Energy Markets & Policy
BERKELEY LAB

Developing an Equity Framework for State Regulatory Decision-Making

Sydney P. Forrester and Andrew J. Satchwell

August 2023

This work was supported by the U.S. Department of Energy's Office of Electricity and Office of Energy Efficiency and Renewable Energy via the Grid Modernization Initiative under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

Disclaimer

Copyright Notice

Developing an Equity Framework for State Regulatory Decision-Making

Principal Authors
Sydney P. Forrester
Andrew J. Satchwell

Ernest Orlando Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90R4000
Berkeley CA 94720-8136

August 2023

The work described in this study was funded by the U.S. Department of Energy's Office of Electricity and Office of Energy Efficiency and Renewable Energy via the Grid Modernization Initiative under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

Acknowledgements

The work described in this report was funded by the U.S. Department of Energy's Office of Electricity and Office of Energy Efficiency and Renewable Energy via the Grid Modernization Initiative under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

The authors would like to thank Michele Boyd, Joe Paladino, and Paul Spitsen at the U.S. Department of Energy for support of this work. Any remaining errors or omissions are our own.

Table of Contents

Table of Figures

List of Tables

Executive Summary

States have recently acted on the topic of equity, including passing legislation, opening dockets, and/or conducting various studies. A subset of these states directed their respective regulators to incorporate equity considerations in regulatory processes. Lawrence Berkeley National Laboratory conducted a literature review and assessed how states have incorporated equity into regulatory processes and decision-making in order to support future efforts. This paper introduces a framework and contextualizes findings from various states into example processes, including topics such as the development of equity goals and definitions, intervenor funding, community engagement, performance-based ratemaking, and utility resource planning. We offer five key takeaways and considerations:

1. *Equity comprises multiple tenets and stages, all of which must be considered in parallel.*

Distributional, procedural, recognition, and restorative equity address specific sources and types of inequity from multiple perspectives, and therefore should all be considered together. Equity could come in the form of goal setting, tools, or metrics, and all three must be thoughtfully incorporated and aligned for states to begin institutionalizing and progressing on equity priorities.

2. *At the start of designing new equity-related processes, it is critical to establish clear and actionable goals, definitions, roles, and responsibilities to ensure progress.*

Some states have already defined equity and corresponding targets; however, others are still in the process of setting specific equity goals, definitions for relevant terms (including which populations should be prioritized), and how these should be applied. It is important that goals and definitions be specific and codified such that metrics and program administrators can be aligned. Throughout this process, iteration and public input is critical in order to connect community priorities with state goals. Appendix A of this paper includes examples of state goals and definitions, and Appendix B includes indicators and tools produced by states to identify vulnerable communities.

3. *Once goals are in place, it is critical to align tools and metrics that bridge the gap between* ***what*** *an intervention may do and* ***how*** *it may impact communities and households.*

The "*What*" could include any process or intervention that impacts ratepayers and residents (e.g., ratemaking, utility resource planning, DER incentive design), as well as relevant efforts underway such as roadmaps (e.g., distributed generation, electric vehicles), performance-based ratemaking, intervenor compensation, community solar programming, and equitable financing. In each case, the "*How*" is understanding the distribution of qualitative and quantitative impacts on communities that traditionally have not been analyzed with the geographic granularity or proper metrics needed to capture disparities. To do this successfully, it is important to select proper metrics; establish a baseline (using indicators that differentiate impacts on vulnerable communities); and create a method to track progress towards desired outcomes (linking back to established, overarching goals). Appendix C lists examples of how regulators have engaged utilities,

communities, and other parties to promote equity in certain processes such as workforce development, electrification, transportation, distributed energy resource adoption, distribution planning, integrated resource planning, ratemaking, and more.

4. *Processes should be stakeholder driven. It is important to not only increase education and outreach, but to actively seek out and incorporate feedback from inclusive public processes and build in accountability mechanisms.*

Stakeholder input that includes a community voice can provide both a helpful starting point as well as a feedback loop to improve upon processes. Appendix C has examples of how equity is playing out in utility activities. In some cases, utilities have been directed to increase transparency by specifically reaching out to vulnerable communities and hosting workshops. Some utilities are required to produce reports with data related to established equity metrics; others are directed to come up with equity plans of their own, which independent third parties then comment on and/or review from a diversity and equity perspective. Some states simply encourage utilities to make progress on equity, while others have specific compliance targets.

5. *Processes should be iterative. Feedback loops between evaluations and program design provide the flexibility to better align existing interventions with community priorities and to incorporate equity into future decision-making.*

Appendix C includes examples of states with equity-specific roles at the state level or committees dedicated to providing feedback and recommendations to regulators and utilities. For existing programs, quarterly or annual reports can help accountability committees identify gaps. In turn, these committees can then gather input and provide recommendations for improvements. With a better understanding of gaps, new program designs can support equity goals by addressing the highest priorities and incorporating lessons learned from previous experiences.

Many states have taken initial, important steps towards including equity into regulatory decision-making processes. In the near term, a cohesive set of goals and definitions could help align state goals with those under their jurisdiction. Building on goals and definitions, states can then integrate various activities to support equitable distribution of benefits through mechanisms to track progress, gain feedback, and make changes where appropriate.

1. Introduction

A growing number of regions in the United States have begun to increase their emphasis on equity in utility regulatory decision-making. Twenty-two states, including the District of Columbia, incorporated equity goals in regulatory activities between January 2020 and July 2022.[1] This activity occurred both within existing state utility regulatory processes (e.g., integrated resource planning, distribution system planning, energy efficiency and weatherization, rooftop solar compensation, grid modernization, transportation electrification, emergency response or load management, various roadmaps, rate cases, and decarbonization), as well as new proceedings focused exclusively on equity or related topics such as diversity and inclusion (Hanus et al., 2023). Some states have more explicit targets and accountability protocols, while others included equity as more of a qualitative or non-binding goal (e.g., an executive goal, as opposed to a mandate with a timeline and penalties), which may result in lower impact unless strengthened via future interventions or program design (see Appendix A for a selection of state goals and definitions).

In some cases, regulators have initiated these actions in states through issuing orders independent of other state government and/or opening dockets. In other cases, efforts begin with legislative action or executive, governor goals and/or roadmaps (Hanus et al., 2023). Hanus et al. (2023) identified five main energy equity objectives addressed by these various actions (in order of prevalence): (1) Recognizing disadvantaged communities, (2) Identifying equity as a goal, (3) Identifying environmental justice as a goal, (4) Increasing transparency, and (5) Establishing or enhancing intervenor compensation. Nested outcomes spanned a large number of categories including access to financing, access to technology, education and outreach, workforce development, and more.

Conceptually, equity definitions and frameworks have been developed by researchers and in literature that has coalesced around several concepts and terminology within the field of environmental and energy justice (Jenkins et al., 2021). Notably, Sovacool and Dworkin (2015) introduced energy justice as the fair dissemination of both costs and benefits of services while maintaining representative and impartial decision-making. Often, energy justice is broken down into three key elements[2]: *Distributional* Justice, *Procedural* Justice, and *Recognition* Justice (Heffron et al., 2015).

- Distributional justice aims for an even spatial distribution of energy system costs and benefits.
- Procedural justice requires engagement and consideration of all stakeholders throughout decision-making, including transparent communication, disclosure, and impartiality.
- Recognition justice ensures that under-recognized individuals be fairly treated and represented.

[1] Based on Hanus et al. (2023) review of regulatory dockets "in process" during this timeframe that found activity in CA, CO, CT, DC, HI, IL, MA, MD, ME, MI, MN, MS, NM, NY, OR, PA, RI, VA, WA, and WI.

[2] Some literature includes "restorative justice" as another equity element, which acknowledges the historical and current burdens placed on communities and implements actions that remedy these disproportionate impacts. This report considers the concepts in restorative justice alongside recognition justice throughout.

In practice, the application of these concepts varies by the characteristics and needs of the impacted region or communities, the actions or policies under consideration, and other factors. Due to the intersection of energy equity, affordability and many other issues, the primary stakeholders interested in and affected by equity frameworks include consumer advocates, faith-based organizations, grassroots community groups, and other third parties, in addition to regulators, utilities, and customers.

The framework described in this report is meant to build upon any foundation that a state regulatory body may have in incorporating equity into its processes and decision-making. The report's framework is organized by three considerations: namely, equity as a *goal*, *tool*, and *metric* (Farley et al., 2021). Accordingly, the framework outlined in this report walks through (1) identifying the priorities and goals within the context of equity, (2) selecting vulnerability indicators to identify priority communities, and (3) measuring and tracking progress towards these goals. Each section defines important terms, identifies examples, considerations, potential implementation challenges, and solutions. The report concludes by applying the framework to two example decision-making and deliberative processes.

2. Equity as a Goal: Setting priorities and desired outcomes

First, it is important to clarify the priority of equity in regulatory processes and the types of outcomes that are desired. During this stage, it is important to set clear and specific goals, incorporate accountability mechanisms to make those goals actionable, and identify which new or existing regulatory processes may be relevant. This often entails balancing multiple objectives such as feasibility (e.g., ensuring sufficient resources to track progress in the short-, medium-, and/or long-term), sustainability (e.g., integrating goals relating to transportation, clean energy, generation capacity siting, and decarbonization), and equity (e.g., aligning definitions of equity and goals with community priorities). Another complementary framework introduces the idea that energy justice decisions should promote: (1) availability, (2) affordability, (3) due process, (4) good governance, (5) sustainability, (6) intergenerational equity, (7) *intra*-generational equity, and (8) responsibility (Heffron et al., 2015).

