VOTE SOLAR

Issue Brief

VOTE SOLAR'S ACCESS & EQUITY ADVISORY COMMITTEE

Advancing Equitable Interconnection in Frontline and BIPOC Communities

By: **Olivia Nedd** ✹ Edited By: ***The Vote Solar Access & Equity Advisory Committee (AEAC)***

About Vote Solar

Vote Solar is a solar advocacy nonprofit that advances access to equitable clean energy policy in legislatures and public utility commissions across the United States. Our work takes place at the state level—where the majority of energy decisions are made. Vote Solar's expertise comes from deep understanding and experience of legislative and regulatory processes, and the ability to identify and accelerate solar solutions. We are adept at bridging communities and bringing diverse stakeholders together to forge inclusive coalitions and winning campaigns.

Issue Brief Summary

In the Spring of 2023, the Access & Equity Advisory Committee (AEAC or "the Committee") came together with the objective of examining equitable interconnection policies and best practices. Given the increased federal funding enabled by the Inflation Reduction Act to expand solar in frontline, low-wealth and historically underserved communities, the AEAC sought to identify the challenges and obstacles faced by these communities when attempting to navigate the interconnection process independent of a solar developer. The aim was to determine whether frontline communities could successfully navigate interconnection without relying on traditional forms of support. This issue brief highlights the AEAC's definition of equitable interconnection and presents the challenges uncovered by the Committee. Finally, the AEAC presents a series of policy recommendations aimed at facilitating wider community participation by making the interconnection process more accessible in states and jurisdictions across the United States.

About the Advisory Committee

The AEAC is composed of clean energy experts and providers who currently work to deliver the benefits of clean energy to underserved communities. Led by Vote Solar's Access & Equity Team, the AEAC works to address barriers to low-wealth solar program implementation. This includes developing and sharing solutions on how to make solar deployment more accessible and affordable for low-wealth communities.

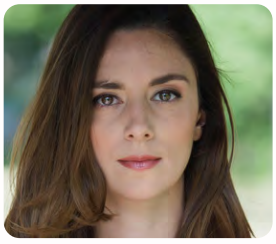
Vote Solar established the AEAC in 2020 with the overarching objective of identifying implementation issues with regard to low-wealth solar programs and to offer solutions. During the spring of 2020, Vote Solar staff conducted interviews with 14 experts and community members to identify the barriers. These interviews resulted in a list of low-wealth housing condition issues that required further exploration. In 2020 the AEAC developed **Recommendations on Automatic Qualification and Community Engagement for State Policy-Enabled Low- and Moderate-Income Community Solar Programs.** On June 16, 2021, Vote Solar brought the AEAC together in a workshop to discuss two topics that rose to the top: **Process for Repairs or Upgrades for Low-Income Homeowners and Financing for Repairs or Upgrades for Low-Income Homeowners.**

Acknowledgements

Vote Solar would like to offer a special thank you to the Interstate Renewable Energy Council (IREC) and the members of the Committee for offering their time, expertise and support to the AEAC and the policy brief.

Interstate Renewable Energy Council (IREC)

IREC is a national, non-profit organization that builds the foundation for rapid adoption of clean energy and energy efficiency to benefit people, the economy, and our planet. IREC's team of engineers, attorneys, and policy specialists facilitates policies and regulatory reforms that allow more communities to benefit from clean, renewable energy, and encourages and prioritizes new policies to benefit low- to moderate-income consumers and disadvantaged communities.



Radina Valova

Regulatory Vice President, IREC

As Vice President of IREC's Regulatory Program, Radina provides strategic direction and oversight of IREC's regulatory team. Radina brings ten years of experience in energy and climate law and policy, with a focus on the electric and gas utility sectors, utility transformation, and a just transition to a decarbonized economy for underserved and disadvantaged communities.

Shay Banton

Regulatory Program Engineer and Energy Justice Policy Advocate, IREC

Shay (they/them), Regulatory Program Engineer and Energy Justice Policy Advocate for IREC, has been working in the grid integration technology and policy space since 2017. Shay has been lucky to have worked in multiple sectors across the power industry from utility, to developer, to the federal government. Most recently, they worked for the U.S. Department of Energy's Solar Energy Technologies Office where they managed over a dozen projects across the solar integration technology landscape and co-founded one of the DOE's most ambitious efforts, the Interconnection Innovation eXchange, which has a goal of making the DOE a national resource for determining interconnection best practices. Prior to this, they worked for Borrego as a Utility Electrical Engineer where they became a nationally recognized interconnection policy advocate leading multiple state-wide efforts to expand market viability.

Mari Hernandez

Assistant Director – Regulatory, IREC

As IREC's Assistant Director of IREC's Regulatory Program, Mari is responsible for policy tracking, research, and analysis, as well as providing support for IREC's state and national regulatory efforts. Before joining IREC, Mari was Deputy Director of Policy and Electricity Markets at SolarCity where she managed regulatory and legislative solar policy initiatives that covered the Southeastern U.S., as well as provided research and analytical support to the policy team. Prior to SolarCity, Mari worked on clean energy issues at the Center for American Progress and the Solar Energy Industries Association.

