democracy" in their work. Although the terminology differs, the usage commonly focuses on frontline-led approaches to energy policy that center the economic, social, and health concerns of marginalized communities (IEJUSA, 2019)."[45]

Older Populations

Results found that groups of older adults perceived to be "elderly" in New Zealand were frequently being culturally put down through systemic intolerance (Butler, 1969), with the descriptive label of "elderly" perpetuating stereotypes and prejudicial attitudes towards aging and older adults (Amundsen, 2019).[46]

Online news media articles need to avoid the term "elderly" and instead use "older adults", "or "older people", or as advocated by the United Nations (2020), "older person/s."

[45] EJUSA. (2019,). Section 1 – Defining Energy Justice: Connections to Environmental Justice, Climate Justice, and the Just Transition. Initiative for Energy Justice. Retrieved April 2022, from https://iejusa.org/section-1-defining-energy-justice/#section1_1

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LIST OF BEST PRACTICES

- Distinguish different use cases for different terms—e.g., federal government may have definitions, but advocacy and community groups might prefer different terms and nomenclature, and where possible contextualize term use with specific data and descriptions
- Where possible, understand and distinguish between common nomenclature, policy or jargon, etc., versus community-identified and preferred terms
  - Respect individual and community preferences for how they wish to be identified
- Be specific with regards to group classifications: income (e.g., federal "low income" classification? other?), race, ethnicity, etc.
- Acknowledge what isn't always reflected in one metric of income
- Use people first language, e.g., individuals with disabilities
- Explain and provide detail of metrics or criteria used to qualify or determine eligibility for or description of "environmental justice community" in reporting and writing; center community and population self-identification of "environmental justice community"
- Re: "energy justice community," clarify the energy community and detail where appropriate and possible the energy justice issues impacting people in different types of energy communities (e.g., production, consumption, export, transportation communities); target energy "justice" vs. "democracy" vs. "equity" language to appropriate respective audiences
- For energy justice, make sure to consider the full spectrum from energy production to consumption

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Distributional Equity

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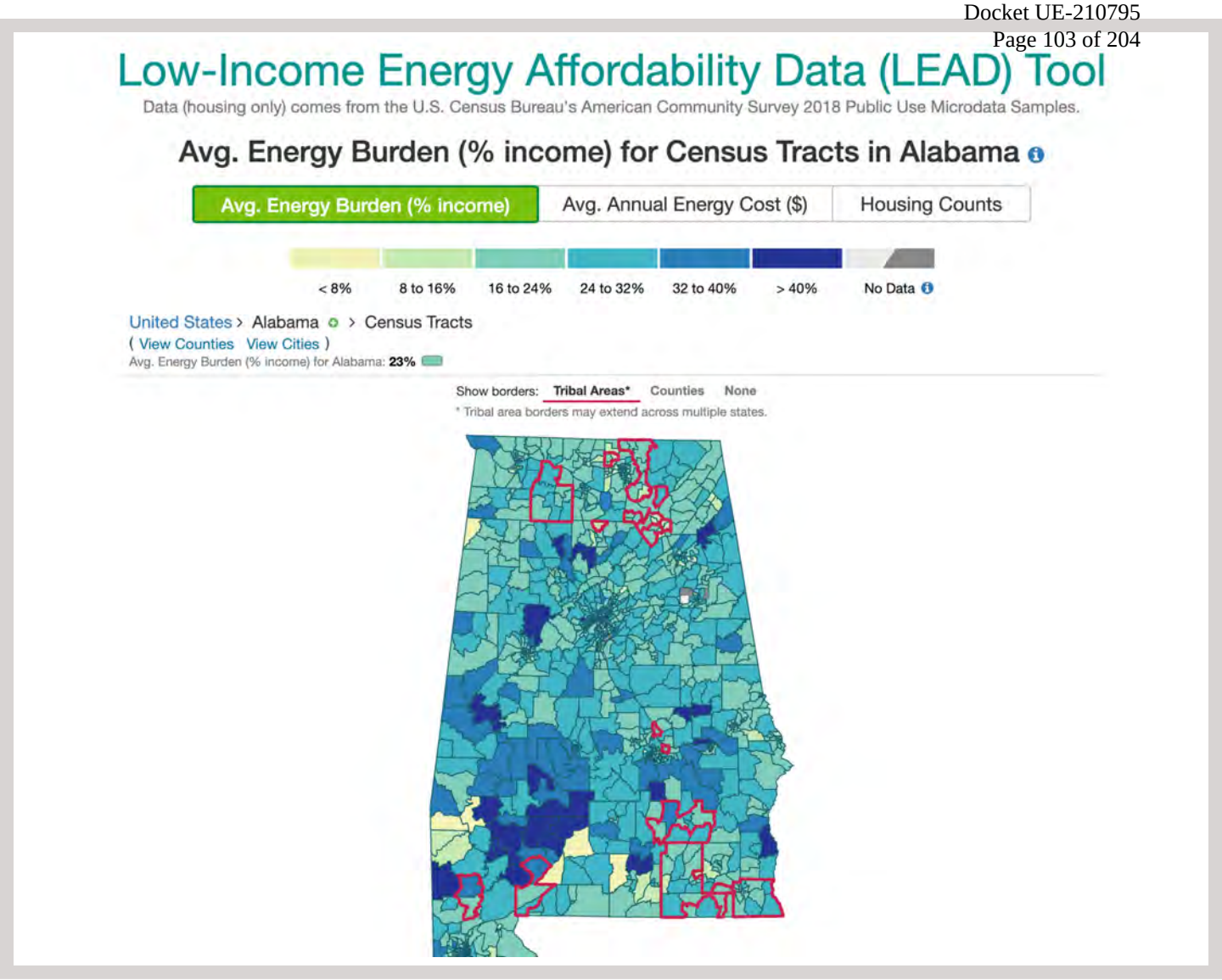
Equity is achieved not by simply redistributing the benefits and harms, but by eliminating the harms and increasing the benefits while expanding access to them.
(Holifield 2001)

Broadly speaking, distributional equity refers to how the benefits and harms of the energy system are distributed, and is closely aligned with the notion of "justice as fairness" (Pello 2000; Rawls 1971). Distributional inequities have been thoroughly documented in the field of environmental justice scholarship and activism (e.g. Ard 2015; Bullard 1994; Bullard 2000; Mohai et al. 2009). Low-income communities and Black, Indigenous, and People of Color (BIPOC) communities are much more likely to face exposure to environmental harms (e.g. toxic pollution, presence of polluting facilities, etc.) and less likely to have access to environmental "goods" like green space and parks.

As with environmental justice, distributional equity in the energy system is multifaceted and concerns both *what* is distributed and among *whom* it's distributed. For example, distributional equity can include distribution of: energy technologies, energy efficient buildings and appliances, economic outcomes (e.g. utility contracts), environmental or climate risks from energy production, health impacts of the energy system (e.g. air pollution both indoors and outdoors), spending and benefits from energy programs (e.g. energy savings, bill savings, financial assistance), investment in communities, the cost of energy, or other energy system characteristics. In terms of who is impacted, the Recognition workgroup has reviewed in detail the sociodemographic and other characteristics that are most likely to influence which people and communities receive more of the benefits and harms. These include frontline or fence-line communities living close to polluting power generation facilities, BIPOC communities who have been historically and are still excluded from investments and economic development opportunities low-income families



Low-Income Energy Affordability Database (LEAD) Tool. Image shows energy burdens (percentage of gross income spent on heating and electricity) among households at or below 100% of the Federal Poverty Level in Alabama. Image source: U.S. Department of Energy.

struggling with high bills and lack of access to energy efficient housing or technologies. Generally speaking, these are the same people and communities that face greater risk of harm from environmental and energy injustices.

As shown in the principles of distributional equity described below, equity is achieved not by simply redistributing the benefits and harms, but by eliminating the harms and increasing the benefits while expanding access to them (Holifield 2001). The elimination of harms is addressed in detail by the Restorative workgroup. When measuring distributional equity, we need to include metrics that capture overall reductions in harms and improvement of lives and livelihoods, as well as the distribution of energy system benefits and investments.

In this chapter, we start by defining Distributional Equity and the guiding principles that can best illustrate it. We then review and discuss a set of recommended metrics that can be used to measure three key aspects of distributional equity: 1) Energy affordability, 2) Household benefits, and 3) Community benefits.

For the majority of recommended metrics, data are not currently publicly available for researchers, regulators, practitioners, and others interested in evaluating distributional equity. Given the importance of capturing equity in all its dimensions and facets, it is critical that future work on energy equity prioritize making data available so that distributional equity can be accurately assessed at all geographic scales including neighborhoods, cities, utility territories, and states.

Principles of Distributional Equity

Before seeking to measure distributional equity we first have to define what we mean by the term and what it looks like in the real world. The Distributional Equity workgroup evaluated various principles to define the concept and capture its ideals and framing. In other words, what does it look like when an energy system is equitable in a distributional sense, and what does inequity look like? This section begins to answer these questions by describing principles of distributional equity.

ENERGY AFFORDABILITY

Energy is a fundamental need for all households because it's essential to fulfilling basic needs such as heating and cooling, cooking, lighting, and communication. Access to affordable energy is therefore essential for families and households; it is both a principle of distributional equity and a key aspect for measurement. There is a large body of research highlighting the dangers families face when they do not have consistent access to affordable energy services, such as: increased risk of poverty (Bohr and McCreery 2020); increased risk of eviction (Desmond 2016); reduced food expenditure and calorie intake (Bhattacharya et al. 2003; Nord and Kantor 2006); and poor respiratory health, mental health, and sleep outcomes (Hernández and Siegel 2019). When households spend more than 6% of their income on energy, this is considered a high energy burden; above 10% is considered severe. However, this energy unaffordability can also be experienced in other ways, such as sacrificing comfort and health by keeping the home at an unsafe temperature to save on bills, reducing spending on food or medicine to pay high energy bills, receiving a disconnection notice or experiencing a disconnection and general financial and housing insecurity (EIA 2015; Hernández 2016).

In addition to the general problem of energy insecurity and lack of affordable energy services, research has also clearly documented income and racial disparities in which households have access to affordable energy. For example, while one in three households in the U.S. were energy insecure in 2015, there were significantly higher rates of energy insecurity for low-income, Black or African American, and Hispanic or Latinx households compared to higher income and white or Caucasian households (EIA 2015).

In an equitable energy system, all households would have access to affordable, clean, reliable energy services. In practice this would mean:

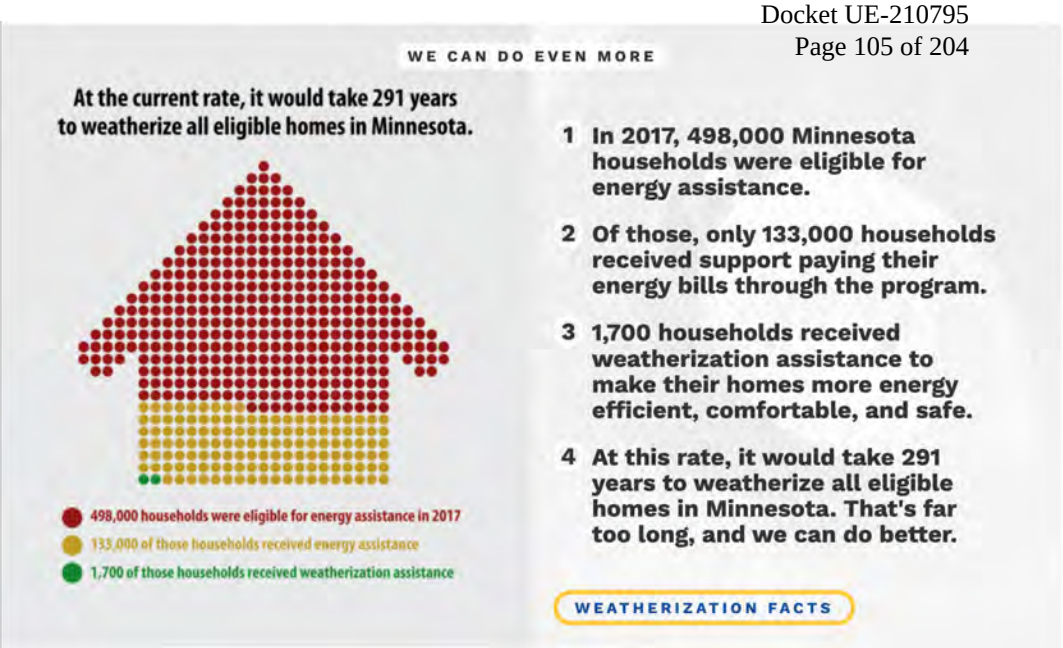
- No households face extreme/severe burdens (>10%).
- A plan and pathway to reducing high energy burdens (>6%) within the next three years
- The distribution of energy burdens does not disproportionately impact any particular demographic or socioeconomic group. In other words, no disparities in energy burden by race, income, education, disabilities or health conditions, age, family structure, or property ownership.
- All households have access to a minimum level of energy services at a cost they can afford without sacrificing other needs.
- Appropriate programs, resources, and support are available for mitigating extreme and severe energy burdens among vulnerable populations, accounting for shutoff experiences, arrears, medical conditions, housing instability, and local environmental quality and cost of living.
- Arrears reduction programs are available for customers with previous experiences of energy insecurity or high energy burdens.
- Financial assistance is provided to households to meet these goals.

EQUITABLE INVESTMENTS, BENEFITS, AND HARMS

The energy system creates a wide variety of benefits and harms, from the point of energy production through consumption in customers' homes. On the production side, the benefits include economic development and job creation in fields such as solar installation, wind farm construction and maintenance, energy efficiency contracting, battery storage technology, and a wide variety of administrative and support roles for this work. On the consumption side, the benefits of energy programs include direct energy savings and bill reductions, as well as various non-energy benefits such as: health benefits from home improvements, increased home value and wealth creation, improved thermal comfort, improved thermal resilience (i.e. the building stays at a comfortable temperature for longer during a power outage or loss of heating service), and more.

In terms of harms, the production of energy from fossil fuels is responsible for some of the greatest environmental harms that humanity has produced,

including climate change and disruption on a global scale, as well as more local harms from mining of coal and metals, natural gas production (e.g. hydraulic fracturing), nuclear fuel mining and waste disposal, air pollution and health impacts from burning fossil fuels, etc. (Hernández 2015). Renewable energy generation can also create harms when large utility-scale solar or wind farms are installed in sensitive ecosystems without the support of local Indigenous people, and through the mining of raw materials and production and manufacturing for solar panels and wind turbines (Baker 2021).



In order to achieve distributional equity, all benefits from the energy system must be distributed fairly and equitably, and harms must be both minimized and distributed equitably and minimized. For example, utility program benefits should be allocated such that frontline communities and households receive a large majority at least 40% of the benefits, or a proportion that matches the percentage of those households in the utility territory, whichever is greater. This is similar to the goal of the Justice40 initiative from the Biden Administration which seeks to allocate at least 40% of the benefits to environmental justice communities (The White House 2021). We must also ensure that no new polluting facilities are placed in communities that already host too many.

One of the ways we can work toward more equitable benefits is to start with equitable investments, i.e. ensuring that a prominent share of utility program investments reach frontline communities and households that have previously been underserved. This is a significantly higher standard required than achieving equal, or proportional investments to different populations without remedying extensive underinvestment that may have accumulated over decades. Furthermore, historically disinvested communities often need additional investment to receive the same benefits and outcomes. A home with deferred maintenance, for instance, may need a larger investment to retrofit and receive the same energy savings and health benefits.

SERVE RENTERS EQUALLY

Rental housing is often recognized as less energy efficient or more energy intensive than occupant-owned homes. This is due to the "split incentive" problem: since landlords usually do not pay utility bills, or can pass along the cost of energy to their tenants, they have less of an incentive to invest in energy efficiency upgrades (Gillingham et al. 2009). Efficiency programs may find it harder to serve rental housing due to this challenge, which creates distributional inequities when rental housing has less insulation, fewer energy-related home improvements, and overall worse physical condition among the building characteristics that most impact energy needs (Middlemiss and Gillard 2015; Samarripas and Jarrah 2021). Programs may need to be redesigned to support these outcomes, for example with tailored multifamily programs designed to connect with landlords and encourage or incentivize energy retrofits for rental housing.

Distributional equity is best achieved when utility programs serve renters equally alongside other customers. In practice, this means:

- Residential energy efficiency programs reach tenants of rental housing on par with owner-occupied housing. This may require disproportionately high investment in programs for renters if they were previously absent or underfunded.
- Incentive programs for advanced or new energy technologies (e.g. smart thermostats, electric vehicles, etc.) are accessible to renters. This may require additional support or incentives to encourage landlords to allow installation in rental units, or programs supporting essential infrastructure in rental housing (e.g. electric vehicle charging stations in multifamily buildings).

- Renters do not face higher energy costs than homeowners due to building conditions. Renters also do not experience higher energy burdens, greater risk of energy insecurity, or similar challenges.
- Programs should be designed so that improvements in rental housing do not lead to gentrification or displacement of low-income families. When buildings are improved by an energy retrofit, programs must ensure that this does not lead to higher rents or tenant turnover.

ENSURE ACCESS TO ALL FORMS OF NECESSARY ASSISTANCE AND MAXIMIZE CO-ENROLLMENTS WHERE APPROPRIATE

There is a perception that for households struggling with unaffordable energy bills, energy insecurity and energy poverty, there are forms of public, utility and charitable assistance to meet their needs. The data, however, confirm that the majority of customers who are eligible for assistance programs such as LIHEAP, weatherization, or utility-provided energy efficiency improvements, do not receive service. For example, LIHEAP typically serves around 20% of eligible households each year (Wein 2017). This can be due to housing characteristics, lack of information about available programs, and other barriers to access, such as lack of local energy efficiency contractors or an inability to access program services and materials in one's native language. Slots are often too limited to meet customer demand (Perl 2018); one organization calculated that at its current pace, it would take 291 years to weatherize all eligible households (CERT, 2017).

For assistance programs to be equitable, "there must be efforts to maximize enrollments and availability of these programs provide more favorable rate options for historically marginalized communities."

Programs can use co-enrollments to ensure that customers who need financial assistance can also enroll easily in other appropriate programs such as favorable time-of-use rates and energy efficiency programs. Despite the goal of ensuring access to assistance programs, the ultimate purpose of reaching frontline populations facing energy poverty and insecurity should remain focused on reducing energy needs through deep energy efficiency retrofits and supporting adoption of distributed solar and storage among these households.

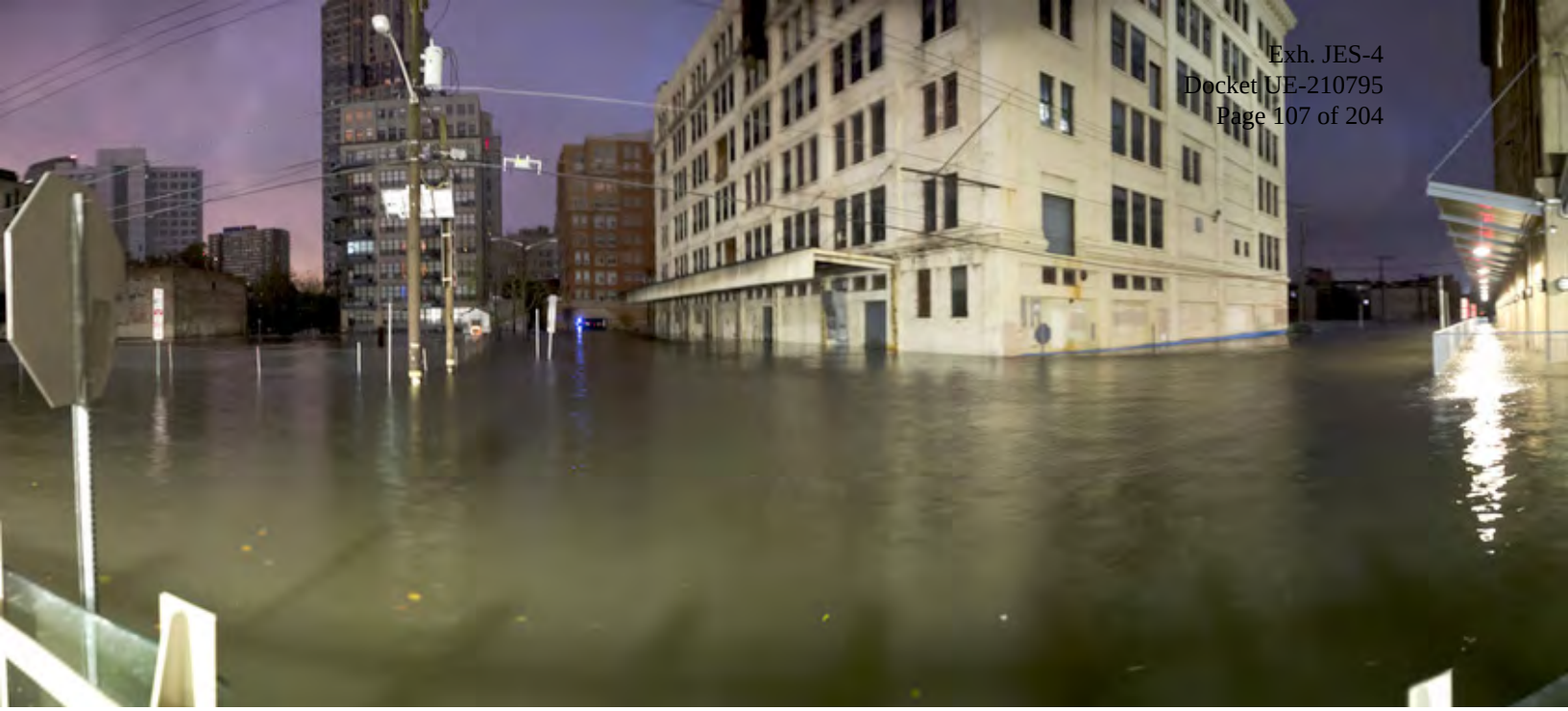
SUPPORT HEALTHY HOMES FOR ALL

The relationships between housing and health are well documented, and housing is generally recognized as a key social determinant of health (Jacobs et al. 2009; Swope and Hernández 2019; Thomson et al. 2013; Wilson et al. 2013). Energy insecurity has been clearly linked with both housing conditions and health outcomes (Hernández 2016; Hernández and Siegel 2019; Jacobs et al. 2009; Swope and Hernández 2019), while improving housing—including the energy characteristics of homes—has been shown to improve health (Thomson et al. 2013; Wilson et al. 2013). This relationship is subject to the same disparities we see elsewhere in the energy system, where BIPOC and low-income households face greater health risks and higher energy costs, with housing as a key link between the two (McCreery 2018; Scheu et al. 2018). Additionally, health-related housing characteristics can act as a barrier to energy efficiency retrofits and programs. When a home has deferred maintenance or existing building health and safety issues, such as a knob and tube wiring, vermiculite insulation that contains asbestos, or mold, this must be remediated before a retrofit can safely proceed. Many programs are unable to serve these homes because they do not have sufficient funds or are not allowed to spend energy efficiency funding on health and safety repairs. These "deferrals", also known as walkaways, can be very common, with some program walkaway rates as high as 50% (Scheu et al. 2018).

Energy efficiency and other utility programs can help address housing-related health disparities by setting aside funding for health and safety repairs as part of a retrofit program. A whole-building approach to retrofits can blend funding sources to address multiple housing related issues at once in the homes and communities that need it most, including energy efficiency, lead paint and pipes, water leaks and mold, and roof repair. To support distributional equity we must ensure that no one has to live in a home that damages their health, and all people have access to safe, healthy, and energy- efficient homes.

SUPPORT ECONOMIC DEVELOPMENT FOR ALL COMMUNITIES

The distributional benefits of clean energy development, such as federal tax credits for energy efficiency upgrades, rooftop solar, and electric vehicles, have been primarily captured by Americans with the highest incomes. This is particularly true for electric vehicles, of which 90% of tax credits went to the top decile of households who earn more than $200,000 annually (Borenstein and Davis, 2016). When tax credits and other financial incentives are inequitably distributed, they result in growing wealth disparities and prevent frontline communities from partaking in the economic benefits of the clean energy transition. Similarly, the majority of the workforce development benefits and contracts for performing the work have gone to white workers, men, and white-owned companies (Said et al, 2021). While considering the distributional impacts of energy efficiency and clean



energy in housing; it is important that investments also prioritize frontline communities that have had little access to the broad economic benefits—reducing the cost of energy, generating wealth, and workforce-related—of these investments.

MAXIMIZE CLIMATE RESILIENCE; MINIMIZE VULNERABILITY

Despite efforts to decarbonize rapidly, climate impacts continue to ratchet up, particularly in frontline communities. In the U.S., climate impacts are particularly severe in areas prone to tropical storms and wildfires and communities that are experiencing unprecedented heat waves (Pacific Northwest "heat dome" of 2021; Golden, 2021) and severe weather (the paralyzing ice storm that left much of Texas and Oklahoma without power for days in February 2021; FERC, NERC, and Regional Entities 2021). Across Tribal nations, many households, including about 15% of Navajo households, still lack electricity after being largely skipped over by federal rural electrification initiatives (Sandoval, 2018). The severity of how these impacts are felt depends significantly on a community's and a household's ability to weather and adapt to these impacts. Improving a home's insulation can protect it from dangerous indoor temperatures if the power goes out during a heat wave; expanding the use of distributed renewables and battery storage capacity can reduce stress on the grid and supplement power if peak demand exceeds the capacity of existing generation plants (Denholm et al, 2020).

Advancing distributional equity requires the consideration and valuation of resilience benefits that result from clean energy programs and investments. These should be considered in formal decision making tools like benefit-cost analyses and societal cost tests and as a holistic approach to protect those most vulnerable to climate impacts.

SUPPORT OR MANDATE WEATHERIZATION STANDARDS FOR ALL HOMES, AND PROVIDE FUNDING

The most durable distributional benefits for households result in significant reduction in household energy demand through efficiency improvements. Weatherization and other programs that offer deep retrofits to the house shell and heating, ventilation, and cooling systems (HVAC) are a primary strategy for such efficiency improvements, but access to these programs is limited for multiple reasons, as mentioned earlier. Addressing this conundrum requires, in part, an examination of critical questions such as:

- Who should pay for this work beyond existing taxpayer-funded programs?
- How can landlords be incentivized to make upgrades without raising the rents for existing tenants?
- Are there ways utilities can help owners of multifamily housing make them more energy efficient with reasonable investments so rents don't need to increase significantly?

Solutions can include simplifying the process to identify retrofit and upgrade plans for existing structures, introducing property owners to qualified trade allies, and facilitating supplemental investment funds for income-qualified homeowners and landlords renting to income-qualified families.

Metrics

Number metrics reviewed	40
# included	3
# priority data gaps	6
# recommend rating scales	1
# shift to qualitative/best practice	6
# not feasible (e.g. data availabilty)	10
# not prioritized (low value)	23

The Distributional Equity workgroup reviewed and evaluated 40 qualitative and quantitative metrics for potential inclusion in three sub-dimensions:

- **Energy Affordability**
- **Household Benefits**
- **Community Benefits**

After the rating and evaluation process described in Chapter 1, we decided to recommend 4 metrics for Energy Affordability, 8 metrics for Household Benefits, and 5 metrics for Community Benefits; these are discussed below. Metrics that were not recommended for inclusion, either due to significant barriers with the data or because they received low scores from the workgroup, are visible in the metrics summary but not discussed further.

The best practices described in the section below could potentially be assessed with a qualitative or quantitative metric, and we recommend any future data gathering work evaluate the feasibility of adding metrics related to the best practices, particularly at the local or utility-scale level. For example, having an arrears forgiveness program or policy with sufficient funding is a best practice, and it could potentially be measured with a metric for the percentage of customers with arrears enrolled in forgiveness programs, or average arrears among low-income households, or other approaches.

Most of the recommended distributional metrics do not have data available publicly at the census tract level, and in many cases public data are not available for any geography in the U.S. Additionally, some metrics may need to be evaluated with data analysis or statistics for the best approach to operationalize them, or for ways to convert qualitative metrics to quantitative (e.g. creation of new rating scales, or development of an appropriate operationalization) for inclusion in the index. In some cases we've recommended multiple metrics on closely related topics, for example, indoor air quality and respiratory distress are captured as separate metrics in the Household Benefits and Community Benefits indices. In those cases we recommend additional analysis when data are available to assess statistically whether both metrics can be included in the same index or whether it's more appropriate to include just one on its own.

Even though public data are not available at this time, utilities and program implementers may have internal data for many of these metrics. We encourage utilities and program implementers to consider using their data for self-evaluation, and to investigate ways they can make the data more available publicly while protecting customers and privacy. Regulators have an important role to play in requiring more transparent reporting of data that utilities are already collecting.

ENERGY AFFORDABILITY INDEX

EA1. Percentage of eligible customers served by financial assistance programs

METRIC STATUS: Priority data gap

Rationale: Energy assistance programs provide direct financial assistance to low-income families in the form of bill reductions or assistance payments. These programs can have significant benefits, for example by reducing energy insecurity (Murray and Mills 2014), and the need to make trade-offs between utilities and other essential expenses like food and medicine (Bhattacharya 2003; Frank et al. 2006). However, due to funding levels these programs typically are not able to reach all households that could benefit from and need assistance. For example, the Low Income Home Energy Assistance Program (LIHEAP) is a federal utility assistance program that started in 1981; the income threshold for this program varies by state and is most commonly set at 150% of the federal poverty level or 60% of the state median income (Graff and Carley 2020; Wein 2017). Typically, LIHEAP provides assistance to around 20% of eligible households before funding is exhausted (Wein 2017), leaving many households unable to access the support they need. While other programs such as state, local, or utility programs may fill some of those gaps, these programs are typically smaller and also unable to provide support to every family that needs it. For these reasons, we recommend a quantitative metric for the percentage of eligible utility customers that are served by income-based assistance programs. Since distributional equity is

Typically, LIHEAP provides assistance to around 20% of eligible households before funding is exhausted (Wein 2017), leaving many households unable to access the support they need.

best achieved by ensuring everyone has access to the programs, financial support, or other resources they need, a larger percentage would indicate greater distributional equity.

EA.2 Average energy burden among low-income households, BIPOC, and frontline households, and/or other disproportionately impacted groups (e.g. renters)

METRIC STATUS: Not included as a specific data set, but available data allows for proxy analysis. The Framework includes data on energy burden for each census tract, as well as percent BIPOC rates and % below the federal poverty level. Although not as precise as the using actual household level data, it is possible to use these existing data sets to analyze the energy burdens in census tracts with certain population characteristics (e.g. > 50% BIPOC, >25% poverty). The data for this metric should be analyzed to consider different approaches to assessing both average energy burdens and disparities between demographic groups, especially potential racial or other disparities for households within the same income band.

Rationale: Energy burden is defined as the percentage of gross household income spent on energy cost (Tarekegne et al. 2021). The two key metrics in measuring energy burden are income and energy cost and any change in one or both metrics can either increase or reduce the level of household energy burden. For example, people that rely on higher-cost fuels such as propane or those living in older energy-intensive homes could see a higher energy cost (DOE State and Local Solution Center 2022).

Research on energy burden has shown that low-income and other underserved groups (for example, frontline households, renters, etc.) tend to experience higher energy burdens than more affluent and non-underserved groups (Drehobl et al. 2020). Low-income households, often defined as those whose incomes do not exceed 80 percent of the area median income (AMI) or those making less than 150 percent of the federal poverty level (FPL), are more vulnerable to energy burden challenges. The DOE's Low-Income Energy Affordability Data (LEAD) Tool[1] shows that the national average energy burden for low-income households is 8.6 percent compared to the 3 percent observed for the average- or higher-income households. These vulnerabilities are further manifested through the tradeoffs and sacrifices households are making on their necessities (i.e., food, comfort, etc.) in order to meet their basic energy needs. For example, children that live in energy insecure homes are more likely to be food insecure and have poorer health conditions compared to children in energy secure homes (Hernández 2016).

Table 1. Average household energy burden by household type

Type of Household	Average Energy Burden (percent)
Low-income	8.6
African-American	5.4
Latino	4.1
Renters	4.0

**6 percent is high energy burden and 10 percent is considered severe energy burden (ACEEE 2020)*

The issue of energy burden and insecurity is exacerbated by social disadvantages including socioeconomic status (concentrated poverty), race (racial residential segregation), ethnicity, family composition, and age of housing (Brown et al. 2020; Drehobl and Ross 2016; Mercado 2020). Distributional equity remedies for reducing energy burden and insecurity could include expanding federal programs such as the Low-Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program (WAP) and creating new energy efficiency programs targeted towards vulnerable and highly impacted groups. In addition, percentage of income payment plans (PIPPs), protection from utility disconnection threats, support for access to affordable and quality housing, equity centered ratemaking, and access to distributed energy can alleviate the burden.

We recommend evaluating quantitative metrics for the average energy burden, with a focus on vulnerable or under-served communities such as low-income, BIPOC, frontline communities, and renters. This metric should take into account both average energy burden overall, and disparities between groups such as race, renters versus homeowners, income bands. Tracking change over time is also an important consideration for energy burdens.

[1] DOE. (n.d.). Low-Income Energy Affordability Data (LEAD) Tool. Energy.gov. Retrieved February 2022, from https://www.energy.gov/eere/slsc/low-income-energy-affordability-data-lead-tool

EA.3 Percentage of eligible customers served by Percentage of Income Payment Plans (PIPPs)

METRIC STATUS: Shift to best practice and local measurement. For states and utilities that offer PIPPs, this is easily calculated by dividing the number of participating households by the number eligible (those that meet an income threshold and/or have a high energy burden). We recommend this metric for inclusion in the future if data become available.

Rationale: Percentage of Income Payment Plans are designed to bring a customer's energy burden into an affordable range. Affordability is generally defined as 6% of the household's income for energy costs.[2] A PIPP will calculate the given percentage of the household's income and divide by 12 to determine the monthly payment. The remaining portion of the bill is paid for by the program, either through an assistance agency (with state and/or federal dollars) or ratepayer or taxpayer dollars. Since many households have separate bills for electricity versus heating fuel, for these households some PIPPs will evenly reduces the energy burden to 3% of income for both electric and heating costs, while other PIPPS may use a 4%–2% split.

Related structures for similar assistance programs can include flat credit amounts applied to customer's bills each month based on their income level. For instance, a customer at 50% FPL could receive a $50/month credit, and a customer at 100% FPL could receive a $25/month credit. Or programs may offer a flat percentage discount of the customer's energy usage each month. These structures function similarly to but are not technically PIPPs, because the final energy burden among households may vary based on their starting burden and the credits applied.

PIPPs can be operated in conjunction with an Arrears Management Program (AMP). For example, a customer with arrears who enrolled in a PIPP may see their arrears payments paused during participation in the PIPP, with the potential for arrears forgiveness after maintaining on-time payments on the PIPP for a year or other time period. The PIPP length and ability to re-enroll are generally set by the program and available funding. Some entities will also provide priority enrollment periods for seniors or others on fixed incomes.

PIPP programs are typically very beneficial for recipients since they tailor the amount of support to each customer's financial circumstances and energy needs. Metrics and practices to assess access to PIPPs could include the number of participants (vs the number qualified), number of seniors, maximum energy burden allowed, the realized energy burden reduction, amount spent in credits, amount spent in arrears forgiveness, length of the program, whether customers can enroll for multiple terms, whether there is a credit cap, whether customers can be removed from the program due to non-payment, and other program details. These are all valuable considerations for local evaluation. Nationally, we recommend evaluating a quantitative metric for the percentage of eligible customers who are served by a PIPP, with the caveat that PIPPs must bring customers' bills to within an appropriate maximum energy burden limit (ideally 6%, never greater than 10%).

As PIPPs are only available in a small number of states and are relatively new, their ability to meet the total need remains to be seen. In OH, which has a longtime PIPP that was first developed in the 1990s, evaluators found that even a $300 million annual budget would only be able to serve 25% of eligible customers (APPRISE et al, 2007).

EA4. Amount of fixed charges on utility bills

METRIC STATUS: Limited coverage (not included), shift to local measurement. This data can be easily calculated locally where the fixed charges are known. We recommend including this metric in the future if data become available, which would require reviewing the billing structure for each utility to create a national dataset.

Rationale: Utility rate design typically includes both variable charges (e.g. a per-kWh or per-therm supply charge for electricity or natural gas), and fixed charges (e.g. a customer charge that's the same amount for a certain class of customers, regardless of how much energy a customer uses). This design is intended to fairly cover both fixed and variable costs of providing utility service, including the cost of distribution infrastructure maintenance and investment. However, higher fixed fees and surcharges can contribute to inequity in several ways:

- They are inherently regressive in that lower-income households pay a higher percentage of their income on these fees regardless of how much energy they use.
- They reduce the incentive and benefits from investing in energy efficiency or conservation.
- They directly contribute to energy burdens and affordability challenges for low-income households, by establishing a higher baseline bill for service, regardless of energy consumption.

For example, a natural gas utility for the city of Chicago has higher fixed charges than the surrounding

[2] The 6% figure, which is recommended by EPA, DOE, and longtime affordability advocates like Roger Colton, was suggested so that energy costs would represent 1/5 of a total housing burden of 30%. In practice, energy costs are higher than the costs of home occupancy (rent or mortgage + property taxes) for many households.

suburban territory, totaling almost $45 a month in January 2021 for households that use gas as their primary heating fuel, which includes a customer charge of approximately $36 (Peoples Gas Light and Coke Company, 2021). These fixed charges have risen substantially in recent years and contribute to high overall residential energy costs which were predicted to nearly double over 2016 to 2031 (ICC 2016).

For these reasons, we recommend including a quantitative metric for the total amount of fixed charges on utility bills (electricity and gas or other heating fuel, as applicable), including all relevant taxes and fees. Lower fixed fees would generally indicate greater distributional equity, and a bottom threshold could be considered to take into account the need for some funds to support distribution infrastructure and maintenance.

HOUSEHOLD BENEFITS INDEX

HB1. Energy efficiency equity baseline (E3b) spending and savings for low-income, BIPOC, and fronline households, and renters.

METRIC STATUS: Not included; shift to local measurement. Data are available on a limited basis for select investor-owned utilities and program years through the E3b website.[3] Recommend for inclusion in the future if data become available.