In some cases, it may be a longer process to set overarching equity goals, definitions for relevant terms, and where these should be applied. This is especially true when ensuring that the relevant stakeholders all provide input, incorporating public participation and iteration. More so when codifying these goals and definitions into legislation. Once established, each agency or program may consider establishing respective targets and desired outcomes. This would add specificity and, if paired with accountability mechanisms, would add more transparency. Agency or program-specific targets would also connect the higher-level state legislation and goals (e.g., those relating to environmental justice, distributed energy resources, greenhouse gas reduction, and affordability) with the activities and stakeholders in PUC or programmatic jurisdiction (e.g., utilities). Doing so would allow stakeholders to adjust their own activities and internal goals to move in a more uniform manner that aligns with PUC and state goals. For example, a review across states with equity goals found that a good portion of equity activity was realized through specific programs such as increasing access to financing for low- and moderate-income customers, incentives for specific clean energy technology adoption, or direct funding to income or geographically qualified participants addressing issues such as resilience (Hanus et al., 2023). Examples from this review, including various goals and definitions from eight separate states,[3] are selected and presented in Appendix A.

The process of developing goals is most effective and impactful when there is buy-in from all stakeholders early in the process, with clear roles and responsibilities, accountability protocols, specificity in terminology, and feedback loops in place to iterate and improve upon the process. The PUC or program manager may consider strengthening its agency-specific goals by:

- Setting clear, specific, actionable goals with intermediate targets
- Clearly defining the terminology used in goals, targets, and processes

[3] Examples from CA, CT, IL, MA, MD, ME, OR, and WA included in Appendix A

- Identifying relevant stakeholders, actively seeking input, and defining roles and responsibilities[4]
- Promoting transparency
- Establishing accountability processes

[4] Note that Maine recently enacted a law (Public Law 2021, Chapter 681 – LD 585) that requires collaboration with Indian tribes and designating a tribal liaison where the PUC's programs, rules, and services may impact tribe members (State of Maine, 2022).

3. Equity as a Tool: Indicators and prioritizing communities

Sovacool and Dworkin (2015) describe energy justice not only as a conceptual tool, but also an analytical tool to track program impacts as well as a decision-making tool for policy makers. Once statewide equity goals have been established, it is then important to define the populations that should be prioritized when considering distributional, procedural, and recognition justice (i.e., where inequity is most prevalent). States and regions have done this by identifying community indicators and then developing tools (e.g., maps and downloadable spatial data) to clarify where these communities may be. These definitions, tools, and/or maps can target programs and track the progress and equity impacts of interventions on communities.

One common example of programs that use indicators are those with criteria to verify eligibility for federal weatherization or bill assistance programs.[5] These programs determine eligibility at the individual level, which requires the customer to provide and validate data proving eligibility, creating an administrative burden on both the customer and program administrator. On the other hand, community indicators are often based on demographic data that are publicly available and updated frequently. As such, many different programs and states have begun considering definitions of vulnerable communities that extend beyond individual households to larger geographies based on indicator metrics for the general population, thereby identifying and quantifying inequity concentrated in certain areas. Identifying specific communities addresses recognition justice, while using this information to target incentives and programs address distributional justice.

One consideration when choosing indicators is to select geographic areas large enough to provide sufficient data but granular enough to capture distributional inequity, based on the assumption that the smaller the geography, the more households may resemble their neighbors. Many states have chosen census tracts for this purpose, which are generally smaller than a zip code but larger than census block groups. Data availability tends to be higher and tends to have a smaller margin of error at the census tract level when compared to block groups. Importantly, many census indicators at the tract level are publicly accessible and updated frequently (e.g., the Census Bureau's American Community Survey is updated annually). Programs can also supplement these community-level indicators with their own, more specific, granular data that may be updated at other frequencies (e.g., distribution grid map layers showing hosting capacity and community infrastructure such as municipal buildings and/or resilience hubs, tree cover, etc.). This approach allows programs to increase education and awareness efforts in specific areas, gain buy-in and feedback, qualify customers based solely on address, and reduce the administrative burden on program managers and applicants.

[5] For example, federal weatherization or bill assistance programs that use household size, income, and location to determine customer eligibility. Further indicators such as presence of a household member that is elderly, a minor, disabled, or a recipient of other assistance may be used to prioritize certain applicants while other indicators like home ownership, asbestos, roof quality, electric system may disqualify others.

Nevertheless, solely using community-based indicators may not capture all vulnerable customers outside of designated areas and, on the other hand, may capture some less vulnerable customers within designated areas. For example, in both rural and urban areas, high-income households can be located near low-income households. As a result, if primarily using community indicators to determine *eligibility* for a program, a program could include an option for an individual household to qualify via traditional methods if not qualified via geography alone (e.g., household income eligibility via tax forms or categorical eligibility via assistance programs such as Federal LIHEAP, WAP, SNAP, or HUD).

To develop a statewide map, some indicators' relevance may span agencies such as those related to communities' income, language proficiency, minority, and Indigenous statuses. For specific agencies or programs, there may be heterogeneity in selected indicators to reflect communities' specific vulnerabilities and priorities as well as the scope of an agency's jurisdiction (e.g., focusing on transportation indicators for a transportation agency). Geospatial tools can provide information for voluntary action in more vulnerable communities and can also be used to target incentives or carve-outs for spending and programs under PUC jurisdiction. When complete, a well-designed geospatial tool that is aligned with state, agency, and programmatic goals and targets could help increase transparency and accountability in addition to alleviating some program administration efforts if used to target programs. Ultimately, geospatial tools can lead to the improved incorporation of communities within planning, design, education/awareness, and evaluation.

Table 1 summarizes various examples of geospatial tools across federal and state agencies as of August 2022 (see Appendix B for a more detailed table, including metrics considered for each tool). For each region, Table 1 illustrates the geographic definition of a "community," an illustrative description of the tool, and the number of indicators considered across five categories: (1) Environmental or climate vulnerability; (2) Demographics; (3) Energy equity; (4) Transit equity, and (5) Housing quality. In all, seventeen tools are shown, each of which includes demographic indicators with metrics pertaining to income, unemployment rate, linguistic isolation, education, disability, race and ethnicity, and vulnerabilities to adverse health outcomes. Ten tools contain environmental and climate indicators with metrics pertaining to air quality, water quality, proximity to hazardous waste sites, indoor air quality, and vulnerability to extreme weather such as flooding, fires, or drought. Agency-specific indicators such as those pertaining to energy, transit, and housing were far less common, appearing in two, three, and two tools, respectively.

Among the federal examples is the U.S. Environmental Protection Agency's EJScreen, which was released to the public in 2015 and has since been updated (U.S. EPA, 2022). EJScreen uses a combination of locational, environmental, and demographic indices, weighted by population count, to come up with an "EJ Index" for each block group or tract. At the federal level, with the introduction of Justice40 in 2021, agencies must determine the flow of their respective programs' benefits and dis-benefits to "disadvantaged communities" (DACs). As such, the White House Council on Environmental Quality released a beta version of their Climate and Economic Justice Screening Tool (CEJST), which extends beyond the scope of EJScreen to consider other factors such as workforce development, transit, housing, and clean energy metrics at the tract level (U.S. CEQ,

2022). As the determination is not yet finalized, other agencies such as the Department of Energy have released their own mapping tools and methodology to identify DACs (U.S. DOE, 2022).

The benefit of state-specific methods, as well as more granular methods at the county or municipality level, is that agencies can incorporate data sources that may not exist at the national level, and/or include the indicators most pertinent to the area in question. One example is the Twin Cities' tool (Center for Earth Energy and Democracy, n.d.). While Minnesota has a statewide tool, it only considers income, minority population, and tribal land. On the other hand, the Twin Cities Environmental Justice Mapping Tool goes further to incorporate environmental and other indicators similar to the federal CEJST, in addition to hyper-local metrics such as proximity to public infrastructure (e.g., parks, grocery stores, and schools) and/or point source pollution (e.g., from power plants and highways). These data may not be reliable, relevant, or available at wider geospatial scales, but leveraging them to customize local-level tools can better represent community vulnerabilities and priorities. In this way, alternative data sources and indicators can help agencies better identify and serve vulnerable communities not fully counted or represented by census data.

Table 1. Summary of Indicator Tools and Maps for Federal and State Governments (numbers indicate indicators per category). Full table is available in Appendix B.

STATE	NAME	GEO	PUTTING IT TOGETHER	ENV	DEMOG	ENERGY	TRANSIT	HOUSING
FED	EPA EJScreen	Tract, Block Group	EJScreen allows users to compare tract or BG population to the U.S. and/or respective state to get the percentile of each indicator. Users can then determine which indicators/categories are most relevant for their purposes.	12	7			
FED	CEQ CEJST	Tract	Tract is categorized as disadvantaged if: (1) Above threshold for 1+ environmental or climate indicators (in various groups), AND (2) Above the threshold for socioeconomic indicator group.	11	6	2	2	3
FED	DOE DAC	Tract	Tract is categorized as disadvantaged if: (A) In the 80th percentile of the cumulative sum of the 36 burden indicators, AND (2) At least 30% of households classified as low-income (at or below 200% FPL or defined low income by HUD at or below 80% AMI).	9	10	6	3	8
FED	DOT DAC	Tract	Calculated percentile across 22 indicators, took the average percentile for each tract within each of 6 groups; given a 1 if over a threshold (50th percentile for all but resilience group which is 75th percentile). Across 6 groups, scores may rank from 0 to 6. Those with 4 - 6 are classified as disadvantaged.	6	12		4	
CA	Cal EnviroScreen v4	Tract	Tract is classified as disadvantaged if: 1. Highest 25th percentile of total scores. For this, percentiles for each individual indicator are averaged by "component" (group). Four components are merged into two groups: Population and Pollution Burden scores (note that Environmental Effects weigh half as much as Exposures score for Pollution burden), and then given a score of 0-10 each and multiplied together for possible 0-100 score OR 2. Highest 5th percentile of cumulative pollution burden scores OR 3. 2017 DAC definition (grandfathered in) OR 4. Tribal lands via request with CalEPA	13	8			