Radina and Shay served as the interconnection experts for the sessions, guiding the Committee through the general rules that guide the interconnection process in various states, and helping to identify solutions for supporting interconnection equity.

Each year the AEAC rotates members and meets to explore and provide equity-centered recommendations to address the most pressing barriers to clean energy access. The 2023 members of the AEAC include:

Cherie Brooks Wallace
President & CEO, *Power52 Foundation*

Sherrie Villmark
Program Director, *Community Energy Project*

Dion Mensah
Outreach Coordinator, *Black Environmental Leaders Action Fund*

Caetano de Campos Lopes
Director of Climate Policy, *Community Climate Collaborative (C3)*

Lamisa Chowdhury
Program Officer, *Patagonia*

Hugo Polanco
Partner, *Creosote Partners*

What is Interconnection?

Interconnection rules are a set of requirements and procedures for both utilities and connecting customers to abide by. They dictate how clean energy (and other) resources can be safely and reliably connected to the electricity grid. Public Utility Commissions (PUCs)—which regulate the utilities at the state-level [1]—create and oversee these rules through a combination of regulatory proceedings, industry standards, and agreements between interested parties. The rules surrounding the connection of small distributed energy resources (DERs),[2] which includes rooftop solar, battery storage, solar on multi-family housing and some community solar projects, are overseen by state PUCs.

Due to the autonomy each PUC has in regulating matters within their respective jurisdiction, interconnection rules vary by state. As a result, interconnection rules across states have some similarity in the overall process but also possess a wide spectrum of variation in the application of procedures, grid requirements, and technical standards. Interconnection rules are typically created or revised in one of four ways, each of which leads to the PUC launching a regulatory proceeding: ① The state legislature passes a bill (note that the PUC then has to adopt the new bill's provisions in the state's interconnection regulations); ② The PUC decides to open a docket of its own volition; ③ The utility company files a petition with the PUC to revise the interconnection rules; or ④ Other stakeholders, such as DER developers, file for changes. Regardless of how interconnection rule creation or revision starts, the subsequent regulatory process follows generally similar patterns across the states, with stakeholder participation that can include filing comments and participating in working groups and hearings. Despite the similarities in the regulatory process, the wide variations in interconnection rules across states underscores the importance of developing interconnection rules within the local context to meet each state's energy priorities.

Solar interconnection is defined as the process of connecting renewable energy systems like solar panels or community solar projects to the electric grid.[3] It involves the physical and electrical integration of the solar system with the utility grid, allowing for the two-way flow of electricity.

As shown in Table 1, there are a number of steps[4] involved in the interconnection process that may look similar in some states but can also vary.

Table 1: Steps in the Interconnection Process[5]

1. **Prospecting:** Stage in which an interconnection customer uses publicly available tools and resources to determine the optimal location of their project.
2. **Application:** Stage in which an interconnection customer submits an application for their project to the interconnection queue which is managed by the electric utility.
3. **Evaluation:** Stage in which the utility evaluates the proposed project in order to determine if there are any adverse impacts to the grid that require additional study or upgrades.
4. **Agreements:** Stage in which the interconnection customer agrees to the terms of interconnection including payment for any necessary upgrades, operating requirements, or maintenance conditions.
5. **Construction:** Stage in which both the interconnection customer and utility complete the construction of the generation facilities and interconnection equipment.
6. **Commissioning:** Stage in which the utility requires and/or performs a series of final system checks before authorizing the interconnection customer to start generating (i.e. grants permission to operate).

1 "An Introduction to Interconnection Policy in the United States." National Association of Regulatory Utility Commissioners, (Accessed August 23, 2023). https://pubs.naruc.org/pub.cfm?id=5375FAA8-2354-D714-51DB-01C5769A4007 Note that this issue brief focuses on state-level processes and procedures for interconnection of distributed energy resources. The Federal Energy Regulatory Commission governs transmission-level interconnection processes. These are generally large scale merchant generation resources. Additionally, most state Public Utility Commissions do not have a role in regulating municipal electric utilities or cooperatives.

2 "Unlocking the Potential of Distributed Energy Resources: Power System Opportunities and Best Practices." International Energy Agency, (May 2022). https://www.iea.org/ reports/unlocking-the-potential-of-distributed-energy-resources. Distributed energy resources (DERs) are defined as small-scale, decentralized power generation and storage systems, such as solar panels, wind turbines and batteries, that are located close to energy consumers. These resources can vary in type and operation based on local regulations."

3 While this report focuses on solar interconnection, interconnection procedures apply to other types of distributed energy systems as well, including non-renewable systems, and the interconnection process described herein is applicable to them as well.

4 The AEAC did not evaluate all the steps included in the inconnection process. The Committee only looked at the "Prospecting" and "Application" stages, but intends to evaluate the remaining stages in a future meeting.

5 This box identifies and describes the general stages in the interconnection process. States may have more nuance in their process to meet state needs.