Rationale: Utilities are generating billions of dollars of revenue each year as a result of state laws that establish what is broadly referred to as Energy Efficiency Resource Standards (EERS). The revenue is generated by a rate-payer surcharge and redistributed to fund each utility's portfolio of residential energy efficiency programs. A University of Michigan study, "A Multi-State Analysis of Equity in Utility Sponsored Energy Efficiency Investments For Residential Electric Customers," found that, "in 2016 alone, twenty-nine EERS states invested $2.5 billion in energy efficiency programs," (Reames et al. 2019). These programs are designed to reach residential customers based on their ability to pay (i.e. income qualified programs). The study created a normative baseline metric, the Energy Efficiency Equity baseline (E3b) for evaluating utility program spending trends and found utilities were systemically disinvesting in income-qualified programs.

To illustrate, one key finding showed that, "The cumulative E3b deficit for the eleven Investor-Owned Utilities (IOUs) in this study reached $586 million (2012–2021), with the largest cumulative deficit for a single IOU at $123 million," (Reames et al. 2019).This means that, in order for those utilities to invest in low-income programs at a level proportionate with the low-income population in their service territories, they would have to first close the historical gap of $585 million. Using the example above, utilities with a collective annual energy efficiency budget of $2.5 billion and 30% low-income customers would devote 30% of the annual budget ($750 million) plus an additional 10% of the cumulative gap per year ($58.5 million) in order to eliminate the gap and return to the E3b after 11 years:

In other words, program spending should at a minimum align with population levels for demographic

Year	Cumulative Deficit	Minimum Annual Investment	Cumulative Deficit Reduction	Annual Low-Income Budget	%	Non-low Income Budget	%
1	$586,000,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
2	$527,400,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
3	$468,800,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
4	$410,200,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
5	$351,600,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
6	$293,000,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
7	$234,400,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
8	$175,800,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
9	$117,200,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
10	$58,600,000	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%
11	$0	$750,000,000	$58,600,000	$808,600,000	32%	$1,691,400,000	68%

Source: EEP Analysis

[3] UEJLa. (n.d.). *Interactive Energy Efficiency Equity Baseline (E3B) Map.* Energy Efficiency Equity Baseline (E3B) Map. Retrieved January 2022, from https://umich.maps.arcgis.com/apps/Cascade/index.html?appid=28f6792ea2134ffba888413e70647c0c

Year-to-year E3B deficit trends for eleven IOUs. Figures above $0 reflect low-income program investment levels above the E3B, whereas figures below $0 reflect low-income program investments below the E3B.

and other groups, e.g. spending on low-income programs that utilizes rate-payer surcharges as funding should align with the prevalence of low-income households in the utility service territory. The minimum E3b investment would thus reflect the utility service territory population characteristics by income or other socioeconomic and demographic characteristics such as race and property ownership and provide a clear baseline for comparing utility investments across the nation. The E3b map is a first attempt to illustrate these investment disparities between states and major utility providers.[4] Utilities across the country, like DTE, are facing interventions in Public Utilities Commission case filings that may require achieving more equitable outcomes (Walton 2022).

EEP believes that these state-regulated and utility-managed programs should invest, at minimum, to the E3b levels *and* remedy cumulative deficits. Because proportional investments do not account for need or for broader historical disparities in the energy system, truly equitable distribution of benefits will exceed the E3b guideline.

While utilities typically report their portfolio spending in annual reports, standardized and required reporting should be adopted across and within states. For a Household Benefits Index of distributional equity, we recommend a quantitative metric of E3b for energy efficiency programs to capture disparities in program spending.

In addition to whether a minimum of proportional spending and savings were achieved, disparities between groups should be considered, particularly for energy savings. If savings per customer or per dollar invested are lower for a particular population, the program components should be restructured (e.g. focus on deep retrofits like air sealing and insulation) and/or additional funding may be needed to achieve E3b savings levels.

HB2. E3b at the program level, especially for deep energy retrofits, distributed energy resources, electric vehicles, electrification, etc.

METRIC STATUS: Not included; shift to local measurement at the utility and/or program level. Recommend for inclusion in the future if data become available, and for current use by local planners, regulators, and program implementers.

Rationale: This metric represents the amount of program implementer spending–by utilities, third parties, and community action agencies who run energy efficiency programs. These investments encompass deep retrofits of homes, electrification (e.g. of customer vehicles, appliances, heating) and distributed energy resources including residential- and community-scale solar and batteries. Comprehensive measures like these bring benefits that build on each other, like the synergistic benefits in deep energy retrofits when weatherization enables installation of a smaller capacity heating system. These multiplicative benefits that have been disproportionately denied to frontline and BIPOC communities. In line with the E3b map, we recommend a quantitative metric assessing the extent to which spending by program/measure—especially for deep retrofits, electrification, and DERs—

[4] UEJLb. (n.d.). Energy Efficiency Equity Baseline "E3b" Map – States 2016. Energy Efficiency Equity Baseline (E3B) Map. Retrieved January 2022, from: https://www.arcgis.com/apps/mapviewer/index.html?webmap=cea413fef3334775b523ca0cb634e541. Hosted by University of Michigan Urban Energy Justice Lab: https://urbanenergyjusticelab.com/

is proportional to the percentage of frontline, BIPOC, and low-income households in the service territory. For example, if the service territory has a 30% BIPOC population, at least 30% of DER program funding should go to these households, for investment to be considered equitable. Just like with metrics HB1, this is a minimum threshold, and in practice most programs should aim higher to address historical and ongoing inequities and greater need.

There are additional considerations for the allocation of program benefits. While program budgets are most often considered, a more equitable approach is to consider the average savings per household. In designing programs, implementers should keep in mind that higher rebates and funding will be needed to make programs accessible for communities facing disproportionate barriers. For example, a $2,000 rebate on a new solar system might be attractive to a middle- or high-income household, but it's not attractive to families who are struggling to keep up with energy bills every month. Achieving equitable savings benefits will typically require higher budgets per participant among frontline communities in order to address financial barriers and a host of barriers to program access (these are discussed at length in the Procedural Equity chapter).

HB3. % Eligible customers served who need healthy homes measures served

METRIC STATUS: Shift to qualitative/best practice in the short term; recommend for inclusion in the future if data become available.

Rationale: Qualities of a healthy home can be measured by ventilation, roof protection, smoke/carbon monoxide detection, protection from pests, protection from toxic materials (e.g. lead paint and pipes), and energy efficiency (Green and Healthy Homes Initiative, 2022). Unrenovated houses built before 1940 often need have a history of energy inefficiencies with recommendations for improvements by the EPA that include air sealing, insulating, upgrading the heating and cooling system, and regular maintenance (EPA, 2016). These homes can also have a variety of other health and safety issues, especially if homeowners are unable to afford ongoing maintenance costs.

For energy efficiency and weatherization programs, many of these older homes have health and safety issues that need to be addressed before a home can be safely retrofitted, for example leaking roofs, electrical or plumbing issues, moisture issues or mold, loose asbestos, or other issues. When programs do not have sufficient funds or are not allowed to spend retrofit funds on health and safety repairs, these homes can be excluded from receiving energy efficiency retrofits (known as deferrals or walkaways). These deferrals can be very common, with some program walkaway rates as high as 50% (Scheu et al. 2018).

Weatherization and efficiency programs can address these health and safety issues and avoid program deferrals by incorporating health and safety repairs. Budgets should be sufficient to remediate these issues for all households that are waiting to receive weatherization or other energy efficiency services.

As a metric, this could be measured quantitatively as the percentage of homes with health and safety issues that are successfully served in a retrofit or weatherization program. The scale of homes needing health and safety improvements could be estimated based on the percentage of homes built before 1940, although this is not a perfect measure of homes needing health and safety repairs. For example, Wayne County, MI which houses the city of Detroit, has 20.4% of houses built before 1940 (U.S. Census Bureau, 2020). A utility or program administrator (e.g. weatherization agency) can then document all the counties, cities, or even states that it serves and find the percentage of houses built before 1940 using the 2020 American Community Survey database, and compare that to the number of homes receiving health and safety repairs. Ideally, home repair and remediation services would be available to all low-income homeowners and households that were harmed by historic housing segregation, ideally within 5-10 years. At the utility or program level this could also be measured as the walkaway rate, with a lower walkaway rate indicating greater equity.

Alternatively, a qualitative approach or best practice could also emphasize efficiency measures that contribute to healthier homes and to coordinate with agencies offering healthy homes services and maximize co-enrollments, particularly for customers with medical conditions or higher vulnerability.

HB4. Improved indoor air quality in frontline households

METRIC STATUS: Shift to best practice and local measurement. There is not currently a national dataset at this time, but it would be useful to pursue locally and at the household level.

Rationale: Building characteristics are closely related to indoor air quality, including appliances (e.g. gas versus electric), air tightness, mechanical ventilation, and other details such as flooring (e.g. carpets). Many of these same characteristics are also related to energy use and may be affected by energy efficiency programs. There is a substantial body of research linking energy and building characteristics to both indoor air quality and respiratory health outcomes (e.g. Carlton et al. 2019; Colton et al. 2014; Kang et al.

2022; Wilson et al. 2013). Given these links, an equitable energy system should support indoor air quality improvements through appropriately designed and equitable efficiency, electrification, and other building retrofit programs.

Increasingly, utility programs are including dedicated budgets to provide measures that benefit indoor air quality. Measures like remediating mold, asbestos, and providing HEPA filters do not improve energy efficiency, but with dedicated funding they are a sensible provision for utility contractors to provide at the time of energy efficiency retrofits.

It is possible to measure improvements in indoor air quality at the household level, even for just a sample of customers. The EPA's National Ambient Air Quality Standards (NAAQs) are available for determining an official air pollutant criteria linking routine household activity to health-threatening inhalation exposure. These criteria, however, are typically applied to outdoor instead of indoor air. Indoor air pollution monitors available for less than $300 can measure particulate matter (PM 2.5), volatile organic compounds (VOCs), carbon monoxide and dioxide, temperature and humidity. Improving ventilation and sealing drafty building envelopes help prevent mold and mildew. Effective, holistic public awareness and strategic communication may be targeted to specific populations to encourage behavioral approaches to improving air quality. Some other indoor air quality improvements, like regularly changing furnace filters and cleaning ducts, also offer energy saving benefits.

Improving indoor air quality is a precursor to achieving reductions in respiratory distress. Reductions in respiratory distress are likely to take several years or more to become visible in data, while changes in air quality can be measured almost immediately. This mirrors air quality issues that are addressed in the Recognition chapter, but its focus is on indoor instead of outdoor air quality.

HB5. Reduction in respiratory distress and disparities among frontline households

METRIC STATUS: Priority data gap; the CDC PLACES data has been identified for future inclusion but we are unable to incorporate it due to time constraints. CDC PLACES provides asthma and chronic obstructive pulmonary disease (COPD) rates by race for adults.. Two limitations of the data are that 1) it is based on modeled prevalence rates, and 2) it does not include prevalence among children. EEP is not aware of a single, complete national dataset for all respiratory conditions and populations (i.e. adults and children, with breakdowns by race and other key demographic and socio-economic characteristics) to include in the EEP map. For local analyses and tracking, we recommend that datasets from city, county, or state departments of health be utilized as they are likely to be more accurate and encompass all age groups.

Risk for COVID-19 Infection, Hospitalization, and Death By Race/Ethnicity

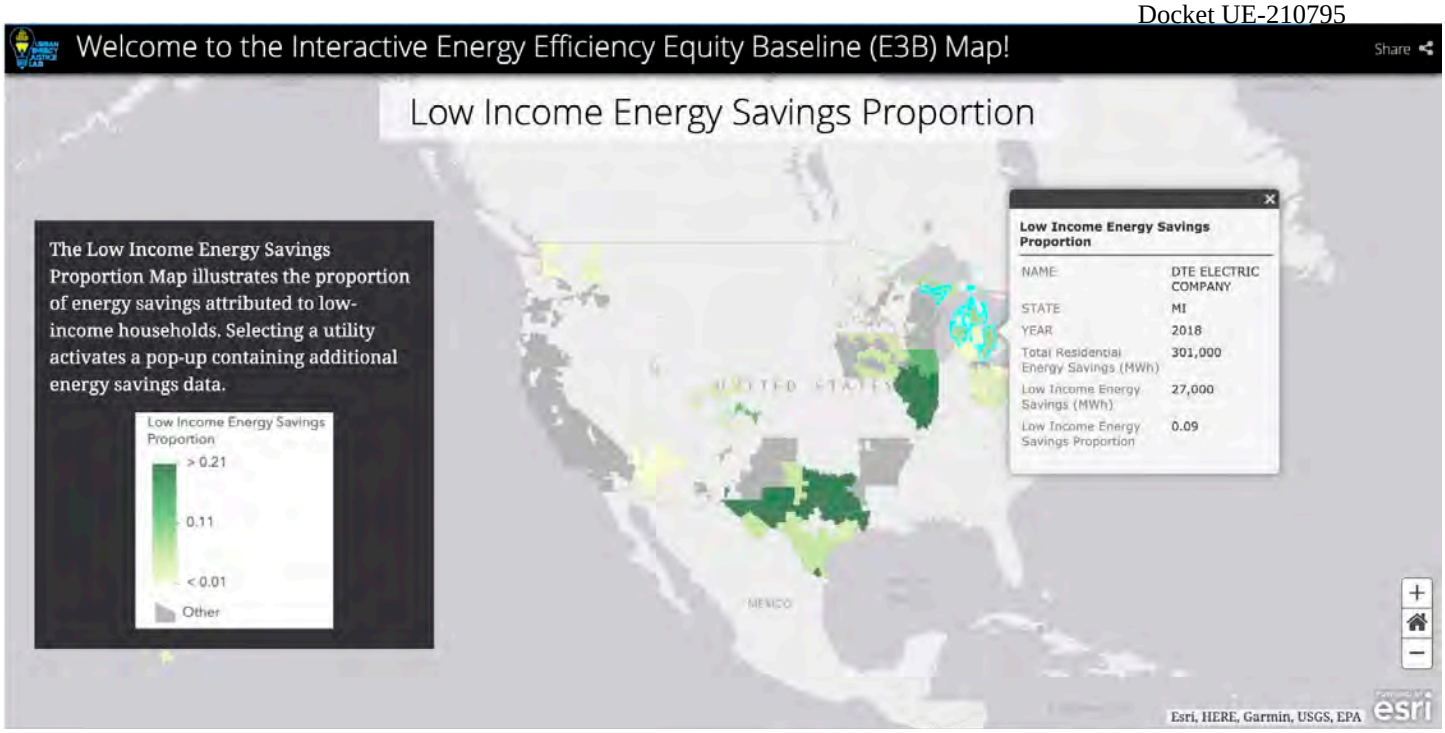
Updated Apr. 29, 2022 CDC Centers for Disease Control and Prevention

Rate ratios compared to White, Non-Hispanic persons	American Indian or Alaska Native, Non-Hispanic persons	Asian, Non-Hispanic persons	Black or African American, Non-Hispanic persons	Hispanic or Latino persons
Cases[1]	1.6x	0.7x	1.1x	1.5x
Hospitalization[2]	3.1x	0.8x	2.4x	2.3x
Death[3]	2.1x	0.8x	1.7x	1.8x

Rationale: Nationally, BIPOC and frontline environmental justice communities experience disproportionately high rates of respiratory illnesses like asthma (American Lung Association, 2022). These disparities result from a combination of exposure to outdoor air pollutants from traffic and industrial facilities and from poor indoor air quality, which can be sourced to poor ventilation, moisture (mold and mildew), smoke, and household chemicals. The combustion of natural gas, even if properly vented, can release carbon monoxide and nitrogen oxides, which cause or contribute to an array of health impacts (Seals and Krasner, 2018). Respiratory impacts also disproportionately impact children and older adults and can cause significant absences from school and work. The impacts of pre-existing respiratory distress like asthma were a contributor to higher COVID cases, hospitalization, and death rates among Black, Indigenous, and Latinx people (CDC, 2022).

A primary root cause of these distresses is the neighborhoods where people live. Black neighborhoods were historically selected for the siting of fossil fuel infrastructure and bisected by interstates as part of "urban renewal" (Mohai and Bryant, 2019). Housing segregation and redlining have perpetuated ongoing exposures to outdoor air pollution. Indoor air quality is a major contributor to respiratory conditions, especially in older buildings with deferred maintenance, healthy homes issues, or inadequate ventilation and air filtration. These kinds of building issues are also more common in BIPOC, low-income, and frontline communities (Scheu et al. 2018; McCreery 2018).

Programs that are designed to remediate indoor air quality issues and provide buffers from poor outdoor air quality should reduce respiratory distress among BIPOC and frontline communities, over time. These programs (such as the electrification of school buses) can eliminate current sources of air pollution from diesel engines in neighborhoods.



The E3B Map (Urban Energy Justice Lab) tallied the proportion of savings from energy efficiency programs benefiting low-income customers. Here, DTE Energy shows that 27,000 of 301,000 MWh of total electricity savings, or 9%, benefited low-income customers.
Image source: Urban Energy Justice Lab

For example, when a home has improperly vented combustion appliances this creates an indoor air quality hazard and may lead to carbon monoxide poisoning, and a furnace upgrade should include properly venting the new furnace outside the home. Weatherization measures like air sealing can protect residents from infiltration of outdoor pollutants, and if mechanical ventilation is installed alongside weatherization this can further improve health by improving indoor air quality.

Additional best practices may be needed to achieve greater equity within this metric. These include: dedicating energy efficiency and electrification funding to measures that improve air quality; selecting contractors that have training to improve indoor air-quality, such as LEED-AP certification or certification from the International WELL Building Institute (IWBI), and/or focusing on energy efficiency measures that improve ventilation and filtration and tighten the home's envelope when exposure to outdoor air pollution is high.

Because health improvements are not necessarily observed immediately, we recommend long-term, local tracking of respiratory distress by different populations, particularly by race, proximity to polluting facilities and poor air quality. Data sets from tools such as EPA's EJSCREEN and similar state-specific versions can help identify census tracts most vulnerable to respiratory distress. In the future, local data could be combined into a state-level, regional, or national dataset.

Finally, it is important to note that a variety of other factors influence respiratory health, including factors that are not clearly connected to the energy system. For example, community rates of asthma or respiratory symptoms could drop because of traffic reduction or no-idling efforts rather than the intervention of an energy program. Future analysis should continue to assess the extent of the linkages between the energy system and respiratory health, identify targeted intervention points and track their impacts. Additionally, understanding which communities face the greatest respiratory burden and using that data to target these communities for specific energy efficiency and healthy homes programs is a valuable best practice. Air quality metrics from the Recognition Chapter serve this purpose.

HB6. % BIPOC, frontline, and low-income program participants achieving substantial (>20%) energy savings from building retrofit programs

METRIC STATUS: Priority data gap. Recommend assessing at the scale of a single utility and, including nationally if data can be collected and compiled.

Rationale: The concept behind this metric is that the financial benefits from participating in energy efficiency programs should make a significant difference in people's lives. Programs that generate only minor energy savings, notably direct install programs that offer free LED light bulbs, low-flow sink aerators and showerheads, and pipe insulation

Image source: Jim West/Alamy Stock Photo

are likely to reduce energy consumption by only a few percent. Too often the savings per low income household are lower than they are among non low-income households, because they are unable to access higher impact energy upgrades. In Michigan, for instance, 34% of a utility's customers are low-income, but only 9% of the total energy efficiency program savings benefit those customers.[5] Something is better than nothing, but the focus, particularly for those with high energy burdens and who have been historically underserved by energy efficiency programs, should be on deeper retrofits (e.g. insulation, air-sealing, major improvements to HVAC systems). These retrofits can generate savings of at least 20%, ideally more, which is on par with weatherization programs (DOE 2014). Depending on the local housing stock, deep energy retrofit programs may be able to achieve even higher savings. For example, a recent analysis of Chicago's older single-family and 2-4 unit housing by Elevate and the National Renewable Energy Laboratory found that modeled energy savings of over 50% can be easily achieved in retrofits that include building envelope improvements and upgrades to a heat pump heating system (Laidlaw 2022).

[5] Information from the Energy Efficiency Equity Baseline Map (Urban Energy Justice Lab, University of Michigan).

HB7. % Eligible customers served annually by building retrofit programs, or expected time to retrofit all homes with frontline, BIPOC, and low-income families

METRIC STATUS: Priority data gap. Recommend assessing at the scale of a single utility and nationally if data can be collected and compiled.

Rationale: The rate of participation, number of participants and number of years needed to fully serve a frontline community are critical indicators for evaluating distributional equity of a building retrofit program. Together, they present a snapshot of progress made, progress yet to be made, and the resources required to achieve the end goal. However, "Despite the importance of participation, comprehensive program participation analyses remain sparse, and the availability and consistency of participation data vary widely." (2020 Utility Energy Efficiency Scorecard, ACEEE). ACEEE took the initiative to calculate the percent of customers served, however, it did not provide a time horizon based on current funding levels to fully serve the income-eligible population of each utility. Data needed to calculate the time to serve all eligible customers are the number of income-eligible, BIPOC, and frontline households in the utility service territory, number of participants, and funding levels allocated to serve those customers. Participation in income-eligible programs is more commonly tracked, however, in very few cases have utility providers begun tracking program participation by race. DTE recently committed to move in this direction, by geographically targeting underserved communities with energy efficiency program offerings (Walton, 2022).

This metric aims to size the solution(s) to meet the need for building retrofits on a meaningful timescale. One report illustrated this metric well: In Minnesota, over 500,000 homes qualify for the Low-Income Weatherization Assistance Program. Due to funding limitations, only 9% of those households have been served and at current funding levels, it would take, "291 years to weatherize all eligible homes (Clean Energy Resource Teams, 2017)." Importantly, the goal should be to serve all frontline households with significant energy savings—to serve with breadth across frontline community customers *and* with depth in energy savings achieved per household.

HB8. Disparity in program savings by customer among frontline households and renters

METRIC STATUS: Limited coverage; shift to local measurement. There is limited coverage for publicly available data; for example, Drehobl et al, 2020 (ACEEE) includes data for some Metropolitan Statistical Areas (MSAs). We recommend including this metric if national data can be compiled.

Rationale: As described above for metric HB6, energy efficiency programs can achieve energy and cost savings at varying rates, for example savings for direct install programs that offer LED light bulbs and other small measures will achieve small savings, while more substantial measures like weatherization can produce larger savings.

While metric HB6 addresses the percentage of households achieving deep energy savings from efficiency programs, this metric focuses on differences between BIPOC, low-income, and frontline households versus market-rate or other households undergoing energy efficiency retrofits. The goal is to ensure that weatherization and efficiency assistance programs achieve energy savings on par with or exceeding programs and services for higher-income and white households.

The E3b metric, while primarily used to compare energy efficiency investments to the proportion of a utility's customers who are income-qualified, can also be used to determine shortfalls in energy savings. Energy savings among low-income customers are frequently less than their proportionate investment. In this image of a Michigan utility, for instance, 34% of the customers are low-income, 27% of the program budget is allocated for low-income energy efficiency programs, but only 9% of all program energy savings benefit low-income households (see image on page 113).

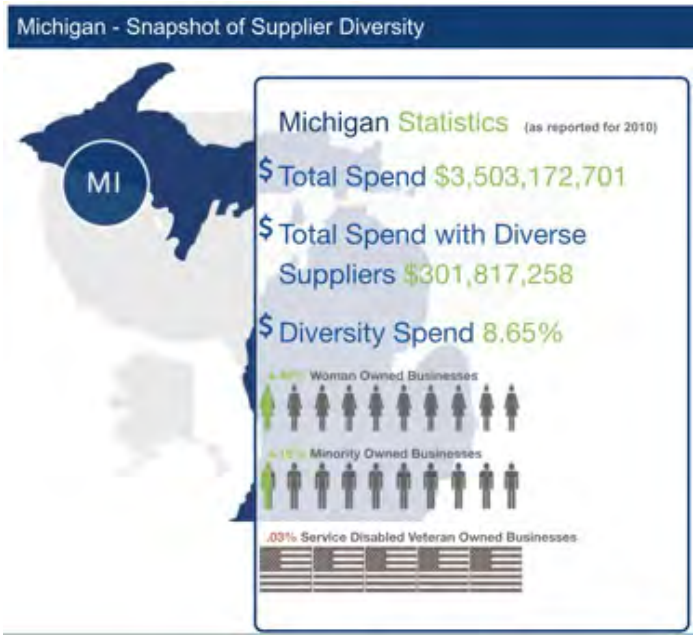
COMMUNITY BENEFITS INDEX

CB1. % of contracts awarded to Black-, Indigenous-, Latinx-, Asian-, women-owned businesses and businesses owned by other marginalized groups including people with a disability and people living in frontline environmental justice communities.

METRIC STATUS: Priority data gap. Some of this data exists by state but not at the census tract level. We recommend including if nationwide data can be collected and compiled, and to evaluate feasibility of including more readily available state-level or utility-level data if census tract data is not available.

Rationale: EEP recommends tracking the percentage of utility or program implementer contracts awarded to "minority-owned" businesses (see specific groups in the metric definition). Utilities typically award contracts through requests for proposals, which could require diversity metrics from bidders. Many states, including Massachusetts and Washington, have or are exploring supplier diversity requirements around energy provision (Massachusetts Governor's Office 2021; UTC 2021, National Utilities Diversity Council), but utilities' economic power extends across the supply chain. To operate their businesses, utilities require everything from toilet paper, budgetary software and HR recruitment services, to project management, construction and event coordination services, all of which represent a constant flow of money. Historically, minority contractors have been underrepresented in energy efficiency retrofit programs, and utilities that require approved contractor pools can unwittingly

The National Utility Diversity Council (NUDC) provides a map of supplier information. However, varying levels of data are available (note this data is from 2010 and useful conceptually, but not for present decision-makers.



create barriers to access for new businesses who would otherwise be well-suited for the work. We recommend including a quantitative metric for the percentage of contracts (both number and monetary value) that are awarded to minority-owned businesses, or minority-led nonprofits, both for utility programs and for utility suppliers in general. Further tracking or certification of supply chain diversity would be valuable.

CB2. Quality of new jobs created by utility programs, and reduction in job quality disparities for frontline workers

METRIC STATUS: Shift to best practice and local measurement, and develop a rating scale. We recommend local measurement of key indicators of job quality, along with development of a clean energy job quality rating scale or index to convert to a quantitative metrics. We encourage regulators and utilities to pursue quantitative data collection and reporting at the local level, and to compile local data into a national metric if it becomes available in the future.

Rationale: Utilities and utility programs create jobs in a various of sectors, including direct employment for utilities and contractors, as well as indirect employment as the economic impacts of utility and energy programs spread throughout the economy (e.g. when a retrofit construction worker buys food at a local restaurant and contributes to local employment overall). Alongside any discussion of job quantity, EEP recommends starting with measuring job quality: to what degree did jobs created by a project or in a jurisdiction consider and incorporate benefits, wages, health and safety risks, etc.? Further work is needed to evaluate potential quantitative metrics or qualitative scales for job quality and whether they should be combined into an index. Further work should also examine different definitions of a 'good' job that may exist in different industries. The University of Buffalo's School of Management issues a Job Quality Index for the private sector, but this considers only wages and the number of working hours as factors in job desirability.[6] Building trades consider prevailing wage instead of living wage—which means implementers and policymakers need to work with labor to define 'good' in a particular context.

The question of whether employment opportunities are equitable will not only consist of evaluating the quality of new jobs and whether those good jobs went to frontline communities, but also the context of whether job opportunities are moving—is there 'net' good job creation? Greater building electrification and solar construction, for example, would likely displace unionized pipefitters who work on natural gas systems. To summarize, there are a variety of nuances associated with job quality that should be considered when developing a rating scale for the quality of new jobs created by utility programs.

CB3. % of new jobs created by utility programs that go to BIPOC and low-income individuals or frontline communities

METRIC STATUS: Limited data availability, shift to local measurement. In the near-term this can be measured at the program, utility, or state level. We recommend development of a metric and reporting process for the long-term and to include nationally if data become available.

Rationale: In addition to the quality of job opportunities, an energy equity score should also measure *who* benefits from those opportunities. What percentage of jobs created by a given project or entity, or within a given time frame, went to frontline communities/households? Similar to the historic underrepresentation of minority contractors, women, Black, Native, and Latinx people are underrepresented in the jobs created by utility programs and in the overall energy industry workforce. We therefore recommend a quantitative metric to track how many net jobs are created by utility efficiency and clean energy programs, and representation of BIPOC, frontline, and low-income communities in those jobs. Measuring jobs created and jobs lost is a complex process, and this metric should take into consideration nuances like indirect versus direct jobs.

CB4. % Electricity generation from renewables

METRIC STATUS: Priority data gap and partially included. This data is available by state (EIA, 2022) and for investor-owned utilities in Rocky Mountain Institute's (RMI) Utility Transition Portal.[7] Data that accounts for distributed generation at the census tract level, however, is not directly available. EEP included census tract level data from Lawrence Berkeley National Lab reports on the median income of households installing rooftop solar, which also includes the number of installations but not the electric output (megawatts).

Rationale: Electricity generation from renewable sources (e.g., solar, wind, biomass, geothermal, hydro, and marine) will have an impact on the economy, environment, and society. According to the U.S. Energy Information Administration (EIA), in 2021, renewables

[6] The Job Quality Index is available at: https://ubwp.buffalo.edu/job-quality-index-jqi/

[7] RMI displays the percentage of each energy generation source for every IOU in the Operations tab from 2005–2020; select the utility or utilities of interest on the left to see their specific data. Another tab shows related emissions data. https://utilitytransitionhub.rmi.org/

accounted for 21% of the U.S. electricity generation with the renewables share divided across solar at 4%, wind at 9%, hydroelectric at 6%, and other at 2% (EIA 2022). The Annual Energy Outlook 2022 (EIA 2022) also shows a projection of 44% electricity generation from renewables to be achieved by 2050.

This continued growth of renewables in the power grid will offer various benefits to communities and electricity customers, including: electric service reliability, security, and resilience; enhanced energy affordability and energy access; reduced emissions and improved air quality; energy independence; and opportunities for job creation and other economic activities (Union of Concerned Scientists 2017). However, access to renewable energy and the benefits it offers has not been distributed equitably. For example, looking at rooftop solar, studies have shown that there is an 80% median rooftop solar potential across all US census tracts and 42% of this potential is within Low- and Moderate-Income (LMI) communities (Reames 2021). However, rooftop solar adoptions have been higher in more affluent households whereas adoption in LMI communities has been limited—in 2018, only 15% of LMI households were solar adopters (Heeter et al. 2021).

These disparities in access to renewable energy can be explained by socioeconomic and demographic characteristics including income (i.e., financing barriers), property ownership (i.e., split incentive for rentals), race and ethnicity, and additional policy and administrative barriers. The following solutions can help mitigate these barriers and advance distributional equity by making clean energy available to underserved communities:

- Community renewable energy: design robust community renewable energy models that allow collaboration between utilities and other relevant stakeholders to increase the percent of renewable energy generation in underserved communities.
- Project financing and ownership: targeted public/private financing mechanisms that provide lower-cost capital.
- Targeted deployment: policy requirements to increase renewable energy deployment to support underserved communities.

We recommend a metric be included for the percentage of electricity generation in a given community that comes from renewable energy. It is important to note that this metric will not provide a complete picture of the impact on communities from renewable energy, and should be included alongside other considerations. For example, although renewable energy generation is typically less harmful than fossil fuel generation and offers a variety of benefits, there are plenty of examples when renewable energy installations are done without community input and with minimal benefit or even harm to the local community (Baker 2021). We also recommend evaluating the possibility of measuring community harms from electricity generation, as discussed in the chapter on Recognition equity.

CB5. Frontline community and climate resilience benefits, and reductions in disparities

METRIC STATUS: Priority data gap; shift to local measurement. We recommend creating a new rating scale. This metric is extremely beneficial if defined and reported at the local level to account for different climate impacts and vulnerability.

Rationale: Energy professionals have often restricted their understanding of resilience to the types of outcomes they can easily see and measure whether power to houses and businesses is continuous or restored quickly after a disaster, and how prepared the poles and wires of the grid are in a given location for disasters or outages. Measurements of these very specific types of resilience are common in energy circles (NARUC 2022). Some utilities go a step further and explore resilience metrics that are about people, rather than about wires and events, such as the Customers Experiencing Multiple Interruptions (CEMI) metric for outages (Avista Corp 2021, Figure 13.7).

"There's a need to take a broader and integrative viewpoint when valuing resilience, one that is inclusive of people and community resilience," (O'Neil et al. 2021). EEP recognizes more work is needed to qualitatively and quantitatively measure resilience benefits, especially for frontline communities. There are two challenges to keep in mind when furthering this work. First, resilience benefits are entirely place-, person-, and community-specific, that is, "priorities are likely to be very different when resilience is approached from the perspective of the impacted community as opposed to the state as a whole," (Rubado et al. 2018). The value of having power on during a wildfire is very different for someone who uses a breathing machine and lives in a mobile home compared to someone who lives in a new, energy-efficient house, for example. Second, jurisdictions may have different definitions of "resilience" and its benefits, which means implementers should be careful not to "double-count" benefits. One community or state might want to measure the amount of back-up power available, another might want to measure built structures' ability to maintain a consistent temperature during an extreme weather event or during a power or heating outage, and a third might want to measure both of those things–but all three should make sure resilience is measured separately from comfort, health, air

quality, etc., which have a lot in common. Third, resilience is place-specific, not just for utility territories, cities, or other jurisdictions, but also down to the level of individual neighborhoods, blocks, and even homes. It is therefore hard to standardize across a jurisdiction, and any metric should account for disparities within a given geographic area.

Finally, while resilience of the energy system is relatively concrete and specific, overall community and climate resilience is much broader. For example, climate resilience includes not just the ability to manage during extreme weather events, but also the ability to maintain affordable energy services and a cool home while every-day outdoor temperatures increase. It encompasses risk of exposure (i.e. the likelihood of experiencing particular climate impacts) and sensitivity of particular populations and adaptive capacity, i.e. the availability of resources (or lack thereof) to preserve physical, social, and economic well-being in the face of harms or challenges (Ribeiro et al. 2015). These concepts are closely tied to all aspects of energy equity, not just distributional. We recommend various potential metrics for community and climate resiliency be reviewed and assessed for inclusion. The U.S. Sustainability Directors Network offers an exemplary compilation of climate resilience resources: https://www.usdn.org/products-climate.html.

Best Practices

MAXIMUM ENERGY BURDEN LIMIT(S)

EEP ranked "establishing a maximum energy burden" as a high priority (4.43). EEP recommends establishing a maximum energy burden of 6%, which EPA and other prominent affordability advocates (e.g. Roger Colton) define as the limit of energy affordability. DOE's Low-income Energy Affordability Data (LEAD) Tool illustrates spatial patterns of Energy Burden by income, and the Greenlink Equity Map (GEM) illustrates energy burden by income and race. Helpful resources include: "How High Are Household Energy Burdens: An Assessment of National and Metropolitan Energy Burdens Across the United States (ACEEE 2020)," "Understanding and Alleviating Energy Cost Burden in New York City (New York City Mayor's Office, 2019)," and "Ten-Year Plan: Reducing the Energy Burden in Oregon's Affordable Housing" (Oregon Department of Energy et al. 2018).

Energy burden is disproportionately experienced between populations when comparing race and income. "According to DOE's Low-Income Energy Affordability Data (LEAD) Tool the national average energy burden for low-income households is 8.6%, three times higher than for non-low-income households which is estimated at 3%. In some areas, depending on location and income, energy burden can be as high as 30%," (DOE State and Local Solution Center 2022). High energy burdens illustrate energy insecurity that leads to, "one in five households reported reducing or forgoing basic necessities like food and medicine to pay an energy bill and 14% reported receiving a disconnection notice for energy service. Households may have also used less energy than they would prefer to: 11% of households surveyed reported keeping their home at an unhealthy or unsafe temperature," (EIA 2015.)

In practice, a maximum energy burden would require income verification and utility bill limitations. This would require payment support and should be structured to target and drive investments in energy efficiency improvements and renewable energy installations necessary to eliminate the excess energy burden. According to ACEEE, "weatherization can reduce low-income household energy burdens by about 25%, making it an effective strategy to reduce high energy burdens for households with high energy use while also benefiting the environment," (ACEEE 2020).

EEP did not identify a jurisdiction that currently has an energy burden maximum in place. Percentage of Income Payment Plans (PIPP) are the closest current mechanism for establishing a cap on energy

burdens. Proposing maximum energy burdens may be particularly applicable for renters, who have minimal control over the efficiency or energy supply of their homes. This best practice would protect renters from the burden of paying high utility bills due to energy-intensive housing. Ideally, this best practice should be structured so that the burden of proof in reporting does not fall solely on renters, and that barriers to reporting unfairly high energy burdens are minimized.

ARREARAGE MANAGEMENT PLANS (AMPs)

Arrears Forgiveness Policies or Management Plans are programs designed to reduce or eliminate customer past due balances. These can be done as part of a discounted bill program, or as a "reward" for customers paying their current bill in full for a determined amount of time. Another format would be a one-time assistance payment. LIHEAP dollars can be used in multiple ways to pay down customer arrears through the state or grantee's crisis assistance program and/or their bill assistance program. States, non-profits, and utilities can also establish their own AMPs. In general, EEP recommends a best practice of offering an arrears management or forgiveness program to any customer with a past-due balance, and structuring these programs in such a way that they do not excessively increase ongoing bills. These programs should enable customers to maintain service and avoid shut-offs, and allow low-income customers to manage and reduce their arrears while keeping their bills below an energy burden limit of 6%. AMPs are especially critical as many U.S. households were unable to keep up with their bills during the COVID-19 crisis, and shut-off moratoriums during the pandemic resulted in very high arrears balances (Sainato 2021).