CO	CO EnviroScreen	County, Tract, Block Group	Percentile combines five components (made up of different population characteristics) for a final score 0-100. Users can specify geospatial scale of interest, component, or indicator, and whether they want the map to display percentile rank or raw score. The tool provides percentiles overall, by group, and by component. It also provides categorization into "Disproportionately Impacted Community," "Justice40," "Coal Community," and "Oil and Gas Community."	20	15
CT	EJ Mapping Tool	Municipality, Block group	The Department of Economic and Community Development has a ranked list of 169 "distressed municipalities." Outside of these municipalities, there are definitions by census block. Indicators correspond to definitions in the legislation and account for multiple demographics with varying weights (all weighted 1x except for unemployment weighted 2x and house stock built before 1939 weighted 1/3x). List updated annually.		9
IL	IL EPA EJ Start	Block group	Block group given EJ status if: 1. Minority, AND/OR 2. Poverty It is noted when both apply.		2
MA	EJ Tool	Block group	EJ populations are defined at the block group level considering income, communities of color, and/or language. Additionally, the Vulnerable Health EJ Criteria includes four health and environmental metrics.	4	3
MD	MDE EJ Screening Tool	Tract	The Maryland tool uses three socioeconomic metrics – minority population, poverty rate, and English proficiency – to determine census tracts with potential EJ concerns.		3
MI	MiEJScreen	Tract	MI modeled its EJScreen on CA EnviroScreen and follows its v3 methods.	13	13
MN	MN EJ	Tract	Tract is an "area of environmental justice concern" if: 1. Greater than 50% of population are people of color, OR 2. More than 40% of households have income less than 185% of Federal Poverty Level, OR 3. Tribal areas		3

NC	Community Mapping System v1	Block group	The v1 tool builds on a beta version, summarizing various demographic and environmental indicators at the block group level. The tool shows a variety of data for informational purposes, but "potentially underserved block groups" are defined only by demographics: (1a) Share of non-white or Hispanic population is 50% or more OR (1b) at least 10 percentage points higher than County or State share; AND (2) Share of population experiencing poverty is over 20%; AND (3) Share of households in poverty is at least 5 percentage points higher than County or State share.		3
NJ	EJ Map	Block group	"Overburdened communities" are defined by looking at 26 different stressors in 8 categories. Values were determined for each block group and given a County and State percentile, which is compared to a cutoff determined by a comparison group.	24	2
NY	Potential EJ Areas	Block group	"Potential EJ Areas" are defined as those where: (1) at least (a) 52.42% of urban population are members of a minority group, OR (b) 26.28% of rural population are members of a minority group; OR (2) at least 22.82% of households have incomes below FPL.		2
PA	EJ Area	Tract	DEP defines an EJ Area as census tract if surpasses threshold for both: 1. People of color, AND/OR 2. Poverty level		2
WA	Washington Tracking Network	Tract	(Informational). Shows relative burden/risk by layers, based on various indicators. Layers include Environmental Health Disparities (v2), Social Vulnerability to COVID-19, Social Vulnerability to Hazards, Lead Exposure Risk, Health Disparities, Planning for Health.	10	9

The purpose of providing this comprehensive review of state tools is to give examples of tool designs, features, data sources, primary indicators, and additional supplemental demographic layers. Agencies' creation of interactive map(s) and/or downloadable dataset(s) accessible by the public allows practitioners, researchers, and any user to select specific indicators or groups of indicators to filter down to communities of interest. While some tools are created for informational purposes, others align with legislation or programs that define indicators to be used to identify "EJ communities" (or similar). These definitions can be used to qualify programs or activities for incentives or compliance. For example, Cal EnviroScreen aligns with SB 535, which calls for cap-and-trade proceeds to go, in part, to "disadvantaged communities." Additional uses include programs across housing, recycling and recovery programs, pollution abatement, transit, weatherization, and more (CA OEHHA, n.d.).

Public participation can bring to light location-specific priorities. For example, a report from Governor of Maine's Office of Policy Innovation and the Future outlines findings from public meetings in which stakeholders identified the communities experiencing higher environmental burdens as being minority, rural, industrial, low income, and/or coastal, among others. Participants also mentioned specific and intersectional concerns for vulnerable communities such as sea level rise, high energy burdens, shifting job opportunities, health impacts, extreme weather, community resilience, and access to food. While some of these (e.g., energy burden, workforce concerns, and health issues) may be more universal, the specific application of these (e.g., Maine's rural communities include isolated island communities) and others (e.g., sea level rise) could be more specific to the respective region. Starting with stakeholder engagement to identify these priorities can help any agency or program better understand which data are available and can help define vulnerable communities in statute.

After establishing definitions, the next step could be to provide public mapping tools to approximate the locations of vulnerable populations (e.g., census tracts or other regions). An important consideration for any tool development is the underlying data (e.g., Census' 5-Year American Community Survey), both in terms of selecting the best data source(s) as well as weighing data availability and quality. Understanding the limitations of data inputs is important in ultimately understanding the limitations of the tool. Once data sources are defined, the next decision is how frequently to update maps or tools (e.g., annually). Most helpful are mapping tools with files that can be downloaded, such as shapefiles for mapping or .csv files with definitions or classifications by community.

Next, it is important to consider the intended use and audience of these tools. For mapping tools, some states have layered on additional information from other data sources for informational purposes (e.g., climate or environmental indicators, transportation indicators, housing indicators, public infrastructure). While these indicators may be outside legislative definitions, they can still be important data points for those working on equity issues in the region (e.g., community groups), and can provide supplementary information for program targeting. For example, transportation program administrators may be interested in intersecting environmental justice and frontline population definitions with supplemental transportation indicators. Outside of the regulatory space, having a public tool serves other functions. For example, it could allow external

organizations to target efforts towards these communities (e.g., an impact-driven company may want to increase activity or awareness within a population); assist decision-makers at other levels (e.g., in county or municipal government); and push researchers to add to the body of literature in a state's equity space using standard definitions.

4. Equity as a Metric: Evaluation to track outcomes and impact

The final consideration in an equity framework is to select metrics that align with what the intervention is working towards (equity as a goal) and where these efforts should be prioritized (equity as a tool). Ideally, metrics establish a baseline, evaluate community impact, and measure an intervention's progress toward the state, agency, or program's higher-level equity goals. Importantly, metrics should distinguish between "outputs" and "outcomes." An outcome better represents an intervention's big-picture impacts (e.g., to promote equity in distributed solar adoption), while an output may describe more measurable, direct results (e.g., program incentives led to *X* households below 80% Area Median Income adopting solar). One report differentiates these two concepts in another way, by likening outcomes to "how well" and outputs to "how much" (Lanckton and DeVar, 2021). Metrics could span topics such as energy affordability, technology adoption patterns, resilience, community engagement in decision-making, community education and capacity building, and consumer protection while still maintaining a safe and reliable grid.

Regulators have historically had an impact on evaluations (e.g., for utility energy efficiency programs), providing guidelines on frequency, format, and/or standardization of data collection and reporting, as well as establishing verification requirements and metrics to consider. Even so, when transitioning to evaluation to track progress towards equity, there are various pitfalls to avoid. For example, a meta-analysis of low- and moderate-income solar program evaluations in the U.S. found that very few programs are set up with distinct process or impact evaluations to track outcomes or progress towards goals (Paulos et al., 2021). A selection of recommendations from the paper included: being specific when developing goals and avoiding general statements; selecting evaluation metrics to align with those goals and to track progress; establishing a baseline and control group to understand attribution, if possible; using surveys or other data collection methods to gain insight on qualitative impacts; and involving various stakeholders in the process early on, as well as feedback loops to improve a program's impact (Paulos et al., 2021). Additionally, when evaluating programs and activities on their equity impacts, it is important to capture both positive and negative impacts on communities and individuals. These takeaways are not exclusive to solar programs, though the collection of relevant metrics may differ for other programs (e.g., equity in transportation). Appendix C highlights various examples of how PUC directives have led utilities to co-develop goals and incorporate equity in their planning, program design, and reporting. In some of these examples (e.g., IL, NY), there are additional accountability mechanisms such as quarterly or annual reporting, and/or an independent third-party consultant with diversity and equity expertise to evaluate utility plans and practices.

Regulators should direct program administrators (e.g., utilities, third-party administrators) to propose specific equity targets or goals for each intervention, and to subsequently plan and design evaluations specifically to measure progress. Selecting specific metrics will depend on the program or activity and requires balancing objectives, such as the tradeoff between feasibility and accuracy. Figure 1 shows an example of tradeoffs in the Energy Equity Project's 2022 report and illustrates how to balance impact and feasibility. Focusing exclusively on data availability may lead a program to defer to existing data collection and evaluation protocols. Focusing on incumbent methods that pre-date equity goals are unlikely to complement new objectives and may not track desired impact or outcomes accurately. On the other end, focusing exclusively on metric impact could require data collection and evaluation that is more granular, frequent, or requires new methods (e.g., surveys or interviews). This can come with additional cost, time, and/or personnel that may take away from implementation. Both data availability and metric impact are important, and balance must be sought in program and evaluation design.