Defining Equitable Interconnection: Navigating the Path Towards Inclusive and Fair Distributed Energy Integration

A key focus of the AEAC was to expand the policy conversation around interconnection to include a discussion of equity, specifically by applying a racial and class lens to the discussion. Interconnection policy is traditionally viewed as a technical space and lacks such a lens. In order to hold a robust conversation where the AEAC would be able to effectively question whether it is feasible for BIPOC (Black, Indigenous and People of Color), frontline and low-wealth communities to navigate the interconnection process on their own (without the support of a solar developer), there was a need to create an equity framework[6] to guide discussions. An equity focus in policymaking recognizes the need to eliminate racial and income disparities in clean energy access for BIPOC, frontline and low-wealth communities. Discrete policy issues such as interconnection are only a small piece of a larger puzzle that is the U.S. energy system. On its own, policy fixes to interconnection rules cannot solve the problem of equitable access to clean energy.

An "Equity Lens" refers to a perspective or approach that examines issues and actions through a lens centered[7] around ensuring inclusivity and access for all participants. It also requires consideration of the historical impact of policies, how different groups of people are affected by those decisions and policies, and the systemic inequities that occur as a result. By viewing policies through this lens there must also be a naming of the barriers, a desire to shift accountability, and efforts to ensure fairness and justice in outcomes for those who have been harmed. Therefore, the AEAC found that:

Interconnection plays a crucial role in making sure that states are able to realize their clean energy goals. A key piece of reaching those goals is ensuring that everyone is brought along in the clean energy transition, especially frontline, BIPOC and low-wealth communities. Historically underserved communities have had challenges accessing the benefits of clean energy, for example, "Black- and Hispanic-majority census tracts show on average significantly less rooftop Photovoltaic (PV) installed. This disparity is often attributed to racial and ethnic differences in household income and home ownership."[9] This unequal access to clean energy is a concern with the growing number of major weather events.

Additionally, decades of underinvestment in grid infrastructure in BIPOC, frontline and low-wealth communities has resulted in old infrastructure in their communities, and in some cases, reliability challenges. This lack of attention to the "poles and wires" also known as "utility redlining"[10] in some neighborhoods plays a role in promoting inequality, classism, and racial segregation. BIPOC, frontline and low-wealth communities that are able to overcome the financing challenges of clean energy technologies, can run into the challenge of not being able to connect their systems to the grid because of the lack of upgrades occurring in their communities, the technical nature of interconnection and associated expenses. Given this inequitable dynamic, it is important to approach interconnection policies with an equity lens to ensure that interconnection rules are easily understood and transparent.

> Equitable Interconnection takes into account three large areas: ① The historical context of interconnection policy. When looking at interconnection policy it is important to take the time to think about the origins of the policy, and how racial and class equity have played a role; ② Equitable Policy Development; and ③ Policy outcomes, implementation, accessibility, accountability and adoption.[8]

6 Please see the appendix for more information on the "Applying An Equity Lens to Clean Energy Policy Analysis" framework the AEAC used to guide discussions. It details complete definitions and steps that the AEAC took.

7 The AEAC chose to approach this work through a set of questions centered around challenging the traditional approach to this work.

8 Refer to the appendix section on "Applying An Equity Lens to Clean Energy Policy Analysis" for more information.

9 Disparities in rooftop photovoltaics deployment in the United States by race and ethnicity." Deborah A. Sunter, Sergio Castellanos and Daniel M. Kammen, Nature Sustainability (January 2019). https://doi.org/10.1038/s41893-018-0204-z.

10 "'Utility redlining': Detroit power outages disproportionally hit minority and low-income areas." Tom Perkins, The Guardian (October 2022). https://www.theguardian.com/inequality/2022/oct/06/detroit-power-outages-impact-minority-low-income-neighborhoods.

Solving Barriers and Challenges: Obstacles to Equitable Interconnection Practices in States

Numerous challenges exist in the realm of interconnection policies, ranging from the intricacies of the regulatory landscape to the technological requirements of solar PV systems. Beyond the mere recognition of these barriers and challenges, it is important to identify how people who have been historically excluded from navigating the interconnection process perceive and interact with these challenges. Furthermore, it is crucial to also take into account the unique challenges that BIPOC, frontline and low-wealth communities face, which differ from other groups. By employing an equity lens that proactively identifies and tackles those barriers, we can lay the foundation for state interconnection rules that are inclusive of the needs of all communities. This issue brief provides policy solutions that address these challenges and advance equitable interconnection rules.

One of the first challenges community groups face when seeking to interconnect to the grid is the sheer complexity of the interconnection process. By their very nature, regulatory, and specifically interconnection processes, require an understanding of the associated laws, rules and standards to participate. As a result, community groups who do not have that necessary understanding may find it difficult to know where to begin and how to engage in ways that advance their interests, which further excludes these communities from participating. In addition, a key challenge in focusing on interconnection standards is technical language access. This involves enabling effective communication across groups with limited proficiency in the topic or comprehension barriers that hinder their participation. The terminology used in regulatory spaces and particularly in interconnection rules and procedures is complex and often requires an individual who is well versed in the topic to navigate discussions, and submission of forms and other materials. For a community group who does not regularly engage in the interconnection process, it's a challenge to understand the terms and language used in the rules and forms. Without resources and tools provided by either the PUC or the utility company to aid communities in comprehending the process, it can feel discouraging to participate.