LOW PRIORITY METRICS AND BEST PRACTICES

The Distributional Equity Workgroup evaluated and decided not to include a variety of other potential metrics and best practices related to energy

Chart 4: PIPP Discount – 6% Target Burden:
Undiscounted and Discounted Electricity Burdens by Selected Household Income

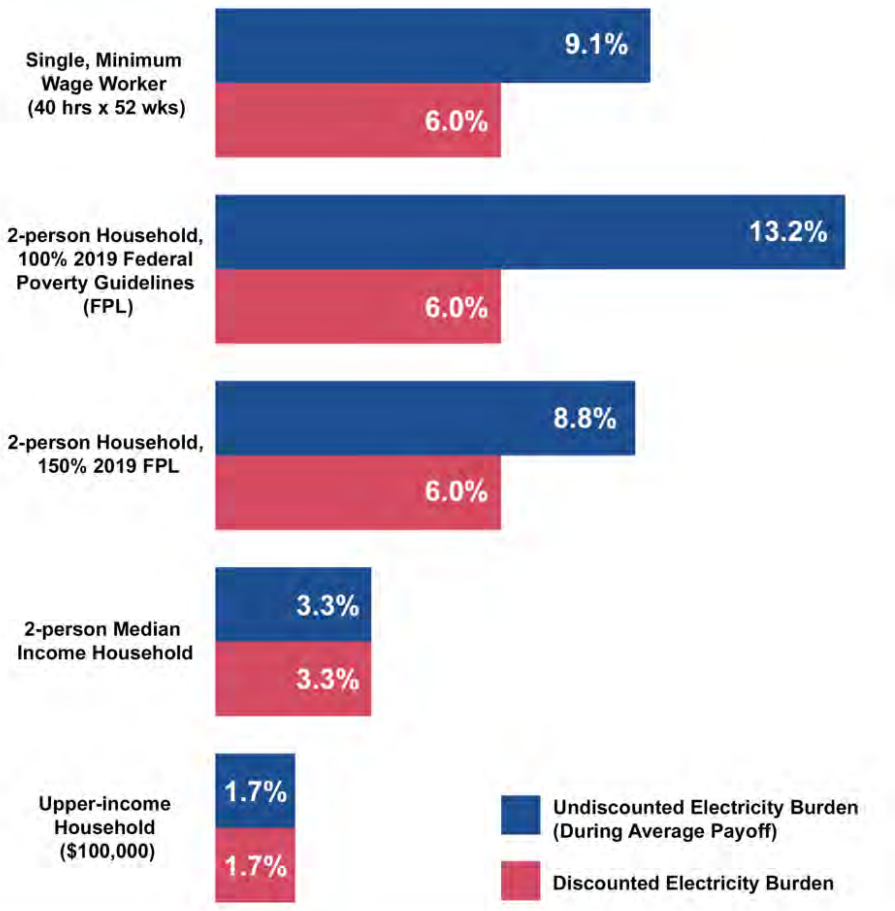


Image source: National Consumer Law Center, 2020. Electric service discount and AMP design, p.20. https://www.nclc.org/images/pdf/special_projects/covid-19/WP_Program_Design_Template.pdf

affordability, household benefits, and community benefits. These other metrics and best practices were excluded for various reasons, including: not being fully aligned with distributional equity principles; not sufficiently reflective of the relevant index (e.g. household energy affordability); possibility of creating perverse incentives; lack of alignment with the best ways to distribute benefits to frontline households and communities; focusing too much on program delivery process details or specific technologies and not enough on the relevant outcomes (e.g. households or communities receiving benefits); program characteristics or approaches that might not improve equity or provide community or household benefits in all contexts; redundancy with other metrics; or other reasons.

Energy affordability metrics and best practices that we evaluated and decided not to include:

- Free or discounted first block of energy consumption
- Enabling subscriptions in community-owned Distributed Energy Resources (DERs)
- % of safety net funds directed toward deep retrofits or DERs
- Transit affordability
- LIHEAP allocation per eligible household
- Rate offsets for electrification or electric vehicles (EVs)
- Beneficial time of day (TOD) and demand response (DR) rates
- Disparity in rates between residential vs commercial & industrial
- Disparate application of rate incentives (e.g. demand response/time of day rates) among BIPOC, frontline, and low-income communities
- Energy burden floor for high income households

Household benefits metrics and best practices that we evaluated and decided not to include:

- % clean energy investments overlapping with healthy homes investments
- % rebates and tax incentives received by BIPOC, frontline, and low-income households
- Total amount or size of clean energy programs
- Selection of a cost effectiveness test for efficiency or other programs

Community benefits metrics and best practices that we evaluated and decided not to include:

- Policy support for BIPOC, frontline, and low-income locally owned contractors
- Electrification, EV-ready, and/or EV charging ordinances
- % of buildings electrified
- % efficiency potential achieved
- % residentially-owned solar potential achieved
- % served by a microgrid
- % distributed energy storage achieved
- Cost per ton of CO2 reduced
- Ordinances specifying no new natural gas buildings

DISTRIBUTIONAL MEASURES SUMMARY

Energy Affordability Index
- EA1. % eligible customers served by financial assistance programs
- EA.2 Average energy burden among low-income households, BIPOC, and frontline households, and/or other disproportionately impacted groups (e.g. renters)
- EA.3 % of eligible customers served by Percentage of Income Payment Plans (PIPPs)
- EA4. Amount of fixed charges on utility bills

Household Benefits Index
- HB1. E3b spending and savings for low-income, BIPOC-FL households, renters, etc.
- HB2. E3b at the program level, especially for deep energy retrofits, distributed energy resources, electric vehicles, electrification, etc.
- HB3. % eligible customers needing healthy homes measures served
- HB4. Improved indoor air quality in BIPOC-F-LI households
- HB5. Reduction in respiratory distress and disparities among BIPOC-F-LI households
- HB6. % BIPOC, frontline, and low-income program participants achieving substantial (>20%) energy savings from building retrofit programs
- HB7. % eligible customers served annually by building retrofit programs expected time to retrofit all homes with frontline, BIPOC, and low-income families
- HB8. Disparity in program savings by customer for and frontline households and renters

Community Benefits Index
- CB1. % of contracts awarded to Black-, Indigenous-, Latinx-, Asian-, women-owned businesses and businesses owned by other marginalized groups including people with a disability and people living in frontline environmental justice communities.
- CB2. Quality of new jobs created by utility programs, and reduction in job quality disparities for BIPOC-F-LI workers
- CB3. % of new jobs created by utility programs that go to BIPOC-F-LI individuals or communities
- CB4. % electricity generation from renewables
- CB5. Frontline community and climate resiliency benefits, and reductions in disparities

Best Practices
- Maximum energy burden limit(s)
- Arrearage Management Plans (AMPs)

Other Potential Metrics and Best Practices

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Restorative Justice

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"Restorative justice is about the idea that because crime hurts, justice should heal. It follows that conversations with those who have been hurt and with those who have afflicted the harm must be central to the process."

JOHN BRAITHWAITE[1]

Restorative Justice does not have a single unified definition, instead it is often a concept used to capture the many different practices centered around repairing harm and relationships.[2, 3, 4] Although it emerged in the mid to late 1970s in relation to criminal justice studies, much of the values, principles, and practices of restorative justice can be traced back to Indigenous cultures.[5, 6]

Recently restorative justice has begun to be applied to issues concerning energy and the environment. Restorative justice plays a vital part within the concept of energy justice as it aims to repair injustices arising from energy decision-making.[7] It encourages decision-makers to ensure that all potential harms and injustices that may arise are addressed, and prevention, mitigation, and restoration plans are implemented. Still, restorative justice is a relatively novel concept and there is still much left to understand about its role in energy justice.

[1] John Braithwaite, Restorative Justice and De-Professionalization, The Good Society, Volume 13, No. 1, 2004

[2] Jennifer J. Llewellyn, Transforming restorative justice, The International Journal of Restorative Justice 2021 vol. 4(3) pp. 374-395

[3] The Federal-Provincial-Territorial Ministers Responsible for Justice and Public Safety defines restorative justice as "an approach to justice that seeks to repair harm by providing an opportunity for those harmed and those who take responsibility for the harm to communicate about and address their needs in the aftermath of a crime." (Principles and Guidelines for Restorative Practice in the Criminal Matters, 2019)

[4] Tony Marshall defined restorative justice as "a process whereby all the parties with a stake in a particular offence come together to resolve collectively how to deal with the aftermath of the offence and its implications for the future" (Marshall 1999: 5)

[5] M.Hazrati & R.J.Heffron, Conceptualizing restorative justice in the energy Transition: Changing the perspectives of fossil fuels, *Energy Research & Social Science,* Volume 78, August 2021, 102115

[6] Ted Lewis (Author), Carl Stauffer (Editor), Fania E. Davis (Foreword), Listening to the Movement: Essays on New Growth and New Challenges in Restorative Justice, Cascade Books (Feb. 21 2021), p. xxii

[7] M.Hazrati & R.J.Heffron, Conceptualizing restorative justice in the energy Transition: Changing the perspectives of fossil fuels, Energy Research & Social Science, Volume 78, August 2021, 102115

Photo by Markus Spiske on Unsplash

The restorative justice dimension of the Energy Equity Project is a dynamic framework that evolved and grew to reflect the complexity and interconnectedness of the ecological, social, economic, and equity dimensions of the energy system. Our goal with the restorative justice chapter is to provide a pathway that will guide and inspire energy system practitioners in their work to cultivate accountability, healing, and resilience.

Approach

The restorative justice chapter has been separated into 2 parts. The first part is dedicated to exploring the concept of restorative justice and its core principles in more detail. Case studies are included to showcase how these principles can be applied in real-life projects and how this can lead to repairing some of the harms brought on by the energy sector. The second part is centered around existing legal and regulatory frameworks that can be used to identify potential injustices and harms that can result from a proposed project. These frameworks could help identify ways to circumvent these or develop action plans for reparations, if unable to do so. This part is also looking at utility reforms to incentivize support for a just and equitable transition. The following section outlines how we as a group ended up with this structure.

CORE PRINCIPLES AND INDICES

The workgroup of the restorative justice dimension consisted of 11 members, representing 10 organizations from various sectors and diverse backgrounds. Initially, the restorative justice dimension was only described using one index, energy democracy. This was, in this framework, defined as *"the notion that communities should have a say and agency in shaping and participating in their energy future"*. As the workgroup went through the previously recorded listening sessions, and a series of discussions organized around the concepts of energy democracy and restorative justice, it became apparent that the concept of energy democracy, while a crucial ingredient, does not fully amount to the transformational and far-reaching work we wish to achieve. **Figures 1 and 2** show some of the questions that were raised during our discussions and a snapshot of one of the jamboard pages.

Figure 1. This figure showcases some of the questions asked during our discussions.

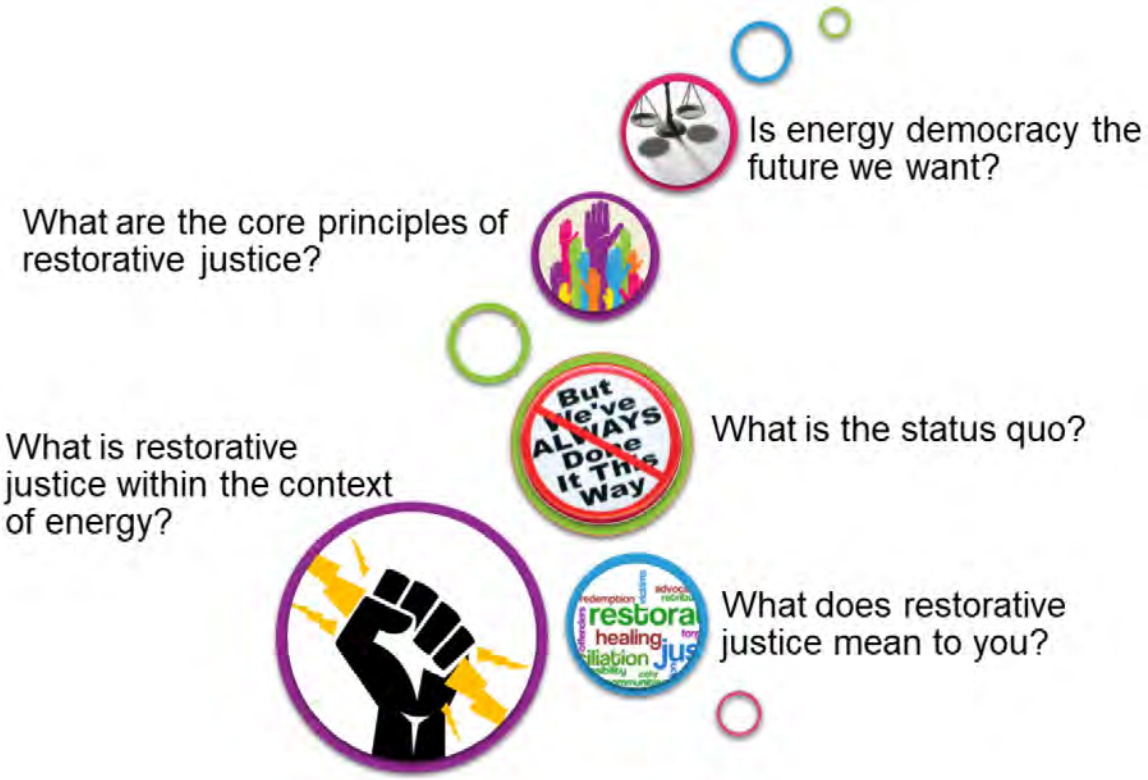

Figure 2. A snapshot of one of the jamboard pages designed to break down "What does Restorative Justice mean to you?"

Relying on listening sessions, conversations, and research, the workgroup decided that the following indices are of importance to the dimension:

- *Indigenous Sovereignty*
- *Power to the People,* and
- *Accountability and reparations*

These indices are all interconnected, and so the restorative justice dimension cannot be represented by a hierarchical figure, instead, we draw your attention to **Figure 3**, showing the deep interconnectedness of the 3 indices.

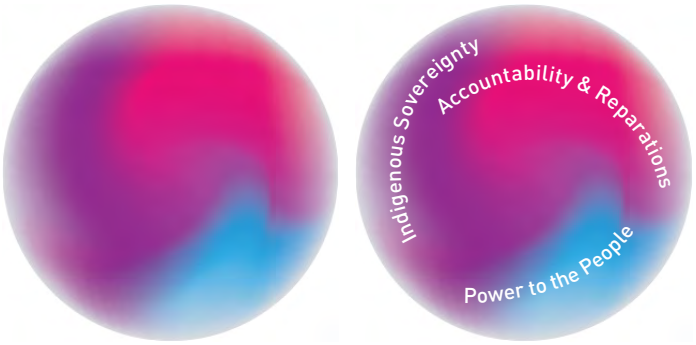

Figure 3. A visual representation of the restorative justice dimension, each index is represented by a color.

The restorative justice workgroup defined core principles for each index to guide us through the research and development process of the dimension. These principles were developed and reevaluated as the workgroup sought feedback and expertise from advisors, Indigenous leaders, community members, and activists.

SUB-DIMENSION	CORE PRINCIPLES
Indigenous Sovereignty	· Restoring balance · Healing our relationship to the land, water, air and all our relations · Environmental justice in the context of land · Traditional knowledge and sacred ways of knowing and teaching
Power to the People	· Shifting the power · Decentralization · Degrowth
Accountability and Reparations	· Transparency · Accountability · Reparations

A NARRATIVE APPROACH

After defining the indices of Restorative Justice and corresponding guiding principles, we moved on to brainstorm and compile metrics that would enable the measurement of progress made towards each index. This turned out to be challenging.

The restorative justice dimension is centered around core concepts such as healing and restoring our relations. As these concepts are deeply subjective, making tracking their progress difficult. Additionally, in order to quantitatively track progress, there needs to be a baseline for comparison. But restoring back to the current status quo is not a victory for BIPOC communities. The work of restorative justice goes beyond restoring to generating something that we may never have had. How can we quantitatively measure progress towards a beautifully undefined better future defined by systems and relationships that do not currently exist?

Our Restorative Justice workgroup believes that the narrative approach to defining our indices will provide the structure and inspiration needed to support energy practitioners on their journey to creating an equitable energy future while retaining the flexibility and boundlessness that this work demands. For the Restorative Justice dimension of energy equity, we provide

- *Explanations and storytelling* of why each index matters
- *Analysis* of what is lacking in or wrong with our existing energy systems and where opportunities for enhancing equity lie
- *Case studies* showcasing examples of where issues have been addressed, not addressed, or addressed badly

We recognize that we all operate within systems that often demand quantification and categorization of work, and a cut-and-dry template for quickly displaying results. This narrative approach to the restorative justice dimension cannot help you meet those needs. We ask that stats-minded, quantitatively-oriented folks bring an open mind to engaging with this part of the Restorative Justice dimension, and we hope that our narrative structure will provide inspiration and insight that will guide you in your work.

Source: A Message from the Future with Alexandria Ocasio-Cortez

PREVENTATIVE MEASURES AND UTILITY REFORMS

The second part of this work is focused on preventative measures and utility reform. The preventative measures section is aimed at discussing existing legal frameworks that can be used to identify where injustices may arise in the future and how they can be avoided or repaired. We also try to pinpoint weaknesses in these mechanisms and provide suggestions on how to address these.

One large piece of why restorative justice is needed in the first place is that the energy sector has constantly put profit over people (and nature). This chapter would not be complete without a closer look at the business model of utilities and a discussion around how this prevents the adoption of renewable and energy efficiency projects and potential reforms that can counteract this.

CASE STUDY OVERVIEW

INDIGENOUS SOVEREIGNTY	
CASE STUDY	**TAKE AWAY**
Old Crow solar farm	This case study is a good example of how the meaningful inclusion of community members during the planning and visioning phase of a renewable energy project led to the preservation and conservation of native plants, the permafrost, the Vuntut Gwitchin Nation's traditional way of life, and cultural sites.
Red Crow Community College	This case study showcases how programs built around Traditional Knowledge can lead to transformative change in the way we view the natural world and our other-than-human kin. By centering caretaking within our relationship with the land and each other, we would be able to create thriving and sustainable communities.
Nuiqsut, Alaska	This case study highlights the importance of understanding the costs of energy extraction on communities and the environment and weighing the economic benefits of such projects against the devastation of ecosystems and community wellbeing.

POWER TO THE PEOPLE	
CASE STUDY	**TAKE AWAY**
One Voice's Energy Democracy Initiative and the Electric Cooperative Leadership Institute (ECLI), Mississippi	This case study shows the role of education to increase engagement and participation. It is an example of how community education efforts can transform existing institutions and bolster community ownership.
Coquí Solar, Puerto Rico	This case study highlights the role renewable energy can play in democratizing power and how community responsibility can build community power.
Machynlleth, Wales	This case study is a good example of how decentralized power can be coupled with degrowth values, especially with the support of energy education.
Buen Vivir, Bolivia & Ecuador	This case study shows how indigenous philosophies can be a source for decentralizing power away from for-profit entities and humans to sharing power with nature and our non-human kin.

ACCOUNTABILITY & REPARATIONS	
CASE STUDY	**TAKE AWAY**
Garrett vs. Williams	This case study is a good example of how reparations between a corporation and Indigenous communities can be performed. The restorative justice conference provided an opportunity for the victims to stipulate their terms for reparations and for the offender to take responsibility by honoring these.
ECHO Notify	This case study outlines ways to increase transparency and how this can be leveraged by the public, as well as regulators and policymakers, to achieve positive behavior change in corporations.
Debt Justice for Climate Reparations	This case study showcases one way that the Global North could take responsibility for its dominating role in shaping the global economy and climate change to the detriment of the Global South by offering a debt restructuring and debt cancellation program.

The Path from the Past to the Future

While fossil fuels were key to industrialization and rising prosperity for some nations, it has resulted in rapid destruction of global ecosystems, displacement of Indigenous Peoples in the name of energy extraction, and has arguably led the world to the current complex economic, ecological, and neocolonialist crises. These crises are felt by all communities around the world, but according to the IPCC,[8] BIPOC communities suffering from historical and ongoing patterns of inequity brought on by colonialism, are the most vulnerable.

Members of these groups often live in sacrifice zones or are forcibly displaced from their homes in the name of energy extraction and profits.[9] Colonialism brought on this vulnerability by not only stealing the land and displacing local communities, but also by devastating ecosystems and our other-than-human relatives. Colonial structures are not a thing of the past, they still run deep within the injustices entrenched in the energy system and the powers that control it.

Colonialism fuels the narrative that 'selected' human societies are superior to the Earth, its ecosystems, and our other-than-human relations. This belief has shaped many societal, cultural, and economic values of modern societies to pave the way for the exploitation of our planet and many communities in the name of perpetual growth. Othering[10] of Black and Brown bodies, Indigenous nations, other-than-human relatives, and the Earth has unleashed tremendous amounts of violence, trauma, and loss upon these communities, groups, and our planet.

As we reflect upon the complex challenges of our world, it becomes increasingly clear that our social and climate justice movements are deeply interconnected. The liberation of Black and Brown bodies, the struggle for environmental and energy justice and Indigenous sovereignty, all intersect in the collective struggle for decolonization. Restorative Justice, embedded

Photo by Logan Weaver | @LGNWVR on Unsplash

"Black and First Nations communities are fighting against the same system of colonization and white supremacy that created two different, but not dissimilar, legacies of poverty, incarceration, and socioeconomic and health disparities."[11]

REGIONAL CHIEF MARLENE POITRAS

"What's often downplayed is the revolutionary potency of what Indigenous resistance stands for: caretaking and creating just relations between human and nonhuman worlds on a planet thoroughly devastated by capitalism."[12]

NICK ESTES (KUL WICASA)

[8] IPCC Sixth Assessment Report-Summary for Policymakers Headline Statements, https://www.ipcc.ch/report/ar6/wg2/resources/spm-headline-statements/ 28 February 2022

[9] Diego Andreucci, Christos Zografos, Between improvement and sacrifice: Othering and the (bio)political ecology of climate change, Political Geography, (https://www.sciencedirect.com/science/article/pii/S0962629821001724)

[10] john a. powell and Stephen Menendian, The Problem of Othering: Towards Inclusiveness and Belonging, https://www.otheringandbelonging.org/the-problem-of-othering/

[11] Marlene Poitras, In Solidarity With The BLM Movement, Assembly of First Nations, http://www.afnab.ca/News-and-Events/BLM-Statement

[12] A Red Deal, Nick Estes (Kul Wicasa), https://www.jacobinmag.com/2019/08/red-deal-green-new-deal-ecosocialism-decolonization-indigenous-resistance-environment

in restoring people, the earth, and communities, has emerged as a holistic pathway to honor the intersectionality of our complex crises and guide our collective efforts to decolonize our systems, our ways of life, and our vision of the future.

Decolonization is the first step to envisioning a different world, a world built upon cultures of care and healing. The strategies needed for this collective vision are deeply rooted in Indigenous resistance in pursuit of nationhood and sovereignty. Transforming our relationships to one another and to the Earth, restoring balance, reciprocity, sovereignty, and stewardship are pillars of many Indigenous knowledge systems that are the guiding principles of the restorative justice workgroup. Borrowing from Indigenous knowledge systems and grassroots movements, we have collectively defined restorative justice as *"a holistic understanding of equity that recognizes past and current energy injustices allowing us to form a pathway to heal our relationship to the land, water, air, and all our relatives."*

Indigenous Sovereignty

"The rights of human beings and the rights of nature are two names of the same dignity."

EDUARDO GALEANO[13]

The forces of colonialism shape Indigenous Peoples' lives all over the world every day. Energy projects often violate Indigenous lands, and expose Indigenous peoples to environmental risks, threatening their livelihoods, health, and cultural values. At the heart of the controversies surrounding these projects lies Indigenous Sovereignty, the inherent rights of Indigenous Peoples over their lands, traditional territories, and resources.

As authors of this chapter, we recognize that we are not Indigenous to the land that we occupy. However, we believe it is our duty to acknowledge and integrate the principles of Indigenous Sovereignty into the vision for restorative justice as people reap the benefits of western colonialism and land theft. Furthermore, we are deeply aware of the fact that Indigenous peoples across the globe are not a monolithic group. Our attempt at defining Indigenous sovereignty is grounded in a recognition of the historic and contemporary role Indigenous communities play in maintaining a restorative and regenerative relationship with the land and our non-human kin. This attempt is not meant to define and or determine sovereignty for the diverse, varied, and self-determining Indigenous peoples of the world.

Restorative justice originates from the idea of restoring something back to its original condition after harm is done. The original harm in North American history was perpetrated against Indigenous communities and their territories. European colonists used the centuries-old *Doctrine of Discovery* to gain title to the lands they "discovered", and Indigenous inhabitants lost their natural right to that land once the Europeans claimed it.[14] Under this legal cover for theft, Euro-American wars of conquest and settler colonialism devastated Indigenous Nations and communities, ripping their territories away from them and transforming the land into private property, real estate." With settler colonialism's manifest for extraction and expansion, an intricate and advanced system of communal politics, land stewardship, and regenerative agriculture was marred and transformed by a mechanistic philosophy.

Fossil fuel extraction was a vital tool for rapid industrialization in the 19th century. This industrial revolution built our modern-day energy system, on the backs of land theft and slave labor—colonized forms of private property. At the root of it, all was the inferiorization and infantilization of Indigenous ways of being. As Amitav Ghosh eloquently puts it, "[t]*o remake immense stretches of terrain to suit the lifestyles of another continent invariably entailed the undermining and elimination of the ways of life of those who inhabited those lands for many thousands of years."*[15] This project of erasure has led us to this moment of crisis: the climate crisis.

In order to respond to the climate crisis, we must transition away from extractivism, racial capitalism, and neocolonialism. This requires our current and future generations to reckon with the attempted erasure of Indigenous Peoples and cultures and how this history shaped the path to this moment. But reckoning cannot begin without recognizing, upholding, and rehabilitating Indigenous rights and sovereignty. Only by restoring our collective relationship to the land and our non-human kin can we create a thriving ecosystem and communities. This effort/restoration must be guided by Indigenous Peoples, as they are the ones who were the originators of the philosophy of humans as part of nature, not separate from it.

As a starting point for developing this index, we held one listening session (February 2022) with about 40

[13] Eduardo Galeano, Message to the Mother Earth Summit, https://climateandcapitalism.com/2010/04/21/eduardo-galeano-message-to-the-mother-earth-summit/, April 21, 2010

[14] An Indigeneous People's History of the United States, Roxanne Dunbar-Ortiz.

[15] The Nutmeg's Curse. Amitav Ghosh. Page 55.

Figure 4. A snapshot from one of the breakout sessions focused on *Healing Our Relationship to the Land, Water, and Air & All Our Relations.* As a starting point we asked the question, *How can the transition to renewable energy ensure that nonhuman relatives are not forgotten, abused, or mistreated?*

Indigenous leaders across the U.S. and Canada. The listening session was framed along with four different themes:

- Restoring balance: shifting away from the colonizer's view of power, ownership, and growth
- Healing our relationship to the land, water, and air & all our relations: returning to our sacred duties
- Environmental justice in the context of land: land as nationhood
- Traditional knowledge & sacred ways of knowing and teaching: decolonizing the energy story and conversation

Our session was framed broadly around these themes, so the issues, concerns, and ideas that emerged from this listening session were broadly applicable to the fight for Indigenous sovereignty. A snapshot from one of the breakout sessions can be seen in **Figure 4**.

ATTACK ON INDIGENOUS SOVEREIGNTY

A good example of contemporary colonialism is the Trans Mountain Pipeline Expansion project (TMX) in British Columbia (BC), Canada. In 2012, a proposal was brought forward to triple the capacity of the existing pipeline.[16] Despite being contested by over two-thirds of the First Nations impacted by the project, and the lack of consent to build through their territories, the extension was approved.[17] The Canadian government justified the violation of Indigenous law by referring to national "interests" such as economic growth, job creation, and increased tax revenues.[18]

What is particularly interesting in this case, is that both the provincial (BC) and the federal government have incorporated the United Nations Declaration on

[16] Expansion Project, https://www.transmountain.com/project-overview

[17] No Trans Mountain Pipeline, https://www.wildernesscommittee.org/noTMX

[18] Emiliano Castillo Jara & Antje Bruns,Contested notions of energy justice and energy futures in struggles over tar sands development in British Columbia, Canada, Futures Volume 138, April 2022, 102921, doi: https://doi.org/10.1016/j.futures.2022.102921

the Rights of Indigenous Peoples (UNDRIP).[19] Central to UNDRIP is the Free, Prior, and Informed Consent principle, stipulating that Indigenous People can give or withhold consent to a project that may affect them or their territories.[20, 21] This principle was not respected by the Canadian government. Instead of engaging in a meaningful dialogue, the consultation seemingly appeared to have been performed with the intention of ignoring the right to withhold consent to the TMX, rendering the consultation toothless. This is not surprising as the government of Canada views the UNDRIP legislation as having "no *immediate impact on existing law and is simply 'a forward-looking statement of intent that contemplates an action plan' yet to be prepared and implemented by either level of government."*[22]

[19] Arend J.A. Hoekstra et al. BCSC Decision Suggests Implications for UNDRIP Legislation in Canada, https://cassels.com/insights/bcsc-decision-suggests-implications-for-undrip-legislation-in-canada/, 18 Jan 2022

[20] United Nations Declaration on the Rights of Indigenous Peoples, https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html

[21] Free, Prior, and Informed Consent, https://www.fao.org/indigenous-peoples/our-pillars/fpic/en/

[22] Thomas and Saik'uz First Nation v Rio Tinto Alcan Inc., 2022 BCSC 15 (CanLII), https://canlii.ca/t/jlnn6, retrieved on 2022-04-23

Image source: Aditi Bansal, member of the Restorative Justice working group

Image source: Aditi Bansal, member of the Restorative Justice working group

JUST TRANSITION

The Just Transition[23, 24] framework has been forged by Indigenous Nations and leaders for years. These strategies call for a deep transformation of the global economic, cultural, and social structures. Indigenous Nations are reimagining a future where care and well-being are central to the economic system, our relationship to the Earth, each other, and our other-than-human relatives are restored, and Indigenous communities assert their sovereignty through democratized, decentralized, and regenerative energy systems.[25] Indigenous Just Transition movements center "all relations" and offer a more holistic conception of justice to address the multi-dimensional challenges of our time, including the energy transition.[26]

An Indigenous Just Transition pathway also highlights the importance of healing justice to recognize historical harm to communities and the Earth, traumatic implications of land theft and colonization on Indigenous Nations, and to center decolonization in all Just Transition strategies. By implementing the Just Transition strategies, Indigenous Nations embark on their journey to heal and revitalize their ways of living and knowing by shifting away from the dominant system of capitalism.

To assert their sovereignty, many Indigenous Nations have started to develop small-scale renewable and sustainable energy projects led by their unique knowledge systems, community processes, laws, values, priorities, and needs. These community-based projects act as a foundation for Indigenous Nations to build sustainable, localized, and regenerative economies for the next seven generations.

[23] From Banks and Tanks To Cooperation and Caring: A Strategic Framework for a Just Transition. Movement Generation: Justice & Ecology Project. https://movementgeneration.org/wp-content/uploads/2016/11/JT_booklet_English_SPREADs_web.pdf

[24] Just Transition | Indigeonus Environmental Network. https://www.ienearth.org/justtransition/

[25] From Banks and Tanks To Cooperation and Caring: A Strategic Framework for a Just Transition. Movement Generation: Justice & Ecology Project. https://movementgeneration.org/wp-content/uploads/2016/11/JT_booklet_English_SPREADs_web.pdf

[26] Deborah McGregor, Steven Whitaker, Mahisha Sritharan, Indigenous environmental justice and sustainability, Current Opinion in Environmental Sustainability, Volume 43, 2020, Pages 35-40, ISSN 1877-3435, https://doi.org/10.1016/j.cosust.2020.01.007. (https://www.sciencedirect.com/science/article/pii/S1877343520300075)

CASE STUDIES

This section showcases examples of how principles of the Indigenous Sovereignty Index have been implemented in practice.

Old Crow solar farm

The Vuntut Gwitchin First Nation community of Old Crow is a small rural community with 250 inhabitants.[27] The community lies 80 miles North of the Arctic Circle in the Yukon Territory and is not connected to any road system. Its isolated state has left it dependent upon diesel that has to be flown in, leading to high economic and environmental costs. In 2008 the Vuntut Gwitchin Government started to investigate the potential development of renewable energy alternatives to gain long-term energy sovereignty and security.[28]

"Our people have been occupying this area as archaeological evidence suggests going back 27,000 years. So, I constantly ask myself: How were our people able to thrive in this inhospitable environment? Because we survive off the energy systems local to our areas, the energy in the plants, the animals and in the nutrients—all driven by the sun."[29]

What makes this project unique is the meaningful inclusion of the community members from the beginning.[30] Through a series of sessions, attended by everyone from young children to elders, a community vision was developed. Early on, a potential conflict arose as the best location for the solar farm was at the heart of an area traditionally used for gathering berries.[31] A compromise was reached by making sure to replant native plants on the site once construction was completed. The site was also to remain completely open, allowing citizens, and local wildlife to forage freely.

Another important aspect was to preserve the fragile permafrost. The thawing of permafrost is a major concern for Indigenous People living north of the Arctic circle. As it thaws it can deposit organic matter into the water, upsetting aquatic ecosystems and threatening important cultural sites.[32, 33] These and many more issues are having a profound effect on their traditions. To minimize any disruptions of the permafrost, the design team collaborated with a Vuntut Gwitchin contractor to gain local knowledge.[34] The collaboration led to a tailored design, preventing heat and water from entering the ground.

Once fully operational, the solar project will be able to replace 190,000 liters of diesel per year, reducing greenhouse gas emissions by 680 tons of carbon dioxide, the equivalent of removing 140 cars off the road.[35]

"The whole process was really centered around community leadership, medical experts, harvesters, not just to design it, but how to build and maintain the solar farm." – quote an EEP listening session participant, February 21, 2022.

Red Crow Community College

Prior to colonialism, Indigenous Peoples had their own self-governing and education systems.[36] They relied on Traditional Knowledge,[37] gained over the centuries about the local culture and environment, allowing them to sustain and adapt themselves to their environment over time. Children were educated in many different ways including oral teachings, hunting, demonstrations, and participating in spiritual rituals. Once the colonizers arrived, European classroom-style education was used as a tool to sever the children's ties with their culture and language. It taught the children to "distrust their Indigenous knowledge systems, their elders' wisdom, and their own inner learning spirit".[38] This practice continued in Canada up until the 1970s.[39]

Traditional Knowledge can play a vital role in restoring the health of our planet.[40] It contains an abundance of wisdom gained over millennia from direct observations, and (often) handed down orally. Although facing suppression in the past, Traditional Knowledge is slowly gaining the respect it deserves, especially within the realm of sustainable living and the protection of biodiversity.

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[27] Powered by Nature: The Old Crow Solar Project, https://www.arctic-council.org/news/the-old-crow-solar-project/, 14 Dec 2020

[28] Ibid.

[29] Ibid.

[30] Ibid.

[31] Old Crow Solar project, https://s3.ca-central-1.amazonaws.com/medias.bba.ca/documents/pdf/oldcrow-spread-web-EN.pdf

[32] Kenyon Wallace, Beyond Frozen, https://projects.thestar.com/climate-change-canada/nunavut/, July 4 2019

[33] Permafrost thaw brings major problems to Canada's Northern Arctic communities, https://www.nrcan.gc.ca/simply-science/permafrost-thaw-brings-major-problems-canadas-northern-arctic-communities/23233, 2021-01-04

[34] Old Crow Solar project, https://s3.ca-central-1.amazonaws.com/medias.bba.ca/documents/pdf/oldcrow-spread-web-EN.pdf

[35] Ibid.

[36] Harvey A. McCue, Education of Indigenous Peoples in Canada, https://www.thecanadianencyclopedia.ca/en/article/aboriginal-people-education, January 28, 2020

[37] Traditional Knowledge, Assembly of First Nations, https://www.afn.ca/uploads/files/env/ns_-_traditional_knowledge.pdf

[38] Make Space for Indigeneity: Decolonizing Education, SELU Research Review Journal, 2016, 1(2), 49–5

[39] Ibid.

[40] Fulvio Mazzocchi, Western science and traditional knowledge: Despite their variations, different forms of knowledge can learn from each other, EMBO Rep. 2006 May; 7(5): 463–466

Red Crow Community College[41] is situated in the Blackfoot First Nations Reserve of southern Alberta. The school once occupied the same building that housed the St. Mary's residential school that many of the Red Crow College teachers were forced to attend. The community took the space and their own history back by reclaiming their knowledge systems and re-imagining education. The college developed the *"Kainai Studies"* program, open to the new generation of Blackfoot and non-Blackfoot students. Here they are taught the language, knowledge, and practices that have allowed people to thrive in this region for thousands of years.

One example of how this program is different compared to the European classroom-style education is the class on *Blackfoot ecological knowledge and traditional foods*.[42] Students have no required readings but are instead asked to spend a few hours a day, three days a week outside at the same spot. As the seasons come and go, the participants start to notice the little things. They are able to identify who lives in this nook of the land, what grows here, and where. They are able to gain firsthand experience of how the seasons and the external elements impact the land and its inhabitants. By showing up they are able to develop deep relationships to the place and get to learn from the place and the beings themselves.

This program is a good example of how Indigenous knowledge systems, cultures, and languages are deeply rooted in the interconnection to the natural world and our other-than-human relations. Many Indigenous languages describe animal or plant species in relation to each other; the salmon is described as a fish species that swims up the river and distributes a certain frequency of energy into the ecosystem. In return, other species offer the salmon their energy and gifts. Recentering such reciprocity and caretaking within our relationship to the land and each other will enable us to create thriving and sustainable communities.

The inclusion of Indigenous Knowledge and worldview in the sustainability debate has a lot to offer.[43] The sustainability goals developed by the United Nations are built around the idea of growth, albeit sustainable, and are underpinned by notions such as the sovereignty of humans over nature, individualism, private property, and materialism.[44] This dominant viewpoint often permeates energy projects and can result in the perpetuation of colonialism by non-recognition of Indigenous rights and disrespect for local customs.[45] In order to ensure an inclusive and just energy transition, current non-dominant worldviews must be incorporated into the system. The *Blackfoot ecological knowledge and traditional foods program* highlighted here is a great example of restoring and maintaining cultures and traditions that are at risk of being lost. Incorporating these non-dominant knowledge systems will allow for a more holistic approach to sustainability to be observed, one that is based upon the collective agency, reciprocity, and the nurturing of nature.

Nuiqsut, Alaska

"You know with drilling, and drilling and tearing apart our Earth, that is not who we are. We protect our earth, we protect our animals and our way of life."[46]

The North Slope Borough is one of America's most sparsely populated places, with just 10,000 people across 95,000 square miles.[47] One of the 8 villages in this region is Nuiqsut. It has a small population of just over 400 people with the overwhelming majority being Iñupiaq.[48, 49] Nearly every household in Nuiqsut relies on the land for food.

