Understanding Energy Insecurity in the Field
A Toolkit for Community Members, Researchers and Local Practitioners

Acknowledgments

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Introduction

THE GROWING PUBLIC AND SCIENTIFIC DISCOURSE ON CLIMATE CHANGE AND HEALTH demands a closer examination on how energy impacts individuals and families where they live. Diana Hernández, PhD is an associate Professor in the Department of Sociomedical Sciences in the Mailman School of Public Health at Columbia University and Founder/Principal Investigator of the Energy, Equity, Housing and Health (E2H2) Program. She is also the Director of U.S. Programs for the Energy Opportunity Lab at the Center on Global Energy Policy. Her foundational research on energy insecurity has explored the multiple dimensions of this phenomenon identifying sociodemographic disparities, adverse consequences and promising interventions toward energy equity and justice. As Dr. Hernández points out, "Climate justice starts at home." Households are encountering higher temperatures and extreme weather most directly in their home environments and relying more heavily on their homes to offer shelter and protection from the outside elements.[1] As the climate changes around us, there are increasing energy demands and dependencies.

The issue of energy insecurity has long been a concern for low-income, vulnerable communities.[2,3] With the onset of the COVID-19 pandemic, which confined people across America to their homes, recognition of this problem was heightened due to the demand for affordable and reliable household energy as a basic requirement to maintain health and safety during the global crisis. Though our lives have resumed since the onset of the pandemic, we continue to need sustained attention to how the health and overall well-being of individuals are compromised when homes become excessively hot or cold, when access to energy is threatened by affordability hardships, and how vulnerable populations in various community contexts are disproportionately exposed and more susceptible to the detrimental consequences of prolonged energy insecurity.

This toolkit serves as a guide for community members, researchers and local practitioners, especially those in the field of public health, to understand how energy insecurity manifests within their communities, define the adverse effects of energy insecurity, and implement effective strategies to mitigate its repercussions. The toolkit will equip stakeholders with resources on conducting community-based focus groups, including best practices in outreach and recruitment strategies as well as innovative methods for disseminating the findings and insights on how these conversations can inform subsequent actions towards energy equity and justice.

BACKGROUND

WHAT IS ENERGY INSECURITY?

AS ESTABLISHED BY DR. DIANA HERNÁNDEZ, energy insecurity is defined as the "inability to adequately meet basic household energy needs."[2,4,5] In this context, energy refers to electricity, gas and/or other power sources used in homes for the purposes of lighting, cooling, heating and use of household appliances and electronic devices.

In the United States, nearly one-third of all households contend with energy insecurity.[6] This multifaceted issue encompasses economic, physical and coping dimensions. Economically, individuals struggle to afford utility bills, resulting in a substantial energy burden that can lead to unpaid bills and service disconnection threats. The physical aspect involves suboptimal housing conditions, manifesting as drafts, insufficient insulation, and malfunctioning heating, cooling, or appliance systems, raising operational costs and impeding comfort. Faced with these challenges, households resort to diverse coping strategies, such as vigilant conservation,[7] enduring discomfort to minimize expenses, or utilizing alternative heating sources such as ovens in lieu of adequate heat. These coping mechanisms represent the community's resourcefulness in countering significant economic and physical obstacles with inventive solutions, personal sacrifices and potential health risks.

Economic Energy Insecurity

- Economic energy insecurity is a consequence of high energy bills relative to low income. The ratio of income to energy expenses is known as "energy burden." In the U.S., when the ratio exceeds 6% it is considered a high burden, and when it exceeds 10% it is deemed severe.
- The average US household allocates 3.1% of its income to energy expenses; for low-income households, this figure is upward of 8.1%.
- This financial hardship often means that for low-income households there are fewer financial resources available for other basic needs such as housing, food, clothing, child care, medical expenses, digital access and transportation.

Adapted from Hernandez 2023[5]

Physical Energy Insecurity

- Energy insecurity is rooted in poverty and housing deficiencies, often acting synergistically in a vicious cycle, as poor individuals and families tend to reside in housing units that are less efficient, and those inefficiencies drive up residents' monthly utility bills.
- Deficiencies and inefficiencies in the home environment affect energy performance and reflect deferred maintenance and the lack of energy-efficient building materials and appliances.
- The physical manifestations of energy insecurity include dated, malfunctioning, or nonexistent heating and cooling equipment; poor insulation; drafts; and reliance on older, less efficient lighting systems and domestic appliances such as refrigerators, stoves, and hot water heaters.
- These factors affect the ability to achieve comfort and manage costs.

Adapted from Hernandez 2023[5]

Coping with Energy Insecurity

- People facing energy insecurity rely on adaptive strategies to manage inadequate and inefficient housing conditions and economic hardship. Energy-insecure households may use supplemental and potentially hazardous heating alternatives such as stoves, ovens, and space heaters when a primary source is unavailable or lacks sufficient capacity.
- Coping also alludes to the trade-offs that households make, such as forgoing food or medicine or enduring extreme temperatures by not running an air conditioning unit because of cost concerns. Low-income households are more likely than their higher-income counterparts to engage in energy-limiting behavior to contain costs at the expense of comfort and health.
- Coping with energy insecurity represents a way to both prevent and respond to physical and economic hardship.

Adapted from Hernandez 2023[5]

Prevalence of Energy Insecurity in the U.S.