Groups seeking grid interconnection are also hindered by the lack of data transparency and the limited availability of tools and supports that facilitate their understanding of the data they do have access to. For example, a significant challenge is created when essential information regarding hosting capacity maps[11] is missing or not explained. This lack of transparency can lead to uncertainty, misunderstandings, and inefficiencies, particularly for community-based groups who are not familiar with interconnection processes. There may also be discrepancies in data formats that can lead to confusion and misalignment.

Additionally, there exists a power imbalance between the PUC, the utility companies and the BIPOC, frontline and low-wealth communities. When a community group is seeking information or is about to start their interconnection application, there is often a lack of information that acts as an obstacle in getting the application off the ground. Answers to fundamental but important questions like "What is interconnection?" and "How do I get started?" are hard to find. Given the gap in technical language access, these gatekeeping questions and many others are simply not always addressed. The uneven distribution of resources and access to knowledge makes it a challenge for some to navigate interconnection processes. Those who hold the knowledge, and know how to work the process, are able to participate with more ease.

Some states still lack consistent standards in their approach to interconnection, which further complicates things for community groups, especially for those who provide services to clients in various service territories. For example, community groups may be required to navigate multiple processes, made harder by inconsistent forms and paperwork. Processes may be further hindered when lengthy procedures are involved and there is an absence of clear timelines. For many BIPOC, frontline and low-wealth communities, this only extends the wait periods to reap the health and financial benefits associated with solar.

11 "Advanced Hosting Capacity Analysis." National Renewable Energy Laboratory (Accessed August 2023). https://www.nrel.gov/solar/market-research-analysis/advanced-hosting-capacity-analysis.html. Hosting capacity is the amount of distributed solar that can be added to the distribution system before control changes or system upgrades are required to safely and reliably integrate additional distributed solar.

The substantial fees and expenses associated with participating in the interconnection process also act as a significant hurdle. In order for community groups to fully participate in interconnection, the expenses they need to shoulder include hiring an engineer, covering application fees, and possibly engaging legal services. Costs can quickly add up for community groups who do not necessarily have access to the capital required, let alone the capacity to perform these tasks without any external support. Thus, the lack of funding or support for these services is a strong deterrent for their participation.

Another challenge arises when there is a dispute that requires resolution. Community groups often find themselves uncertain about the appropriate avenues to follow in such situations; they do not trust the utility company who they are seeking resolution with, or they may be faced with nonexistent or challenging dispute resolution processes that require significant time, money, and potentially legal services to pursue. When community groups are forced to depend on the utility company to address disputes, a troublesome issue emerges: the absence of an impartial mediator to guide and support the community group. This lack of an unbiased voice can impede the resolution of conflicts, decrease trust, and potentially favor the utility's perspective over that of the community, which leads to unbalanced power. As a result, the community might find it difficult to have their concerns adequately addressed and their interests safeguarded within the interconnection process. Even in states that require third-party (non-utility) dispute resolution processes, getting to that third-party process can require significant resources and time.

The challenges and barriers addressed in this section are not meant to be a comprehensive list. These are the challenges identified by the AEAC during discussions.

Community Participation in Interconnection Reforms

An area of importance is community participation in the revision and development of state interconnection rules and procedures. In order to fully address the listed challenges, community participation in interconnection proceedings at the PUC is needed to help shape rules and procedures that reflect the diverse needs and concerns of those directly impacted by energy policies.

Navigating Equity in Interconnection Across the States

Each state customizes its interconnection process to meet its unique needs. For investor-owned utilities, distribution-level interconnection is governed by state policies and administered by the state's PUC.[12] Prior to the adoption of statewide interconnection policies (which exist in 39 states—not across the entire U.S.), the process was largely left up to utility companies to determine. This resulted in a costly, time-consuming and inconsistent process across service territories, and is still the case in states that have not yet adopted statewide procedures. Even in states that have adopted statewide interconnection rules, individual utility implementation of those rules may differ, creating the same challenges with inconsistent application. Finally, regardless of whether or not statewide procedures exist, very few interconnection rules include energy equity considerations.

Below, we delve into a selection of state-specific examples that have successfully integrated some equitable principles into their interconnection procedures. By examining these pioneering cases, we gain valuable insights into work that serve community needs, and how states are working towards a more inclusive and just solar energy future.

NEW MEXICO

In 2022, New Mexico completed a comprehensive update of its interconnection rules.[13] The decision to update the rules was driven by input from various interested groups, the New Mexico Public Utility Commission's recognition of the need to align interconnection rules with the state's new energy policies, and to better meet consumer demand for clean energy. To inform the revisions of the interconnection rules, a collaborative effort was employed, where utilities and other interested stakeholders, including IREC, were engaged in a "Technical Advisory" working group process to explore precisely what needed to be changed.[14]

Standard agreement forms have been implemented to streamline the interconnection process, which promotes efficiency and consistency. Additionally, the introduction of a pre-application form that offers applicants the option to undergo a preliminary review of their application now provides customers insight into system conditions at the point of interconnection, without the need to submit a complete application.[15]

To address the issues with transparency and accountability, a set of reporting requirements has been added to the process including the utility providing regular updates to the PUC and the public regarding the status of interconnection requests. This reporting mechanism not only encourages oversight but also offers the PUC the opportunity to assess the effectiveness of the new processes and identify potential areas for improvement for utility companies.[16]