Nuiqsut has become almost entirely surrounded by oil and gas industries over the past three decades.[50] These industries play a fundamental role in the local economy as the municipal government primarily relies on oil and gas taxes for funding. The economic benefits have resulted in a relatively low number of people living below the poverty line and the villages can pay as little

[41] Kelly Teamey, Re-imagining higher education, Open Democracy, https://www.opendemocracy.net/en/transformation/reimagining-higher-education/, 1 December 2014

[42] Kainai Studies, https://enlivenedlearning.com/2012/11/06/red-crow-college-and-the-role-of-experience/, Nov 6, 2012

[43] Dorine E. van Norren, The Sustainable Development Goals viewed through Gross National Happiness, Ubuntu, and Buen Vivir. International Environmental Agreements: Politics, Law and Economics volume 20, pages 431–458 (2020)

[44] Ibid.

[45] Paola Velasco-Herrejón, et al. Challenging dominant sustainability worldviews on the energy transition: Lessons from Indigenous communities in Mexico and a plea for pluriversal technologie, World Development 150 (2022) 105725

[46] Juliet Eilperin, Facing catastrophic climate change, they still can't quit Big Oil, The Whasington Post, https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-alaska/ Dec. 13, 2019

[47] Elizabeth Harball, How a small, Arctic village found itself in the middle of Alaska's new oil boom, Alaska Public Media, https://www.alaskapublic.org/2019/05/08/the-neighbors-midnight-oil/, May 8th 2019

[48] Nuiqsut, Artic Slope Native Association, https://arcticslope.org/about/communities/nuiqsut/

[49] Elizabeth Harball, How a small, Arctic village found itself in the middle of Alaska's new oil boom, Alaska Public Media, https://www.alaskapublic.org/2019/05/08/the-neighbors-midnight-oil/, May 8th 2019

[50] Sabrina Shankman, Arctic Drilling Ruling Brings Hope to Native Villages, Subsistence Hunters, Inside Climate News, https://insideclimatenews.org/news/03042019/arctic-offshore-drilling-ruling-alaska-native-subsistence-hunters-whaling-oil-gas-trump-administration/ April 3, 2019

as one-tenth to heat their homes compared to some other rural Alaskan communities.[51, 52]

But these benefits come with a cost as climate change has started to severely affect the landscape. The annual temperature in the region has increased by 4° C, over 3 times the global average.[53] This temperature increase has resulted in less sea ice, more rain, and more snow. The thawing of the permafrost is drowning some villages and 12 rural villages in Alaska will be forced to relocate to drier ground, making their residents among the first climate refugees in the United States.[54] Environmental degradation is also destroying important cultural and archaeological sites.[55]

Humans are not the only victims, the warming has impacted local wildlife.[56] In 2019, tens of thousands of summer chum salmon died of heat stress, caribou herds are declining and bowhead whales' migration patterns have started to shift.[57] Hunters have to travel further and further to find game. This severely disrupts the traditional livelihoods of Native communities and leads to food scarcity as food from the land is the base of nearly every meal.

Concerns about oil development accelerated eight years ago as a well-located 18 miles outside of Nuiqsut suffered an apparent blowout, spewing out drilling mud and methane gas.[58] Although a state investigation concluded it was *"highly unlikely"* that residents were exposed to gas from the blowout, the many villagers that started to suffer from respiratory ailments say otherwise.[59] It turns out that the network of air monitors operated by ConocoPhillips had been shut down for routine maintenance. It was clear to the village that they would have to take protective measures in their own hands and so the town installed their own air monitors.

Since then more and more people have started to question the impact of fossil fuels in the region. In 2019, this came to a pivotal point when Nanieezh Peter and Quannah Chasing Horse Potts spoke at *the Elders and Youth Conference* held shortly before the 2019 Alaska Federation convention.[60] They gave a passionate speech to their leaders about how the landscape is changing including the unsafe traveling conditions of weak ice and the deaths and diseases of animals including seals, salmon, and migratory birds.[61] Potts asked to reinstate a task force that would advocate for strong climate policies, develop Indigenous voices and declare a state of emergency on climate change.[62] The emotional debate paid off as AFN approved a resolution that declared a climate change emergency.[63]

"I'm worried for our generation, we are crying up here, we should not have to come to you worrying about future generations."[64] – Quannah Chasing Horse Potts

But not everyone was thrilled with the proposal, two months after the resolution, the state's largest Alaska Native Corporation, Arctic Slope Regional Corporation (ASRC) left the AFN.[65] Although the official statement does not mention the resolution, officials from ASRC strongly argued against it during the convention.

"Environmental groups, animal rights groups, these are the same organizations that come into our communities and try to split us all apart, split all the corporations, the tribes, the governments because they have an agenda. And if they had their agenda we wouldn't be able to hunt today. If they had their agenda, we wouldn't be able to develop the oil we have in the ground. That would cripple us economically."[66] – Crawford Patkotak, ASRC's chairman

This example showcases how challenging it can be for Indigenous communities to try and balance economic development with community protection and ecosystem stewardship. Transitioning away from fossil fuels will greatly impact these communities and they will need resources to help create a new economic direction.

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[51] Juliet Eilperin, Facing catastrophic climate change, they still can't quit Big Oil, The Whasington Post, https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-alaska/ Dec. 13, 2019

[52] Elizabeth Harball, How a small, Arctic village found itself in the middle of Alaska's new oil boom, Alaska Public Media, https://www.alaskapublic.org/2019/05/08/the-neighbors-midnight-oil/, May8th 2019

[53] Juliet Eilperin, Facing catastrophic climate change, they still can't quit Big Oil, The Whasington Post, https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-alaska/ Dec. 13, 2019

[54] Ibid.

[55] Ibid.

[56] Ibid.

[57] Ibid.

[58] Richard Mauer, North Slope oil well suffers a blowout, Anchorage Daily News, https://www.adn.com/economy/article/north-slope-oil-well-suffers-blowout/2012/02/15/, September 29, 2016

[59] Juliet Eilperin, Facing catastrophic climate change, they still can't quit Big Oil, The Whasington Post, https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-alaska/ Dec. 13, 2019

[60] Alex DeMarban, AFN declares 'state of emergency' for climate change, Anchorage Daily News, https://www.adn.com/alaska-news/2019/10/20/afn-declares-state-of-emergency-for-climate-change/ December 8, 2019

[61] Ibid.

[62] Ibid.

[63] Ibid.

[64] Ibid.

[65] Yereth Rosen, Oil-rich Inupiat corporation to quit Alaska Federation of Natives, https://www.arctictoday.com/oil-rich-inupiat-corporation-to-quit-alaska-federation-of-natives/ December 17, 2019

[66] Ibid.

Image source: *Los Angeles Times*

Power to the People

"Power is not brute force and money; power is in your spirit. Power is in your soul. It is what your ancestors, your old people gave you. Power is in the earth; it is in your relationship to the earth."

WINONA LADUKE

The era of worsening socioeconomic inequality and the climate crisis illustrate the systemic limitations of centralized power, both in relation to the grid and structural power. Centralization of power is designed to create systems that elude efforts for transparency and accountability, which are important guiding principles of restorative justice. In order to incorporate restorative justice into the energy justice movement, there will be a need for adoption of flexible, decentralized, and grassroots efforts.

The control that energy utilities, especially investor-owned utilities, have over energy affordability and accessibility has left numerous Black, Native American, Latinx, and low-income households across the U.S. energy insecure. Looking into the history of the energy system reveals that its foundations are in extractivism, colonial expansion, and capitalism —the trifecta of exploitation of land and people through power and capital accumulation.

Living on the frontlines of the climate crisis, energy insecurity, and polluted environments, people of color are facing a scarier future than wealthier, white Americans. In the context of the contemporary struggle to decarbonize our grid to address the climate crisis, similar patterns of injustices have been recreated by the systems of power. For example, recent studies show that even as the price of solar dropped, a racial disparity in adoption persists.[67] In 2000, the Energy Information Administration reported that 14 percent of Native households on reservations had no access to electricity, and data collected in 2020 revealed little improvement.[68, 69] Creating an equitable future requires communities to be at the helm of determining their own path, with support through reparations and other forms determined by the communities themselves.

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[67] Baker, Shalanda H. Revolutionary Power: An Activist's Guide to the Energy Transition. Washington, DC: Island Press, 2021.

[68] Sandoval, Catherine J.K. "Energy access is energy justice: the Yurok Tribe's trailblazing work to close the Native American reservation electricity gap". In Energy Justice, (Cheltenham, UK: Edward Elgar Publishing, 2018) doi: https://doi.org/10.4337/9781786431769.00014

[69] Sandoval, Catherine JK. "Principles to Advance Energy Justice for Native Americans." EBA BRIEF, OCTOBER (2020)

THE CORE PRINCIPLES OF POWER TO THE PEOPLE

Decentralization and Democratizing

Within the jurisdiction of federal and state governments, publicly owned and decentralized energy must be supported through regulations, processes, policies, and incentives to bolster the efforts of communities to create their own energy systems and have options available outside of extractive, profit-driven utilities. A recent study from 2020 found that of the five US communities that had transitioned to 100 percent renewable energy, three had publicly owned utilities, one had a cooperative, and one had an investor-owned utility (IOU).[70] A wave of returning private utilities to public ownership, remunicipalization, has also been seen outside of the U.S., in places such as Germany where approximately 284 remunicipalizations have happened since 2005.[71] Cooperative utilities can therefore play an important role as an anchor institution for a just energy transition. Converting investor-owned utilities (IOUs) to publicly owned utilities or cooperatives can be the first step to shifting power away from profit motivated private institutions. This shift could allow communities to have a larger role in how their energy systems function and hold them accountable.

However, this is not the ultimate vision for decentralization. Research shows that even public-owned utilities and cooperatives have several limitations with regard to transitioning to renewable energy and equitable participation. One of the primary reasons why cooperatives are not able to rapidly transition to renewable energy is the prevailing incentive structure, which is bound to tax incentives that community utilities do not have access to. This means they cannot build their own sources of energy and have to procure, potentially raising the costs for their customers.[72] Also, although democracy is a founding principle of cooperatives, research has shown that in practice, democratic engagement in existing many rural electric cooperatives is close to nonexistent, with low voter turnout and member engagement.[73] Even the popular, widely adopted model of rural electric cooperatives (RECs) reproduces concentration of power to higher income, white constituents even when the region is largely made up of low income and people of color, missing the mark on issues of equity and justice.[74] Furthermore, RECs have continued to rely heavily on fossil fuels and shown a resistance to shifting to renewables. "Most RECs are indistinguishable in their day-to-day operations and guiding visions from their for-profit counterparts: they see themselves as single-issue businesses run by competent managers and specialized workers, whose sole purpose is to provide electricity."[75]

In converting existing IOUs to cooperatives or publicly owned utilities, it will be important to build processes for deeper democracy, data transparency, and accountability that give communities more power.

Existing Programs

Currently, there are a few policy programs that support various models of community ownership and agency, such as net metering, community choice aggregation, and community solar. However, since much of the power related to capital and decision making (at the federal, state, and local levels) is concentrated amongst a handful of people, these policies have shown to reproduce inequities along race, gender, and class lines.

Net metering (NEM) refers to the ability of a business owner or a homeowner to receive credit on their electricity bill for generating electricity from solar panels on their own property.[76] There are two factors that lead to inequitable outcomes for a policy like net metering. Firstly, due to the legacy of exclusionary zoning, redlining, and *de jure* segregation, Black homeownership is drastically lower than white homeownership.[77] The history of racial residential segregation limits the equitable adoption and reach of net metering as a distributive policy. Secondly, even though residential solar costs reached parity with grid-supplied energy in the last decade, a study from 2019 on "rooftop solar penetration showed that even when controlling for homeownership and income, Black and Brown communities have fewer rooftop solar panels than white communities."[78] Unless NEM policies at the state level are designed to target environmental justice communities, they will continue to reproduce and bolster the status quo.

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[67] Hanna, Thomas M., Johanna Bozuwa, and Raj Rao. "The Power of Community Utilities." Climate and Community Project. https://www.climateandcommunity.org/power-of-community-utilities, n.d. Accessed April 22, 2022.

[68] Ibid.

[69] Ibid. Page 20.

[70] Matt Grimley, "Just How Democratic Are Rural Electric Cooperatives?," Institute For Local Self-Reliance, January 13, 2016, https://ilsr.org/just-how-democratic-are-rural-electric-cooperatives; Spinak, "Infrastructure," 241–42, 250.

[74] Upadhya, RK. "Co-Ops, Climate, and Capital · SFTP Magazine." Science for the People Magazine, March 3, 2022. https://magazine.scienceforthepeople.org/vol24-3-cooperation/co-ops-climate-and-capital/.

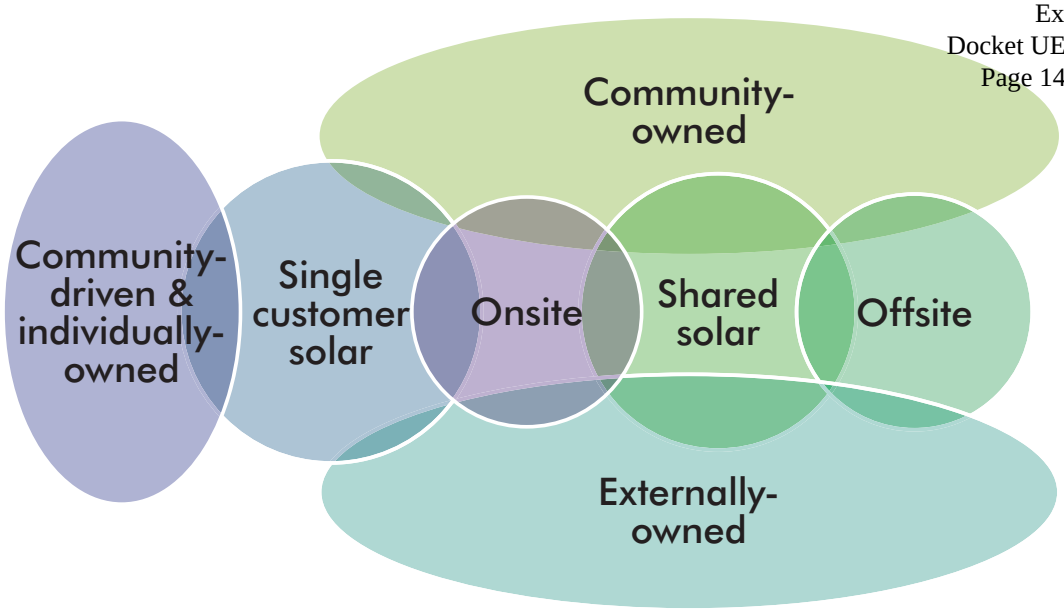
[75] Ibid.

[76] Baker, Shalanda H. Revolutionary Power: An Activist's Guide to the Energy Transition. Washington, DC: Island Press, 2021.

[77] Choi, Jung Hyun. "Breaking down the Black-White Homeownership Gap." Urban Institute, February 21, 2020. https://www.urban.org/urban-wire/breaking-down-black-white-homeownership-gap.

[78] Ibid.

EXISTING PROGRAMS					
ENERGY GENERATION & DISTRIBUTION MODEL	**GOVERNANCE**	**COMMUNITY OWNERSHIP POTENTIAL**	**COMMUNITY GOVERNANCE POTENTIAL**	**PROS**	**CONS**
Municipalization	Local government staff; oversight by appointed and / or elected officials or community board	Low – assets remain under municipal ownership	Moderate – many existing municipal utilities have little input or oversight from the communities they serve, but better engagement and accountability processes are possible.	Existing model; municipalities have a mission to serve their residents and meet their needs and interests.	Community is still separated from the actual energy generation and direct governance. Requires participation in democracy and electoral change to indirectly impact utility planning and operations.
Net metering	Must be legislatively enabled; may require third parties to capture tax credits	Indirect. Net metering may be necessary for community-owned solar projects, but typically it enables individuals or organizations to own solar.	None	Immediately incentivizes solar installations.	Does not ensure equitable access to financing; additional costs (e.g. grid maintenance) can fall to ratepayers who don't participate (and are more likely to be BIPOC and lower-income).
Community choice aggregation	Utility governed; requires an additional system in which the utility is responsive to customer interests.	Indirect. Communities can organize to chose their source of energy, however, it is not owned by the community itself.	None	Good option to democratize the energy system.	Often formed by wealthy communities, burdening lower income customers to bear the cost of grid upkeep.
Community-owned solar	Existing third-party (e.g. non-profit) or new community co-op	None	Mixed. Caution for IOU-owned, community solar subscriptions which do not build wealth		



Models within Community Solar. Image source: Equitable Community Solar: California & Beyond

Community energy or community solar policy emerged as a solution for communities left out of NEM programs, such as low to moderate-income communities, renters, etc. These programs were designed to support community ownership and decision-making. However, the initial NEM programs failed on many fronts to address issues of equity and access because the solar industry and incentive structure are designed to support and incentivize private solar developers and utilities. As the image below shows, there are many ownership models for community solar. The predominant models for community energy put control in the hands of either a utility, a business, and/or a nonprofit, which completely removes generation control out of the hands of communities. With requirements for high credit scores and long contract requirements, these projects make it nearly impossible for low to moderate-income (LMI) communities to consider solar. According to Shalanda Baker, deputy Director for Energy Justice and Secretary's Advisor on Equity at the United States Department of Energy, the program has become a "mask [for] what is ultimately a wealth transfer from the utility industry to the solar industry."[79] Some state community solar programs have carve outs for LMI communities, however, with strict requirements for credit scores and the incentive designed to benefit developers rather than communities, the programs barely address systemic inequities.

The technocratic underpinnings of the energy system in the U.S. is designed to ensure that the current system seems too difficult or too complex to overhaul by mass organizing. The knowledge about how electricity is produced and distributed, how the grid functions, how rates are designed, etc. is concentrated among the professional and managerial class; gatekeeping the working-class people out of the democratic process. With working-class peoples' time and resources bound to corporations as laborers and consumers, they are limited in their ability to participate in protracted political battles.[80] An important element to rectify this will be designing and implementing political education programs. These must be anchored in community institutions—a role that rural electric cooperatives can consider playing—and designed to be flexible. Liberation schools developed by the Black Panther Party in the 1960s for their communities are an excellent example of the importance of raising consciousness for the purpose of liberation. This pathway of community education and organizing could present many challenges, as it is not radically different from the current status quo and can recreate similar inequities.

For power to be decentralized with the restorative justice framing, it must be radically different, which to some may be unimaginable. What the decentralized energy system looks like must vary by each community and their needs for energy, resiliency, and development. However, decentralization of power will require mass organizing across intersecting identities of race, age, gender, and class.

Degrowth

The climate crisis is not only impacting countries in the Global North. As discussed in the introduction, colonialism and racial capitalism have built and designed our systems, leading us to this epoch of

[79] Ibid. Page 134.

[80] Upadhya, RK. "Co-Ops, Climate, and Capital · SFTP Magazine." Science for the People Magazine, March 3, 2022. https://magazine.scienceforthepeople.org/vol24-3-cooperation/co-ops-climate-and-capital/

existential crises. These levers of oppression and power have also sustained the hegemony of the West creating an unequal world with the Global South living under a new form of colonialism, one driven by the growth and profit motivated demands of private markets. Therefore, solutions for the climate crisis must address implications and include direct benefits for the Global South.

A framework for sociopolitical and economic redistribution that could rebalance power dynamics is degrowth, which "challenges the hegemony of economic growth and calls for a democratically led redistributive downscaling of production and consumption in industrialized countries as a means to achieve environmental sustainability, social justice, and well-being."[81] Degrowth as a concept may not immediately seem pertinent to decentralization and community ownership. However, ensuring that industrialized countries are held responsible for the harm they have caused and may cause during the energy transition is imperative to decentralizing power. Furthermore, several studies have found that decarbonizing the economy and transitioning away from fossil fuels will not necessarily keep global average temperatures below 2 degrees Celsius, therefore requiring degrowing larger economies.[82] The framework of degrowth is also compatible with the demand for community ownership of energy, which is one of the core principles of restorative justice. "In contrast to conventional private corporate ownership, public and collective ownership opens up possibilities for the social and ecological transformation that degrowth is calling for, though it does in no way automatically guarantee the implementation of such goals."[83] Shifting power from private utilities to community owned energy systems would allow for reduction in energy consumption, emissions, and a shift away from a growth mindset to one where energy is treated as a communal resource.

[81] Kothari, Ashish, Ariel Salleh, Arturo Escobar, Federico Demaria, and Alberto Acosta. Pluriverse: A Post-Development Dictionary. New Delhi, India: Tulika Books and Authorsupfront, 2019.

[82] Anderson, Kevin, and Alice Bows. "Beyond 'Dangerous' Climate Change: Emission Scenarios for a New World." Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 369, no. 1934 (2011): 20–44. https://doi.org/10.1098/rsta.2010.0290

[83] Kunze, Conrad, and Sören Becker. "Collective Ownership in Renewable Energy and Opportunities for Sustainable Degrowth." Sustainability Science 10, no. 3 (2015): 425–37. https://doi.org/10.1007/s11625-015-0301-0

CASE STUDIES

This section has some examples of how principles of "Power to the People" have been found in different regions of the world—whether that is in federal policy, or local programs to democratize energy, or indigenous values. This is not an exhaustive list of case studies by any means; there are other resources that exist for the U.S. context. It is a list that is meant to provide the reader with examples and grounding in the fact that the principles presented earlier are found in real projects led by real people.

One Voice's Energy Democracy Initiative and the Electric Cooperative Leadership Institute (ECLI), Mississippi

One Voice is organizing to democratize electric cooperatives in the U.S. South. This organization was built in response to Hurricane Katrina to amplify the policy advocacy needs of marginalized communities in the South. In Mississippi, there are 26 electric cooperatives with board representation of Black members at a shockingly low 6.6 percent, even though 37 percent of the population in Mississippi is Black.[84]

Image source: Energy Democracy Project

One Voice is trying to change the racial makeup of cooperative boards and ensure that member-owners are aware of their rights, so they can deeply participate to establish a true energy democracy in Mississippi. This energy democracy campaign was divided into three phases: 1) Listening, 2) ECLI, and 3) Election Campaigns. In the listening phase of the initiative, One Voice conducted listening sessions with member-owners of all cooperatives in the state. These

[84] "Campaign for Energy Democracy and Energy Security: Electric Cooperatives in Rural Mississippi." One Voice: Working for Justice One Voice At A Time, June 2016. http://onevoicems.org/wp-content/uploads/2016/06/OV_Campaign_for_Energy_Democracy_and_Economic_Security.pdf.

sessions found that members were concerned about the lack of transparency and practices that were suspicious within the cooperative boards.[85] One Voice understood that without broad community education the effort to democratic cooperatives in the state would fail. They used the lessons and findings from the listening sessions to create the Electric Cooperative Leadership Institute. "ECLI was developed as a recurring, six-month intensive training program to facilitate participatory power by co-op member-owners."[86] The three components of the institute were: member education (member ownership, bylaws of the cooperative, and cooperative finances), local engagement, and data collection. The last phase of the energy democracy initiative was election campaigns, which included a selection of candidates and campaign strategy. This phase was largely led by the community with support from One Voice.[87] Since the initiative was launched, the community has seen some small wins, like member-owners being able to secure funds from the cooperative profits for community improvement projects.

Coquí Solar, Puerto Rico

Coquí Solar emerged out of the aftermath of Hurricane Maria that hit Puerto Rico in 2017. The utility company drafted a proposal, "Queremos Sol." Puerto Rico Electric Power Authority (PREPA), notorious for corruption and mismanagement, took months to restore power to both rural and urban parts of the country. Residents of the El Coquí community in Salinas, post-Hurricane Maria decided to accelerate their efforts to transition to renewable energy. "Coquí Solar exemplifies a local, grassroots enactment of energy justice in practice."[88] The community group was dedicated to raising residential solar literacy and increasing rooftop infrastructure. Although group members had similar goals, they faced disagreements specifically on how to "distribute solar technology and create educational opportunities for collaborative learning about energy consumption, infrastructure, and community responsibility."[89] With their guiding principle of mutual support and community empowerment, they decided to giveaway solar kits and ensured that recipients offered meals to installers, and they also "attend group meetings and offer their homes as charging stations for neighbors during outages and other power disruptions," borrowing from the approach

Image source: Primera Hora

Construyendo solidaridad desde el amor y la entrega (Building Solidarity through Love and Commitment).[90]

This effort to democratize energy in El Coquí eventually became part of a movement in Puerto Rico urging the government to pass laws that enabled community-led efforts for solar. "Along with a wide range of collaborators, including the worker's union of PREPA, several environmental and energy organizations, and several professors from the University of Puerto Rico Mayagüez, this island-wide group drafted a proposal, "Queremos Sol." This comprehensive proposal presented a detailed energy vision for Puerto Rico, including the elimination of fossil fuels, using the burgeoning solar movement to enhance local economies, and significantly expanding rooftop solar and microgrids."[91] Although the legislative adoption of these laws has been protracted, at the local level El Coquí has created something that's community-owned, led, developed, and implemented; an effort that is built upon values of resiliency, love, and democracy.

Machynlleth, Wales

In 2003 a small Welsh community, Machynlleth, set out on a journey to collectively own a wind turbine. To supplant arguments around financial burdens, the community procured a used 75-kilowatt turbine from Denmark. With an increase in demand by 2010, a larger wind turbine was set up in the community. It followed a degrowth agenda by using profits to benefit the community (a third of the funds were donated to a fund to support households to save energy, via retrofits, etc.), and reducing energy consumption by increasing energy literacy.[92] This small project is an example of how democratic participation and degrowth can be linked to transitioning a community away from fossil fuels.

[85] Fairchild, Denise, and Al Weinrub. Energy Democracy: Advancing Equity in Clean Energy Solutions. Washington (D.C.): Island press, 2018.

[86] Ibid.

[87] Ibid.

88 De Onis, Catalina M.. "(No) Conclusion Delinking for Energy Justice." Essay. In Energy Islands: Metaphors of Power, Extractivism, and Justice in Puerto Rico. Oakland, CA: University of California Press, 2021.

[89] Ibid. Page 173.

[90] Ibid. Page 175.

[91] Rosa, Melanie La. "Step by Powerful Step, Citizens Lead Puerto Rico into Its Solar Future." NACLA. Accessed April 25, 2022. https://nacla.org/news/2019/09/19/step-powerful-step-citizens-lead-puerto-rico-its-solar-future.

[92] Kunze, Conrad, and Sören Becker. "Collective Ownership in Renewable Energy and Opportunities for Sustainable Degrowth - Sustainability Science." SpringerLink. Springer Japan, May 27, 2015. https://link.springer.com/article/10.1007/s11625-015-0301-0.

Buen Vivir, Bolivia & Ecuador

"Buen Vivir or Vivir Bien are the spanish words used in Latin America to describe alternatives to development focused on the good life," rejecting classical developmental neocolonial strategies pioneered by the West for countries in the global South.[93] It emerged out of the efforts for decolonization, especially in relation to national identity. It borrows ideas from the Indigenous traditions of Latin America, radical environmental scholarship that rejects "anthropocentric perspective of modernity," and the feminist movement challenging gender norms and hierarchies in relation to non-human kin.[94] "Buen Vivir displaces the centrality of humans as the sole subject endowed with political representation and as the source of all valuation."[95] It has been constitutionally adopted by Ecuador and Bolivia, however, each has their own version recognizing different aspects of the philosophy. The Ecuadorian text establishes and protects the right of nature in relation to development projects.

Image source: L'Ideologia Socialista

The constitutional rights for nature were upheld in a recent court decision in Ecuador to protect Los Cedros Protected Forest Ecosystem. In this court decision, all extractive and mining activities were banned.[96] Rights of nature being constitutionally protected offers a pathway to decentralize power away from corporations and private interests. However, its applications are deeply contested and can waver with judiciary and country leadership, therefore it has to be fought for through consistent demands for transparency, accountability, and in the case of harm already done, reparations.

[93] Gudynas, Eduardo. "Buen Vivir: Today's Tomorrow." Development 54, no. 4 (2011): 441–47. https://doi.org/10.1057/dev.2011.86.

[94] Ibid.

[95] Kothari, Ashish, Ariel Salleh, Arturo Escobar, Federico Demaria, and Alberto Acosta. Pluriverse: A Post-Development Dictionary. New Delhi: Tulika Books and Authorsupfront, 2019.

[96] Center for Biological Diversity. "Ecuador's Highest Court Enforces Constitutional 'Rights of Nature' to Safeguard Los Cedros Protected Forest." Center for Biological Diversity. Center for Biological Diversity, December 2, 2021. https://biologicaldiversity.org/w/news/press-releases/ecuadors-highest-court-enforces-constitutional-rights-of-nature-to-safeguard-los-cedros-protected-forest-2021-12-02/.

Reparations & Accountability

"Equality is not likely to be obtained without some form of reparations."

DAVID H. SWINTON[97]

THE ROLE OF REPARATIONS & ACCOUNTABILITY IN RESTORATIVE JUSTICE

Restorative justice is a complex process that aims to generate outcomes that promote accountability, reparation, and healing for everyone involved.[98] The harm caused by energy projects can be long-lasting and sometimes irreversible and can be devastating to communities, the environment, and our other-than-human kin.[99] For Indigenous communities, it can mean the loss of land and cultural sites, profoundly affecting Indigenous traditions and ways of life.

Accountability requires the offender to not only accept responsibility for the harm caused but also to accept their role in repairing the damage done. Reparations for this harm must be centered around the needs and wants of the affected communities and could include financial compensation or restoration of land. The community must be allowed to express their grief, anger, and fear.[100] This provides an opportunity for the offender to truly understand and take accountability for their actions.

Acknowledging and recognizing intergenerational trauma, reparations for past harm, and creating space for frontline, LI, and racialized communities to retell stories of oppressions are pillars of restorative justice that can pave the way for communities to heal and reimagine a different future.

[97] Patricia Cohen, What Reparations for Slavery Might Look Like in 2019, https://www.nytimes.com/2019/05/23/business/economy/reparations-slavery.html, May 23, 2019

[98] Howard Zehr, Little Book of Restorative Justice, https://www.ojp.gov/ncjrs/virtual-library/abstracts/little-book-restorative-justice

[99] M.Hazrati & R.J.Heffron, Conceptualizing restorative justice in the energy Transition: Changing the perspectives of fossil fuels, Energy Research & Social Science, Volume 78, August 2021, 102115

[100] Restorative justice intervention in an environmental law context: Garrett v Williams, prosecutions under the resource management act 1991 (NZ), and beyond, Environmental and Planning Law Journal, 31:263-271

THE CORE PRINCIPLES OF REPARATION & ACCOUNTABILITY

Transparency

What is transparency?

One of the main challenges with transparency is that there is no one definition for it.[101] It has multiple meanings, purposes, and applications. Transparency will be different based on who the efforts are targeted towards, so there can be no "one size fits all" solution.[102]

The notion is that transparency leads to accountability by empowering citizens with information that can allow them to hold institutions accountable. This would then lead to less corruption and improvements in basic services. However, the literature is somewhat torn about this notion.[103] It has been shown that some forms of transparency are better able to leverage accountability than others.[104] But it's not enough to just share information, transparency without taking responsibility does not lead to accountability. High-level transparency goes beyond the mere sharing of raw data and sheds light on institutional behavior and decision-making processes, allowing interested parties to pursue strategies of constructive change. In this way, transparency can lead to one form of accountability.

Why transparency matters

One example of the lack of transparency within the energy system is utility shutoffs, the practice of disconnecting a household's electric service for unpaid bills.[105] The burden of utility shutoffs disproportionately impacts BIPOC communities.[106] Losing vital energy services such as lighting, heating, cooling, and food preservation, can have severe negative impacts on the finances, health, and safety of vulnerable families.

Despite its detrimental effects on people's lives, there is a huge lack of data and transparency surrounding shutoffs. As there is no industry standard or blanket government mandate that applies to all jurisdictions and utilities, data on customer shutoffs are often not disclosed. Without comprehensive data and transparency, it is impossible to understand the full scope of the problem. It prevents advocates, regulators, and utilities from identifying inequitable practices and hinders policymakers and regulators from creating alternative solutions.

Accountability

What is accountability?

Accountability has become synonymous with good governance as it conveys an image of transparency and trustworthiness.[107, 108] Despite this, accountability lacks a clear definition in the literature.[109] It often serves as a conceptual umbrella that covers transparency, equity, integrity, and responsibility. It is this elusive definition that makes it challenging to establish whether or not an official or organization is accountable.

Nevertheless, accountability is closely related to the failure of equitable and democratic governance and it is important to establish mechanisms to achieve it. Accountability can be improved by mobilization of different knowledge systems and building agency within citizen communities.[110] This means broadening the experts engaged in a project —increasing the number of actors that are consulted and engaged— and giving agency to citizens to provide input during the decision-making process.

Why accountability matters

While energy efficiency should play an important role in the current energy transition, the benefits and outcomes of efficiency measures are often only enjoyed by privileged members of a community. There are many factors that play into systemic inequities of these programs but an important component is the absence of equitable and holistic indicators within these programs to hold authorities and program administrators accountable.

For example, when analyzing current low-income energy efficiency programs in British Columbia, Canada, researchers identified a deep disconnect between the overall goals of the programs and the

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[101] Stephen Kosack and Archon Fung. Does Transparency Improve Governance? Annual Review of Political Science Vol. 17:65-87 doi: https://doi.org/10.1146/annurev-polisci-032210-144356

[102] N. Zúñiga et al. Does more transparency improve accountability? U4 Helpdesk Answer 2018:22 U4 Anti-Corruption Helpdesk

[103] Jonathan Fox, The uncertain relationship between transparency and accountability, Development in Practice Volume 17, 2007 – Issue 4-5 doi: https://doi.org/10.1080/09614520701469955

[104] Ibid.

[105] Jean Su, Christopher Kuveke, Powerless in the pandemic: After Bailouts, Electric Utilities Chose Profits Over People

[106] Maria Castillo and Caitlin Odom, What Do We Know about Utility Shutoffs of Vulnerable Families during COVID-19?, https://rmi.org/what-do-we-know-about-utility-shutoffs-of-vulnerable-families-during-covid-19/, March 16, 2022

[107] Mark Bovens, Analyzing and Assessing Accountability: A Conceptual Framework Volume 13, Issue 4. July 2007 doi: https://doi.org/10.1111/j.1468-0386.2007.00378.x

[108] Danielle Hanna Rached. The Concept(s) of Accountability: Form in Search of Substance. Leiden Journal of International Law (2016), 29, pp. 317–342 Doi: https://doi.org/10.1017/S0922156516000042

[109] The United Nations defined accountability as: "Accountability is the obligation of the Secretariat and its staff members to be answerable for all decisions made and actions taken by them, and to be responsible" and the Office for the Prevention of Domestic Violence in New York defines it as: "making sure the participant takes responsibility for their actions, along with the consequences associated with them, and understands that they are the only person who is responsible for their abusive behavior."

[110] Valkenburg, G., Cotella, G. Governance of energy transitions: about inclusion and closure in complex socio technical problems. Energy Sustain Soc 6, 20 (2016). https://doi.org/10.1186/s13705-016-0086-8

defined indicators.[111] While these programs boast their vision to reduce energy poverty, lower household energy consumption and increase home comfort, they have failed to transparently measure their progress and hence, are falling short of achieving these goals in practice. Focusing on outputs like the 'number of customers served' or 'achieving program budget' is not enough to showcase whether households were lifted out of energy poverty. The absence of equity-focused and outcome-based indicators also make it difficult for communities and advocates to hold delivery organizations and utilities accountable for their potential failure to fulfill their obligations to provide fair and affordable service, measure progress, and live up to their promises.

There are major gaps in the funding schemes of these programs as well. Many jurisdictions around North America set minimum funding thresholds for low-income programs but they lack comprehensive accountability mechanisms to showcase where and how these funds are being spent. In addition, low-income energy efficiency programs are justified based on cost-effectiveness and resource tests rather than community-based outcomes including reducing energy poverty, decreasing environmental impact, and increasing home comfort. The absence of detailed information on program expenditure and inequitable indicators inhibit the agency of citizens to hold organizations and authorities accountable.

Reparations & Healing

What are reparations?

The National Coalition of Blacks for Reparations in America defines reparations as *"a process of repairing, healing and restoring a people injured because of their group identity and in violation of their fundamental human rights by governments, corporations, institutions, and families. Those groups that have been injured have the right to obtain from the government, corporation, institution or family responsible for the injuries that they need to repair and heal themselves."*[112]

At the heart of reparations lies the notion that one must fix what has been broken. Reparations can be a physical symbol of the perpetrator's admission of guilt and apology.[113, 114] As such, reparations can signify vindication, that the victim is not guilty, and the acknowledgment of their injustice. In this regard, reparations are then more than just financial or material compensation, they are a message of who is valued. An apology can carry monumental weight as it is can be viewed as a symbolic act of acknowledgment and a step toward restoring faith between the victim and the offender.[115]

The call for reparations has gained momentum in recent years, fueled by growing knowledge about past harms and increased worldwide readiness to call societies to account for their past.[116, 117] As every community and group is unique there can be no one solution for reparations. Where financial compensation may be sought by one group, others will seek the official recognition and preservation of their ancestors' land.

Why do reparations matter?

The harm caused by energy projects can be long-lasting, irreversible, and devastating to communities and the environment.[118] As many as 80 million people may have been displaced by dam projects worldwide.[119] Once displaced, these people often face long-lasting negative impacts such as marginalization and poverty.[120] Another example is the environmental racism faced by the residents of Sarnia and the Aamjiwnaang First Nation, who are surrounded by over 50 large polluting industrial facilities, including one of the largest petrochemical complexes in Canada.[121] Despite growing health concerns, the local government has been criticized for delaying the release of critical air pollution data showing up to 44 times the annual level of the cancer-causing chemical benzene in the community.[122] These are just two examples of instances where restorative justice is lacking.

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[111] Laura MacTaggart, Transforming Income-Qualified Home Energy Retrofit Programs in B.C., UBC Sustainability Scholars report, 2021. https://sustain.ubc.ca/about/resources/transforming-income-qualified-home-energy-retrofit-programs-bc

[112] N'COBRA, Reparations https://www.ncobraonline.org/reparations/

[113] Edited by Jo-Anne M. Wemmers. Reparation for Victims of Crimes against Humanity: The healing role of reparation. Published March 3, 2016 by Routledge ISBN 9781138665361

[114] Adrienne D. Davis. The Case for United States Reparations to African Americans. Human Rights Brief 7, no. 3 (2000): 3-5, 11.