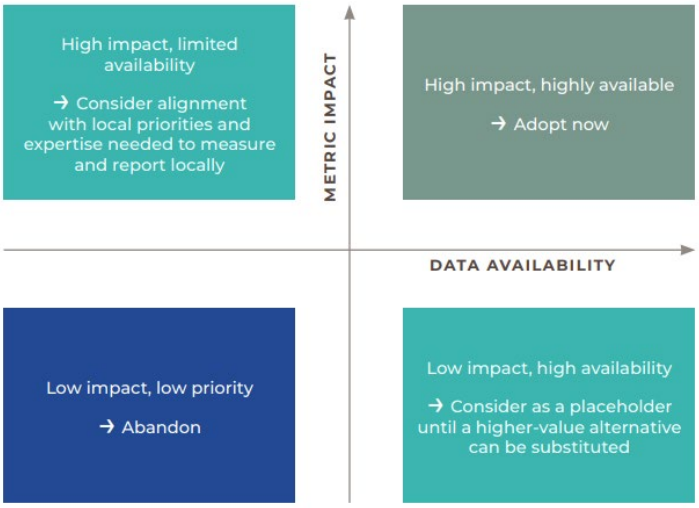

Figure 1. Approach to Metric Impact vs. Availability (Energy Equity Project Report, 2022)

The design of metrics, therefore, is the result of state- and community-specific needs. Several reports address metric design (Lanckton and DeVar, 2021; Tarekegne et al., 2021), and the Energy Equity Project has developed a comprehensive matrix of 148 potential metrics (Energy Equity Project, 2022). Table 2 categorizes a small selection of metrics according to Distributional, Procedural, and Recognition Justice. However, regional priorities and capabilities, both important factors in equity program and evaluation design, lead to distinct evaluation metrics and frameworks.

Table 2. Examples of Metrics to Support Various Equity Goals

	OUTCOMES	EXAMPLE METRICS
DISTRIBUTIONAL	Adoption equity	Adoption [kW, #] to households, by group (region, income, ethnicity, etc.)
	Burden reduction	Energy burden reduction [$] of participants, by income Reduction in utility disconnections and/or customers in arrears [#]
	Access to social services	Transportation index of households, by group
	Access to low-cost capital	Leverage of public to private dollars [$, %] to support clean energy investment, by community
	Resilience	Community centers with access to backup power [#]
	Reliability	Duration of outages, by community Number of customers impacted, by community
	Health	Reduction of point-source emissions Reduction of hospitalizations for cardiac and/or respiratory health emergencies Improved indoor thermal comfort [# households]
	Environment	Improvement of water quality
PROCEDURAL	Public participation, community engagement	Participants in community events [#] Local survey responses [#]
	Outreach events	Events [#]
	Education and awareness	Institutional support provided to community groups [person-hours]
	Representation	Paid appointments to local decision-making groups, by community [#]
RECOGNITION	Small business support	Grants to small, local businesses, by community [$, #]
	Workforce development	Job trainees [#] Job placement [# FTE] Job retention after X, Y, and Z number of years [# FTE] Salary levels [$]

Ultimately, current resources and processes for program evaluation should be assessed to understand what may be adapted to align with new program goals (e.g., database structures, general data quality assurance) and what else may be needed (e.g., survey administration, more frequent data collection). Programs should co-develop a series of desired outcomes with stakeholders with corresponding options for metrics, ranging from sufficient (e.g., maximize data availability), to better (e.g., prioritize data availability, with small changes to methods of collection or evaluation to increase impact), to best (e.g., maximize metric impact). It is important to clearly understand the goals and parameters of a policy or program; to ensure that both practitioners and communities are aligned with those goals; and to get buy-in early in the design process, both from those collecting and reporting data as well as from the participants and community members providing it. Leveraging partnerships in this space could help ensure that the data collected are more accurate and representative. Where necessary, additional data collection methods could be considered, such as conducting surveys or interviews to obtain qualitative metrics. Finally, other evaluation design criteria should be considered, such as how to obtain a representative sample without over-sampling; how to select a control group separate from the treatment group to create a baseline and better assess the accuracy of and confidence in intervention impacts; and how to build in feedback loops to make iterative improvements on both evaluation protocol and program design.

5. Process Examples

This section describes possible applications for the framework of equity as a goal, a tool, and a metric. This section is not meant to be prescriptive; rather, it is meant to demonstrate how a PUC or program administrator could apply this framework to incorporate equity into program design and evaluation. We apply the framework to intervenor funding and performance-based ratemaking, though the framework could be used for various other deliberative processes.

5.1 Example 1: Intervenor Funding

Different states have activities underway to address procedural inequity such as intervenor compensation. Intervenor funding is established at the state level and is a mechanism where compensation is provided to community advocates or other public advocates from impacted groups intervening in regulatory proceedings.

5.1.1 Equity as a goal

Well-designed intervenor compensation is consistent with the tenet of procedural equity, as it reduces barriers to meaningful involvement by impacted communities. Including equity goals related to procedural equity and the definition of "success" for amended intervenor compensation could accelerate progress by allowing affected people and communities to participate in decision-making processes; seeking out and facilitating these parties' involvement; allowing these parties' contributions to influence decision-making in a transparent manner; and considering the concerns and contributions of these parties in decisions.

5.1.2 Equity as a tool

Some states have explicitly set the goal of reducing burden on environmental justice populations. As such, these communities should be explicitly included when identifying data sources and creating definitions. This could be done by prioritizing intervenors from these communities, or those representing the interests of these communities, for application selection and reimbursement. Additionally, funds could go towards education and outreach in those communities to increase participation and awareness of these funds.

5.1.3 Equity as a metric

As discussed in Section 4, metrics should align the desired outcomes (equity as a goal) with the activities of the program and its existing capabilities (in this case, intervenor funding). Importantly, metrics should be developed through a stakeholder feedback and iteration process, and balance accuracy and impact with feasibility and availability. Each metric, if possible, should capture what is feasible in the short, medium, and longer term to capture progress. Table 3 identifies example metrics that could support the tracking of progress toward desired outcomes and high-level state goals. For example, some metrics could help establish a baseline, and subsequently be incorporated into more specific program goals (e.g., at least *X%* and *$Y* of total intervenor funding should go towards those representing interests of EJ and frontline communities), with accountability mechanisms in place if the program is not achieving those goals. Additional

feedback loops may be established to inform changes to program design in the case of persistent under-performance.

Table 3. Example Equity Metrics for Intervenor Compensation Tracking

DESIRED OUTCOME	EXAMPLE METRICS
REDUCE BARRIERS TO PARTICIPATION	• Annual applications submitted [#, $] • Annual applications accepted [#, $] • Annual funds disbursed [#, $] • Delay in determining eligibility [avg. days] • Delay in reimbursement [avg. days]
REDUCE BARRIERS TO PARTICIPATION FOR FRONTLINE & EJ COMMUNITIES	• Annual applications submitted from frontline and EJ intervenors [#, $] • Annual applications accepted from frontline and EJ intervenors [#, $] • Annual funds disbursed to frontline and EJ intervenors [#, $] • Outreach and education to frontline and EJ communities about intervenor compensation opportunities [# events, # participants]
INCREASE CONTRIBUTION OF FRONTLINE & EJ COMMUNITIES	• Number of frontline and EJ recommendations incorporated from intervenors into decision-making process • Education and outreach to communities throughout the proceeding to communicate potential impacts and how to contribute comments • Satisfaction of stakeholders with process

5.1.4 Implementation considerations

Once goals, tools, and metrics have been defined, there are several important implementation considerations. First, program evaluation includes the metrics, short- and medium-term goals, the methods and frequency of data collection, and accountability mechanisms put in place. Michigan is currently the only state that has separated the intervenor compensation program from regulators – it is overseen by a five-member Utility Consumer Participation Board, elected by the governor (LARA, n.d.) – and it is the only state that sets aside funds for administrative costs, allowing for reports to be filed each year with total funds disbursed and impact to customers, among other outcomes (NARUC, 2021).

Second, the source of intervenor compensation funding can impact certainty of reimbursement and program participation. For example, California issues the most dollars annually and has specific employees dedicated to program administration. Nevertheless, the reimbursement structure of the program creates budgeting uncertainty for intervenors. A one-time 2013 audit found that the PUC did not abide by the 30-day limit to determine intervenor eligibility after petitions were filed, and also failed to award funds within the 75-day limit 94% of the time; in 30% of cases, funds were awarded over 6 months late (CPUC, 2013). In all, these delays led to consumer groups going unpaid for over a year, creating a disincentive for participation and unnecessary payments by ratepayers to cover the resulting accrued interest. To avoid this, some states have incorporated elements that instead seek to create budgeting certainty and encourage participation. Notably, the above-mentioned NARUC report identifies three states –Michigan, Oregon, and Wisconsin – that issue grants to intervenors *before* proceedings, as opposed to 13 other states that reimburse afterwards (NARUC, 2021). For intervenors, grant-based compensation creates greater budgeting certainty that encourages participation. For regulators, grant-based compensation allows for market-based cost caps and the recovery of any unspent funds (by requiring line-item costs at the close of

proceedings as is done in Michigan and Wisconsin).

Third, explicit language to ensure that the impacted communities are represented can drive more equitable outcomes of intervenor compensation programs (NARUC, 2021). For example, three programs in 2022 explicitly integrated consideration and prioritization of vulnerable communities. Oregon passed a more specific definition of the organizations qualified to receive compensation to only include those representing the interests of (1) the broader customer base, (2) low-income residential customers, or (3) residential customers who are members of environmental justice communities (NARUC, 2021). Similarly, Washington's program is under development and prioritizes applicants that represent vulnerable communities. Moreover, at least one-third of funds are to be reserved for this purpose and, for the first year, can go towards program outreach and education to the communities (NARUC, 2021). Illinois' program is under development and includes language about vulnerable communities.