While maintaining the principle that interconnection applicants should cover the costs of necessary utility system upgrades, the updated rules allow for a new flexibility. The Commission is now allowed to consider, on a case by case basis, situations where cost-sharing might be appropriate, potentially among similarly situated applicants or through rate adjustments, further aligning the policy with fairness and equitable access.[17]

New Mexico was the only state to receive an "A" in IREC and Vote Solar's Freeing the Grid 2023 Interconnection Scorecard, which grades states on specific policies that help to increase clean energy adoption and access to the grid, and was also the only state to receive credit for including the above energy equity provision in its interconnection procedures.[18] The interconnection provisions adopted by the states described below are not directly or exclusively targeted at supporting energy equity, but they do help to create a more accessible interconnection process that can, if implemented correctly, alleviate some of the barriers described above.

12 For publicly-owned and municipal utilities not under the jurisdiction of a state public utility commission, the interconnection process is likely self-determined and administered. However, it is often the case that these utilities utilize state or federal regulations to guide the development of their own interconnection processes.

13 "In The Matter Of A Commission Rulemaking Regarding Nmprc Rule 17.9.568 Nmac Interconnection Of Generating Resources With A Nameplate Capacity Rating Up To And Including 10 Mw Connecting To A Utility System." Docket No. 21-00266-UT, New Mexico Public Regulation Commission, (November 2022). https://irecusa.org/wp-content/uploads/2022/12/NM-Interconnection-21-00266-UT-2022-11-30-Final-Order.pdf

14 Id. at 6.

15 Id. at 13.

16 Id. at 14.

17 Id.

18 Interstate Renewable Energy Council and Vote Solar, Freeing the Grid, https://freeingthegrid.org/criteria/.

CALIFORNIA

California's Rule 21 outlines the state's interconnection rules and procedures. Rule 21 provides clear guidelines for timelines, technical requirements, and standards for the interconnection of DERs. California offers an Interconnection Discussion Forum, that serves as an informal platform for utilities, developers and other stakeholders to hold discussions where they explore a variety of issues related to the interconnection process in the state.[19] The goal of the discussion forum is to foster communication between these groups, preemptively resolve interconnection disputes through informal discussion, and share information and best practices. The forum convenes quarterly, in person, and the distribution list is maintained by the California Energy Division.[20] Section K of Rule 21 details interconnection dispute resolution procedures.[21] Each investor-owned utility company has a designated staff person to support with dispute resolution and the state's PUC offers assistance in reviewing or resolving a dispute. In 2017, an expedited resolution process was established via Assembly Bill 2861.[22]

Rule 21 also sets out clear timelines for each step of the interconnection process, ensuring transparency and predictability for customers and developers.[23] Utilities that fail to meet these timelines may have to provide certain customer benefits as a penalty such as lowered fees.[24] Since December 2020, the California Public Utility Commission's Energy Division Interconnection staff has worked in collaboration with utility companies to develop spreadsheets that track utility interconnection timeline performance and application processing expenses for Rule 21 systems.[25] Additionally, on a quarterly basis, investor owned-utilities in the state submit interconnection data reports to the public utility commission's Energy Division and public versions are made available on a website.[26]

NEW YORK

In New York, the process for connecting to the utility grid is determined by the New York State Public Service Commission. The state operates under the "Standardized Interconnection Requirements" (SIR) framework, which explains the process and necessary information required for submitting interconnection requests to utility companies.[27] This standardization of the process facilitates a consistent approach. For applicants engaging with the utility, a prospective applicant is provided with a copy of the SIR and any utility-specific requirements necessary to apply.[28] To streamline communication and project coordination, a utility representative serves as a single point of contact for the potential applicant to coordinate the potential project.[29] Upon receipt of the application, the utility company has ten business days to determine if the application is complete or meets all requirements.[30] In the event of incompleteness, the utility must provide a detailed explanation of the deficiencies that were identified in the application along with an explanation and a list of additional information that is required.[31]

An area of improvement lies in material modifications of a customer's interconnection application—this is where an applicant is allowed to submit a modification for utility review, and the utility must review the request to determine whether the proposed modification is a material modification or not and provide its determination to the applicant within ten business days of submission.[32]

20 "Rule 21 Interconnection." California Public Utilities Commission (Accessed August 2023). https://www.cpuc.ca.gov/rule21/

21 "Resolution ALJ-347. Adopts an Expedited Interconnection Dispute Resolution Process as Authorized by Assembly Bill 2861." Public Utilities Commission of California (October 2017). https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M197/K421/197421608.pdf.

22 Id.

23 "Rule 21 Interconnection." California Public Utilities Commission (Accessed August 2023). https://www.cpuc.ca.gov/rule21/.

24 Id.

25 Id.

26 "Quarterly IOU Interconnection Data Reports." California Public Utilities Commission (Accessed August 2023). https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/rule-21-interconnection/quarterly-iou-interconnection-data-reports.