[115] Are Apologies Enough?, https://www.facinghistory.org/stolen-lives-indigenous-peoples-canada-and-indian-residential-schools/chapter-5/are-apologies-enough

[116] Victoria J. Barnett. Racism, Reparations and Accountability Payback? The Christian Century, October 25, 2000, pp. 1070-1073.

[117] M.Hazrati & R.J.Heffron, Conceptualizing restorative justice in the energy Transition: Changing the perspectives of fossil fuels, Energy Research & Social Science, Volume 78, August 2021, 102115

[118] M.Hazrati & R.J.Heffron, Conceptualizing restorative justice in the energy Transition: Changing the perspectives of fossil fuels, Energy Research & Social Science, Volume 78, August 2021, 102115

[119] Dams and Internal Displacement, International Displacement Monitoring Center, https://www.internal-displacement.org/sites/default/files/publications/documents/20170411-idmc-intro-dam-case-study.pdf, April 2017

[120] Ibid.

[121] Sean Craig et al. 'We expected cancer': Are industrial spills in Canada's 'Chemical Valley' making people sick?, https://globalnews.ca/news/3796720/sarnia-oil-industry-spills-human-impact-investigation/, October 14, 2017

[122] Carolyn Jarvis, Cancer-causing air pollution forecast at 44 times annual level in Ont. First Nation, docs show, https://globalnews.ca/news/8369470/ontario-first-nation-air-pollution-cancer-causing-chemicals-new-data/, November 17, 2021

Image source: Phil Pasquini/Shutterstock

Acknowledgment and accountability for the colonization and destruction of many communities around the world in the name of growth and industrialization is a crucial step toward climate and energy justice.[123] Recognizing the harm and trauma inflicted upon these communities through the destruction of their land, culture, and ecosystems can ignite a meaningful transformation of existing colonial relations and lead to systemic changes. In the absence of acknowledgment and accountability, current power dynamics are going to be maintained and these structures are likely to be maintained, leading to further destruction of local cultures, ecosystems, and potential land theft. For this reason, reparations are an important element of the bigger climate and energy justice movement. By taking the first step towards repairing past harms, communities can regain their agency enabling them to shift the power dynamics within the economic, social, and cultural systems and embark on their journey to heal.

Healing

Restorative justice as a framework creates space for healing so that communities on the frontlines of the energy and climate justice movements are able to not only survive but thrive. The first step towards healing from past and present trauma is to acknowledge and recognize the impacts of colonialism, capitalism, and the violence inflicted upon frontline, lower-income, BIPOC, and Indigenous communities. Narrating and recognizing the stories of oppression is a healing process and can create a safe space for communities to be heard and reimagine an alternative world where systems are built upon the foundations of justice, care, and well-being.[124]

Through the strategies offered by the restorative justice framework, communities can define effective processes and initiatives to embark on their healing journey. Food sovereignty, energy justice, reconnecting with the land, and climate reparations are approaches that have created space and place for Indigenous and racialized communities to meaningfully transform systems of oppression and heal from intergenerational trauma.

[123] Anita Bhadani, A Guide to Climate Reparations, https://www.yesmagazine.org/environment/2021/11/29/climate-reparations, Nov 29, 2021

[124] Gilbert, J. L., & Williams, R. A. (2020). Pathways to reparations: land and healing through food justice. Human Geography, 194277862095193. doi: 10.1177/1942778620951936

CASE STUDIES

This section showcases three examples of how principles of "Reparation & Accountability" have been implemented in practice.

Garrett v Williams

This was a criminal case in New Zealand where several Aboriginal artifacts and sacred places were damaged or destroyed during mining activities.[125, 126] In this case, the defendant (Craig Williams) was charged with and pled guilty to an offense against s 90(1) of the National Parks and Wildlife Act 1974 (NSW) (NPW Act). Before the sentencing, a restorative justice conference was held. The conference was funded by the defendant and facilitated by an experienced restorative justice facilitator. Extensive work was done before the conference by the facilitator and included conversations with Broken Hill Aboriginal Land Council (victim), archeologists, and representatives from the mining company.

The conference lasted for 6 hours during which the defendant offered an official apology.[127] The victims could hear from the defendant what had taken place. But most importantly, it allowed for the victims to express how they had been affected and to discuss what could be done to repair any harm and prevent future offenses. During the conference, representatives of the Broken Hill Aboriginal Land Council were also able to share information about the Aboriginal objects and the Aboriginal place and their significance to the Aboriginal people of the area.

The hurt the Aboriginal community experienced can be seen in this quote:

"I was very upset with what I saw because the drains had been dug at a sacred place. I believe that the drains had damaged the Pinnacles sacred area because they would have disturbed the Aboriginal spirits and the storyline of our teaching. I believe that the Aboriginal spirits would be very unhappy. I felt like the spirits were angry because the weather was awful that day. It was very cold and windy. The Pinnacles were serene and a place of beauty until the drains were dug. I remember saying to Steve Millington words like, 'Look at this Steve, isn't it terrible that they put in these drains. Feels like they put a big hole in my body.'"[128]

The importance of cultural education can be seen in the apology of the defendant:

"I regret that I committed the offenses and I am sorry for the harm it has caused. I realize that it was foolish not to be vigilant and more respectful about the Aboriginal objects and the Aboriginal place. During the course of these proceedings, I have learnt a significant amount about Aboriginal archaeology and the importance of the Aboriginal place. I have also realized how both Aboriginal objects and the Aboriginal place are more important to Aboriginal people than I had previously appreciated. I am seriously remorseful about what has occurred."[129]

The defendant and representatives of the Broken Hill Local reached a tentative agreement:

- Financial contributions
- Future training and employment opportunities for the local community
- The seeking of solutions to prevent the occurrence of similar offenses

At a quick glance, this process seems to have been a success, an apology was given, reparations were made and healing could begin. Although the victims of this case were non-human as well as human, the court only recognized the human aspect when it came to the restorative justice proceedings. But for many Indigenous Peoples, there is a deep spiritual connection to the land and all living and nonliving beings, it is an integral part of their identity. Yet they were not recognized in this process. In this case, the offense occurred on a cultural site, allowing the Aboriginals to "not only speak on behalf of the land—they spoke with the land". But for offenses that occur where there are no humans involved it will be challenging for the courts to relate to these victims as they have to rely on expert testimony.

ECHO Notify

This case study outlines ways to increase transparency and how this can be leveraged by the public, as well as regulators and policymakers, to achieve positive behavior change in corporations.

"ECHO Notify" is a new web tool by EPA that allows members of the public to stay informed about important environmental enforcement and compliance activities in their communities.[131] Users

[125] Rob White, Indigenous communities, environmental protection and restorative justice, Australian Indigenous Law Review, Vol. 18, No. 2 (2014/2015), pp. 43-54

[126] Mark Hamilton, Restorative justice intervention in an environmental law context: Garrett v Williams, prosecutions under the resource management act 1991 (NZ), and beyond, Environmental and Planning Law Journal, 31:263-271

[127] Ibid.

[128] Ibid.

[129] Ibid

[130] Mark Hamilton, Restorative justice intervention in an environmental law context: Garrett v Williams, prosecutions under the resource management act 1991 (NZ), and beyond, Environmental and Planning Law Journal, 31:263-271

[131] New EPA Tool Provides the Public with Customized Updates on Local Enforcement and Compliance Activities, https://www.epa.gov/newsreleases/new-epa-tool-provides-public-customized-updates-local-enforcement-and-compliance, March 22, 2022

will receive weekly emails when new information is available within the selected geographic area, such as when a violation or enforcement action has taken place at a nearby facility. Users can request to be notified based on a specific state, county, ZIP code, or EPA Facility ID. The website also has the option to receive a screen reader-friendly email that transforms the text into speech for those who require it.[132]

The service allows one to choose what enforcement and/or compliance activities they want to receive updates about.[133] Examples include failure to complete a required activity by the date specified in a permit or enforcement action (Compliance Schedule Violation), failure to abide by pollutant discharge limits established in a permit or enforcement action (Effluent Violation), and the highest level of a contaminant that is allowed in drinking water (Maximum Contaminant Level). The violations and enforcement are organized by environmental programs such as the Clean Air Act (CAA), Clean Water Act (CWA), and the Resource Conservation and Recovery Act (RCRA).

The benefit of this tool is the ease of receiving news about violations and enforcement actions, not just for the public but for regulators and policymakers as well. This type of transparency can lead to increased public pressure and as such to a behavior change in the corporations.[134] One example of successful public pressure (shaming) is when Shell proposed to dispose of the Brent Spar oil platform in the North Sea by breaking it up with explosives and allowing it to sink along with the residual oil and waste products.[135] Once Greenpeace became aware of the situation it started a relentless campaign that led to an unprecedented consumer boycott of Shell and a firebombing of one of its service stations near Hamburg. Three weeks later Shell announced that they were dropping the plan and would look into an alternative solution.[136]

As valuable as this tool is in creating increased transparency, it may also lead to increased anxiety among members of the BIPOC community that are often living in areas with a high industrial density. This is the result of systematic racist governmental policies, rules, and regulations that have made it easier to build industrial facilities in BIPOC communities.[137]

African Americans are 75 percent[138] more likely to live in a front-line community than the average American. With fewer resources to fight back with, compared to more privileged communities,[139] it is important that the burden is not placed on these communities alone to fight for change. We must ensure that energy justice legislation and policy are passed in order to eliminate these unjust and inequitable conditions.

Debt Justice for Climate Reparations

"Achieving debt justice entails prioritizing the needs of the public and nature in front of creditors' balance sheets..."[140]

There is an ongoing financial debt crisis across the Global South, limiting governments' ability to pursue public health action, alleviate poverty, or implement climate change adaptation strategies. At the same time, the Global North has refused to acknowledge the benefits they have received from the historical and ongoing plundering and resource extraction from these countries, leading to degrading and polluting the local environment and threatening the lives and livelihoods of the people in these countries.

While many of the poorest countries on Earth are the least responsible for climate change,[141] they are the ones affected by it the most. Trapped in the international debt system that favors the global north and its big banks, climate-vulnerable countries now experience higher borrowing costs due to the increased risk of natural disasters and other social disruptions brought on by climate change. These countries are essentially punished for being casualties of climate change. Already stretched thin, the governments are forced to cut spending on essential services including climate mitigation and adaptation to meet the payment obligations.

The Climate and Community Project suggests this lack of responsibility of the Global North could be corrected if the richer nations took accountability and offered a debt restructuring and debt cancellation

[132] ECHO Notify, https://echo.epa.gov/help/tutorials#notify, April 22, 2022

[133] ECHO Notify, https://echo.epa.gov/tools/echo-notify, April 21, 2022

[134] Behnam Taebi & Azar Safari, On Effectiveness and Legitimacy of 'Shaming' as a Strategy for Combating Climate Change, Science and Engineering Ethics volume 23, pages 1289–1306 (2017)

[135] Brent Spar: Battle that launched modern activism, https://www.reutersevents.com/sustainability/business-strategy/brent-spar-battle-launched-modern-activism, May 5, 2010

[136] Ibid.

[137] Victoria Whalen, Environmental Racism and Climate Change 101, https://acespace.org/2022/03/10/environmental-racism-101/, March 2022

[138] Lesley Fleischman & Marcus Franklin, Fumes Across the Fence-Line: The Health Impacts of Air Pollution from Oil & Gas Facilities on African American Communities, 2017

[139] Ingrid Waldron, Environmental Racism and Climate Change: Determinants of Health in Mi'kmaw and African Nova Scotian Communities, https://climateinstitute.ca/publications/environmental-racism-and-climate-change/ July 2021

[140] Táíwò, Olúfẹmi O., and Patrick Bigger. "Debt justice for climate reparations." Climate and Community Project, 2022, https://www.climateandcommunity.org/_files/ugd/d6378b_d2d12f75ec8f405a97f336f8a6ddf711.pdf

[141] Táíwò, Olúfẹmi O., and Patrick Bigger. "Debt justice for climate reparations." Climate and Community Project, 2022, https://www.climateandcommunity.org/_files/ugd/d6378b_d2d12f75ec8f405a97f336f8a6ddf711.pdf

program.[142] Their recommendations follow conversations with climate and debt justice movement partners, scholarly research, and the overarching aims of the Green New Deal.

Their recommendations fall into five categories:

1. Cancel publicly held debt and implement debt restructuring mechanisms. Reductions in debt payments have been shown to boost spending on health, education, and other social services.[143]
2. Meet existing climate finance commitments and significantly scale up future commitments. The Global North has pledged to jointly mobilize $100 billion per year by 2020 in support of climate action in the Global South.[144] This figure is set to increase after 2021 and in the following years. This financial commitment is vital to drive net-zero carbon and climate-resilient growth.
3. Redistribute IMF Special Drawing Rights (SDRs). The SDR is an international reserve asset created by the IMF.[145] SDRs can be used for many things such as to gain access to hard currency, the repayment of loans, or the payment of interest on loans.[146] Typically, rich countries receive the majority of SDRs, which has been heavily criticized.[147] However, in 2021, the IMF implemented a new allocation of SDRs worth US$650 billion, only about one-third went to countries in the Global South.[148] The IMF has attempted to correct this injustice by creating the *Resilience and Sustainability Trust*.[149] This trust will be funded by rich countries' unused SDRs. This new trust is aimed at ensuring vulnerable countries' increased resiliency to external shocks and achieving sustainable and inclusive growth.
4. Make it less attractive for private creditors to lend money to the Global South. Debt owed to private creditors has increased dramatically over the last decade.[150] As private lenders are not included in decisions made by the G20, restruction actions often fall short.
5. Fossil fuel companies should be held liable for climate damages. As early as 1977, Exxon was aware of climate change.[151] Despite this, the top fossil fuel companies banded together and formed *the Global Climate Coalition*. A decade later they started a misinformation campaign to question the scientific basis for concern about climate change. The same coalition influenced the U.S. from signing the Kyoto Protocol in 1998. Money from criminal charges can be relocated to fund disaster risk reduction, insurance, and adaptation.[152]

For this proposal to come to fruition, the Global North must reckon with its past, built upon a foundation of colonialism and slavery.[153] They must acknowledge the social, ecological, and economic harms they have inflicted on the Global South both historically and through contemporary operations.[154] As the instigators of climate change, the Global North must take accountability and pay its fair share for decarbonization and adaptation. They must relinquish their obsessive need for power and control, and respect the financial self-determination of the Global South and their right to implement locally and culturally appropriate solutions.

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[142] Ibid.

[143] Debt Relief Under the Heavily Indebted Poor Countries (HIPC) Initiative, https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/16/11/Debt-Relief-Under-the-Heavily-Indebted-Poor-Countries-Initiative, March 23, 2021

[144] Amar Bhattacharya et al. Delivering on the $100 billion climate finance commitment and transforming climate finance, https://www.un.org/sites/un2.un.org/files/100_billion_climate_finance_report.pdf, 2020

[145] Special Drawing Rights (SDR), https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR, August 5, 2021

[146] What are Special Drawing Rights (SDRs)?, https://www.brettonwoodsproject.org/2021/12/what-are-special-drawing-rights-sdrs/, 9 December 2021

[147] Ibid.

[148] Andrés Arauz, Kevin Cashman, Eighty Countries Have Already Used Their Special Drawing Rights, but More of these Resources Are Needed, https://cepr.net/eighty-countries-have-already-used-their-special-drawing-rights-but-more-are-needed/, January 26, 2022

[149] Ceyla Pazarbasioglu and Uma Ramakrishnan, A New Trust to Help Countries Build Resilience and Sustainability, https://blogs.imf.org/2022/01/20/a-new-trust-to-help-countries-build-resilience-and-sustainability/, January 20, 2022

[150] Táíwò, Olúfẹmi O., and Patrick Bigger. "Debt justice for climate reparations." Climate and Community Project, 2022, https://www.climateandcommunity.org/_files/ugd/d6378b_d2d12f75ec8f405a97f336f8a6ddf711.pdf.

[151] Shannon Hall, Exxon Knew about Climate Change almost 40 years ago, https://www.scientificamerican.com/article/exxon-knew-about-climate-change-almost-40-years-ago/, October 26, 2015

[152] Anita Bhadani, A Guide to Climate Reparations, https://www.yesmagazine.org/environment/2021/11/29/climate-reparations, Nov 29, 2021

[153] josh gabbatiss and ayesha tandon, In-depth Q&A: What is 'climate justice'?, https://www.carbonbrief.org/in-depth-qa-what-is-climate-justice, 4 October 2021

[154] Táíwò, Olúfẹmi O., and Patrick Bigger. "Debt justice for climate reparations." Climate and Community Project, 2022

Preventative Measures

Restorative justice can be used not only to rectify existing injustices, but also to prevent harm.[155] When coupled with the other justice dimensions (distributional, procedural, and recognition), it challenges decision-makers to identify where injustices may occur in the future and the cost of remedying these. For some projects, the cost of restoration would outweigh the gains and the project could simply be stopped or declined.

This section provides a high-level outline of existing legal frameworks and levers which could be used to identify potential injustices and harms that result from a proposed project. These frameworks could help identify ways to circumvent these or develop action plans for reparations if unable to do so.[156] These mechanisms are initiated during the planning stage of a project (Impacts Assessment, IA), throughout the operational lifespan of the project (Social License to Operate, SLO), and throughout the decommissioning and restoration phase of the project (Energy Financial Reserve Obligation EFRO).

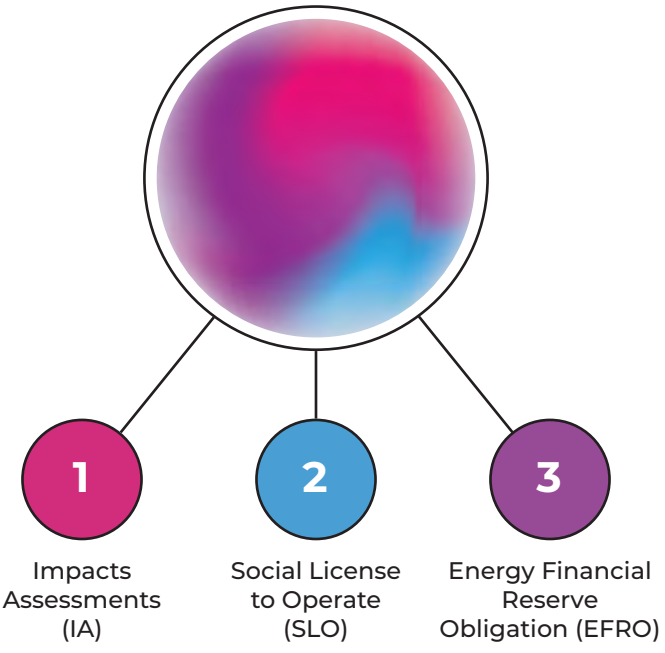

Figure 5. Mechanisms that can be applied during the different phases of a project to ensure that injustices are prevented or minimized.

[155] Ibid.

[156] Ibid.

IMPACT ASSESSMENTS

Environmental Impacts Assessments

An Environmental Impact Assessment (EIA) can be used as a tool to identify the environmental, social, health, and economic impacts of a proposed project or development prior to decision-making.[157] By predicting negative impacts during the project planning and design phases, risk mitigation and restoration plans can be developed, including avoidance strategies.

An EIA follows the same model as a restorative justice process.[158] The proponent can be viewed as the (potential) offender, the impacted community as the victim, and the regulator acts as the mediator. The difference is that an EIA takes place before any harm has occurred. In this way, a well-executed EIA can be used as a preventative tool in the restorative justice process.

In theory, the proper application of EIA would result in *"sustainability, environmental conservation, deliberative dialogue, and biodiversity management goals in the face of proposed projects."*[159] But EIAs are often criticized for the inability to incorporate the best available environmental knowledge and to take into consideration the local interests, needs, and cultures of impacted communities.[160] And once an EIA is performed, the project is rarely rejected.[161] In Canada, energy projects that have gone through an EIA process have still allowed for the occupation of sovereign territories of First Nations, Inuit, and Métis peoples.[162] These examples showcase the limitations of EIA that lact strict accountability measures.

For EIA to act as a restorative justice mechanism, it requires Indigenous power in the decision-making process, recognition of land and treaty rights, and legally binding adherence to UNDRIP.[163] The process must also become more transparent,

[157] What is Impact Assessment?, Convention on Biological Diversity, 2010

[158] M. Hazrati & R.J. Heffron, Conceptualising restorative justice in the energy Transition: Changing the perspectives of fossil fuels, Energy Research & Social Science 78 (2021) 102115

[159] Lauren E. Eckert Leckert et al. Indigenous knowledge and federal environmental assessments in Canada: applying past lessons to the 2019 impact assessment act, FACETS, 5(1) 2020

[160] Ibid.

[161] Alberto Fonseca & Robert B. Gibson, Why are projects rarely rejected in environmental impact assessments? Narratives of justifiability in Brazilian and Canadian review reports, Journal of Environmental Planning and Management, 2021

[162] Ibid.

[163] Lauren E. Eckert Leckert et al. Indigenous knowledge and federal environmental assessments in Canada: applying past lessons to the 2019 impact assessment act, FACETS, 5(1) 2020

allowing for comments from people outside of the local area, especially on energy projects that have global impacts.[164] It should also focus on the positive contributions to sustainability instead of just risk mitigation.[165] And finally, projects that are unlikely to bring lasting positive gains to the environment and society should be outright rejected.[166]

Social Impact Assessment (SIA)

An EIA can be complemented by a Social Impact Assessment (SIA).[167] This assessment can investigate the social effects of a designated project. Projects can result in changes to people's way of life (how they live, work, play), their culture (beliefs, customs, values, language), their community (stability, character, services, and facilities), their environment and their health and wellbeing.[168] The SIA is important as social change usually occurs before any environmental impacts.[169] Even the first rumor that something may happen within or near a community can cause social change to occur. Rumors can lead to speculations that feed anxiety and fear, and these must be managed in an effective way.

In Canada, SIAs have been shown to lack transparency regarding data sources, collection and methods of analysis. SIAs also tend to focus more on economic indicators than those pertinent to culture, livelihoods, and wellbeing.[170] In order for SIA to accurately describe the impact on a community, these indicators must be given much more weight.

Social License to Operate (SLO)

The social license to operate (SLO) is an informal social contract.[171] It was developed in the late 1990s as a result of the mining industry failing to meet societal and community expectations.[172] Since then it has branched out into many other sectors including the activities of the forest, agriculture, and energy sectors.[173] The aim of an SLO is to ensure the ongoing approval and broad acceptance of an operation by its employees, the local communities, and the general public. This will ensure a project's sustainability in the long term. The license cannot be provided by any authorities but is instead associated with the approval, consent, demands, and reputation of its above-mentioned stakeholders.[174]

While the SLO concept has potential, its main drawback is that it is based on a company's voluntary actions. It has further been criticized as a self-preservation mechanism primarily designed to reduce conflict between stakeholders and the company than it is about engagement for long-term development.[175] However, the concept has proven to work, mass protests against different tar sands projects in Canada that lacked SLOs have resulted in the cancellation or halting of various projects.[176]

Energy Financial Reserve Obligation (EFRO)

At the end of the project, the site must be dismantled and the environment returned to its initial state. In the U.S. the US Federal Surface Mining Control and Reclamation Act (SMCRA)[177] was developed to ensure that coal companies were held responsible for restoring the lands where mining activity occurred. The companies must post reclamation bonds with regulators as collateral for remediating the lands. That way emergency funds are available to finish the reclamation, or mine clean up, if the company goes bankrupt or fails to clean up the mine site. This system has been criticized in the following ways:[179, 180]

1. Sometimes the dollar amount of the bonds is not enough to reclaim the land.
2. Many states allow companies to pool their bonds meaning that they pay only a fraction as much as

[164] William Lawrence & David Salt, OPINION: Environmental impact assessments aren't protecting the environment, Ensia, 2018, https://ensia.com/voices/environmental-impact-assessment/

[165] Alberto Fonseca & Robert B. Gibson, hy are projects rarely rejected in environmental impact assessments? Narratives of justifiability in Brazilian and Canadian review reports, Journal of Environmental Planning and Management, 2021

[166] Ibid.

[167] Analyzing Health, Social and Economic Effects under the Impact Assessment Act, Practitioner's Guide to the Impact Assessment Act, Government of Canada, 2020

[168] Frank Vanclay et al. Social Impact Assessment: Guidance for assessing and managing the social impacts of projects, International Association for Impact Assessment, 2015

[169] Ibid.

[170] G.D Pimentel da Silva, Do methods used in social impact assessment adequately capture impacts? An exploration of the research-practice gap using hydroelectricity in Canada, Energy Research & Social Science 79 (2021) 102188

[171] Konstantinos Komnitsas, Social License to Operate in Mining: Present Views and Future Trends, Resources 2020, 9, 79

[172] Ibid.

[173] Kieren Moffat et al. Kieren Moffat The social licence to operate: a critical review, 2016, Pages 477–488, https://doi.org/10.1093/forestry/cpv044

[174] Rethinking Social Licence to Operate: A Concept in Search of Definition and Boundaries, Business Council Of British Columbia, Volume 7, Issue 2, 2015

[175] Pamela Lesser, Challenges that mining companies face in gaining and maintaining a social license to operate in Finnish Lapland, Miner Econ (2017) 30:41–51

[176] M. Hazrati & R.J. Heffron, Conceptualising restorative justice in the energy Transition: Changing the perspectives of fossil fuels, Energy Research & Social Science 78 (2021) 102115

[177] Raphael J Heffron, Inclusive Energy Transition, Commonwealth Sustainable Energy Transition Series 2021/01 ISSN 2413-3175

[178] Who will pay to clean up coal strip mines? Western Organization of Resource Councils, 2019

[179] Who Cleans Up Coal's Current Mess?, Appalachian Voices, https://appvoices.org/coal-impacts/current-mine-reclamation/

[180] Erin Savage, Repairing the Damage: The costs of delaying reclamation at modern-era mines, Appalachian Voices July, 2021.

the normal bond cost. This proves to be a challenge when there is widespread bankruptcy of large companies as this will drain the bonds.

3. The usage of *self-bonding*. This is when companies merely have to claim that they are capable of covering the cost of mine reclamation, and so no money is actually transferred to an independent bank/agency. If the company goes bankrupt, there is no funding available for reclamation obligations.

To ensure that funding is available to decommission an energy project or to cover restoration costs after an accident, a fund should be set up before the project starts. This is known as Energy Financial Reserve Obligation.[181] This type of "polluter-pays" practice is already used in the energy sector. For instance in Canada, the Nuclear Fuel Waste Act requires nuclear electricity producers to establish independently managed trust funds.[182] By making annual deposits to these funds, the public can be sure that money will be available if needed.

UTILITY BUSINESS MODELS AND REFORMS

Utility business models

The number of renewable energy and energy efficiency projects continues to grow on Turtle Island, the land that is also known as North America. Many of the independent and small-scale distributed energy sources are led and initiated by Indigenous nations and communities.[183] But many of these communities face barriers embedded in the regulatory and business structures of local utilities that delay or block the adoption of renewable and energy efficiency projects. The current Cost-of-Service (CoS) business model that most utilities in North America are founded upon hinders energy efficiency projects and clean energy initiatives, mainly due to the unfavorable system of rewarding capital infrastructure projects and the incentive to grow energy sales.[184, 185] Simply put, as more independent and small-scale energy efficiency and renewable energy projects are implemented and the energy demand of communities decreases, utilities tend to lose more revenue. It is then inevitable that most utilities are disincentivized to support energy efficiency and community-owned renewable energy projects.[186]

Utility business models need to be restructured and reformed so that these entities are incentivized to support energy efficiency and renewable energy projects. Principles of restorative justice call on utilities, regulators, and governments to design and implement policies, procedures, and structures that pave the way for community-owned and Indigenous-led energy projects. To move towards true reparations for historical harms and prevent future harm, utilities and regulators should first remove these systemic barriers and strive to become active partners and supporters of energy efficiency and renewable energy projects. Such reforms will not only accelerate the adoption of innovative solutions to mitigate climate change but will also ensure that Indigenous nations and historically underrepresented communities have a voice in the design and implementation of energy efficiency and renewable energy projects.

These reforms can take many shapes and include a wide range of government-initiated policies, modernization of revenue generation avenues, and shifting service offerings to ratepayers.[187] There is no one-size-fits-all approach that can be applied to all jurisdictions so it is important for utilities, regulators, different levels of government, and communities to meaningfully engage with each other so that these revisions are centered around the voices of racialized and frontline communities, informed by equity, and designed to meet climate action targets for all populations.

We encourage our readers to explore these alternatives in more detail and open up more space for innovation and co-creation within their own communities. These alternatives are only a few suggestions among a long list of proposed reforms found in practice and literature.

Performance Incentive Mechanisms (PIMs)

Performance-based policies and regulations are designed to integrate community values, environmental impact, and customer engagement within the utility business model to incentivize these entities to reduce their environmental footprint,

[181] Raphael J Heffron, Inclusive Energy Transition, Commonwealth Sustainable Energy Transition Series 2021/01 ISSN 2413-3175

[182] Funding, Nuclear Waste Managmnet Organization, https://www.nwmo.ca/en/ABOUT-US/Who-We-Are/Funding

[183] WAVES OF CHANGE: Indigenous clean energy leadership for Canada's clean, electric future, Indigenous Clean Energy, 2020, https://climateinstitute.ca/wp-content/uploads/2022/02/ICE-report-ENGLISH-FINAL.pdf

[184] D.Cross-Call, C. Goldenberg, L. Guccione, R. Gold, & M. O'Boyle, Navigating Utility Business Model Reform. Rocky Mountain Institute (2018)

[185] E. He, G. Brown, & D. Levekin, Transforming the Utility Business Model. Pembina Institute (2022)

[186] Utility Business Models. ACEEE: https://www.aceee.org/topic/utility-business-models#:~:text=The%20utility%20business%20model%E2%80%94the,in%20successful%20energy%20efficiency%20programs.

[187] E. He, G. Brown, & D. Levekin, Transforming the Utility Business Model. Pembina Institute (2022)

consider the impacts of their projects on communities, or comply with any other requirements outlined in the regulation or policy.[188]

Through defined metrics and key performance indicators (KPIs), the utility is held accountable for their performance, and the flow of revenue to the utility changes accordingly. For instance, if the implementation of energy conservation programs is a defined KPI, then the successful expansion and uptake of these programs would mean an increase in revenue for the utility. But if the utility fails to comply with the requirement to consult with an Indigenous community prior to building a power plant, then the flow of revenue to this entity declines accordingly. With more emphasis on energy efficiency and the need for communities to reduce their energy demand, performance incentive mechanisms (PIMs) are usually combined with revenue decoupling initiatives to dissociate a utility's revenue from units of energy that they sell.[189] These integrated policies and regulations, when applied in tandem, can result in a shift in utility operations and potentially, embedded structures.

Independent Power Producer (IPP) and Similar Policies[190]

Independent power producer (IPP) policies enable communities, Indigenous nations, and small-scale businesses to generate energy—mostly electricity—using renewable energy sources and sell it back to the grid which is controlled by a utility.[191] These policies can take many forms but generally, they are developed by the local government in partnership with the involved utilities and the regulatory body. Remote communities and Indigenous nations heavily rely on IPP policies and power purchase agreements (PPAs) to transition away from fossil fuels—including diesel power plants—and implement independent small-scale energy projects. Many communities, scholars, and industry experts agree that unfavorable terms and conditions within PPAs and IPPs and short-sighted policy design hinder the uptake of energy efficiency and renewable energy projects within communities.[192]

To encourage the deployment of renewable energy projects and successful implementation of energy efficiency measures, utilities should work with government bodies and regulators to develop stronger IPP policies that incentivize small-scale projects and climate change mitigation. Many utilities have mandates to tackle climate change, reduce their emissions, and improve their community engagement. Designing community-centric IPP policies will open the door for more communities to partner with utilities and collectively reduce the energy system's environmental impact.

One of the main barriers for communities to pursue small-scale energy projects is the low PPA rates that most utilities offer in exchange for the generated renewable electricity sent to the grid.[193] The majority of PPA rates do not reflect the true cost of the status quo power generation which is in many cases reliant on fossil fuels, outdated infrastructure, and displacement of many communities.[194] In many Northern communities dependent on diesel fuel, for instance, energy prices are heavily subsidized by the government to try and maintain an affordable energy supply to local communities.[195] These subsidies conceal the fact that power generation with diesel is not efficient nor profitable and therefore, not good for business or the community's health. Nevertheless, PPA rates offered to small-scale renewable energy projects are too low to justify a transition away from diesel to these new energy sources. In order to support communities in their efforts to implement alternative energy sources and boost uptake in clean energy programs, utilities should consider collaborating with government bodies and regulators to create stronger financial incentives for these projects by offering higher PPA rates. The Pembina Institute in Canada recommends that PPA rates should, at a minimum, approach the *marginal cost of diesel* (cost of fuel, generation, transportation, and taxes) to incentivize more communities and businesses to transition away from fossil fuels and embrace renewable energy power generation.[196]

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[188] E. He, G. Brown, & D. Levekin, Transforming the Utility Business Model. Pembina Institute (2022)

[189] Utility Business Models. ACEEE: https://www.aceee.org/topic/utility-business-models#:~:text=The%20utility%20business%20model%E2%80%94the,in%20successful%20energy%20efficiency%20programs.

[190] Also see Community Choice Aggregation resources compiled by EPA: https://www.epa.gov/green-power-markets/community-choice-aggregation

[191] Yukon's Independent Power Production Policy, https://yukon.ca/en/yukons-independent-power-production-policy

[192] P. Okalik, D. Lovekin, K. Savic, & E. Stewart, Recommendations to improve the CIPP and forthcoming utility-scale IPP policy. Pembina Institute (2022). https://www.pembina.org/reports/recommendations-nunavut-to-improve-cipp-english.pdf

[193] Ibid.

[194] VanCleef, A. (2016). Hydropower Development and Involuntary Displacement: Toward a Global Solution. Indiana Journal of Global Legal Studies, 23(1), 349–376. https://doi.org/10.2979/indjglolegstu.23.1.349

[195] Y. Touchette, P. Gass, & D. Echeverria, Costing Energy and Fossil Fuel Subsidies in Nunavut: A mapping exercise. International Institute for Sustainable Development (2017).

[196] P. Okalik, D. Lovekin, K. Savic, & E. Stewart, Recommendations to improve the CIPP and forthcoming utility-scale IPP policy. Pembina Institute (2022).

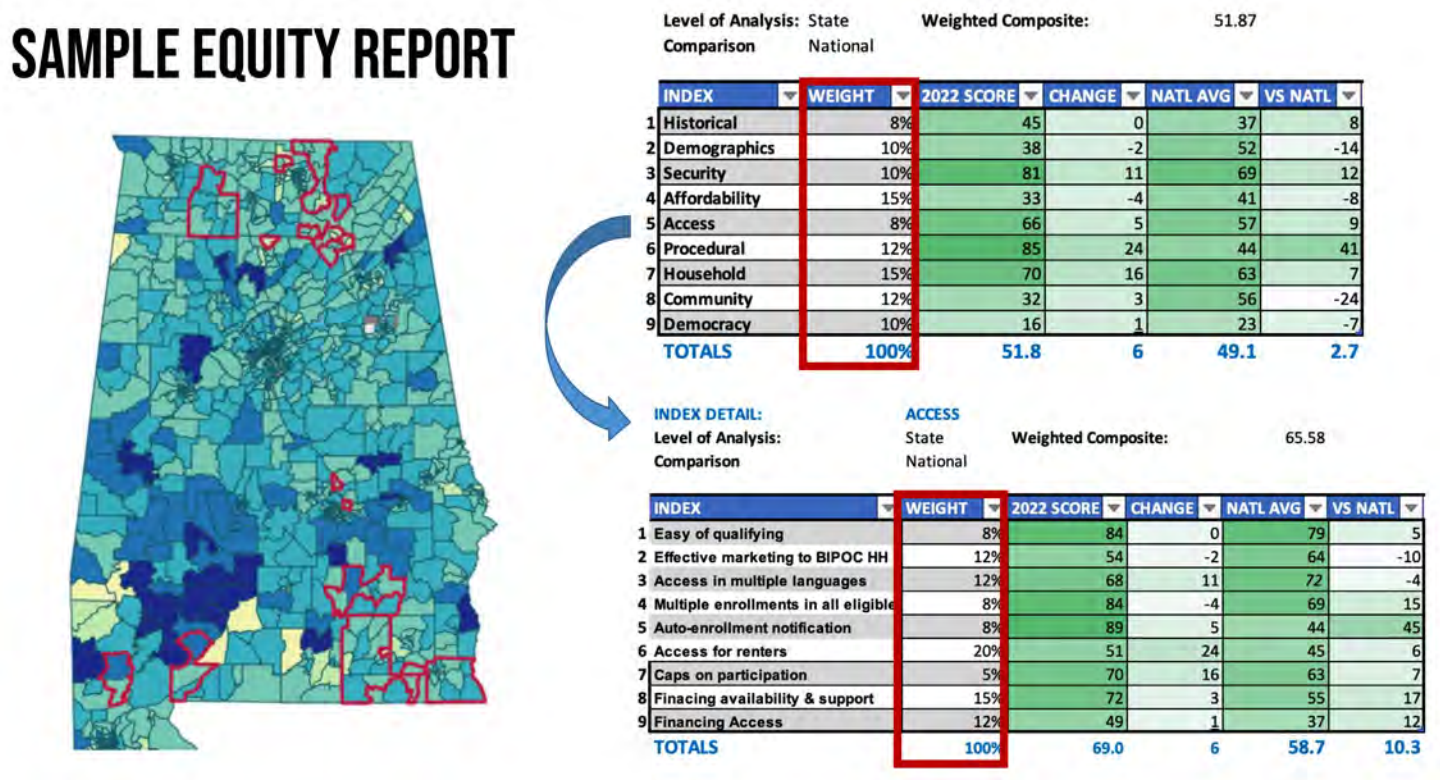
APPENDIX A: The Pathway to Energy Equity Scores

A WORK IN PROGRESS

Original vision: Initially, EEP set out to create a standardized Energy Equity score for every U.S. census tract. We envisioned these scores as a composite of data representing each of EEP's four equity dimensions.

Our original vision would provide comparative scores (e.g. percentiles) for each of nine indices (subdimensions). The metrics comprising each subdimension would also be viewable individually, and users would have the ability to change the weights of both individual metrics and the subdimensions. In the example below, we present a census tract level map (adapted from Department of Energy's Low-Income Energy Affordability Data (LEAD) Tool) as an example of the scores that would be generated by the EEP Framework. In the top right, each index would have a score, a user-selected weight, and comparison to both a national average and the previous year. In the bottom right, users would be able to look at the detail of individual metrics that comprise any one of the nine indices. In this example, we present the scores for nine individual metrics that comprise the Access index.