Table 4 offers example implementation steps aligned with a state's overarching goals, focus on frontline communities, and present example program outcomes and metrics (building on Table 3). The implementation steps in Table 4 could be duplicated for other efforts underway that are related to procedural and recognition equity such as renewable energy siting, community benefit agreements,[6] increased stakeholder engagement,[7] transparency, education, and awareness.

Table 4. Example Implementation Steps for Intervenor Compensation Program Design that Align with Desired Program Outcomes

DESIRED OUTCOME	EXAMPLE IMPLEMENTATION STEPS
REDUCE BARRIERS TO PARTICIPATION	• Consider a grant-based model with reimbursement at the start to increase participation and budget certainty. This should include requirements for intervenors to submit itemized costs and mechanisms to recapture any unspent funds after the proceeding. • For market-based compensation of services, encourage transparency and accuracy in creating these values • Continue to allow for flexibility in the types of proceedings and expenditures that this program will cover • Consider use of administrative funds to ensure application review deadlines are met and funds are disbursed on time to increase confidence in the program and participation
REDUCE BARRIERS TO PARTICIPATION FOR FRONTLINE & EJ COMMUNITIES	• Prioritize applicants representing communities of interest such as low-income populations/communities, environmental justice populations, and/or other defined vulnerable populations • Consider use of administrative funds to develop metrics that will properly track equity impacts of new program design
INCREASE CONTRIBUTION OF FRONTLINE & EJ COMMUNITIES	• Improve transparency around which contributions were taken, and how • Include feedback loops and accountability mechanisms to ensure that frontline and EJ contributions are considered • Consider use of administrative funds to conduct recurring evaluation

[6] In Hawaii, intervention into a power purchase agreement led the PUC to order a mediation between the developer and community group. This resulted in a legally enforceable community benefits package of mandatory donations to impacted community groups over the lifetime of the project (Maui Electric, 2021).

[7] NARUC released a report in 2021 outlining best practices in stakeholder engagement for PUCs. The report includes helpful definitions, examples, and tools for each of six framework categories: Scope, Facilitation, Engagement, Meeting Format, Timeline, and Engagement Outcomes and Follow-Up (McAdams, 2021).

5.2 Example 2: Performance-Based Ratemaking and Utility Resource Planning

Various states have conducted inquiries into equity metrics to better align regulatory processes and programs with state goals and targets (Hanus et al., 2023). Pairing these metrics with performance-based ratemaking offers a degree of accountability and ensures a more holistic use of equity metrics across all processes and programs.

5.2.1 Equity as a goal

For states with performance-based ratemaking currently in place, or for those considering this change, there will often be specific performance areas with key performance indicators associated. Currently, most states' performance areas may not directly address equity, though may have indirectly-related areas such as environmental, reliability, or affordability performance areas. If this is the case, a PUC in a state with established equity targets may consider outcomes that more explicitly incorporate equity goals while still fitting under the existing performance areas, providing parallel guidance to encourage progress towards performance areas and the state's equity goals in tandem. A step further, states may consider creating a specific performance area that aligns with state and/or agency equity goals.

5.2.2 Equity as a tool

When identifying where individual performance areas should focus, it is important to understand the distribution of both the positive and negative impacts, since each performance area likely has a heterogeneous distribution of costs and benefits. For example, where on the network is power reliability especially poor? Which communities are particularly vulnerable to extreme weather and long-duration outages? To best address each performance area, data sources and indicators can shed light on which communities may experience the most burden, and whether those communities intersect with frontline or environmental justice populations. One consideration when developing a statewide tool or map would be to create additional informational layers with performance area indicators. For example, there could be an "affordability and cost control" layer, with indicators pertaining to energy burden, energy vulnerability, disconnections, and/or energy use intensity (see following Section 5.2.3.). This could be done for several other performance areas. Combining the defined indicators of a frontline or EJ community with supplemental indicators can help programs prioritize specific issues, locations, and/or vulnerable communities.

5.2.3 Equity as a metric

One challenges with using existing key performance indicators or data collection processes is the granularity at which these metrics are collected. If done so territory-wide for a utility, it may be impossible to differentiate the experiences of vulnerable customers compared to the wider customer class. This may pose a barrier for aligning PBR efforts with state equity goals if trying to include equity indirectly. One example of a state with explicit equity metrics is Hawaii, which includes customer equity as one of its performance areas to track low-to-moderate customer disconnection due to nonpayment, participants in payment plans, participants in various DER incentive programs, and an energy burden metric (HECO, 2021).

5.2.4 Implementation considerations

Beyond implementing specific and targeted equity PBR metrics and corresponding utility financial incentives, there are additional considerations to implement PBR that can indirectly promote more equitable outcomes. First, communities should be engaged throughout the process of developing PBR goals and metrics.

Second, all ratepayers can benefit from PBR that mitigates utility cost and rate increases through deployment and utilization of distributed energy resources (DERs) in targeted locations. For example, advanced distribution system planning and integrated resource planning that takes into account present and projected DER deployment could help utilities avoid over-sizing new infrastructure investments and improve utilization of existing infrastructure.[8] In practice, such non-wires alternative projects have not been deployed to the extent that was initially hoped, due to various challenges (Menonna and Holden, 2020). PBR metrics and incentives could specifically increase the consideration of non-wires alternatives. Publications providing more information about non-wires alternatives include a 2018 guide with information and practices related to screening criteria, competitive solicitation, evaluation frameworks, and contract terms (Dyson et al., 2018), as well as a report outlining ten successful case studies (E4TheFuture et al., 2018).

Third, several customer programs could be incentivized via PBR to increase customer energy affordability. Energy burden varies widely across the country with bills exceeding 6% of gross annual household income for low and moderate income households in many cases, compared to burdens closer to 3% across all households in the nation (Drehobl et al., 2020). As such, affordability and incentive programs that promote adoption of technologies that reduce this burden must effectively reach these households. [9] This is especially the case when these programs specifically target eligible populations. For example, the Low-Income Home Energy Assistance Program (LIHEAP) provides bill assistance to income-qualified households (i.e., with less than or equal to the greater of 150% FPL or 60% of state median income). Some states supplement this with state-funded programs providing additional bill assistance. California has also implemented specific utility rates for low-income customers (e.g., California's CARE and FERA programs) (CPUC, n.d.). Additionally, residential customers can invest in weatherization and other energy efficiency measures to lower their bills and increase home comfort. This can be accomplished via the Weatherization Assistance Program (WAP) grant for those at or below 200% FPL, via utility programs, or through an upfront cash purchase. Finally, novel financing mechanisms for moderate-income customers with ability to pay (given proper consumer protections)– such as Pay As You Save, on-bill financing, alternative underwriting criteria (e.g., utility bill repayment), and others – can drive increased investments in energy efficiency and distributed solar (SEEAction, 2017).

[8] LBNL has a repository that includes multiple resources created for state regulators interested in advanced distribution system planning (LBNL, n.d.).

[9] ACEEE convenes a working group for utilities developing low- and moderate-income energy efficiency programs that addresses topics such as metrics, evaluation, education and awareness, stakeholder engagement, and implementation (ACEEE, n.d.).

Table 6 outlines various examples of implementation activities and steps that could complement PBR and equity goals. Most are in the categories of Affordability, Distributed Energy Resource Deployment, Grid Modernization, and Energy and Environmental Policy. Table 5 goes beyond energy conservation and affordability to discuss how addressing other performance areas could increase equity as well.

Table 5. Example Implementation Steps that Could be Promoted Alongside PBR to Improve Outcomes Across Seven Performance Categories

PERFORMANCE CATEGORY	EXAMPLE IMPLEMENTATION STEPS
SERVICE RELIABILITY & QUALITY	• Promote deployment of backup power for vulnerable households and/or vulnerable communities via solar and storage incentives or community center resilience hubs in vulnerable areas
CUSTOMER SERVICE	• Promote transparency encouraging town hall events, marketing material in languages other than English, and other education and awareness efforts (McAdams, 2021) • Include customer satisfaction metrics for programs that target vulnerable customers or communities to better understand qualitative impacts
AFFORDABILITY	• Increase grant-based assistance to low-income customers, including bill assistance and weatherization programs • Encourage utilities to provide low-income energy efficiency and weatherization programs[10] • Increase availability of low-cost capital financing for moderate-income customers to reduce upfront capital cost barriers for clean energy technologies (SEEAction, 2017)
DISTRIBUTED ENERGY RESOURCE DEPLOYMENT	• Increase incentives to adopt distributed energy resources for all customers, with specific consideration for low- and moderate-income customers or those in frontline and EJ communities • Increase access to low-cost capital with consumer protections in place (SEEAction, 2017)
GRID MODERNIZATION	• Understand hosting capacity of service territories • Increase Wi-Fi adoption levels • Consider advanced distribution system planning for utilities
ENERGY & ENVIRONMENTAL POLICY	• Adopt IEEE 1527-2018 advanced inverter standards[11] • Direct utilities to consider energy efficiency, demand response, and other distributed energy resources in resource planning • Require competitive consideration of non-wires alternatives alongside traditional utility infrastructure investment to reduce over-spending and stranded assets • Reduce barriers to community solar development

[10] ACEEE (ACEEE, 2021) found that Illinois and Michigan have legislation requiring utilities to provide low-income energy efficiency programs. Similarly, DC sets aside funding specifically for low-income energy efficiency. The Pennsylvania PUC goes further to have utilities not only create and fund programs, but also achieve long-term energy savings goals within those programs. Other states have established goals, such as Connecticut's goal to weatherize 80% of the state's homes and California's goal to allow for 100% of eligible and willing low-income customers to receive all cost-effective energy efficiency measures.

[11] NREL has a repository of publications and resources on IEEE 1547-2018 (NREL, n.d.). Of particular interest may be its 2021 guide that provides a step-by-step approach to develop and update existing interconnection rules and incorporate IEEE 1547-2018 (Ingram et al., 2021).