27 "Interconnection." New York State Energy Research and Development Authority (Accessed August 2023). https://www.nyserda.ny.gov/All-Programs/NY-Sun/Contractors/Resources-for-Contractors/Interconnection

28 "Standardized Interconnection Requirements and Application Process For New Distributed Generators and/or Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems." New York State Public Service Commission, (Accessed August 2023). https://dps.ny.gov/system/files/documents/2023/07/may-2023-sir-final.pdf.

29 Id.

30 Id.

31 Id. at 3.

32 Id. at 18.

However, similar to other jurisdictions, if a material modification is required, a new application, queue position and removal of the original application is required along with the associated payment for necessary studies and costs of evaluation.[33] The applicant is also required to pay for any necessary studies and costs of evaluation associated with the application.[34] New York does employ equitable cost sharing methods for certain qualifying modifications.[35] This ensures fair distribution of interconnection costs among stakeholders, fostering broader participation across customers.

The Department of Public Service and the New York State Energy Research and Development Authority (NYSERDA) provide ombudsperson services to facilitate coordination between applicants and utility companies, to address questions and concerns.[36] In addition, the New York State Interconnection Technical Working Group[37] aims to identify, discuss, and resolve any technical barriers and challenges associated with DERs interconnection and the SIR.[38]

MICHIGAN

In 2022, Michigan underwent a revision of its interconnection rules that resulted in the Michigan Interconnection and Distributed Generation Rules (MIXDG Rules).[39] A noteworthy outcome of these rules is a provision for technical assistance that states: "If an applicant requests before or during the application process, an electric utility shall provide up to two hours of technical consultation at no additional cost to the applicant. Consultation may be limited to providing information concerning the utility system operating characteristics and location of system components."[40]

33 Id.

34 Id. at 18.

35 Id. at 2.

36 "Interconnection Ombudsman Effort." Department of Public Service, New York State, (Accessed August 22, 2023). https://dps.ny.gov/interconnection-ombudsman-effort.

37 "Interconnection Technical Working Group." Department of Public Service, New York State, (Accessed August 2023). https://dps.ny.gov/interconnection-technical-working-group.

38 "Interconnection Technical Working Group Governance." Department of Public Service, New York State. (January 2021). https://dps.ny.gov/distributed-generation-information.

39 "Electric Interconnection And Net Metering Standards." Department Of Energy, Labor And Economic Growth Public Service Commission Michigan. (Accessed August 23, 2023). https://www.michigan.gov/mpsc/consumer/electricity//mpsc/-/media/Project/Websites/mpsc/regulatory/rules-laws/R-460601a-to-R-460656—Grandfathered.pdf.

40 "Electric Interconnection And Net Metering Standards." Department Of Energy, Labor And Economic Growth Public Service Commission Michigan. (Accessed August 23, 2023). https://www.michigan.gov/mpsc/consumer/electricity//mpsc/-/media/Project/Websites/mpsc/regulatory/rules-laws/R-460601a-to-R-460656—Grandfathered.pdf.

Access and Equity Advisory Committee Recommendations to Improve Interconnection

The AEAC developed four recommendations to make interconnection at the state-level more equitable. These proposed policy solutions can streamline the interconnection process and allow more frontline, BIPOC and low-wealth communities to participate. Below, we detail how to best apply these policy recommendations, accompanied by state examples of the policy recommendations in practice.

Overlay Population Data and Reliability Data to Identify Which Communities Need Upgrades

A critical first step in reforms to the inconnection process begins with identifying which communities have the necessary grid infrastructure to support the addition of new distributed energy resources. By overlaying[41] utility reliability data[42] with census data or data from other state-level mapping tools, it is possible to assess whether disparities exist across the utility service territory for different demographic, social, and economic groups. This type of analysis allows states to identify which areas are in need of grid infrastructure improvements. The visual representation this provides also allows policymakers to see how the reliability data correlates with the census data and what patterns or trends may be hidden. Additionally, it allows for more efficient grid planning.

Make Information Publicly Available: Hosting Capacity Maps

There is a role here for PUCs to enforce utility accountability and ensure that utility companies are providing reliable service. A hosting capacity map provides users an indication of how much distributed energy can be added to the grid without adversely impacting power quality.[43] If the map shows that there is not enough capacity in one area of the grid, infrastructure upgrades are required for the interconnection of additional DERs.

Offering a virtual map developed by the utility company and hosted on both the utility companies' and PUC's website, allows a user to type in their address and see the probability of interconnection issues in their area. For example, Consolidated Edison in New York offers an interactive portal that contractors, customers and developers can use to identify sites for generation.[44] The portal provides views of the service territory and utility information. Utility companies should also use this portal as a one-stop-shop for those interested in connecting distributed resources to the grid. The portal should also include hosting an online interconnection application, a place to find technical standards, fees and costs, and to submit all required documents. The creation of a resource like this will require additional staff capacity from the utility company to ensure regular communication is maintained with applicants, information on the website is up to date, and the process is streamlined.

An important consideration for public utility commissions is to encourage accountability and transparency. Utilities can also be required to track everything and provide regular updates.