What we found: The majority of datasets we were able to collect that provide national data at the census tract level reflect recognition equity; few are available that address energy security and affordability and household benefits; virtually none are available at our desired coverage and geographic resolution that address procedural or restorative equity.



Dimension	Total # Proposed Metrics	Included	Priority Data Gap	Desire to Create Rating	Shift to Best Practice	Unlimited Coverage or Unreliable Data	No Potential, Not Requested, Abandoned
Recognition	55	26	10	0	9	4	6
Procedural	40	0	1	8	10	5	16
Distributional	47	3	5	0	6	8	25
Restorative	6	0	0	0	2	4	0
TOTALS	**148**	**29**	**16**	**8**	**27**	**21**	**47**

Because of significant data limitations, the final collection of datasets looks different than the original vision of an equity score. Because many of the subdimensions have only one dataset or none at all, it would not be possible to create a map and subdimension scores as we had originally envisioned.

With this reality in mind, we pivoted to focus on three goals:

1) **Assessing and categorizing all potential metrics,** with an emphasis on identifying priority data gaps and developing a data bill of rights.
2) **Providing the national census-tract level data** we did secure and a platform for users to explore and download data.
3) **Considering alternative methodologies for developing equity scores.** The absence of many desired datasets meant we needed to rethink how we might present an aggregate score.

Metrics selection process: In light of data limitations, one of our primary deliverables is a comprehensive assessment of all metrics and conceptual data sources reviewed and their status. **EEP workgroups assessed 150 potential metrics.** Workgroup members each scored the metrics associated with their equity dimension using the following guidance:

Members used a continuous scale from 0 to 5, with the option to indicate a -5 score for equity for metrics they thought would be in conflict with their dimension of equity or EEP values; no other negative values were enabled. A single workgroup member could apply a -5 score to indicate severe reservations with a proposed metric and to block it from inclusion in the final framework, unless their reservations could be addressed.

Scores for each metric were then averaged and presented back to each workgroup. These scores formed the basis for discussion during 1–2 metric selection sessions that each workgroup convened. Workgroup members were also encouraged to add comments to explain their rationale for scoring or thoughts on improving a metric or suggesting whether it should be captured quantitatively, qualitatively, or as a recommended best practice.

We created 8 classifications for our ultimate usage or determination of these 150 proposed metrics:

1. **Included** – a national dataset either at the census tract level or with lower resolution values applied to each census tract (e.g. all tracts in a county receive the same value ascribed to that county). The data has been cleaned and is readily available for further analysis and visualization.

2. **Secured, late addition** – data is available for inclusion, but was not in our possession in time for inclusion in the beta version of the EEP Framework.

3. **X – Priority data gap** – This data was scored highly by the workgroup and if available, would be very useful for advancing energy equity. We believe policies and data collection and reporting practices are possible to obtain this data universally, or others may already be in the process of compiling a nationally consistent dataset. This data may warrant additional efforts to secure. It may also be available in some states, municipalities, or utility jurisdictions.

4. **X – Desire to create rating scale** – Quantitative data does not currently exist, but there is potential to create a scoring methodology in order to create quantitative data. Data sets that create scores based on qualitatively analyzing existing policies and practices are examples of such rating scales.
   a. Justice in 100 Scorecard, Initiative for Energy Justice
   b. Community Power Scorecard

c. Southeast Rural Electric Co-Op Scorecards, Energy Democracy Y'all
d. Green 2.0 (foundations and NGOs)

Other data sets may be compiled other researchers but not yet translated into a universal scoring method. Examples include:

a. Energy shutoffs practices

A third group of rating scales has been proposed but information about their application is not publicly available.

a. Energy Democracy Scorecard, Emerald Cities

5. **X – Shift to best practice** – These proposed metrics were recognized as neither a fit for quantitative or qualitative assessment and reporting. Reasons for this may have been that they represent an output rather than an outcome metric (e.g. marketing materials available in multiple languages), they are activities that should be promoted regardless of whether and how they are measured (e.g. equity trainings for agency, utility, and utility contractor staff), or we do not anticipate data measurement being appropriate, feasible or useful for comparisons. Centering the voices of BIPOC communities in narratives about historical energy injustices, for instance, would be recommended as a best practice.

6. **X – Limited coverage** – Some quality data is available for a small number of jurisdictions. The presence of funding for public intervenors in utility rate cases and plans, for instance, covers less than a dozen states and there is no clear standard for what is equitable or not. Where data was available for a small portion of the country, we did not include it.

7. **X – Unreliable data** – Datasets that are old or updated sporadically, that are indexes relying on multiple measures (that may each have their own flaws), or from sources we have concerns about or were unable to vet were not included. Generally, this meant we did not include datasets provided by scorecards because we were unable to verify how the subjective scoring was done and whether we believe the underlying methodology was sound. We may consider some of these datasets for future inclusion if we are able to further investigate underlying assumptions and processes of their development and maintenance.

8. **X – no potential, not requested or abandoned** – Workgroups found these proposed metrics uninteresting, low value, or in some cases problematic. We excluded these measures but present them so Framework users see the full universe of metrics that were considered.

Discussion:

- Workgroups found at least some value in 101 of 148 datasets
- Roughly ¼ were included, ¼ were shifted to best practices or qualitative dimensions
- 16 remain priority data gaps, and another 17 remain limited coverage, primarily in the Recognition and Distributional dimensions
- 8 procedural metrics could be developed by creating rating scales as used in scorecards
- The restorative dimension is largely about a holistic approach that does not conform to the same structure of quantitative and qualitative metrics and best practices. Defining restorative equity and how it might be operationalized is pathbreaking work in the field

On the following page, we summarize the status of equity measurement and the future needs for each of the four equity dimensions.

EQUITY DIMENSION	MEASUREMENT SUMMARY	FUTURE NEEDS AND APPROACHES
RECOGNITION	Extensive data availability for demographic sub-dimension, especially through U.S. Census and American Community Survey datasets.	i) Develop historical dimension to: a) Measure cumulative disparities in benefits and burdens should be quantified when possible (e.g. receipt of financial incentives). b) Suggest a process for integrating narratives of historical concerns into equity assessment ii) Secure energy insecurity data for every census tract. Shutoff data is already held by utilities but infrequently disclosed
PROCEDURAL	Numerous best practices have been identified in guides and reports, but almost none are measured quantitatively.	i) Create quantitative rating scales to assess qualitative performance in procedural and program access sub-dimensions.
DISTRIBUTIONAL	A limited number of national data sets exist; some of these are state-wide scores that need to be applied	i) Pursue priority data gaps in affordability, household benefits (e.g. energy savings by race, health benefits) and community benefits (e.g. job creation and quality)
RESTORATIVE	Primary approach is qualitative best practices; majority does not lend itself to quantitative measurement.	i) Develop an overarching process for setting standards in the other three dimensions that must be met from a restorative perspective. ii) Continue to hone conceptual development of sub-dimensions and identify applications specific to the energy system. iii) Compile and develop new resources that promote holistic consideration of restorative equity in energy planning, programming and decision-making.

DATABASES CONSIDERED, ALL DIMENSIONS

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	METRIC DESCRIPTION (Initial Granularity, how it's been adapted for census tracts, coverage)	WORKGROUP INITIAL RATING
Defining "disadvantaged"/ target populations	Included	Recognition	Identity	State	5.00
Relative poverty (% of AMI)	Included	Recognition	Identity	Census Tract	5.00
Age of housing (affects efficiency and exposure to toxics)	Included	Recognition	Identity	Census Tract	5.00
Adoption of historical narrative of disparities in energy system and root causes	X – shift to qualitative/best practice	Recognition	Historical	Municipality/ City	5.00
Disconnections disproportionately impacting BIPOC	X – priority data gap	Recognition	Security	Census Tract	5.00
Disconnection suspensions during extreme circumstances	Secured – late addition	Recognition	Security	State	5.00
# of disconnections	X – priority data gap	Recognition	Security	Census Tract	4.86
% BIPOC	Included	Recognition	Identity	Census Tract	4.78
Deep poverty rate	Included	Recognition	Identity	Census Tract	4.78
% renters	Included	Recognition	Identity	Census Tract	4.67
Trend in disconnections	X – priority data gap	Recognition	Security	Census Tract	4.63
Outages (frequency, duration, restoration time) disproportionately affecting FL-LI-BIPOC	Included	Recognition	Security	Census Tract	4.57
Poverty rate	Included	Recognition	Identity	Census Tract	4.56
Housing burden	Included	Recognition	Identity	Census Tract	4.56
Energy efficiency equity baseline (E3b) metric	X – limited coverage	Recognition	Historical	Utility Service Territory	4.50
Disconnections policies protecting vulnerable populations	Secured – late addition	Recognition	Security	State	4.50
Ease of restoration	X – priority data gap	Recognition	Security	State	4.50
Data transparency for outages and disconnections	X – shift to qualitative/best practice	Recognition	Security	State	4.50
Climate vulnerability - heat exposure	X – priority data gap	Recognition	Identity	Census Tract	4.44
Incarceration rate	Included	Recognition	Identity	Census Tract	4.44
Educational attainment	Included	Recognition	Identity	Census Tract	4.44

DATABASES CONSIDERED, ALL DIMENSIONS *continued*

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	METRIC DESCRIPTION (Initial Granularity, how it's been adapted for census tracts, coverage)	WORKGROUP INITIAL RATING
Air quality	X – priority data gap	Recognition	Identity	Census Tract	4.44
Opportunity scores	Abandon	Recognition	Identity	Census Tract	4.44
Presence of toxic facilities	X – priority data gap	Recognition	Identity	Census Tract	4.33
Climate vulnerability – severe storm / hurricane exposure	Included	Recognition	Identity	Census Tract	4.33
% without health insurance	Included	Recognition	Identity	Census Tract	4.33
Job access score	X – no potential	Recognition	Identity	Census Tract	4.33
Housing + transportation burden	X – shift to qualitative/best practice	Recognition	Identity	Census Tract	4.33
Social Vulnerability Index	Included	Recognition	Identity	Census Tract	4.22
Climate vulnerability – flooding/sea level rise exposure	Included	Recognition	Identity	Census Tract	4.22
Climate vulnerability – adaptive capacity/resilience	Included	Recognition	Identity	Census Tract	4.22
Historical rate & billing changes relative to 1) National average, and 2) Commercial & industrial sector	Secured – late addition	Recognition	Historical	Utility Service Territory	4.14
Asthma rates	X – no potential	Recognition	Identity	Census Tract	4.13
Outage and wrongful disconnection record/ disincentives	X – shift to qualitative/best practice	Recognition	Security	Utility Service Territory	4.13
% households keeping homes at unsafe temperature	X – priority data gap	Recognition	Security	Census Tract	4.13
Employment rate	Included	Recognition	Identity	Census Tract	4.11
% households where English not primary language spoken	Included	Recognition	Identity	Census Tract	4.11
Housing inspection scores (HUD multifamily)	X – shift to qualitative/best practice	Recognition	Identity	Census Tract	4.11
Availability of affordable housing	X – unreliable source	Recognition	Identity	Census Tract	4.11
Eviction rate	Included	Recognition	Identity	Census Tract	4.11
Climate vulnerability – fire exposure	Included	Recognition	Identity	Census Tract	4.00
COVID case and death rates	X – priority data gap	Recognition	Identity	Census Tract	4.00
% households without internet access	Included	Recognition	Identity	Census Tract	4.00

DATABASES CONSIDERED, ALL DIMENSIONS *continued*

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	METRIC DESCRIPTION (Initial Granularity, how it's been adapted for census tracts, coverage)	WORKGROUP INITIAL RATING
Historical violations of land sovereignty by the energy industry	X – shift to qualitative/best practice	Recognition	Historical	Other	4.00
Energy as a human right policy/declaration guaranteeing access/ permanent moratorium on disconnections	X – shift to qualitative/best practice	Recognition	Security	State	4.00
% senior, living alone	Included	Recognition	Identity	Census Tract	3.89
Eviction scorecard (during COVID)	X – limited coverage	Recognition	Identity	Census Tract	3.89
Transportation burden	X – priority data gap	Recognition	Identity	Census Tract	3.89
Maternal mortality		Recognition	Identity	Census Tract	3.80
Life expectancy		Recognition	Identity	Census Tract	3.78
Income mobility	Not requested	Recognition	Identity	Census Tract	3.78
Historical violations of land sovereignty – general	X – shift to qualitative/best practice	Recognition	Historical	Other	3.63
Residential energy consumption disclosure/ benchmarking	X – limited coverage	Recognition	Historical	Municipality/ City	3.57
Reparations	X – shift to qualitative/best practice	Recognition	Historical	Other	3.38
% with a disability	Included	Recognition	Identity	Census Tract	3.33
Blood lead levels in children	Not requested	Recognition	Identity	Census Tract	3.22
Low birth weight		Recognition	Identity	Census Tract	2.78

The Different Dimensions of Equity

RECOGNITION EQUITY

Data is generally available and suitable for quantitative analysis at the Census tract level.

I. Discussion summary:

- Community demographics and climate vulnerability at the census tract level are largely available through existing federal datasets, particularly through the American Community Survey of the U.S. Census. These datasets are not perfect and contain some systematic flaws, such as undercounting of Tribal, unhoused, immigrant, and urban populations or an absence of data altogether, particular for Tribal nations. With attention to these cat
- Quantitative historical data is limited. One notable exception is the University of Richmond's Mapping Inequality map[1] on redlining. While many sources of demographic datasets are available for prior years, EEP did not have the capacity to incorporate this historical data to analyze changes over time.

II. Metrics review:

1. Included

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Defining "disadvantaged"/ target populations	Included	Recognition	Identity	State	5.00
Relative poverty (% of AMI)	Included	Recognition	Identity	Census Tract	5.00
Age of housing (affects efficiency and exposure to toxics)	Included	Recognition	Identity	Census Tract	5.00
Disconnection suspensions during extreme circumstances	Secured - late addition	Recognition	Security	State	5.00
% BIPOC	Included	Recognition	Identity	Census Tract	4.78
Deep poverty rate	Included	Recognition	Identity	Census Tract	4.78
% renters	Included	Recognition	Identity	Census Tract	4.67
Outages (frequency, duration, restoration time) disproportionately affecting FL-LI-BIPOC	Included	Recognition	Security	Census Tract	4.57
Poverty rate	Included	Recognition	Identity	Census Tract	4.56
Housing burden	Included	Recognition	Identity	Census Tract	4.56
Disconnections policies protecting vulnerable populations	Secured - late addition	Recognition	Security	State	4.50
Incarceration rate	Included	Recognition	Identity	Census Tract	4.44
Educational attainment	Included	Recognition	Identity	Census Tract	4.44
Climate vulnerability – severe storm/hurricane exposure	Included	Recognition	Identity	Census Tract	4.33
% without health insurance	Included	Recognition	Identity	Census Tract	4.33
Social Vulnerability Index	Included	Recognition	Identity	Census Tract	4.22

[1] Digital Scholarship Lab, University of Richmond, in collaboration with Virginia Tech University and Johns Hopkins University 2020. Mapping Inequality. Last accessed Friday, April 15, 2022 from: https://dsl.richmond.edu/panorama/redlining/

1. Included *continued*

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Climate vulnerability – flooding/sea level rise exposure	Included	Recognition	Identity	Census Tract	4.22
Climate vulnerability – adaptive capacity/resilience	Included	Recognition	Identity	Census Tract	4.22
Historical rate & billing changes relative to 1) National average, and 2) Commercial & industrial sector	Secured – late addition	Recognition	Historical	Utility Service Territory	4.14
Employment rate	Included	Recognition	Identity	Census Tract	4.11
% households where English not primary language spoken	Included	Recognition	Identity	Census Tract	4.11
Eviction rate	Included	Recognition	Identity	Census Tract	4.11
Climate vulnerability – fire exposure	Included	Recognition	Identity	Census Tract	4.00
% households without internet access	Included	Recognition	Identity	Census Tract	4.00
% senior, living alone	Included	Recognition	Identity	Census Tract	3.89
% with a disability	Included	Recognition	Identity	Census Tract	3.33

2. Priority data gaps & desire to create rating scales

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Disconnections disproportionately impacting BIPOC	X – priority data gap	Recognition	Security	Census Tract	5.00
# of disconnections	X – priority data gap	Recognition	Security	Census Tract	4.86
Trend in disconnections	X – priority data gap	Recognition	Security	Census Tract	4.63
Ease of restoration	X – priority data gap	Recognition	Security	State	4.50
Climate vulnerability – heat exposure	X – priority data gap	Recognition	Identity	Census Tract	4.44
Air quality	X – priority data gap	Recognition	Identity	Census Tract	4.44
Presence of toxic facilities	X – priority data gap	Recognition	Identity	Census Tract	4.33
% households keeping homes at unsafe temperature	X – priority data gap	Recognition	Security	Census Tract	4.13
COVID case and death rates	X – priority data gap	Recognition	Identity	Census Tract	4.00
Transportation burden	X – priority data gap	Recognition	Identity	Census Tract	3.89

3. Shift to best practice

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Adoption of historical narrative of disparities in energy system and root causes	X – shift to qualitative/best practice	Recognition	Historical	Municipality/ City	5.00
Data transparency for outages and disconnections	X – shift to qualitative/best practice	Recognition	Security	State	4.50
Housing + transportation burden	X – shift to qualitative/best practice	Recognition	Identity	Census Tract	4.33
Outage and wrongful disconnection record/ disincentives	X – shift to qualitative/best practice	Recognition	Security	Utility Service Territory	4.13
Housing inspection scores (HUD multifamily)	X – shift to qualitative/best practice	Recognition	Identity	Census Tract	4.11
Historical violations of land sovereignty by the energy industry	X – shift to qualitative/best practice	Recognition	Historical	Other	4.00
Energy as a human right policy/declaration guaranteeing access/ permanent moratorium on disconnections	X – shift to qualitative/best practice	Recognition	Security	State	4.00
Historical violations of land sovereignty – general	X – shift to qualitative/best practice	Recognition	Historical	Other	3.63
Reparations	X – shift to qualitative/best practice	Recognition	Historical	Other	3.38

4. Significant data limitations issues and low priorities

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Energy efficiency equity baseline (E3b) metric	X – limited coverage	Recognition	Historical	Utility Service Territory	4.50
Opportunity scores	Abandon	Recognition	Identity	Census Tract	4.44
Job access score	X – no potential	Recognition	Identity	Census Tract	4.33
Asthma rates	X – no potential	Recognition	Identity	Census Tract	4.13
Availability of affordable housing	X – unreliable source	Recognition	Identity	Census Tract	4.11
Eviction scorecard (during COVID)	X – limited coverage	Recognition	Identity	Census Tract	3.89
Income mobility	Not requested	Recognition	Identity	Census Tract	3.78
Residential energy consumption disclosure/ benchmarking	X - limited coverage	Recognition	Historical	Municipality/ City	3.57
Blood lead levels in children	Not requested	Recognition	Identity	Census Tract	3.22

PROCEDURAL EQUITY

Minimal data is available at the state level and is often patchy; data is primarily suited for qualitative assessment, subjective rating scales, and local narratives.

1. Included – NONE

2. Priority data gaps & desire to create rating scales

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Ease of access to participate meaningfully (clearly explained on website, ease of filing comment, easier path of public intervention, trainings/overview of the process and opportunities, ability to join workgroups that have decision-making power, ease of access to data, FL-LI-BIPOC surveys and focus groups)	X – desire to create rating scale	Procedural	Procedural	State	4.89
Easy of qualifying/ participation	X – desire to create rating scale	Procedural	Access	State	4.89
Regulatory disclosures/ reporting	X – desire to create rating scale	Procedural	Procedural	State	4.50
Regulatory agency/utility/ contractor mandatory equity training/internal practice of equity/diversity reporting requirements	X – desire to create rating scale	Procedural	Procedural	State	4.44
Mandatory utility disclosures/ reporting	X – desire to create rating scale	Procedural	Procedural	State	4.44
Access for renters	X – priority data gap	Procedural	Access	Utility Service Territory	4.44
Presence and involvement (number, budget, etc.) of public advocate/ ombudsman/attorney general/consumer advocate/ non-profit intervenors/ advisory council	X – desire to create rating scale	Procedural	Procedural	State	4.22
Stated equity goals, principles	X – desire to create rating scale	Procedural	Procedural	State	4.11
Auto-enrollment notification/ opt-out	X – desire to create rating scale	Procedural	Access	Utility Service Territory	2.33

3. Shift to best practice

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Financing access – eliminate credit score requirements, subsidize/eliminate interest payments, etc.	X – shift to qualitative/best practice	Procedural	Access	State	5.00
Access in multiple languages	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	4.89
Population access – multilingual materials, public meetings in impacted communities at appropriate times, multiple ways to participate, public comment early in meeting and extended	X – shift to qualitative/best practice	Procedural	Procedural	State	4.78
Effective marketing to BIPOC, frontline, low-income households	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	4.78
Utility penalties for failing to hit equity targets in clean energy plans and program commitments	X – shift to qualitative/best practice	Procedural	Procedural	Utility Service Territory	4.11
FL-LI-BIPOC engagement in writing policy/rulemaking	X – shift to qualitative/best practice	Procedural	Procedural	State	4.00
Financing availability and support – on-bill/PACE/PAYS	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	3.44
Utility lobbying/anti-equity campaigning	X – shift to qualitative/best practice	Procedural	Procedural	Utility Service Territory	3.22
Multiple enrollments in all eligible programs supported	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	3.11
%/total budget for equity measurement	X – shift to qualitative/best practice	Procedural	Procedural	State	3.11

4. Significant data limitations issues and low priorities

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Financing access – eliminate credit score requirements, subsidize/eliminate interest payments, etc.	X – shift to qualitative/best practice	Procedural	Access	State	5.00
Access in multiple languages	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	4.89
Population access – multilingual materials, public meetings in impacted communities at appropriate times, multiple ways to participate, public comment early in meeting and extended	X – shift to qualitative/best practice	Procedural	Procedural	State	4.78
Effective marketing to BIPOC, frontline, low-income households	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	4.78
Utility penalties for failing to hit equity targets in clean energy plans and program commitments	X – shift to qualitative/best practice	Procedural	Procedural	Utility Service Territory	4.11
FL-LI-BIPOC engagement in writing policy/rulemaking	X – shift to qualitative/best practice	Procedural	Procedural	State	4.00
Financing availability and support – on-bill/PACE/PAYS	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	3.44
Utility lobbying/anti-equity campaigning	X – shift to qualitative/best practice	Procedural	Procedural	Utility Service Territory	3.22
Multiple enrollments in all eligible programs supported	X – shift to qualitative/best practice	Procedural	Access	Utility Service Territory	3.11
%/total budget for equity measurement	X – shift to qualitative/best practice	Procedural	Procedural	State	3.11

DISTRIBUTIONAL EQUITY

1. Included

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Energy burden disparities	Included	Distributional	Household Benefits	Census Tract	4.75
Average energy burden among low-income households, BIPOC-F-LI households, and/or other groups (e.g. renters)	Included	Distributional	Affordability	Census Tract	4.43
Disparity in rates between residential vs commercial & industrial	Secured – late addition	Distributional	Affordability	State	3

2. Priority data gaps & desire to create rating scales

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Change in air quality in BIPOC-F-LI communities	X – priority data gap	Distributional	Community Benefits	Census Tract	4.80
% contracts awarded to BIPOC-F-LI-owned businesses	X – priority data gap	Distributional	Community Benefits	State	4.45
BIPOC-F-LI community and climate resilience benefits, reduction in disparities	X – priority data gap	Distributional	Community Benefits	Census Tract	4.33
Reduction in asthma rates	X – priority data gap	Distributional	Community Benefits	Census Tract	4.27
% electricity generation from renewables	X – priority data gap	Distributional	Community Benefits	Utility Service Territory	3.18

3. Shift to best practice

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
BIPOC-F-LI quality of new jobs/wage disparities	X – shift to qualitative/best practice	Distributional	Community Benefits	Census Tract	4.00
% of new jobs obtained by impacted communities/ households	X – shift to qualitative/best practice	Distributional	Community Benefits	Census Tract	4.00
Arrears forgiveness policies/ plans/funding (aka AMPs – arrearage management plans)	X – shift to qualitative/best practice	Distributional	Affordability	Utility Service Territory	3.85
% BIPOC-F-LI participants achieving "substantial" (20%+?) energy savings	X – shift to qualitative/best practice	Distributional	Household Benefits	Utility Service Territory	3.82
Maximum energy burden for renters	X – shift to qualitative/best practice	Distributional	Affordability	State	3.21
% eligible customers needing healthy homes measures served	X – shift to qualitative/best practice	Distributional	Household Benefits	Census Tract	N/A

4. Significant data limitations issues and low priorities

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
% eligible customers served by $ assistance programs	X – limited coverage	Distributional	Affordability	State	NR
% eligible customers served annually/expected time to retrofit all frontline customers	X – limited coverage	Distributional	Affordability	Utility Service Territory	4.77
% eligible customers served annually/expected time to retrofit all frontline, BIPOC, and low-income homes	X – limited coverage	Distributional	Household Benefits	Utility Service Territory	4.77
E3b – spending and savings – for LI, BIPOC, renters, other target populations	X – limited coverage	Distributional	Household Benefits	Utility Service Territory	4.73
Maximum energy burden limit(s)	X – no potential	Distributional	Affordability	State	4.43
Percentage of income payment plans (PIP(P)s)	X – limited coverage	Distributional	Affordability	State	4.42
Improved indoor air quality in BIPOC-F-LI households	X – no potential	Distributional	Household Benefits	Census Tract	4.42
Reduction in respiratory distress / disparities among frontline households	X – limited coverage	Distributional	Household Benefits	Census Tract	4.18
Amount of fixed charges on a bill	X – limited coverage	Distributional	Affordability	Utility Service Territory	4
Disparity in program savings by customer for BIPOC-F-LI households and renters	X – limited coverage	Distributional	Household Benefits	Utility Service Territory	4
E3b at program level, esp for deep retrofits, DERs, EVs, electrification	X – no potential	Distributional	Household Benefits	Utility Service Territory	3.9
Policy support for BIPOC-F-LI locally owned contractors	Not requested	Distributional	Community Benefits	State	3.82
Transit affordability	Abandon	Distributional	Affordability	Census Tract	3.77
Enabling subscriptions in community-owned DERs	Abandon	Distributional	Affordability	Utility Service Territory	3.77
LIHEAP allocation per eligible household	Abandon	Distributional	Affordability	State	3.54
Electrification/EV ready/ charging ordinances	Not requested	Distributional	Community Benefits	Municipality/ City	3.44
% clean energy investments overlapping with health homes	Not requested	Distributional	Household Benefits	Utility Service Territory	3.36
Free or discounted first block of energy	Abandon	Distributional	Affordability	State	3.29
% buildings electrified	Not requested	Distributional	Community Benefits	Census Tract	3.20

4. Significant data limitations issues and low priorities *continued*

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Disparate application of rate incentives (e.g. demand response/time of day) among frontline households	Abandon	Distributional	Affordability	Utility Service Territory	3.17
% of safety net funds directed toward deep retrofits/DERs	Abandon	Distributional	Affordability	Utility Service Territory	3.15
Total amount of clean energy programs	Not requested	Distributional	Household Benefits	Utility Service Territory	3.09
Rate offsets for electrification/ EVs	Abandon	Distributional	Affordability	Utility Service Territory	3.08
% residentially-owned solar potential achieved	Not requested	Distributional	Community Benefits	Census Tract	2.90
Selection of cost effectiveness test	Not requested	Distributional	Household Benefits	Utility Service Territory	2.73
% rebates and tax incentives received by LI, BIPOC households	Not requested	Distributional	Household Benefits	Utility Service Territory	2.67
Beneficial time of day (TOD) and demand response (DR) rates	Abandon	Distributional	Affordability	Utility Service Territory	2.64
% efficiency potential achieved	Not requested	Distributional	Community Benefits	Utility Service Territory	2.60
Cost per ton CO2 reduced?	Not requested	Distributional	Community Benefits	Utility Service Territory	2.22
No new natural gas ordinances	Not requested	Distributional	Community Benefits	Other	2.20
% distributed storage achieved	Not requested	Distributional	Community Benefits	Utility Service Territory	2.10
% served by microgrid	Not requested	Distributional	Community Benefits	Census Tract	2.00
Energy burden floor for high income customers	Abandon	Distributional	Affordability	Utility Service Territory	0.15

RESTORATIVE EQUITY

1. Included: NONE

2. Priority data gaps & desire to create rating scales: NONE

3. Shift to best practice

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
** Aggregate presence of restorative elements	X – shift to qualitative/best practice	Restorative	Reparations & Accountability	Other	3.89
Protections against gentrification resulting from clean energy	X – shift to qualitative/best practice	Restorative	Reparations & Accountability	Municipality/City	2.9

4. Significant data limitations issues and low priorities

METRIC	INCLUDED STATUS	DIMENSION	SUB-DIMENSION	RESOLUTION	WORKGROUP INITIAL RATING
Presence of community choice aggregation or virtual utilities	Not requested	Restorative	Power to the People	State	2.4
Net metering	Not requested	Restorative	Power to the People	State	1.8
Favorable rates for time of day use/generation	Not requested	Restorative	Household Benefits	Utility Service Territory	1.56
Adders/bonus rebates or tax credits for impacted communities and households	X - limited coverage	Restorative	Power to the People	State	4.1

Data Considerations

What data should regulators require, collect, and share?

Data gaps are one of the greatest frustrations in attempting to advance equity. Too often, we don't know who participates in public processes, who participates in clean energy programs, who receives incentives or tax credits, and how different groups benefit from clean energy and climate policies and investments. In these situations, efforts to advance equity are operating in the dark.

There are a host of reasons underlying data gaps, including:

1) **No data exists.** No one has thought to collect this particular data, thought it was important, or had the resources to collect and maintain data for it to be sufficiently useful and secure.
   a. *Legality concerns:* Another common reason data may not exist is that it is believed that collecting the data is unallowable/unethical/illegal. These justifications may or may not be right, or entirely right. For instance, we often hear a blanket objection to collecting data on race "because the lawyers say it is illegal" or a "non-starter" or something to that effect. There are indeed likely to be *legal concerns* that might be raised if data on race were to be collected and publicized, but it is simply not true that no data can be collected, or that we are sure such an effort would be rejected by the courts in a particular context. There may be appropriate cautions or limitations to collecting data on race, but knee-jerk reactions to sweep all options off the table are probably short sighted. There is often room for more nuanced approaches to getting some data or data for de-personalized usage in a particular context.
   b. *Data privacy and security* are legitimate concerns that need to be respected. That said, most often there are effective safeguards that can be enacted to protect data to very high standards. In California, legislation enables use of individual household energy consumption data (the finest resolution possible) by providing the. UCLA's Energy Atlas, led by Dr. Stephanie Pincetl, is one of the public research institutions that has met these stringent requirements and been granted access to the data. The Energy Atlas, as a result, has provided some ground-breaking insights they were able to achieve by working with data at such a fine scale.
   c. *Data acquisition cost and difficulty.*

2) **Data is not in usable format.** Data must be easy to analyze for all interested parties—regulators, researchers, and community-based organizations. We have seen data that is available only as a scanned PDF or an image, thus preventing users from doing further analysis or requiring exasperating hand entry to recreate a table. We know no data is collected as an image or PDF, and only presenting data in this format flies in the face of transparency.

   At a bare minimum, data must be downloadable in a standard format that can used in simple, readily accessible software. .CSV and .XSLX (Excel) formats should be available. Other formats and features that make data more accessible and transparent to the public include:

   - Choice of multiple formats for export
   - Ability to query specific data and dedicated technical support
   - Pre-selected analyses
   - Combination of raw data and data visualization through maps, tables, graphs
   - Clearly described methodology for obtaining, cleaning, and maintaining data, along with descriptions of data limitations

3) **Data is not available at an appropriate scale of geography or time.** It is easy to draw unintended conclusions when working with data that do not align with the needed time and place.

   For instance, the DOE's LEAD Tool that reports energy burdens by census tract, does not have energy consumption data at this scale. Without this half of the equation, the data

4) **Data is available only as a proxy for the desired data.**

Summary of recommendations to close gaps:

1) Create an open, accessible process to identify high priority data gaps. The process shoulrd include multiple government agencies, data collectors (e.g. utilities), researchers, and frontline community representatives and organizations so that efforts to fill data gaps can be coordinated.

2) Identify the end outcomes and proposed uses of data for each type of data desired. What data is absolutely essential for achieving the desired outcomes and what data is only interesting and nice to have? Given staff capacity and funding limitations, data needs should be prioritized to align with community goals.

3) Define the data strategy parameters, including:
   a. Who collects, cleans, and maintains the data?
   b. What supporting resources are available to data users, including technical assistance support, data hosting and queries capacity, training, and budget for public advocacy, such as allowing use of public funding for intervenors in rate cases to be used for data analysis?
   c. What format is the data held in?
   d. What geographic scale is the data collected at and how frequently is it updated?
   e. What privacy and security protections must be in place? What data, if any, is off limits or only accessible in aggregate and why?
   f. Are there different levels of access to data based upon meeting different standards of data protection?
   g. What policies and administrative rules must be enacted to codify the data strategy?
   h. What staff time, budget, and other resources are needed both to start and sustain the data strategy?

4) Liberating data in the nearterm. Researchers, regulators, advocates and community organizers may be entitled to data that already exists but has not been previously published or publicly disclosed. These avenues include:
   a. Searching existing public records – A link to all state utility commission websites if available here
   b. FOIA (Freedom of Information Act) requests and requests through state and local public meetings acts (e.g. requiring release of agendas, minutes, and meeting presentations)
   c. Formal discovery requests by a state public utility commission or a legal intervenor in a public proceeding or docket.
   d. Citizen science – data collected by the public is invaluable. The tragedy of the Flint Water Crisis serves as a powerful example of how, when stonewalled by the agencies charged with protecting their water quality, the citizens of Flint organized and collected their own water samples and reached out to scientists and labs that would help conduct the analysis and prove that Flint's water had been poisoned with lead. Not all citizen science needs to be so impressively coordinated or exhaustive. Neighbors on a block documenting regular outages, their dates and durations and the weather conditions when they occurred, or contractors refusal to provide service for an energy efficiency program despite being listed on the utility website as a qualified contractor serving their city or county, are viable, straightforward strategies for collecting and using data to argue for change, and for justice.

APPENDIX B: Stakeholder Engagement Summary

EEP LISTENING SESSION COMPILATION

SUMMER 2021

Listening Sessions Overview

This document details the feedback we received over seven 90-minute stakeholder listening sessions, attended by 153 people in Summer 2021. To create a safe space during the session, we agreed that we would not make responses public. We did, however, create a summary document of what we heard in the sessions and provide more detail here about how participants value proposed indices and metrics. We ask workgroups to consider feedback for the indices they are responsible for.

Before launching in May, 2021, EEP decided it would work to develop indices and metrics associated with four dimensions of equity: 1) Recognition, 2) Procedural, 3) Distributional, and 4) Restorative. These four dimensions were drawn from the pillars of energy justice. Recognition (often called "structural"), procedural, and distributional equity are most commonly adopted in other contexts. The restorative dimension is not widely recognized or may be considered a component of distributional and recognition equity. We decided to include this is as its own dimension to shine a light on energy democracy and sovereignty issues which are concerned with the right to own and control clean energy assets and systems.

From there, EEP researched and brainstormed a potential list of 92 metrics that could be used to represent the four equity dimensions. Dozens of sources were reviewed to develop this potential list of draft metrics. Some of the more prominent resources we drew from include:

- ACEEE Scorecards
- Initiative for Energy Justice – Justice in 100 metrics
- Greenlining reports and guides
- State and city indicators, such as California's Energy Equity Indicators
- Public data sets, such as EIA's Residential Energy Consumption Survey (RECS), DOE's LEAD Tool for energy burdens, and EPA's EJSCREEN tool for pollution exposure

Other metrics were suggested to EEP based on dozens of 1 to 1 conversations with allies, partners, and other stakeholders and decades of EEP staff experience with community-based energy justice initiatives and research in Detroit.

We organized individual metrics into a series of nine themes, or indices. In our first session we asked participants to rate every metric in every index, which was overload. We tailored our remaining sessions to focus on indices and metrics we thought would be of interest to specific stakeholder groups or asked the groups to pick three indices to rate. As a result, each stakeholder group rated a subset of the indices and metrics; the number and composition of raters varies for each index. The question consistently posed to raters was: **"How essential are these metrics for the _____ Index?"** on a 1 to 5 scale, with 1 = Cut/low value/too hard and 5 = Absolutely needed/keep.

Participation

We invited all contacts in our network to participate in sector-specific listening sessions, with the goal of creating safe spaces for each group of stakeholders to emphasize their priorities and concerns about EEP's proposed indices and metrics. New suggestions and refinements were added to the potential metrics as they were received.

Document Organization

Each index includes three charts: 1) The number of participants by stakeholder group, 2) A bar graph of the mean individual scores (across all stakeholder groups) for each metric in that index and the variance in scores between the highest and lowest stakeholder

EVENT	DATE	# REGISTERED	# ATTENDED
Kickoff #1	6/9/21	210	130
Kickoff #2	6/17/21	165	85
Listening #1 – Practitioners #1	6/23/21	39	27
Listening #2 – Community #1	7/14/21	40	13
Listening #3 – Utility	8/4/21	67	36
Listening #4 – Regulator	8/11/21	50	25
Listening #5 – Philanthropy	8/18/21	26	9
Listening #6 – Community #2	8/19/21	36	17
Listening #7 – Practitioners #2	8/25/21	66	26
Listening #8 – Indigenous	2/21/22	71	41
9 EVENTS	**11 WEEKS**	**699**	**409**

group score, and 3) A table with additional rating detail. These charts are described in the highlights, themes, quotes, questions, staff reflections and references are provided (some entries are blank for some indices). If you view the navigation pane, you can move directly to the data summary or commentary for any index.

Limitations

- While participants do represent a cross section of stakeholders, they are not necessarily a representative sample of each stakeholder group. We have a limited sample size and participants have pre-existing interest in the topic of energy equity.

- Although we did not collect demographic data on participants, we observed that the majority of participants were white, and were professionally involved in the energy or climate work and thus often able to participate as part of their job. We held second sessions for grassroots community stakeholders and participants, offered compensation for participating, and did direct outreach to energy and environmental justice groups in underrepresented states and regions. Despite that, we did not achieve majority BIPOC representation and have gaps in participation from politically conservative states and frontline communities.