6. Conclusions

States across the U.S. have taken strong steps to build a foundation upon which state regulators and program administrators can better incorporate equity goals and consider impacts to vulnerable communities. This report describes a conceptual framework to consider in implementing state legislation and aligning regulatory decision-making with equitable outcomes. The framework describes three components of equity as a goal, a tool, and a metric, and can be applied for each distinct PUC decision-making process. Drawing on the information in the report, we suggest the following for each component of the framework:

- PUC activities that could impact equity and state legislative equity goals may need to include specific, measurable outcomes that align with the state's overarching goals, as well as current and near-term activities and programs.
- PUCs may consider creating a publicly-accessible tool to clearly identify which communities may be defined as priority communities. Providing additional informational layers may also help programs consider indicators of interest (e.g., a layer of climate vulnerability or reliability statistics may be of interest to a resilience program).
- Once the relevant programs, goals, and tools have been identified, metrics must be selected to specifically measure progress toward a desired income, taking care to balance feasibility and data availability with accuracy and metric impact. These metrics should be used to set a baseline, track progress towards equity goals, and feed into accountability mechanisms to ensure that goals are being met.

From a process standpoint, it is important to solicit feedback from those most impacted by prospective changes and gain buy-in from all stakeholders. Creating a working group with community perspectives could improve understanding of community priorities, what is working well, where there are still gaps, and how to ensure that equity and buy-in are incorporated at the onset of program design to ensure participation. Utilizing these principles and this framework can lead to more inclusive, transparent, and equitable outcomes for communities of interest. With thoughtful implementation, PUCs can better progress towards equitable outcomes in a more consistent and holistic way. Finally, PUCs should contextualize decision-making within procedural, distributive, and recognition equity.

This report is not meant to be prescriptive or comprehensive. Rather, it is meant to offer a potential framework and outline areas in which a state can further strengthen activities around its policies and activities that may, in turn, influence additional programs and activities of those in their jurisdiction.

7. References

ACEEE, 2021. Supporting Low-Income Energy Efficiency: A Guide for Utility Regulators [WWW Document]. URL https://www.aceee.org/toolkit/2021/04/supporting-low-income-energy-efficiency-guide-utility-regulators (accessed 1.10.22).

ACEEE, n.d. Low-Income Energy Efficiency Programs: Utility Working Group [WWW Document]. URL https://www.aceee.org/low-income-energy-efficiency-programs (accessed 1.10.22).

CA OEHHA, n.d. Uses of CalEnviroScreen [WWW Document]. URL https://oehha.ca.gov/calenviroscreen/how-use (accessed 1.10.22).

Center for Earth Energy and Democracy, n.d. Twin Cities Environmental Justice Mapping Tool [WWW Document]. URL http://ceed.org/environmental-justice-mapping-tool/ (accessed 1.10.22).

CPUC, 2013. California State Auditor Report 2012-118.

CPUC, n.d. CARE/FERA Program: Discounts on energy bills for income qualified households [WWW Document]. URL https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/care-fera-program (accessed 1.10.22).

De Martini, P., Cooke, A., Kahrl, F., Freeman, L., Martinez, J., Prifti, E., Cullen, K., Londo, J., Woolf, T., O'Neil, R., Boff, D., Zhu, X., Pal, S., Melton, R., Schwartz, L.C., Frick, N.M., Homer, J., 2022. New England PUCs training on electricity system planning.

DG Stakeholder Working Group, 2021. Interim Report of the Distributed Generation Stakeholder Group.

Drehobl, A., Ross, L., Ayala, R., 2020. Energy Burden Report.

Dyson, M., Prince, J., Shwisberg, L., Waller, J., 2018. The Non-Wires Solutions Implementation Playbook: A Practical Guide for Regulators, Utilities, and Developers.

E4TheFuture, PLMA, SEPA, 2018. Non-Wires Alternatives: Case Studies from Leading U.S. Projects, https://sepapower.org/resource/non-wires-alternatives-case-studies-from-leading-u-s-projects/.

Energy Equity Project, 2022. Energy Equity Project Report.

Farley, C., Howat, J., Bosco, J., Thakar, N., Wise, J., Su, J., 2021. Advancing Equity in Utility Regulation.

Fisher Sheehan & Colton, n.d. Home Energy Affordability Gap [WWW Document]. URL http://www.homeenergyaffordabilitygap.com/index.html (accessed 1.10.22).

Forrester, S., Barbose, G., Darghouth, N., O'Shaughnessy, E., Montañés, C.C., 2022. Solar Demographics Trends and Analysis.

Governor's Office of Policy Innovation and the Future, 2022. Report on Equity Considerations in Decision Making.

Hanus, N., Barlow, J., Satchwell, A., Cappers, P., 2023. Assessing the Current State of U.S. Energy Equity Regulation and Legislation.

HECO, 2021. Performance Based Regulation (PBR) Scorecards and Metrics [WWW Document]. URL https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics

Heffron, R.J., McCauley, D., Sovacool, B.K., 2015. Resolving society's energy trilemma through the Energy Justice Metric. Energy Policy. https://doi.org/10.1016/j.enpol.2015.08.033

Ingram, M., Bhat, A., Narang, D., 2021. A Guide to Updating Interconnection Rules and Incorporating IEEE Standard 1547-2018.

Jenkins, K.E.H., Sovacool, B.K., Mouter, N., Hacking, N., Burns, M.K., McCauley, D., 2021. The methodologies, geographies, and technologies of energy justice: A systematic and comprehensive review. Environ. Res. Lett. https://doi.org/10.1088/1748-9326/abd78c

Lanckton, T., DeVar, S., 2021. Justice in 100 Metrics: Tools for Measuring Equity in 100% Renewable Energy Policy Implementation.

LARA, n.d. Utility Consumer Participation Board [WWW Document]. URL https://www.michigan.gov/lara/about/ucpb (accessed 1.10.22).
LBNL, n.d. Integrated Distribution System Planning [WWW Document]. URL https://emp.lbl.gov/projects/integrated-distribution-system-planning (accessed 1.10.22).
LIHEAP Clearinghouse, n.d. Maine Low-Income Energy Programs [WWW Document]. URL https://liheapch.acf.hhs.gov/profiles/Maine.htm (accessed 1.10.22).
Maine Climate Council, 2022. Initial Recommendations of the Equity Subcommitte.
Maui Electric, 2021. Docket No. 2020-0142 For Approval of Power Purchase Agreement for Renewable Dispatchable Generation with Kahana Solar, LLC.
McAdams, J., 2021. Public Utility Commission Stakeholder Engagement: A Decision-Making Framework.
Menonna, F., Holden, C., 2020. Where Are All the Non-Wires Alternatives? GTM.
MPUC, 2022. Docket No. 2022-00299 Amendments to Intervenor and Participant Funding Rule (Chapter 840).
MPUC, 2021a. Docket No. 2021-00039 - Attachment A Gap Analysis for Versant Power and CMP's Distribution Systems.
MPUC, 2021b. Docket No. 2020-00344 Attachment A: Straw Proposal for Performance Metrics, Transparency, and Incentives for Transmission and Distribution Utilities.
MPUC, 2021c. Docket No. 2020-00344 Appendix: Summary of Comments Filed in Response to Notice of Inquiry.
NARUC, 2021. State Approaches to Intervenor Compensation.
NREL, n.d. IEEE 1547-2018 Resources [WWW Document]. URL https://www.nrel.gov/grid/ieee-standard-1547/educational-materials.html (accessed 1.10.22).
Paulos, B., Forrester, S., O'Shaughnessy, E., Dyson, C., Barbose, G., Wiser, R., 2021. An Assessment of Evaluation Practices of Low- And Moderate-Income Solar Programs.
SEEAction, 2017. Energy Efficiency Financing for Low- and Moderate-Income Households: Current State of the Market, Issues, and Opportunities.
State of Maine, 2022a. Public Law 2021, Chapter 702 (LD 1959): An Act To Ensure Transmission and Distribution Utility Accountability.
State of Maine, 2022b. Public Law 2021, Chapter 736 (LD 2018): An Act To Implement Recommendations Regarding the Incorporation of Equity Considerations in Regulatory Decision Making.
State of Maine, 2022c. Public Law 2021, Chapter 681 (LD 585): An Act To Enhance Tribal-State Collaboration, To Revise the Tax Laws Regarding the Houlton Band of Maliseet Indians, the Passamaquoddy Tribe and the Penobscot Nation and To Authorize Casinos, Off-track Betting Facili.
State of Maine, 2021a. Public Law 2021, Chapter 279 (LD 1682) An Act To Require Consideration of Climate Impacts by the Public Utilities Commission and To Incorporate Equity Considerations in Decision Making by State Agencies.
State of Maine, 2021b. Title 35-A Section 3147: Integrated Grid Planning.
Tarekegne, B.W., Pennell, G.R., Preziuso, D.C., O'Neil, R.S., 2021. Review of Energy Equity Metrics.
U.S. CEQ, 2022. Climate and Economic Justice Screening Tool [WWW Document]. URL https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5 (accessed 1.10.22).
U.S. DOE, 2022. Energy Justice Mapping Tool - Disadvantaged Communities Reporter [WWW Document]. URL https://energyjustice.egs.anl.gov/ (accessed 1.10.22).
U.S. EPA, 2022. EJScreen: Environmental Justice Screening and Mapping Tool [WWW Document]. URL https://www.epa.gov/ejscreen/ej-and-supplemental-indexes-ejscreen (accessed 1.10.22).

APPENDIX A. Sample of State Equity Goals and Definitions

Table A-1 includes a sample of state actions in equity, selected and modified from Hanus et al., 2023. The actions were selected to identify where states defined goals or key equity terms.