Socializing the Cost of Interconnections

Socializing the cost of interconnection refers to spreading out the costs associated with adding DERs to the grid. For example, if a group adds DERs to the grid and it triggers an upgrade, the current practice in many jurisdictions is for that group to pay for the entire cost associated with that upgrade. As stated earlier, this has a significant impact on communities where the grid may not be upgraded in parts of their community and pursuing interconnection would require doing so. Frontline groups simply do not have the extra money to pay for the needed upgrade on top of the solar PV system and interconnection fees. The question lingers on where should the financial burden be placed? On the community groups, the utility, or should it be spread out across ratepayers? Socializing the cost can make renewable energy more accessible and remove the financial burden disproportionately placed on those who cannot afford the upgrade in addition to the cost of the system itself.

41 Overlaying data refers to the process of superimposing one set of data on top of another. This is often done to compare, analyze, or highlight relationships between the two datasets.

42 The most commonly used indices are SAIFI, SAIDI, CAIDI, and ASAI, which all provide information about average system performance. Many utilities also calculate indices on a feeder basis to provide more detailed information for decision making. Averages give general performance trends for the utility; however, using averages will lead to loss of detail that could be critical to decision making. For example, using system averages alone will not provide information about the interruption duration experienced by any specific customer." EEE 1366-2022, pg. 29 - https://ieeexplore.ieee.org/document/9955492

43 "Defining Hosting Capacity." Nation Renewable Energy Laboratory (Accessed August 2023). https://www.nrel.gov/solar/market-research-analysis/advanced-hosting-capacity-analysis.html.

44 Con Edison Hosting Capacity Portal, https://www.coned.com/en/business-partners/hosting-capacity.

This is not a simple question to be answered; however, there are a number of benefits and challenges that state policymakers should be aware of as they attempt to resolve this question:

System-wide Interconnection Planning or Integrated Resource Planning:

Utility companies should take a look at the whole system and be required to make upgrades that consider forecasts of hosting capacity maps and community needs before they arise. There should be some onus on the utility companies to be proactive in making sure that they are planning adequately for upgrades. There needs to be proactive investment that wisely uses ratepayer dollars to do work needed to upgrade the infrastructure. There exists an opportunity to forecast the growth of DERs within a service territory and then plan accordingly by utilizing modeling tools. The public utility commission has a role to play by making this type of planning a requirement that takes interconnection into account.

Ratemaking and interconnection:

Ratemaking involves setting price structures for the electricity service that customers receive. The primary goal in setting the price is to balance the need for utility companies to recover their costs while ensuring affordable access for customers. Part of setting the price structure includes recovering the cost of the upgrades the utility makes to the grid through a fee charged to utility customers. Grid planning and rates are extremely important to highlight, and the lack of hosting capacity in some communities (especially in historically under-invested communities) is especially important. An opportunity to reform this process may exist: If grid upgrade costs are socialized, the utility company can recoup this cost from ratepayers over time, especially when those upgrades have broader ratepayer, system, and environmental benefits. PUCs should also take a holistic view of utility expenditures so that everyone benefits from the grid without paying unfair costs—for example, if reforms are made to reduce unjust and unreasonable utility spending on costs that don't benefit ratepayers, more money is freed up to support the public. There is also a need for the PUC to regulate and ensure that the investor owned utilities do not unnecessarily overspend on this similar to how they do on building new assets.

Fostering Equity: The Vital Role of the Public Utility Commission

The PUC plays a vital role in fostering equity within the clean energy landscape. As a regulatory body, the PUC can implement various strategies that promote inclusivity, transparency, and accessibility for all communities in the state. Given this need, there is an importance of diverse representation and involvement in the development of rules. In this context, expanded intervenor funding stands as a key initiative. By expanding this resource to community representatives, more communities are empowered to participate actively in regulatory proceedings, ensuring their perspectives are adequately considered.

Language access continues to be another critical element in promoting equity at the PUC. Integrating language diversity, multiple mediums for information dissemination helps facilitate equitable participation. BIPOC, frontline and low-wealth communities should have access to resources such as multilingual materials, videos, and in-person opportunities that will enable them to engage meaningfully in the process. One solution PUCs should explore is establishing a comprehensive language access plan that spans beyond interconnection processes, and can bridge communication gaps.

To ensure that communities are able to learn about the PUC, there must also be customer outreach and education efforts. The public utility commission can undertake these efforts themselves or mandate utilities to offer technical assistance and educational resources in various dockets. This equips BIPOC, frontline and low-wealth communities with the necessary knowledge to navigate the PUC and conversations with utility companies.

Furthermore, requiring standardized interconnection standards for all utilities ensures that equitable treatment is extended across the board, regardless of utility size or region. An essential aspect of promoting fairness and accountability involves the adoption and enforcement of procedural timelines. Clear and consistent timelines provide applicants and stakeholders with transparency and predictability, preventing unnecessary delays and disparities. Moreover, introducing performance incentive mechanisms not only encourages utilities to meet interconnection goals promptly but also holds them accountable for equitable distribution of resources and services. Each of these recommendations must be tailored to the state and explored through a process that helps meet clean energy goals. To truly ensure equity, the PUC needs to commit to transparent data sharing. This entails

making relevant information easily understandable and accessible to all parties involved, enabling informed decision-making and fostering trust in the system.