- There is considerable variation in previous knowledge of or exposure to the metrics we presented. Someone with firsthand knowledge of how a metric can improve program outcomes may rate the same metric significantly differently than someone who is encountering them for the first time. We consider ratings for the less commonly used metrics to be the least reliable.

- We used menti.com for live polling to gather quantitative data about the proposed indices and metrics.
  - The sample size is limited (and noted with each index below), so there is likely to be significant noise and variations in ratings are not statistically significant
  - There was a degree of interpretation about the precise definition of each metric. Some clarifications were made in the moment, but for others, like reparations, the value of a potential metric to a rater could depend significantly on the data set used.
  - Live polling proved to be tedious. After our first round of live polling with practitioners, we scaled back our use of this strategy and limited it to indices that were either voted on by participants or suggested as the most relevant for soliciting input on specific metrics.

- **EEP created a survey in Qualtrics** that allows respondents to rate the same indices and metrics that were rated during the listening sessions. This survey was not widely promoted and has few responses as of October 2021. As with the live ratings done in listening sessions, this requires a lot of effort by participants to read and score potentially dozens of metrics. That said, respondents can choose to rate the metrics associated with just one index, greatly reducing the burden of participation. If workgroups decide that feedback from a larger audience is valuable, we have this tool available. You can see the survey here.

Interpreting Feedback

Despite the limitations, the combination of narrative feedback and supplemental quantitative feedback were extremely useful for identifying themes, general priorities, and sticky or unresolved issues. We hope that these ratings, coupled with qualitative feedback received during the sessions, *provide direction* for workgroup members: indicating where there is general agreement, where there are concerns or questions, and where there are tensions. Greater variance in ratings between stakeholder groups indicates potential opposing values or goals. The data will not, however, provide a quantitative justification for the selection of metrics. Some of this content will provide transparency to users of the beta framework and the public, but we intend to keep individuals' ratings and quotes from the listening sessions confidential, as we committed to do at the start of each session.

Broad Themes

Some of these metrics represent end outcomes, while others reflect outputs or program design considerations. There is general agreement by both listening session participants and EEP staff that we should consider these differently. We should focus quantitative assessment through metrics on end outcomes, and offer guidance or best practices for inputs and outputs. For instance, we might suggest how many call center staff should be fluent in Spanish, based on the percentage of Spanish speakers in a program service territory. We wouldn't, however, need to track the number of those staff as a metric. Not having enough Spanish-speaking staff might influence and be reflected in the outcome metric—the percentage of program participants who are not native English speakers and their energy savings resulting from program participation. In short, we will aim to measure outcomes, and provide guidance (both qualitative and quantitative) on inputs and outputs that effect our target outcomes.

Quotes (broad application)

"It seems that a traditional regulatory goal (in statutes) has been 'fair treatment' is defined as 'treat people the same.' This may change now, but the law is hard to change."

"Directives should come from the regulators."

Questions

All these require a baseline. How do you get that in time to be useful for short term programs?
"**A question on data availability: How available is this information?** Will customers share this data willingly? How can we ensure that undocumented folks are included in data collection? Perhaps an extra index should be added to reflect % of customers surveyed."

0. INDEX RATINGS – BY THE NUMBERS

SESSION	# OF RATERS
Community	1
Practitioner	6
Utility	16*
Regulator	17
Philanthropy	5

* Utility stakeholders only rated identity, affordability, and access indices.

INDEX	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Historical	3.9	4.2	3.4	4.7	1.3
Identity	3.5	3.9	3.0	4.4	1.4
Security	4.2	4.4	4.0	4.6	0.6
Affordability	4.0	4.6	2.5	4.8	2.3
Procedural	4.3	4.2	3.8	4.4	0.6
Access	4.1	4.4	3.3	4.4	1.1
Household	4.1	4.1	3.8	4.3	0.5
Community	4.2	4.2	4.0	4.5	0.5
Democracy	3.9	4.0	3.8	4.3	0.5

Index Ratings – Discussion

Highlights:

- **Identity:** For these ratings, participants saw a snapshot of the indices, a description, and 3–5 sample metrics that comprise the index. We had the highest number of respondents to this rating and the most consistent scores all were between 3.9 and 4.3, with the exception of Identity, which was rated at 3.5 but may have been lower due to utility ratings of 3.0. Interest in the identity index may also be lower because its data sources, such as US Census data, are already widely available. Furthermore, the federal government is in the midst of an intensive process to determine the metrics that will assess whether a community is disadvantaged for Justice40 purposes. Other states are in the process developing similar criteria. While extremely valuable, existing efforts for creating metrics for this index are the most robust and may be adopted as is or with minor modifications by EEP.

- **Historical:** This index had the greatest variance between listening sessions, indicating there may be specific differences between stakeholder types or that people vary in how they envision the index and its metrics will be operationalized.

- **Security** and **Affordability** remain top concerns for practitioners, grassroots community organizations, and regulators. It was surprising to see procedural score highest (regulators were about 1/3 of respondents). Procedural elements are raised very frequently but rarely assessed quantitatively. Draft metrics for this index, such as the amount of public funding for intervenors or composition of PUC staff, sparked significant interest with the possibility of measurement.

- Despite being perhaps the least defined at this stage, interest the energy democracy index (e.g. % ownership of clean energy assets by BIPOC households) was surprisingly consistent, tied for the lowest difference in ratings by different stakeholders.

Themes:

Aside from the question about the identity index, all indices were deemed valuable. Between the scores and feedback expressed verbally or in the chat during the session, we think this organization of indices is useful and intuitive for most. We did not attempt other groupings, however, such as simply one index for each of the four equity dimensions.

REFERENCES:

The State of Equity Measurement was written in 2019 by Dr. Carlos Martín and Jamal Lewis, both members of the EEP advisory team. They identify six elements of equity and provide context for which elements can be reflected quantitatively and qualitatively.

1. HISTORICAL INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	6
Practitioner	5
Utility	16*
Regulator	
Philanthropy	

* Utility stakeholders only rated historic presence of toxics and redlining.

METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	VARIANCE
Proportional disparities in program spending and savings	4.7	5.7	4.6	4.7	0.1
Historic presence of toxic facilities, cancer clusters	3.5	4.1	2.5	5.0	2.5
Anti-equity/anti-clean energy lobbying and campaigns	4.3	4.3	4.2	4.4	0.2
Redlining and housing discrimination	3.6	4.2	2.7	5.0	2.3
Opportunity scores	3.7	3.7	3.6	3.7	0.1
State or local designations (e.g. rising tide communities)	3.5	3.5	3.5	3.5	0.0
Reparations	4.3	4.3	4.3	4.3	0.0

Historical Index – Discussion

Highlights:

Proportional spending (also known as the E3B metric which was developed by the Urban Energy Justice Lab), negative lobbying efforts, and reparations were received the most ratings. Historic presence of toxics and redlining are strongly supported by community groups, but not by utilities.

Themes:

Opportunity scores, an existing index that combines health, economic, and housing data, was questioned multiple times and had lower value in both discussion and quantitative ratings.

Redlining and other housing discrimination and potential reparations received robust discussion during multiple listening sessions.

Staff Reflections & Key Questions:

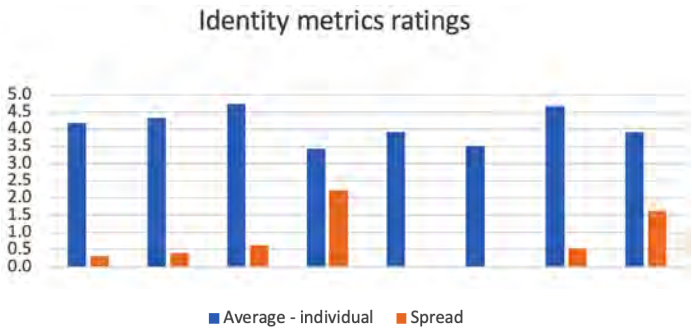
Quantifying the historical differences of program benefits is feasible, at least for certain benefits. It seems, however, that the most prevalent use of historical disparities is merely in the designation of a community as "disadvantaged", but this does not attempt to repay the disparities. Imagine a utility that has been providing residential energy efficiency programs for fifteen years. Annual plan filings with the PUC document that during that time, the utility spent $250 million on programs for non-low-income households, but only $25 million on programs for low-income households. Despite receiving just 10% of program spending (and likely less than 10% of benefits), low-income customers make up 40% of this utility's customer base. Proportionate spending, which we would argue falls short of equitable spending (proportionate spending is equality, not equity), would have required $110 million be spent on LI programs over the course of 15 years. Should LI customers be due the $85 million gap in spending to make up for this, just to get to a baseline of equality? How and when would this be paid? What would this mean for determining an equitable program budget?

If we are serious about correcting for historical disparities in program benefits, it would seem this might require either 100% of program budgets for the next several years be dedicated to LI programs or a massive infusion of additional funds to make up for historic LI shortfalls. Despite the logic behind this, both of these requests seem likely to receive kneejerk reactions of "that's simply not possible," with a willingness only to correct the disparity going forward. We often hear the same response in general about reparations, whether for land taken from Indigenous people or the enslavement and violence against African Americans—it is not practical to quantify historically and we lack the ability to pay what's owed. Allowing messiness and impracticality to stand as excuses for not addressing historic wrongs seems like a major loss. Do you have ideas about how to sell this idea of correcting for historic disparities to reluctant decision-makers?

2. IDENTITY INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	8
Practitioner	8
Utility	16*
Regulator	
Philanthropy	

* Utility stakeholders only rated housing stress and other economic stresses



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Climate vulnerability	4.3	4.3	4.3	4.3	0.0
Pollution	4.1	4.1	4.1	4.1	0.0
Demographics	5.0	5.0	5.0	5.0	0.0
Housing access	3.0	3.2	2.2	4.1	1.9
Language access	3.9	3.9	3.9	3.9	0.0
Opportunity scores	3.5	3.5	3.5	3.5	0.0
Health measures	4.4	4.4	4.4	4.4	0.0
Other economic	3.8	4.1	3.3	4.9	1.6

Identity Index – Discussion

Highlights:

- Opportunity scores were not well known or well received and were widely recommended to be cut. EEP staff concur.
- Health measures, pollution burden, and climate vulnerability were very important identity metrics to stakeholders.

Themes:

Knowing the identity of who is and isn't participating is a central need for assessing energy equity. Many of these metrics are existing, publicly available datasets. Several states and federal agencies (as required by Justice40) are using identity metrics to define "disadvantaged communities" (or some similar emphasis on disproportionately impacted groups).

Quotes:

"How do you we know if climate vulnerability has decreased?"

Key Questions:

How much should EEP invest in defining identity metrics vs waiting for guidance or to adopt what is being developed by others?

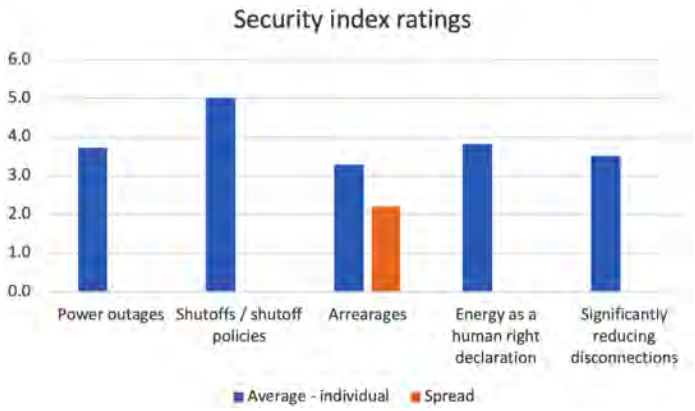
REFERENCES:

- Justice40 draft metrics and data submissions for defining disadvantaged communities
- NY State proceedings on defining disadvantaged communities – see especially June 2021 meeting

3. SECURITY INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	
Practitioner	6
Utility	11*
Regulator	
Philanthropy	

* Utility stakeholders only rated arrearages and significantly reducing disconnections.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Power outages	3.7	3.7	3.7	3.7	0.0
Shutoffs/shutoff policies	5.0	5.0	5.0	5.0	0.0
Arrearages	3.3	3.6	2.5	4.7	2.2
Energy as a human right declaration	3.8	3.8	3.8	3.8	0.0
Significantly reducing disconnections (utility rated only)	3.5	3.5	3.5	3.5	0.0

Security Index – Discussion

Highlights:

We had limited voting on this index but considerable discussion, and it has been our most active topic in Slack. The bottom line is that dramatically reducing or eliminating disconnections is the main metric people care about in this index.

Themes:

Eliminating disconnections is primary goal for many practitioners and grassroots advocates. They note the deaths that occurred during heat waves this summer and additional deaths during COVID after shutoff moratoria were lifted in many states. Some states are doing more than others at both disconnection reporting and reductions; the majority of states do not require any reporting on disconnections.

Arrearages were listed as a key factor in energy insecurity, particularly as many households have accrued additional debts during COVID-related shutoff moratoria.

Quotes:

"The time to restore people also varies widely by utility and needs to be considered."

Key Questions:

- What are the desired reporting guidelines for disconnections?
- What series of protections should be in place before a disconnection can be considered?
- What is a proposed pathway to greatly reduce or eliminate disconnection?
- There are a number of storytelling projects about the impacts of utility disconnections—how could these and qualitative input in general be incorporated in our framework?

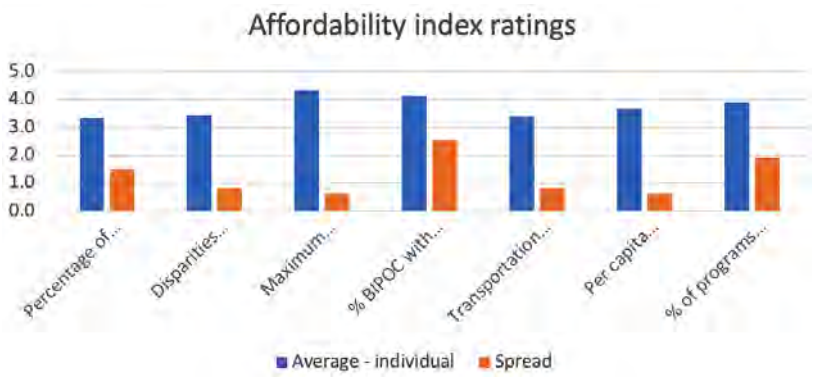
REFERENCES:

- Info on CA efforts
- Info on CARES funding, executive bonuses and shareholder payouts, and shutoffs
- Info on increased COVID infection and mortality as a result of shutoffs and evictions

4. AFFORDABILITY INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	7
Practitioner	26
Utility	11*
Regulator	
Philanthropy	

* Utility stakeholders only rated PIPPs, severe burdens, and deep savings.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Percentage of income payment plans (PIPP)	3.4	3.6	3.0	4.5	1.5
Disparities between customer classes	3.4	3.6	3.2	4.0	0.8
Maximum energy burdens	4.3	4.1	3.8	4.4	0.6
% BIPOC with severe burdens	3.9	3.9	2.5	4.8	2.3
Transportation burdens	3.4	3.6	3.2	4.0	0.8
Per capita energy program budget	3.6	3.5	3.4	3.6	0.2
% of programs dedicated to deep energy savings	3.7	3.8	3.0	4.4	1.4

Affordability Index – Discussion

Highlights:

Despite being an imperfect measure, energy burdens are still the most preferred metric for representing affordability. A subset of this concern was the percentage of BIPOC households with high (>6% income), severe (>10%), or extreme burdens (>15%), which had lower ratings among utility stakeholders but was near the top among practitioners (4.5) and substantially higher among grassroots community stakeholders (4.8).

There was considerable vocal and chat support for percentage of income payment plans (PIPP), although this is not well reflected in the scores and may represent either a minority opinion or greater familiarity with these metrics.

Themes:

Electrification: Some efforts to reduce emissions, particularly electrification, would raise energy costs without significant changes to program design or additional supports. Any increase in cost from decarbonization is strongly opposed by many affordability advocates. Another feedback loop of concern is that as more people stop using natural gas or the electric grid, those that are not able to switch to electricity or distributed sources will be forced to pay a higher share of maintaining the fossil fuel infrastructure. People in cities like Detroit have experienced sharp increases in their water bills, as the systems were originally built for much larger populations but white flight resulted in many paying lower rates in the suburbs. At a minimum, ensuring that costs do not increase, either immediately or from rate increases down the line, should be the baseline for any new clean energy programs.

Quotes:

"I would examine RESIDENTIAL RATE DESIGN, too. For example, large customer charges are regressive and diminish value of energy efficiency investments. Perhaps also look at late fees and deposit requirements—other punitive policy data."

"On % program $ dedicated to deep retrofits, I'd specifically want to see that with a racial/ethnic/ income overlay. As we've discussed a bit already, $ may exist but folks may not be able to take advantage of it."

"Instead of per capita program budget for safety net, why not focus a metric on the recipients? e.g. % of energy costs covered by avg. safety net recipient."

"Problem with all energy burden metrics: energy is a housing cost—unless its transportation. The federal standard is 33% is the right housing burden. Every standalone energy burden metric suggests advocates mean to add that to whatever else the consumer has to pay for to survive. Measure housing burden including energy—then focus on those whose housing will be more affordable if we can lower the energy burden"—lots of support for total housing burden.

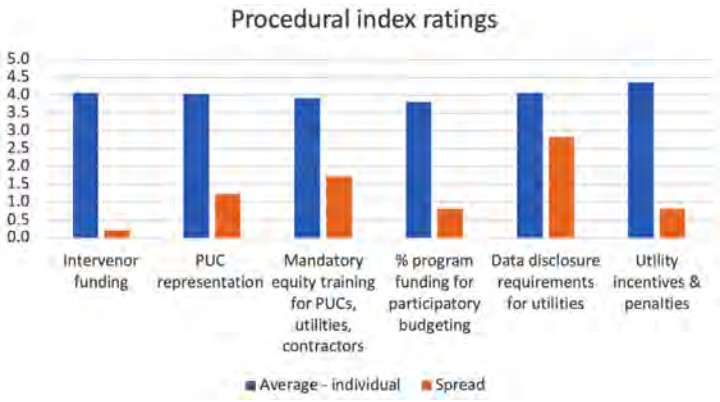
Key Questions:

- How should total housing burden be defined?
- What other cost of living factors should be considered in affordability?
- What are the limitations of estimating current energy burdens? (e.g. accessing IPUMS Census data or customer-scale utility data)
- If rate structure is important, how should that be assessed?
- Which elements of affordability should be treated as prescriptive guidance and which as outcome metrics?

5. PROCEDURAL INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	6
Practitioner	25
Utility	11*
Regulator	15
Philanthropy	

* Utility stakeholders only rated data disclosure requirements for utilities.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Intervenor funding	4.1	4.1	4.0	4.2	0.2
PUC representation	4.0	4.1	3.6	4.8	1.2
Mandatory equity training for PUCs, utilities, contractors	3.9	3.9	3.0	4.7	1.7
% program funding for participatory budgeting	3.8	3.8	3.4	4.2	0.8
Data disclosure requirements for utilities	4.1	4.0	2.0	4.8	2.8
Utility incentives and penalties	4.3	4.3	3.8	4.6	0.8

Procedural Index – Discussion

Highlights:

Addressing how utility compensation ties to program performance, especially achieving equity targets, received the highest ratings. Data disclosure requirements (except among utility stakeholders), PUC representation and mandatory equity training all received strong support.

Themes:

This index is one of the most complex. Creating equitable participation processes includes appropriate external structures (e.g. making meetings and documents more accessible), internal work (equity trainings and increasing BIPOC staff representation) and on-going relationships between regulators and impacted communities.

Quotes:

"I see a lot of data disclosure requirements coming from settlements and stipulations, or potentially from rulemaking proceedings where the PUC defines new procedures."

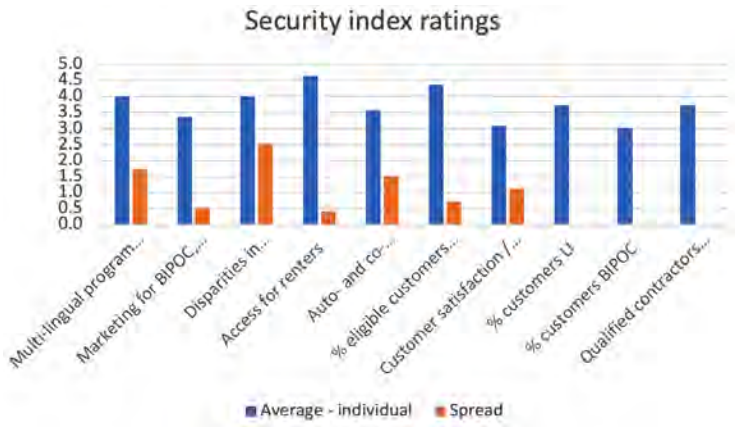
Key Questions:

The question of what constitutes and outcome vs. an output for this index is crucial. Do we need to track intervenor funding, or should we focus on establishing guidelines for this, as one method of increasing public engagement?

6. ACCESS INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	1
Practitioner	21
Utility	11*
Regulator	
Philanthropy	

* Utilities did not rate access for renters, % eligible customers, or customer satisfaction. Practitioner did not rate the last three measures.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Multi-lingual program options	3.4	4.2	3.3	5.0	1.7
Marketing for BIPOC, frontline audiences	3.1	3.1	3.0	3.1	0.1
Disparities in participation rates by race, etc.	2.7	3.8	2.5	5.0	2.5
Access for renters	5.0	5.0	5.0	5.0	0.0
Auto- and co-enrollments, ease of enrollment	3.6	4.3	3.5	5.0	1.5
% eligible customers served	5.0	5.0	5.0	5.0	0.0
Customer satisfaction/utility trust scores	2.0	2.0	2.0	2.0	0.0
% customers LI	3.7	3.7	3.7	3.7	0.0
% customers BIPOC	3.0	3.0	3.0	3.0	0.0
Qualified contractors serving all HH	3.7	3.7	3.7	3.7	0.0

Access Index – Discussion

Highlights:

The raters were almost entirely utility stakeholders (plus one participant in the practitioner session).

Themes:

The importance of end outcomes vs outputs: This was raised for other indices but was most prominent in the Access Index discussion. Better design of marketing materials is good, but meaningless if it doesn't result in participation by desired groups, typically most historically disadvantaged and/or currently vulnerable.

Heated conversation around financing: Financing sparked a lot of debate-notably the idea that people with lowest incomes and/or highest burdens should be expected to somehow pay for these upgrades, even over time. There was concern that financing could be predatory or have negative, have unintended consequences (e.g. liens on houses), or that the presence of financing could reduce the motivation to subsidize upgrades. They also expressed that

because rates change (mostly increase) and energy savings are often underestimated, it is not possible to guarantee or even predict savings. There was skepticism about the idea that these improvements would pay for themselves.

There were a few others that spoke up about financing being important, particularly for certain income brackets, e.g. just above 200% where households not eligible for assistance programs but still may not have enough to fund upgrades out of pocket. Even for income eligible households, grant programs that cover the full cost (like WAP) have very limited slots relative to need and long waitlists.

The trade offs of this metric strike me as similar to the potential tradeoffs between electrification and affordability. It is possible to target and structure well to serve households meeting specific criteria, but it is very possible to get it wrong or perpetuate inequities.

Utility trust scores: Many advocated for cutting this metric; EEP staff agreed.

Quotes:

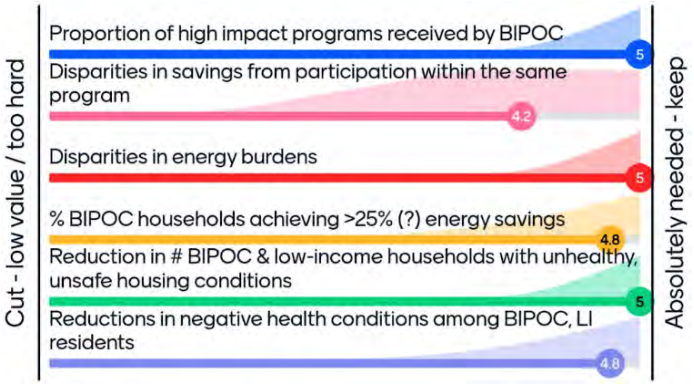
"I would add removal of immigration/citizenship eligibility participation requirements." [especially for govt programs like weatherization]

"Not just access for renters, but for a variety of different housing types" like manufactured housing

"Don't measure outputs like program materials. At all. Results only." +1

"I would also say that actual access metrics are more important. Good program design is a necessary first step but it's only important to the extent that it leads to equitability in who's actually accessing the program."

7. HOUSEHOLD BENEFITS INDEX – BY THE NUMBERS



Household Benefits Index – Discussion

Highlights:

Because of the limited number of responses and limited time reviewing this index, stakeholder feedback remains largely unknown. Based on feedback about affordability and security and health measures, we would expect these metrics, which focus on the outcomes of individual households, would be important to many.

Themes:

Measuring health outcomes at the household level is going to be difficult, and other metrics would require collection of participant data, presumably by utilities or the program administrators they contract with.

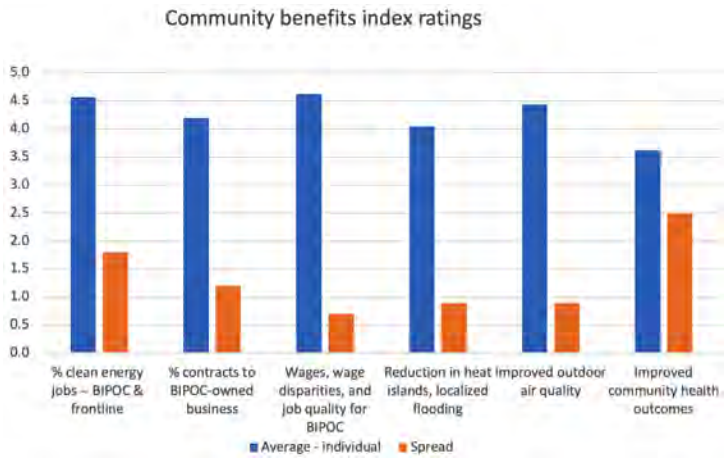
Key Questions:

- Should this be its own index or should it be coupled with community benefits?
- What is the state of data availability for these metrics? Are there leading states or municipalities we could look to for guidance?

8. COMMUNITY BENEFITS INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	5
Practitioner	6
Utility	11*
Regulator	
Philanthropy	

* Utilities did not rate wage disparities.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
% clean energy jobs — BIPOC & frontline	4.6	4.1	3.2	5.0	1.8
% contracts to BIPOC-owned business	4.2	3.8	3.0	4.2	1.2
Wages, wage disparities, and job quality for BIPOC	4.6	4.7	4.3	5.0	0.7
Reduction in heat islands, localized flooding	4.0	4.2	3.7	4.6	0.9
Improved outdoor air quality	4.4	4.2	3.7	4.6	0.9
Improved community health outcomes	3.6	4.0	2.5	5.0	2.5

Community Benefits Index – Discussion

Highlights:

Economic benefits and improved community health benefits rate highly among most stakeholder groups (although averages were lowered by utility ratings, which was a common theme).

Key Questions & Staff Reflections:

Achieving greater equity in health and economic benefits has traction in many places, including from some utility partners. Diverse coalitions with interests including labor, civil rights, environmental justice, and other constituencies have advocated for their inclusion in program design. And yet, for some metrics (e.g. EJSCREEN pollution scores), there are major disparities by race and income. Because these metrics are affected by factors outside of any one party or agency's control, regulators and utilities may understand their value but be reluctant to take responsibility for achieving better outcomes.

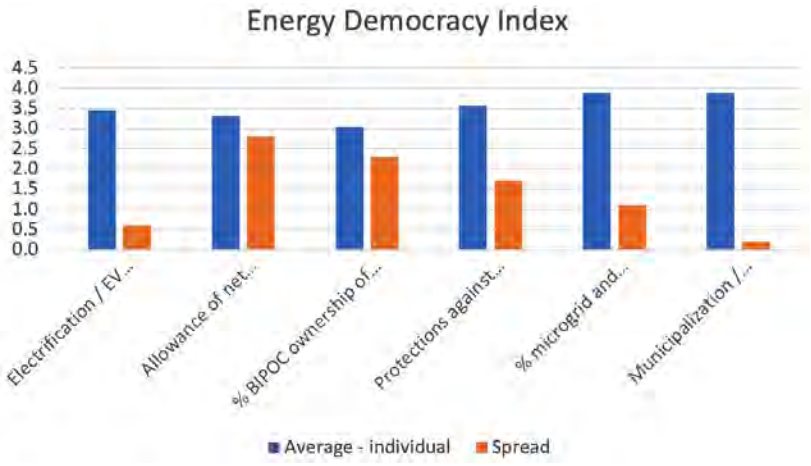
If the Community Benefits Index identifies inequities, how should those be addressed by different stakeholders? As a starting point, they may be used for identifying disadvantaged communities and targeting program investments. But there may be more nuanced, stakeholder specific guidance. If a community action agency notes a household is located within an urban heat island and has numerous heat vulnerability factors, what agencies and organizations does it need to coordinate with to reduce the risk of heat illness and mortality? A local non-profit might be available to plant shade trees; if the household did not have air conditioning it might be prioritized to participate in an air source heat pump program, which would also provide cooling. The layers of action that might emerge from this index will require significant thought and guidance.

On another note, it is unclear where data for many of these metrics would live. Are these held by state agencies? Are there universal metrics we can identify or will this require more user input?

9. ENERGY DEMOCRACY INDEX – BY THE NUMBERS

SESSION	# OF RATERS
Community	4
Practitioner	5
Utility	11*
Regulator	
Philanthropy	

* Utilities only rated net metering and % BIPOC ownership of solar.



METRIC	AVERAGE – INDIVIDUAL	AVERAGE – SESSION	LOW – SESSION	HIGH – SESSION	SPREAD
Electrification/EV-ready ordinances	3.5	3.5	3.2	3.8	0.6
Allowance of net metering, community solar, community choice aggregation	3.3	3.8	2.2	5.0	2.8
% BIPOC ownership of solar, storage, EVs	3.1	3.5	2.2	4.5	2.3
Protections against "greentrification"	3.6	3.7	2.8	4.5	1.7
% microgrid and resilience investments in BIPOC and frontline communities	3.9	4.0	3.4	4.5	1.1
Municipalization/public utility ownership and control	3.9	3.9	3.8	4.0	0.2

Energy Democracy Index – Discussion

Highlights:
Only five practitioners rated the full group of Energy Democracy metrics, and utility stakeholders, not surprisingly, rated net metering and BIPOC ownership of clean energy lower (2.2 for both). Interest in the Energy Democracy Index as a whole received better scores in the overall index ratings (a 3.9).

There were questions about the meaning of "greentrification", an idea expressed to us by staff at Seattle City Light, who worried about the potential for gentrification specifically arising from investments in clean energy, like the presence of EV chargers or microgrids.

Themes:
Energy democracy is fundamentally opposed to an energy system run mainly by monopoly, investor-owned utilities. Proposing greater community ownership has already been met with significant resistance in numerous places.

Level of interest in BIPOC ownership of clean energy assets is relatively unexplored. Many practitioners expressed an interest in focusing on security and affordability first and were not linking these to energy democracy metrics. To those who are more supportive of the democracy index, these metrics may represent a path toward security and affordability.

Restorative WG member – 10/22/21
"I was thinking about why metrics for restorative justice often seem reductive or ideological—as if a certain ownership model alone is equivalent to restorative justice. Looking at your calculators, it occurred to me that maybe restorative justice is actually the presence of a cluster of co-occurring indicators, including those from the other equity working groups. So, (making up an example here for illustrative purposes) restorative justice in Cleveland might look like reducing energy burden and increasing representative membership of CPP board + city council in formerly redlined poverty neighborhoods and some opportunity for wealth sharing via CPP reinvestment of profits into community institutions. The wealth sharing or community owned governance models alone aren't restorative if they don't also co-occur with reliability, cost reduction (recognition), representation (procedural), health benefits (distributive) etc. and actually it is the combination of these factors situated within an understanding of historical/social context that together create restorative justice."

Quotes:
"I'm having trouble with these—your bias to electrification/EVs as a BIPOC/justice outcome is doubtful." – practitioner

Key Questions:
When it comes to owning clean energy assets, knowing the identity of program recipients is critical. Some have suggested that disclosing identity should be a requirement (or at least an opt out), to participate in programs funded by rate payers or tax payers. What are the pros and cons of approaches to gathering data on race, income, and other identities for solar installations, etc. Where are the key opportunities in the system to collect this data? (e.g. anyone requesting a federal tax credit must disclose race, income, etc)

For locations that have higher energy democracy scores, what mandates, supportive policies and incentives/disincentives are in place to foster energy democracy? What arguments and language have been used successfully?

How should utility resistance to community ownership be documented in the framework? Are there metrics for this?

REFERENCES:

The Energy Democracy Project is our go-to resource and lists collaborating organizations from around the country. https://energydemocracy.us/

Energy Equity Project Data Sprint

Team 1 Final Deliverable
March 18, 2022

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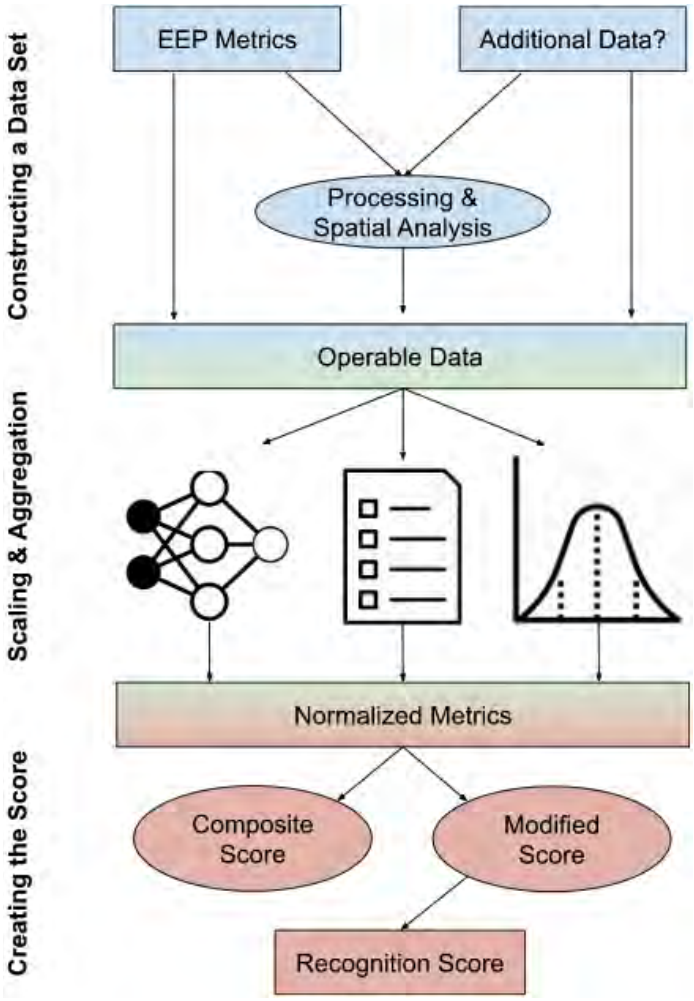
Framing: How we understand the purpose of this exercise and implications for our approach

- To the extent possible, the score should strive to quantitatively reflect the (in)equity and (in)justice of peoples' lived experience with the energy system.
- To do so, we should structure our score based on the leading thinking from communities/experts on what constitutes an equitable and just energy system
- The score should be a tool to enable future analysis and insights and the current focus on producing census tract level data should not be construed as a suggestion that solutions should be focused at that scale.

Process: How we are approaching the challenge

- The process diagram below lays out the steps we used to organize our work efforts. Ovals and icons represent actions while rectangles represent inputs and outputs. The three project phases on the left side structure the steps to producing a final score.

Figure 1. Team 1 Energy Equity Score Process Overview Diagram



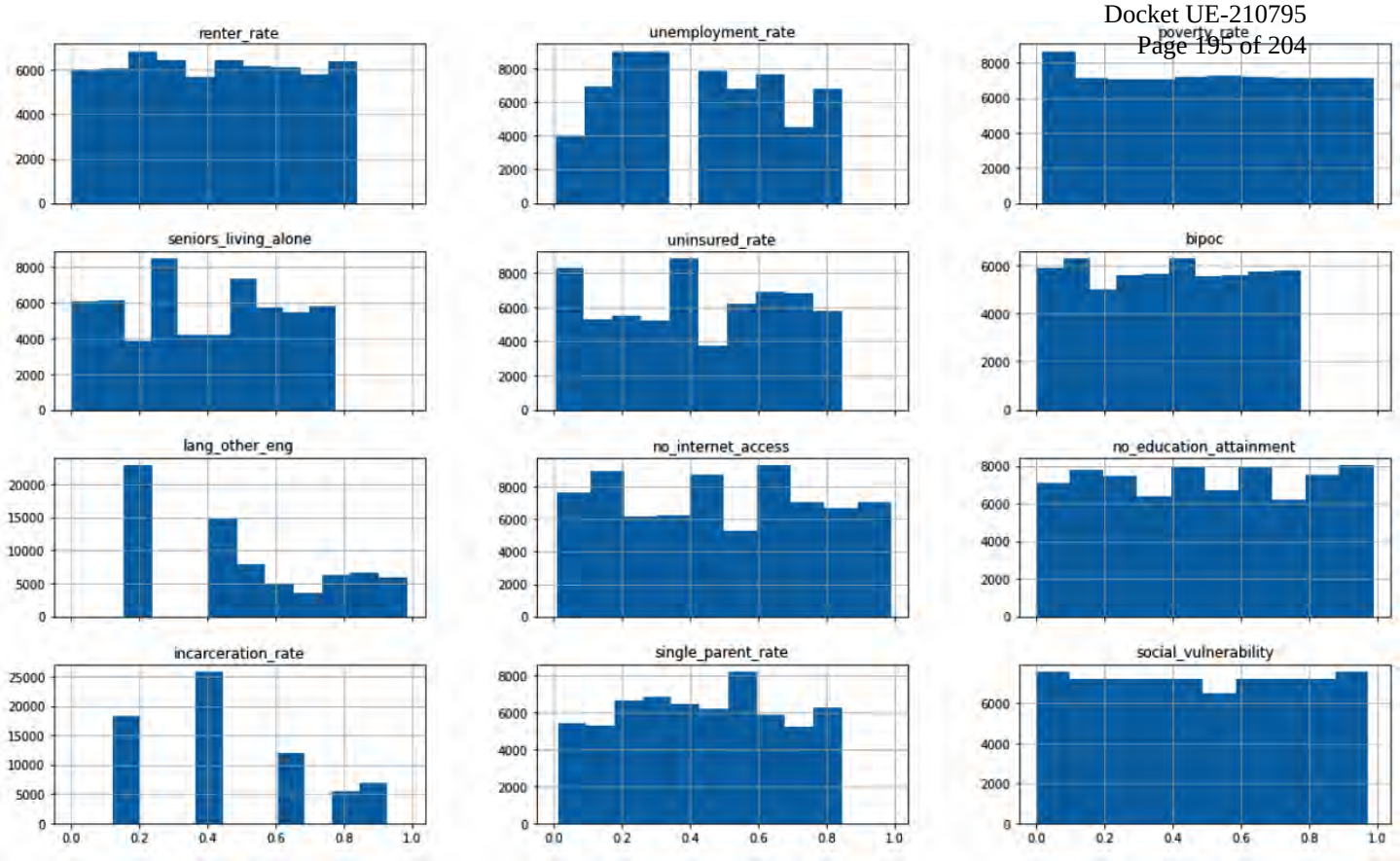


Figure 2. Histograms of the demographic sub-dimension's constituent metrics.