Table A - 1. Sample of State Equity Goals and Definitions

STATE	SOURCE	TAGS	DESCRIPTION
CA	Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Program, Evaluation, and Related Issues (2021)	PUC Order Objectives Energy efficiency Equity *carve-out* Non-energy benefits Bill savings GHG Resiliency	(GOAL) Sets up goals for EE beyond simple kWh savings, kW peak reduction, and traditional cost/benefit analysis and goes beyond to address equity and decarbonization objectives. Next step is to develop metrics. (DEF) 30% of EE funding allocated to equity programs: "Programs with a primary purpose of serving hard-to-reach or underserved customers and disadvantaged communities in advancement of the Commission's Environmental and Social Justice Action Plan."
CT	AN ACT CONCERNING EMERGENCY RESPONSE BY ELECTRIC DISTRIBUTION COMPANIES, THE REGULATION OF OTHER PUBLIC UTILITIES AND NEXUS PROVISIONS FOR CERTAIN DISASTER RELATED OR EMERGENCY-RELATED WORK PERFORMED IN THE STATE (2020)	Legislation Performance based ratemaking Microgrid Resilience Equity *prioritization*	(GOAL) A new performance-based ratemaking framework may address "cost efficiency, affordability, and equity" and/or "advancement of state environmental and policy goals." (DEF) "Vulnerable communities": populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low- and moderate-income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community investment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.
IL	Energy Transition Act (2021) and Press Release	Legislation Objectives Accountability Energy efficiency Renewables	(GOAL) "…ensure that Illinois residents from communities disproportionately impacted by climate change, communities facing coal plant or coal mine closures, and economically disadvantaged communities and individuals experiencing barriers to employment have access to State programs and good jobs and career opportunities in growing sectors of the State economy." (ACCOUNTABILITY) Sets up coalitions; committees; and plans for Community Energy, Climate, and Jobs

		Green bank Reporting Performance based ratemaking Bill reduction Benefits Stakeholder engagement Education and outreach Workforce development Equity *carve-out*	paired with additional supportive infrastructure (green bank; dedicated funding to vulnerable communities; % carve outs for benefits, investment, workforce). Specific examples include the low-income energy efficiency accountability committee, quarterly and annual reporting requirements)
MA	An Act creating a next-generation roadmap for Massachusetts climate policy (2021)	Legislation Objectives Renewables Consumer protection Stakeholder engagement Education and outreach Workforce development GHG Environmental impact reporting Public health	(GOAL) "to consider the environmental justice principles in making any policy, determination or taking any other action related to a project review, or in undertaking any project... that is likely to affect environmental justice populations." (GOAL) "the department shall to the greatest extent feasible: (i) provide equitable access to all Massachusetts ratepayers, including low-income ratepayers; (ii) address solar energy access and affordability for low-income communities; (iii) include effective consumer protection provisions; and (iv) ensure that information about the program and its benefits are provided in a readily accessible manner to all ratepayers, including non-English speaking communities. The department shall consult with a diverse range of stakeholders to inform the design of any such solar incentive program, including low-income ratepayers and organizations representing their interests." (DEF) "Environmental benefits": the access to clean natural resources, including air, water resources, open space, constructed playgrounds and other outdoor recreational facilities and venues, clean renewable energy sources, environmental enforcement, training and funding disbursed or administered by the executive office of energy and environmental affairs. (DEF): "Environmental burdens": any destruction, damage or impairment of natural resources that is not insignificant, resulting from intentional or reasonably foreseeable causes, including but not limited to, air pollution, water pollution, improper sewage disposal, dumping of solid wastes and other noxious substances, excessive noise, activities that limit access to natural resources and constructed outdoor recreational facilities and venues, inadequate remediation of pollution, reduction of ground water levels, impairment of water quality, increased flooding or storm water flows, and damage to inland waterways and waterbodies, wetlands, marine shores and waters, forests, open spaces, and playgrounds from private industrial, commercial or government operations or other activity that contaminates or alters the quality of the environment and poses a risk to public health. (DEF): "Environmental justice population": a neighborhood that meets 1 or more of the following criteria: (i)

			the annual median household income is not more than 65 percent of the statewide annual median household income; (ii) minorities comprise 40 per cent or more of the population; (iii) 25 per cent or more of households lack English language proficiency; or (iv) minorities comprise 25 per cent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 per cent of the statewide annual median household income; provided, however, that for a neighborhood that does not meet said criteria, but a geographic portion of that neighborhood meets at least 1 criterion, the secretary may designate that geographic portion as an environmental justice population upon the petition of at least 10 residents of the geographic portion of that neighborhood meeting any such criteria; provided further, that the secretary may determine that a neighborhood, including any geographic portion thereof, shall not be designated an environmental justice population upon finding that: (A) the annual median household income of that neighborhood is greater than 125 per cent of the statewide median household income; (B) a majority of persons age 25 and older in that neighborhood have a college education; (C) the neighborhood does not bear an unfair burden of environmental pollution; and (D) the neighborhood has more than limited access to natural resources, including open spaces and water resources, playgrounds and other constructed outdoor recreational facilities and venues. (DEF) "Environmental justice principles": principles that support protection from environmental pollution and the ability to live in and enjoy a clean and healthy environment, regardless of race, color, income, class, handicap, gender identity, sexual orientation, national origin, ethnicity or ancestry, religious belief or English language proficiency, which includes: (i) the meaningful involvement of all people with respect to the development, implementation and enforcement of environmental laws, regulations and policies, including climate change policies; and (ii) the equitable distribution of energy and environmental benefits and environmental burdens. (DEF) "Neighborhood": a census block group as defined by the United States Census Bureau, excluding people who live in college dormitories and people who are under formally authorized, supervised care or custody, including federal, state or county prisons.
MD	Climate Solutions Now Act of 2022 (2022)	Legislation Definitions Decarbonization Environmental indicators	(DEF) "Underserved community": means any census tract in which, according to the most recent U.S. Census Bureau Survey: (I) At least 25% of the residents qualify as low-income; (II) At least 50% of the residents identify as nonwhite; or (III) At least 15% of the residents have limited English proficiency. (DEF) "Overburdened community": Any census tract for which three or more of the following environmental health indicators are above the 75th percentile statewide: (I) Particulate matter (PM) 2.5; (II) Ozone; (III) National air toxics assessment (NATA) diesel PM; (IV) NATA cancer risk; (V) NATA respiratory hazard index; (VI) traffic proximity; (VII) lead paint indicator; (VIII) National priorities list superfund site proximity; (IX) Risk management plan facility proximity; (X) Hazardous waste proximity; (XI) Wastewater discharge indicator; (XII) Proximity to a concentrated animal feeding operation (CAFO); (XIII) Percent of the population lacking broadband coverage; (XIV) Asthma emergency room discharge; (XV) Myocardial infarction

			discharges; (XVI) Low-birth-weight infants; (XVII) Proximity to emitting power plants; (XVIII) Proximity to a Toxic Release Inventory (TRI) facility; (XIX) Proximity to a brownfields site; (XX) Proximity to mining operations; and (XXI) Proximity to a hazardous waste landfill (DEF) "Community disproportionately affected by climate impacts": a community identified using the methodology recommended by the Commission on Environmental Justice and Sustainable Communities under 1-702 of the Environment Article
ME	Title 35-A Section 3147: Integrated Grid Planning (2021)	Legislation Definitions Environmental justice Integrated grid planning	(DEF) "Environmental justice" means fair treatment and meaningful involvement of all persons regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, rules, regulations and policies
OR	CLEAN ENERGY TARGETS (2021)	Legislation Definitions Decarbonization Distribution planning Community benefits Workforce development Utility reporting Equity *carve-out* Stakeholder engagement	(DEF) "Environmental justice": equal protection from environmental and health hazards and meaningful public participation in decisions that affect the environment in which people live, work, learn, practice spirituality and play (DEF) "Environmental justice communities": includes communities of color, communities experiencing lower incomes, tribal communities, rural communities, coastal communities, communities with limited infrastructure and other communities traditionally underrepresented in public processes and adversely harmed by environmental and health hazards, including seniors, youth and persons with disabilities. (ACCOUNTABILITY) Biennial reporting from utilities, requirement for utilities to establish Community Benefits and Impacts Advisory Groups with members from impacted communities
WA	Climate Commitment Act (2021)	Legislation GHG Decarbonization	(DEF) "Overburdened community": geographic area where vulnerable populations face combined, multiple environmental harms and health impacts or risks due to exposure to environmental pollutants or contaminants through multiple pathways, which may result in significant disparate adverse health outcomes or effects. "Overburdened community" includes, but is not limited to: (a) Highly impacted communities as defined in RCW 19.405.020; (b) Communities located in census tracts that are fully or partially on "Indian country" as defined in 18 U.S.C. Sec. 1151; and (c) Populations, including Native Americans or immigrant populations, who may be exposed to environmental contaminants and pollutants outside of the geographic area in which they reside based on the populations' use of traditional or cultural foods and practices, such as the use of resources, access to which is protected under treaty rights in ceded areas, when those exposures in conjunction with other exposures may result in disproportionately greater risks, including risks of certain cancers or other adverse health effects and outcomes. (d) Overburdened communities identified by ecology shall include the same communities as those identified by ecology through its process for identifying overburdened communities under RCW 70A.02.010.

APPENDIX B. State Indicators and Tools

Table B-1 summarizes a comprehensive review of federal and state equity tools (i.e., maps and downloadable data products). B-1 includes the geospatial granularity at which vulnerable communities are defined, a brief description, and the indicators used. Indicators fall into five categories: Environmental, Demographic, Energy, Transit, and Housing. The table can be found in the attached Excel sheet.