Conclusion

Interconnection is the critical component for adding solar to the existing grid. The challenges communities and nonprofit organizations face when seeking to interconnect solar and storage systems is a critical barrier to solve if we want to see everyone have access to clean energy. Policymakers, PUCs and utilities need to develop meaningful solutions in collaboration with communities to solve this problem.

The recommendations presented here can assist states and PUCs to design interconnection policies that streamline adoption for communities. The AEAC hopes to continue exploring and sharing solutions that bring about an equitable clean energy future.

Appendix

APPLYING AN EQUITY LENS TO CLEAN ENERGY POLICY ANALYSIS

An equity focus in policy recognizes the need to eliminate racial and income disparities in clean energy access for Black, Indigenous, and people of color (BIPOC), frontline and low wealth communities. Discrete policy issues such as interconnection are only a small piece of a larger puzzle that is the U.S. energy system, and cannot solve the problems of inequity on its own. An "Equity Lens" is a set of questions that we ask ourselves to ensure inclusivity and equity when we plan and develop policies and programs. It is also race and class conscious, and seeks to shift accountability to the institutions rather than the community.

HOW EQUITY IS DEFINED

Equity ensures that outcomes and the conditions of well-being are improved for marginalized groups. Equity is a measure of justice. The strategies that produce equity must be targeted to address the unequal needs, systemic injustice, conditions, and positions of people and communities that are created by historical, institutional, and procedural barriers.[45] When applying an equity lens to this work we will assess:

1. How issues of race/ethnicity, class/socioeconomic status, gender, sexual orientation, disability, age, immigration status, income-level, and houseless individuals interplay with systems of oppression and perpetuate marginalization of those individuals and groups through the interconnection process;
2. How issues of race/ethnicity, class/socioeconomic status, gender, sexual orientation, disability, age, immigration status, income-level, and houseless individuals are incorporated in the interconnection process, and the impacts this has on participation on those individuals and groups.

The goal of **energy equity** is to achieve equity across race/ethnicity, class/socioeconomic status, gender, sexual orientation, disability, age, immigration status, income-level, and houseless individuals who participate in the energy system, while also remediating the social, economic, and health burdens placed on those historically harmed by the energy system. Equity is a process of eliminating disparities across race/ethnicity, class/socioeconomic status, gender, sexual orientation, disability, age, immigration status, income-level, and houseless individuals by improving outcomes for everyone. Additionally, energy equity calls to attention recognition justice, procedural equity, distributional equity, and restorative justice. It is the intentional and continual practice of changing policies, application, systems, and structures by prioritizing measurable change through reduced energy burden and access to clean energy resources.

DIRECTIONS

Discussions connecting interconnection and equity are new to the field. It is important to think about equity as a whole and figure out how interconnection fits in. We will use the below equity lens to support our process for analyzing interconnection policies for equity, and their impact on BIPOC, frontline, and low-wealth communities. Here are a few things to keep in mind:

- **Policies** are the decisions made about how we will build and govern our communities.
- **Processes** are the ways in which we make those decisions.
- **Assumptions** are the underlying values that determine our policies and shape our processes.

45 "Glossary of Terms" Initiative for Energy Justice, https://iejusa.org/glossary-and-appendix/#glossary_of_terms.

Appendix

HISTORICAL CONTEXT

1. What is the historical context of interconnection policy? Think about the origins of interconnection policy, and how racial and class equity has played a role. Also think about any debates that have occurred around the policy, what were they?

EQUITABLE POLICY DEVELOPMENT

2. How is race/ethnicity, class/socioeconomic status, gender, sexual orientation, disability, age, immigration status, income-level, and houseless individuals incorporated within interconnection policy?
3. Will interconnection policy have a positive impact on racial/class equity, inclusion? And does it have full participation of frontline BIPOC and low wealth communities/organizations people (in the process, in implementation, in breadth of outreach and participation, in decision-making and culture of decision-making, etc.)?

POLICY OUTCOMES, IMPLEMENTATION ACCESSIBILITY, ACCOUNTABILITY AND ADOPTION

4. How does interconnection policy address the problem it identifies as it relates to frontline BIPOC and low wealth frontline communities?
   - (a) Does it increase access for frontline BIPOC and low wealth populations? Is the process accessible (i.e. training on topics, engagement barriers, and legal representation)?
   - (b) Will frontline BIPOC and low wealth populations benefit? How? When?
   - (c) Will frontline BIPOC and low wealth populations be negatively impacted? How? When?
   - (d) How are BIPOC leaders involved throughout the process? Are they there from the beginning to the end? Is there continual engagement throughout?
   - (e) How is accountability ensured? Is there data transparency? How are past harms rectified or compensated to allow participation?
5. Does the policy explicitly account for potential racially disparate outcomes? If so, how? If not, how can it be incorporated?
6. How is a racial equity lens incorporated in tracking this policy's outcomes? If so, how? If not, how can it be incorporated?
7. What are the mechanisms in place to ensure accountability (such as equity-focused benchmarks or indicators)? If there are none, what mechanisms can be established?
8. Are there changes that could be made to make the interconnection process and policy to make it more equitable and inclusive?
9. What are the economic and social benefits of incorporating a racial equity lens in the interconnection process and policy?