Constructing the Data Set

- Spatial Metrics
  - We resampled EIA 861 reliability data to the census tract level as described in our metrics documentation.
  - This data is notably limited in resolution because it is only reported at the utility territory level (i.e. it does not capture any difference in reliability between a census tract in Ann Arbor and Detroit as long as they are both in DTE territory)

- **American Community Survey (ACS) data and other non-spatial metrics were extracted and combined as described in our metrics documentation.**
  - We performed significant additional cleaning on the provided data set including redownloading raw ACS data for internet access and poverty rate because the data included negative values and percentages well above 100 among other issues that produced erroneous scores. These steps are documented in the data preparation and score calculation code available on the EEP drive.
  - Nonetheless, reviewing the histograms for metrics in the demographics sub-dimension in Figure 2 we still see unexpected behavior. We would expect histograms of percentiles calculated from random distributions to be relatively flat (i.e. have close to an even number of census tracts per bin) like poverty rate or social vulnerability. Therefore the underlying data should be vetted further before additional analysis.

- Additional Data
  - We included one additional metric in our final score, the percent of single parent households per tract, via the demographic sub-dimension.
  - We were not able to include any of the additional data provided toward the end of the project such as the ACEEE Scorecard, community power scores, etc.

- Scaling & Aggregation
  - The table below lists various options we brainstormed for standardizing metrics so that those with unlike units could be combined into a single score.
  - We chose to standardize all metrics using the percentile method for consistency, expedience, and given our lack of expertise/resources to utilize the more qualitative methods.

Table 1. Metric Normalization Techniques

STANDARDIZING METHOD	PROS	CONS	EXAMPLE
Calculate percentile relative to all census tracts or some specific subset (i.e. only compared to census tracts in certain income bracket, with specific racial makeup, in a certain geographic zone, etc.)	Preserves relative relationships, relies exclusively on available data		CalEnviroScreen
Score groups of related variables e.g. 1 of 6 = 25 2 of 6 = 33 ... 6 of 6 = 100	Allows for qualitative assessment of importance of metric Creates a "conversation" between variables, a way of relating the importance of interactions	You have to know enough about the problem to accurately (usefully) combine variables that describe it	Energy Justice Workbook Policy evaluation tool
Set a threshold for the variable and determine what pop% fits that criteria	Great precedent – we should consider using this for energy burden because it already exists	Not all variables have a data-backed target	AEEE Energy Burden Report (High energy burden = pay more than 6% of income on energy bills)
Develop qualitative criteria for score in specific category e.g. Does the policy make energy more accessible and affordable to marginalized communities? 1 (No), 2 (A little bit), 3 (Somewhat), 4 (Mostly), 5 (Yes)	Allows for reasonable and sensible final score, easily understood	Hard to develop a qualitative question for so many variables Subjective and hard to determine what is "a little bit", "somewhat", and "mostly".	Energy Justice Workbook Policy evaluation tool

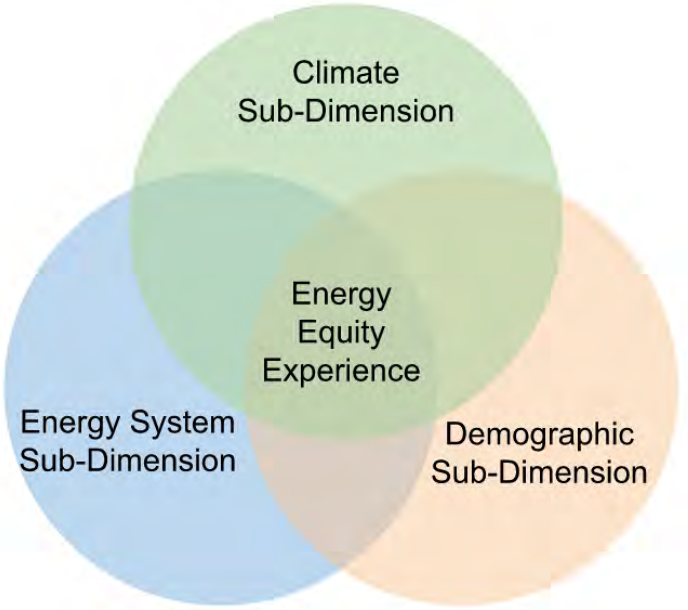


Figure 3. Energy-specific adaptation of the CalEnviroScreen theory on representing experience.

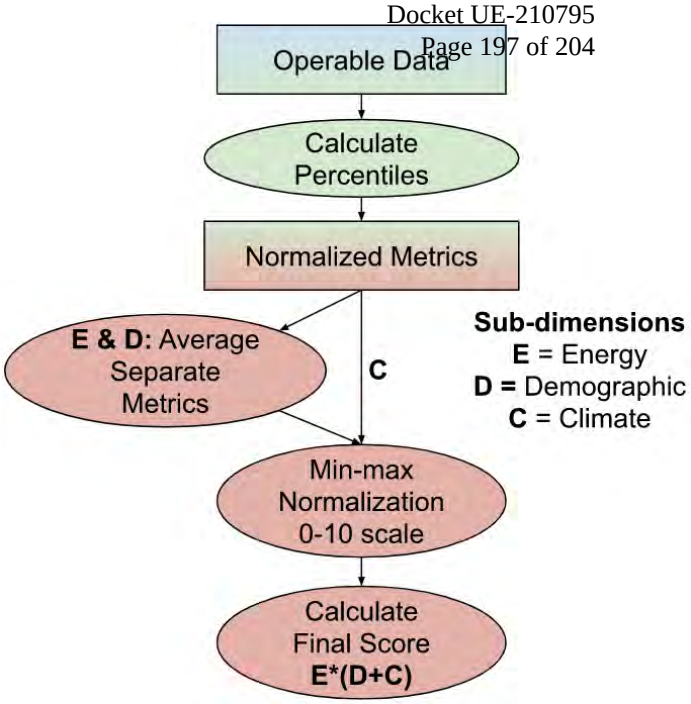


Figure 4. Detailed score calculation steps for the sub-dimensions and overall score.

Creating the Score

- Our approach was inspired by CalEnviroScreen and most closely mirrors their theory of representing experience. Our energy-specific adaptation of this theory is depicted in Figure 3, where the energy equity experience is the intersection of the Energy System, Demographic, and Climate sub-dimensions. Figure 4 shows the individual steps for calculating the separate dimensions and combining them into the final score.
- The Climate dimension is calculated by dividing the National Risk Index (NRI) Expected Annual Loss (EAL) score by the NRI Community Resilience score then calculating the percentile of each census tract. We chose to use only EAL and Community Resilience rather than the overall NRI score so that all demographic metrics are accounted for via the Demographic sub-dimension (the overall score incorporates a social vulnerability index).
- Each input metric is normalized by expressing its percentile relative to all other US tracts. However, comparing tracts at the national level may not be the best approach (i.e. for state-level decision making, it may be more useful to calculate percentiles among only tracts in a state).
- The Energy System and Demographic sub-dimensions are calculated by averaging their constituent metrics, listed in Table 2. This avoids weighting the score towards a sub-dimension solely because more data is available.
- As shown in Figure 4, all three sub-dimensions are then min-max normalized to a 0 to 10 scale.
- Finally, the three sub-dimensions are combined: Modified Final Score = Energy * (Demographic + Climate)
- We advocate for this construction—the Modified Score—over simply multiplying all three dimensions together—the Composite Score—we originally proposed, based on a brief post-hoc analysis of both methods. In particular, we found the Composite Score disproportionately reflected the Climate sub-dimension based on the correlations shown in Table 3.

Table 2. CalEnviro Method Sub-Dimensions and Metrics

ENERGY SYSTEM	DEMOGRAPHIC	CLIMATE MULTIPLIER
Energy-system specific metrics	*Metrics describing various population characteristics*	*Likelihood of disaster and capacity to address impacts*
EIA Reliability	Social Vulnerability Index	NRI Expected Annual Loss
LEAD Energy Burden	Employment rate	NRI Community Resilience
Average Age of Building	Educational attainment	
	Eviction rate	
	Poverty rate	
	% senior living alone	
	% without health insurance	
	% BIPOC	
	% households where English not primary language	
	% households without internet access	
	% with a disability	
	Incarceration rate	
	% renters	
	% single-parent households	

Table 3. Correlations among the sub-dimensions and two final score methods.

	Energy Score	Demographics Score	Climate Score	Composite Score	Modified Score
Energy Score	1.000000	0.269248	0.036696	0.500782	0.746802
Demographics Score	0.269248	1.000000	-0.020263	0.480824	0.493092
Climate Score	0.036696	-0.020263	1.000000	0.668485	0.562284
Composite Score	0.500782	0.480824	0.668485	1.000000	0.919686
Modified Score	0.746802	0.493092	0.562284	0.919686	1.000000

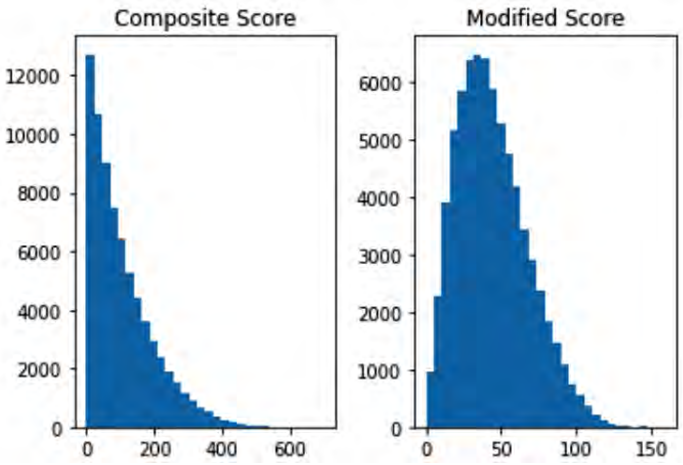


Figure 5. Histograms of resulting scores for the Composite and Modified Score methods.

- We found the Composite score had the strongest correlation with the Climate dimension, which we feel does not align with the stated purpose of reflecting energy equity experience. While the presence of climate risk may compound existing inequalities, the absence of climate risk does not ameliorate other inequities. As we can see in the side by side Composite and Modified histograms (Figure 5), the Climate dimension was skewing the Composite results heavily toward zero and potentially 'hiding' tracts with serious demographic and energy system inequities. Therefore, we propose using the Modified score, which shows the highest correlation with the Energy dimension (intuitively appropriate for an energy equity score) and incorporates climate risk without diminishing scores in tracts with low climate risk.
- Each of the dimensions are currently weighted equally as they can all interact and magnify each other but it is our understanding that the EEP intends to make these weightings available as parameters for users of the eventual online tool. Varying the weight of the climate component offers the opportunity to perform a sensitivity analysis on the importance of climate risk on the final score. Similarly, the ability to vary the climate multiplier allows policymakers and communities to choose how heavily they want to weight climate change impacts and the extent to which they feel climate change exacerbates pre-existing inequities.
- To further understand the sub-dimensions and resulting scores, we examine national and state-level maps in Figure 6 and Figure 7. Additional figures including national maps of each sub-dimension, histograms of sub-dimensions, and histograms of the final score by state are included at the end of the document.

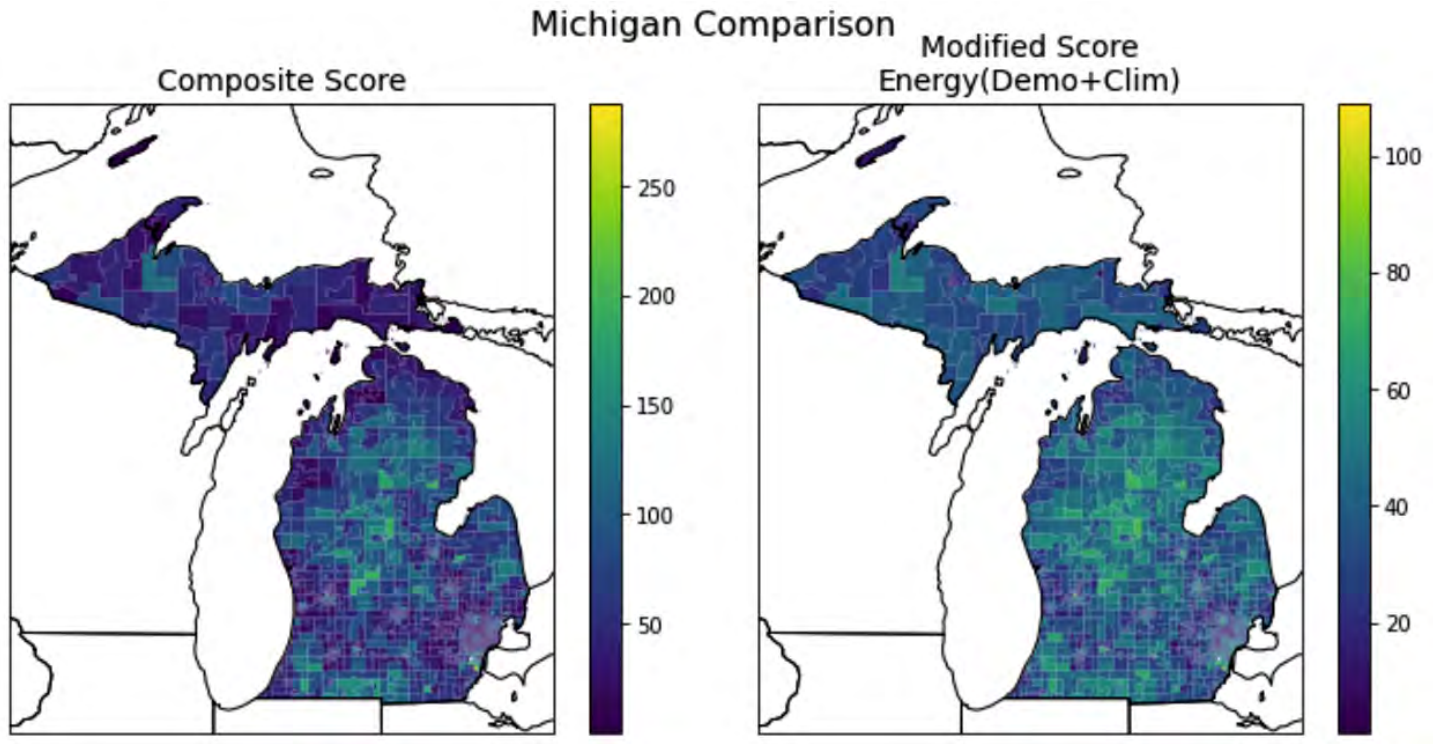


Figure 6. Comparison of resulting scores for Michigan using the Composite and Modified Scores. The effect of climate on the energy equity score is especially visible in the Upper Peninsula where low climate risk puts most tracts near the bottom of the score distribution under the Composite Score while the Modified Score shows many tracts closer to the middle.

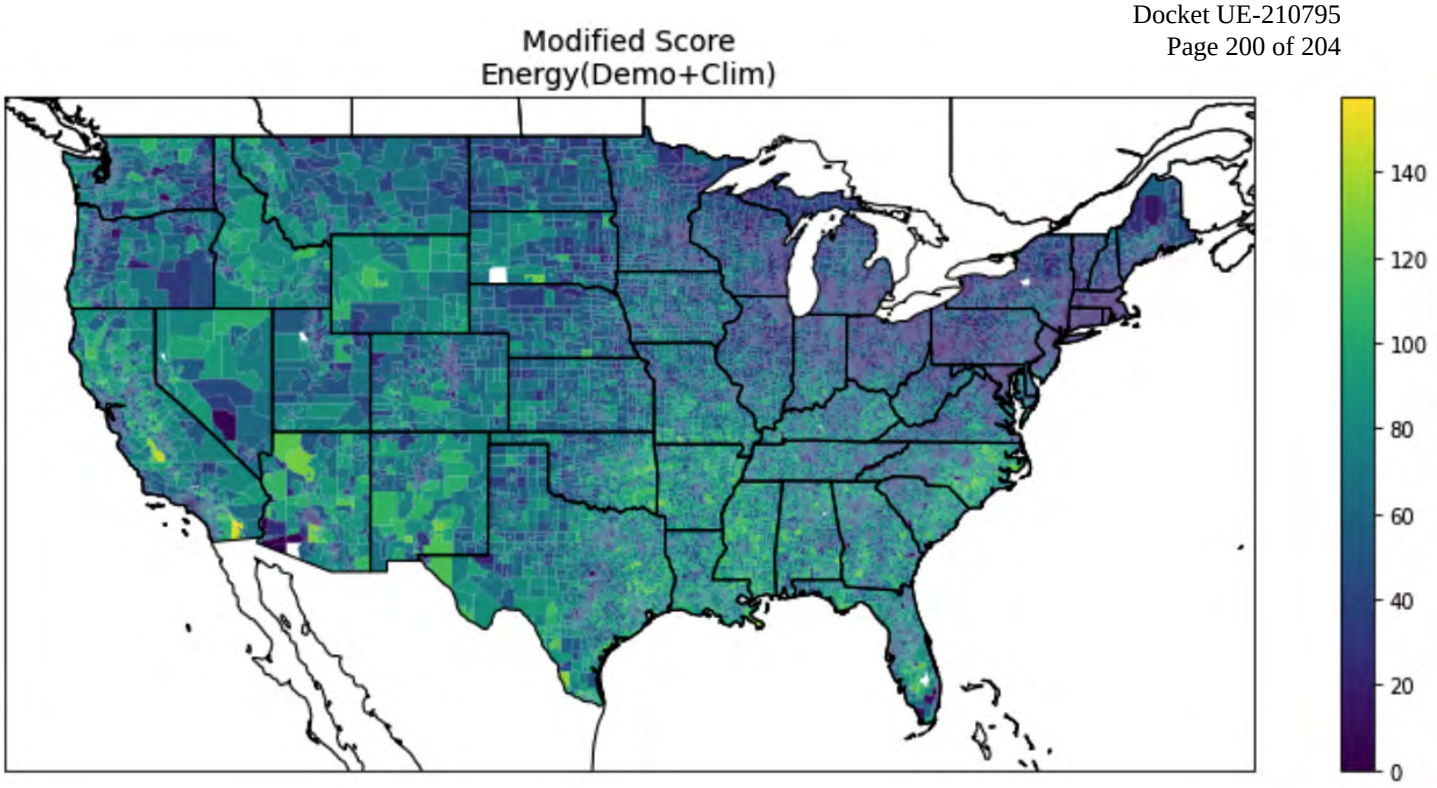


Figure 7. National map of Modified Score results.

Limitations and Future Work

- First and foremost, we acknowledge that we have not had the opportunity for meaningful community involvement in constructing this approach or verifying that it accurately reflects lived experiences. Thus, future work required to make our proposed method a viable scoring tool for energy equity across census tracts is a robust validation analysis that involves both quantitative and qualitative assessments of results.
- Climate multiplier uses FEMA National Risk Index (NRI). The FEMA calculations are backward looking as opposed to forward projection based on climate science, and so under-represent the risk and therefore the climate factors that exacerbate energy inequity. This makes the score less effective as a planning tool than a descriptive tool. Our score will fail to capture the eventuality that some areas will sharply diverge from the current national trend in future risk (areas prone to wildfire and coastal flooding, for example). However, as a placeholder we think the NRI data is valuable until a more robust future-looking vulnerability assessment is available.
- Future work should consider reliability reported at utility territory level, as well as utility-level policies and programs, to better take into account what services are available to individual communities.
- We advocate for more investigation into an energy equity score tool that can meaningfully incorporate energy justice principles defined and studied by our colleagues leading this work such as Michigan Environmental Justice Coalition (MEJC), Greenlining, and Initiative for Energy Justice (IEJ).
- We structured the Justice Principles Method (proposed in the draft deliverable) in an attempt to consider how the demographic factors provided in the EEP data set (like education, language, internet access) enable communities to shape their energy futures. Our team and the reviewers note that limited metrics/dataset availability hinders our ability to create a robust scoring methodology based on the justice principles framing.
- Some metrics that we propose adding include: state level energy policy, pollution, household fuel connections. Justin Schott also suggested utility project margins and percent energy ownership that is distributed.

Additional feedback and suggestions from the EEP that we were unable to implement include:

- Investigate correlations and internal consistency of variables. Consider a Chronbach's alpha to check for internal consistency.
- Factor analyses (exploratory or confirmatory) on 1) the metrics within each sub-dimension, 2) all the metrics of all the sub-dimensions (as if you were combining them all into a straight index—this will help to assess whether your assignments into sub-dimensions match the data), and 3) how the collapsed sub-dimensions interact with each other.
- Qualitative assessment is also useful. Maybe compare the overall index to % BIPOC on its own or the climate multipliers on their own, to see if anything has an overly large influence on the final result.
- Item response theory analysis, which is a technique to assess indices of latent variables and identify which pieces of an index are most influential on the final score.

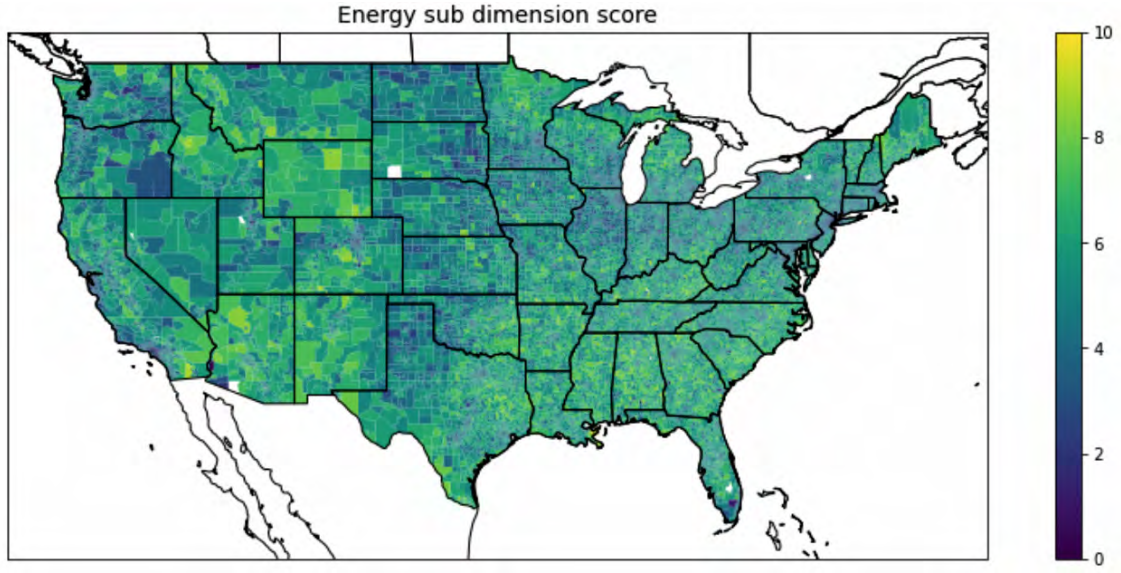


Figure A1. National map of normalized Energy sub-dimension.

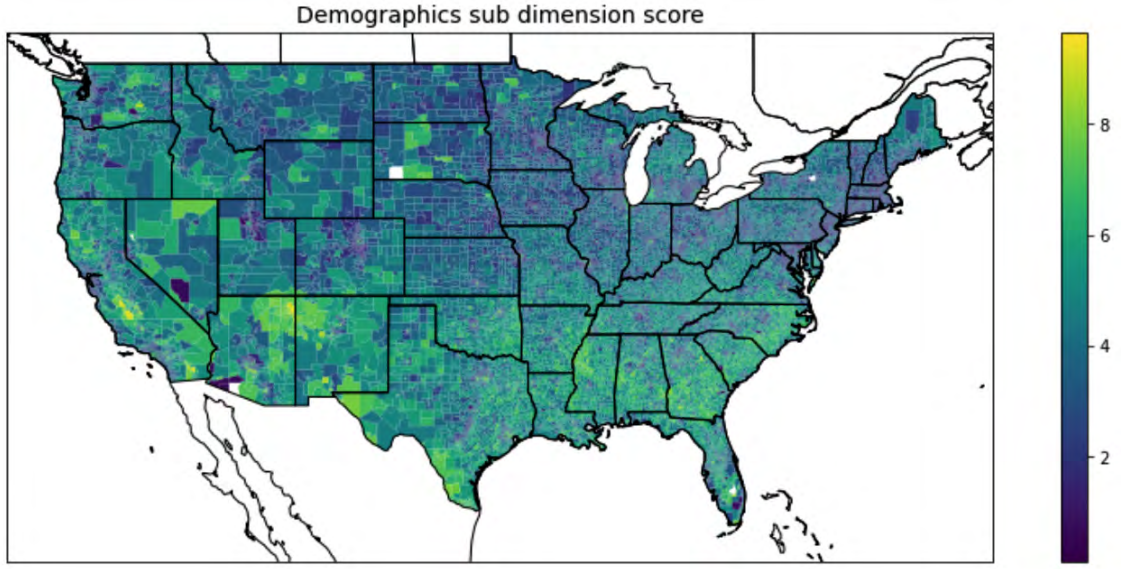


Figure A2. National map of normalized Demographic sub-dimension.

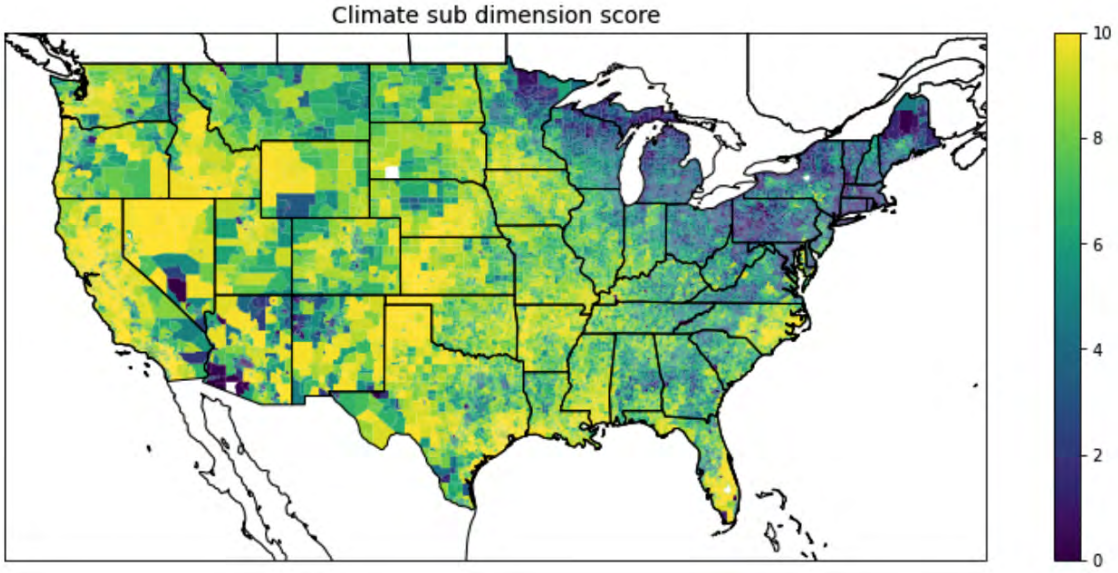


Figure A3. National map of normalized Climate sub-dimension.

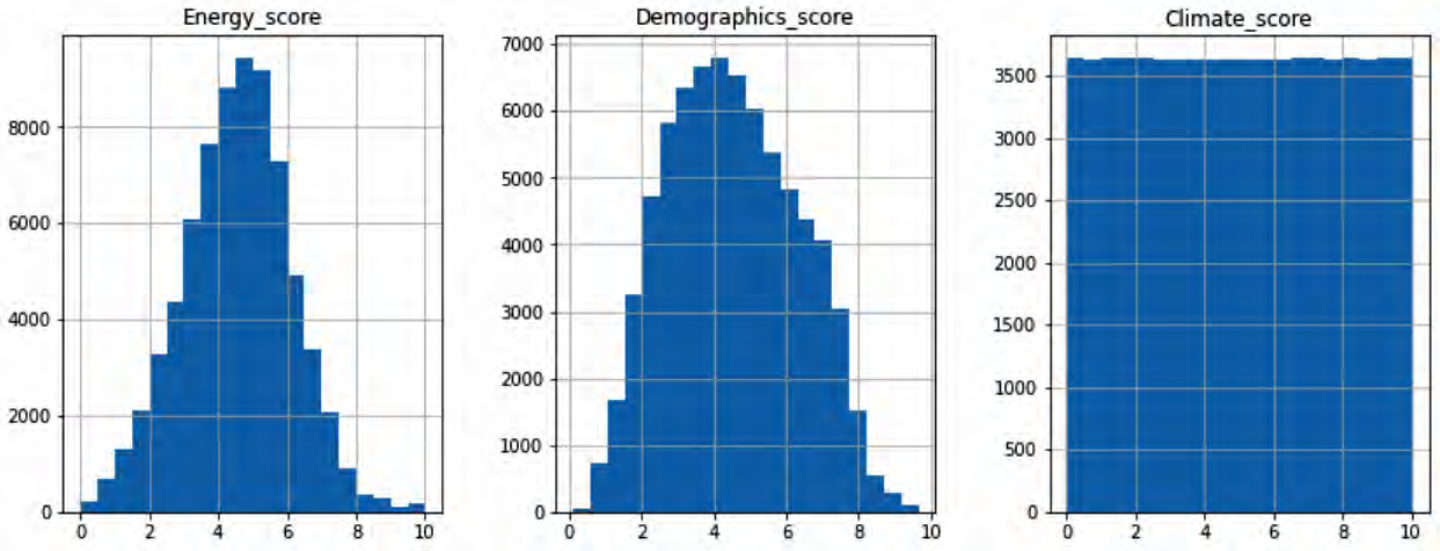


Figure A4. Histograms of separate sub-dimensions.

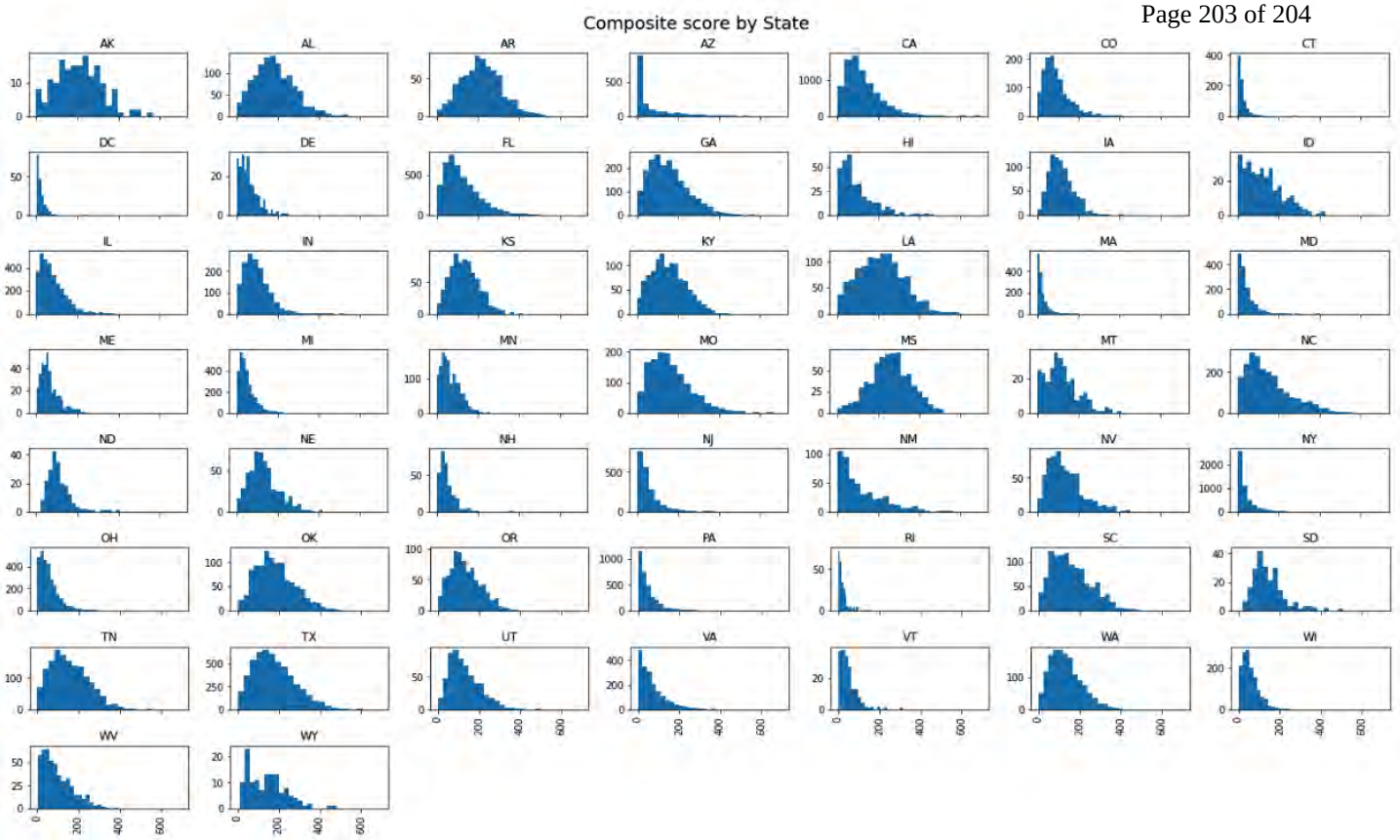


Figure A5. Histograms of Composite score results by state. ***Note:*** All census tracts are not created equal. Because they are determined by population, some geographical locations are more heavily weighted than others.

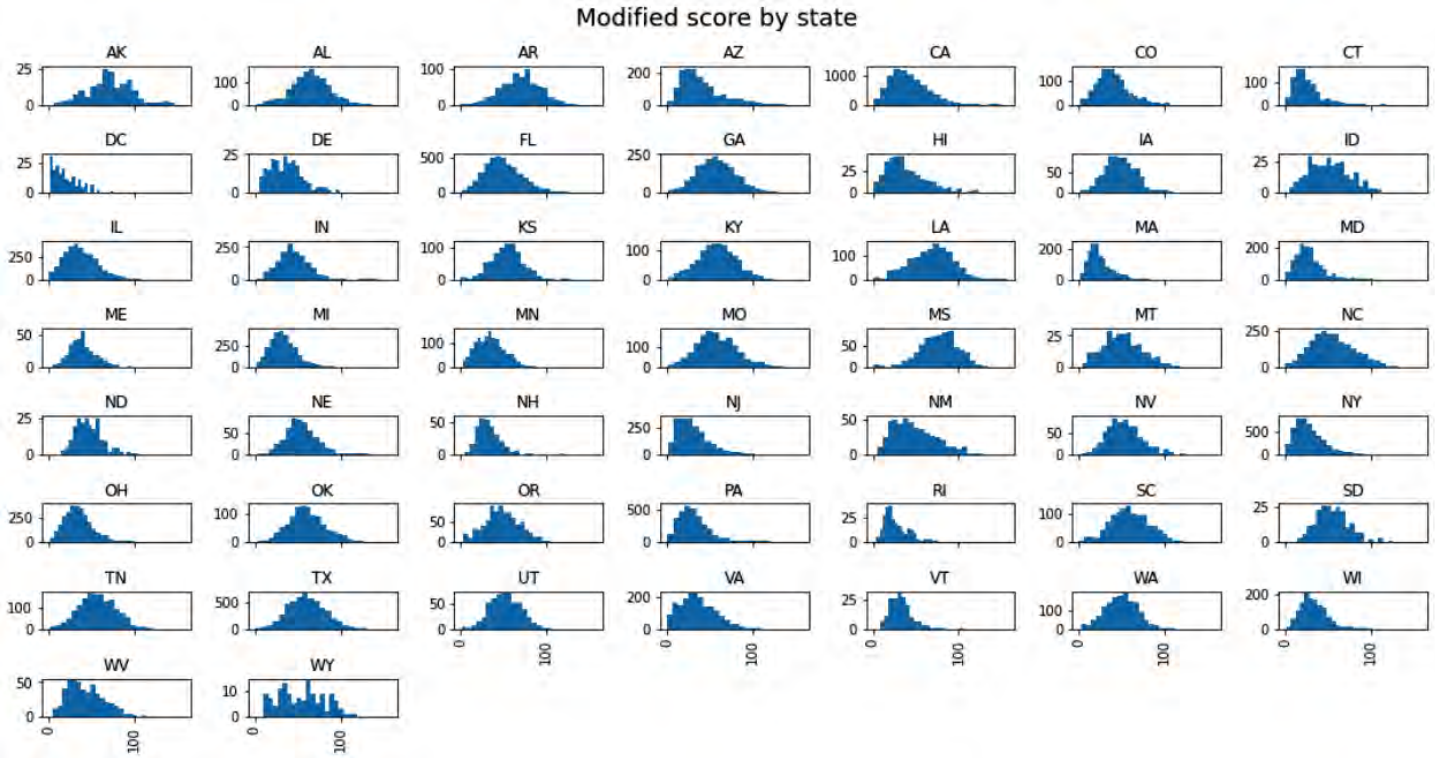


Figure A6. Histograms of Modified score results by state.

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