Table B - 1. State Indicators and Tools

See the attached Excel sheet for Appendix B

APPENDIX C. Sample of Utility Directives with Respect to Equity

Table C-1 includes a sample of state actions in equity, selected and modified from Hanus et al., 2023. The actions were selected to identify where regulators encouraged or directed utilities to act on equity and how they did so.

Table C - 1. Sample of Utility Directives with Respect to Equity

STATE	SOURCE	TAGS	DESCRIPTION
CA	DECISION ADOPTING SHORT-TERM ACTIONS TO ACCELERATE MICROGRID EPLOYMENT AND RELATED RESILIENCY SOLUTIONS (2020)	Docket Resilience Education and outreach Microgrid Equity *prioritization*	Utilities directed to: • Host workshops with specific outreach to community organizations that support vulnerable communities • Develop a resiliency project guide, data portal • Dedicate staff to manage intake of local and tribal government resiliency projects • Provide grants to communities to install microgrids
CO	Public Service Company of Colo – Trans Electrification Plan (2021)	Docket Transportation Electrification Education and outreach	Utilities encouraged to: • Compile relevant data on income-qualified ports, usage, development to inform equity performance incentive mechanism Utilities directed to: • Invest in multicultural and multilingual outreach, especially through community-based organizations • Include stakeholder discussions with focus on equity and higher-emissions communities in school bus electrification initiatives
CT	AN ACT CONCERNING EMERGENCY RESPONSE BY ELECTRIC DISTRIBUTION COMPANIES, THE REGULATION OF OTHER PUBLIC UTILITIES AND NEXUS PROVISIONS FOR CERTAIN DISASTER RELATED OR EMERGENCY-RELATED WORK PERFORMED IN THE STATE (2020)	Legislation Resilience Microgrid Utility planning Equity *carve-out*	Utilities directed to: • Analyze and plan for at-risk and vulnerable customers when evaluating storm events and resiliency issues • Carve out microgrid program for vulnerable communities
CT	FINAL DETERMINATION: APPROVAL WITH	Docket	Utilities directed to: • Conduct targeted outreach to underserved communities, especially to arrearage and shutoff customers

	CONDITIONS OF THE 2022-2024 CONSERVATION AND LOAD MANAGEMENT PLAN (2022)	Energy efficiency Education and outreach Equity *prioritization*	• Increase marketing to non-English speakers; support minority- and women-owned vendors; and reach priority communities with education and engagement initiatives • Implement programmatic changes to make EE programs more accessible
DC	IN THE MATTER OF THE IMPLEMENTATION OF ELECTRIC AND NATURAL GAS CLIMATE CHANGE PROPOSALS (2021)	Docket Decarbonization Equity *impacts*	Utilities directed to: • Indicate impacts on customers and disadvantaged communities in cost benefit analysis, climate change commitment plans, etc. • Climate change commitment plans that explain affordability of service Recommendation to hire a consultant to review utilities' climate plans
IL	Energy Transition Act (2021) and Press Release	Legislation Objectives Accountability Energy efficiency Renewables Green bank Reporting Performance based ratemaking Bill reduction Benefits Stakeholder engagement Education and outreach Workforce development Equity *carve-out*	Utilities directed to: • Implement recommendations from the Low-Income Energy Efficiency Accountability Committee whenever possible • "[B]ring the benefits of grid modernization and the deployment of distributed energy resources to economically disadvantaged communities and eligible communities throughout Illinois" • Expand electrification and EV charging infrastructure to EJ communities • 10% of work on renewable energy projects be done by equity eligible persons or contractors, to increase to 40% by 2030. Separately, 10% of solar funding was earmarked for equity eligible contractors, to also increase to 40%. If utilities are not making progress on workforce equity among contractors and vendors, they must submit a plan to meet the requirements within the following year, and quarterly reports will capture demographic information. • Regarding PBR, pursue affordable customer delivery service costs, reduce disconnections (and related late fees or arrearages) especially pertaining to low-income households and those in EJ communities • Regarding ratemaking, implement reliability metrics to ensure equitable benefits and investment to EJ communities • Quarterly and annual reporting requirements
MA	National Grid 2022-2024 Energy Efficiency Plan (2022)	Utility EE plan Affordability GHG Participation Metrics Workforce development Electrification	Utility's response to PBR equity metric: • Increase participation in EE and promote equitable access for customers that have not traditionally participated by reducing barriers • Include in annual review a detailed description of methods to track success of each equity measure at zip code level • Promote affordability • Intention to implement a workforce development program • Reach limited English-proficiency populations through targeted marketing and outreach • Prioritize underserved and lower-income customers for strategic electrification and EE

		Energy Efficiency	
MN	Xcel Energy ORDER APPROVING PLAN WITH MODIFICATIONS AND ESTABLISHING REQUIREMENTS FOR FUTURE FILINGS (2022)	Utility IRP Education and outreach Procedural justice Stakeholder engagement Metrics Workforce development EE Renewables Affordability Community acceptance Transparency	Utility direction: • Engage in community outreach in IRP • Adopt practices to further procedural justice including engaging renters, affordable rental property owners, minority communities, under-resourced individuals • Establish a stakeholder group to solicit input from members of historically disadvantaged populations • Will incorporate EJ initiatives TBD via environmental justice accountability board • Draft plan to bring racial and gender diversity into utility workforce • Design incentives to ensure vulnerable communities have equitable access to EE, renewable energy, affordable energy • Explore financial and social consequences that large power plants have on host communities • Provide transparency into DER and load information
NY	Proceeding to Review Utilities' Diversity, Equity, and Inclusion Practices (2022)	Notice/Scoping Workforce development Education and outreach Utility reporting Affordability Accountability	Utilities (via their DEI plans) directed to: • Identify supplier diversity procurement strategies, including but not limited to formal supplier diversity programs, partnerships with external organizations, mentorship of suppliers, as well as communication efforts with potential vendors. • Outline community outreach and engagement efforts, including but not limited to partnerships or employee involvement with external organizations, work with elected officials, as well as social media, mass email, and standard mail efforts Utilities encouraged to: • Participate in working group to share draft DEI plans and identify best practices Plans will be assessed by independent third-party consultant with DEI expertise
OR	CLEAN ENERGY TARGETS (2021)	Legislation Definitions Decarbonization Distribution planning Community benefits Workforce development Utility reporting Equity *carve-out* Stakeholder engagement	Utilities (via their biennial reports) directed to: • Include a description of energy burden and disconnections for residential and small commercial customers • Discuss best practices for reducing disconnections • Discuss opportunities to increase contracting with businesses owned by women, veterans or Black, Indigenous, or People of Color. A new section was also added on responsible contractor labor standards with numerous requirements for >10 MW renewable energy projects to follow, including "equity and inclusion for communities that have been underrepresented in the clean energy sector." • Include information on "Distribution of infrastructure or grid investments and upgrades in environmental justice communities in the electric company's service territory, including infrastructure or grid investments that facilitate the electric company's compliance with the clean energy targets set forth in section 3 of this 2021 Act." • Establish Community Benefits and Impacts Advisory Groups that represent the interest of customers and affected entities. Members must include representatives from EJ and low-income communities. • Review energy burden data • Pursue clean energy plans that support affordability

			• Consider "social, economic or environmental justice co-benefits that result from the electric company's investments, contracts or internal practices," including in new clean energy plans • Describe resilience actions within EJ communities
OR	Investigation of Transportation Electrification Investment Framework (2021)	Order Transportation Electrification Utility reporting	Utilities directed to: • Report organizations engaged, number and nature of outreach efforts in energy-burdened communities, EV ownership per capita, and amount of money spent on underserved communities, TE investment plans as a result of those changes • Report "Equitable buildup of infrastructure using TEINA, and meeting gaps in allocation (per Census tracts) and EV ownership per capita infrastructure using TEINA, and meeting gaps in allocation (per census tracts)." • Identify the mobility needs of specific communities, engage with community-based organizations, and report on organizations engaged, number/nature of outreach efforts in energy-burdened communities, timing and milestones, and other components
PA	Rulemaking on Diversity Reporting by Major Jurisdictional Utilities (2020)	Docket Workforce development Utility reporting	Utilities directed to: • Report workforce diversity and gather demographic data on their workers and partners • Report contracts with minority- and woman-owned business enterprises
WA	GAS AND ELECTRICAL COMPANIES—RATES (2021)	Legislation Rate case Utility reporting Workforce development Affordability Stakeholder engagement	Utilities directed to: • Directed to identify options for utilizing local workers • Invest at least 30% of renewable energy programs in disadvantaged communities • Consider in rate cases: affordability, increases in energy burden, etc. • "Must use reasonable and good faith efforts to seek approval for low-income program design, eligibility, operation, outreach, and funding proposals from its low-income and equity advisory groups in advance of filing such proposals with the commission."
WA	In the Matter of Adopting Rules Relating to Clean Energy Implementation Plans and Compliance with the Clean Energy Transformation Act (2020)	Order Stakeholder engagement Metrics Community impact	Utilities directed to: • Evaluate long-term and short-term public health and environmental benefits and reduction of costs and risks • Engage equity advisory groups (created for each utility) in developing timing and extent of meaningful and inclusive public participation, including that in vulnerable and highly impacted communities • Include customer benefit data, including highly impacted communities using the cumulative impact analysis combined with census tracts at least partially in Indian country and vulnerable populations based on adverse socioeconomic factors and sensitivity factors developed through the advisory group process and public participation plan • Describe the specific actions the utility will take to equitably distribute benefits and reduce burdens for highly impacted communities and vulnerable populations while also considering conservation potential, resource additions, demand response, and a variety of related program elements