Indicators of energy insecurity include notices of disconnections for electricity and gas, shut offs, and rationing of cooling/heating sources in addition to a household's energy burden. In 2020 alone, it was reported that more than 30 million households across the U.S. experienced some form of energy insecurity.[5] More specifically, more than 12 million households received disconnection notices. With high costs and accessibility issues, 6 million households were not able to use an air-conditioner when needed and 5 million households were unable to use heating equipment in the winter months. More than 25 million households responded to high energy costs by reducing/going without food/medicine while more than 12 million left leaving their homes during extreme weather to avert higher energy bills.[8]

Number of housing units (million)

Category	Value
Any El	~34
Lack heat	~5
Lack AC	~6
Disconnect Notice	~12
Unhealthy Temp	~12
Reduce/Forgo Basic Needs	~24.5
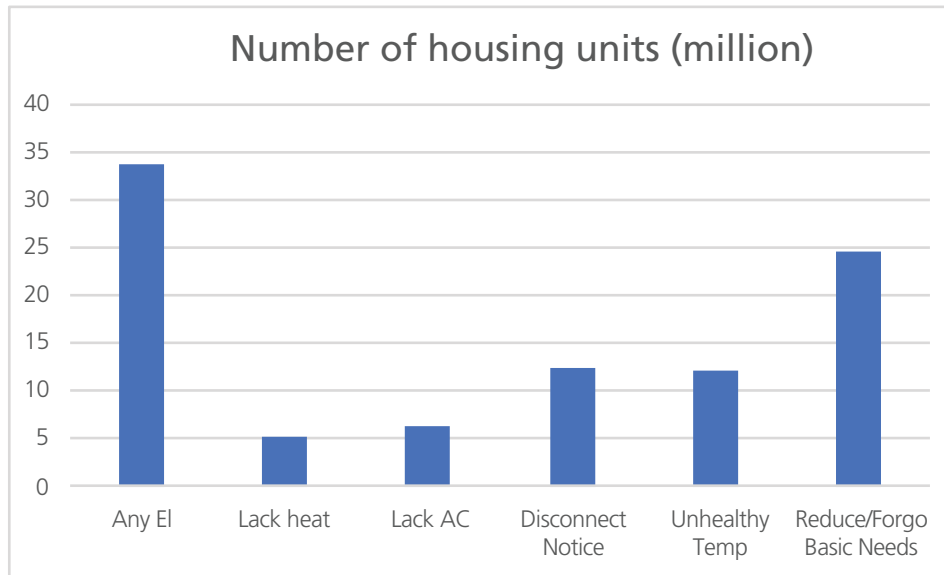
Adapted from Hernandez 2023[5]

Adjacent terms: Energy Burden and Energy Justice

The concept of energy burden often emerges in discussions of energy insecurity. Energy burden is the percentage of a household's gross income that is allocated towards energy related costs.[9] A household is considered energy burdened if this ratio exceeds 6%, but this is just one indicator capturing the economic facet of energy insecurity.[5]

Likewise, energy insecurity is associated with energy justice which refers to the "concepts of equity, affordability, accessibility and participation in the energy system and energy transition regardless of race, nationality, income or geographic location."[10] Often, the communities impacted most by energy production byproducts are left out of conversations related to energy systems despite bearing the largest burden. Energy justice seeks to recenter these communities and their vulnerabilities. This concept describes an energy system that distributes the benefits and costs of energy use in a manner that is fair and just.[11] The ideal system would be based on decision making and governance by affected populations and serve to restore past harms.

Dr. Hernández Outlines Four Tenets of Energy Justice as the Following:

1. **Healthy, sustainable energy** production that utilizes clean energy sources, continued environmental health assessments, and incorporation of community members in efforts to ensure proper monitoring/remediation steps are taken as needed;
2. Utilizing the **best available energy** infrastructure to ensure there is an equitable distribution of resources and burdens;
3. Ensuring **affordable energy** by putting in place measures that assist households struggling to manage high energy costs; and
4. Ensuring **uninterrupted energy service** by offering households protections in the event of disconnection notices resulting from non-payment.[11]

It should be noted that these are vital considerations as the U.S. and the rest of the world are placing greater emphasis on a *clean energy* transition that maximizes utilization of energy resources that do not emit greenhouse gases that would contribute to the growing climate change crisis.[12]

ENERGY INSECURITY AND KEY INTERSECTIONS

BELOW WE PROVIDE SOME CONTEXT on the intersections between energy insecurity and key constructs such as racial inequalities, place and spatial challenges, the clean energy transition, and health. We share this information to better situate energy insecurity in established issue areas related to the social and environmental determinants of health.

Energy Insecurity and Race

Black, Indigenous, and households of color consistently experience higher energy burden and energy insecurity.[5] Black households tend to contribute a larger portion of their income toward their energy bills in comparison to other racial groups.[13] When looking at Detroit, Michigan, as an example, spatial analyses found that African American households were nearly two times more likely to report being behind on utility related payments and three times more likely to experience a utility shutoff compared to their non-black counterparts. This was a critical finding as the study also reported that though minority and low-income households experienced higher energy use intensity, they actually consume less energy.[14] Structural racism has consistently fueled systemic racial disparities, particularly evident in areas closely related to energy insecurity, namely environmental injustices, housing disparities and the disproportionate prevalence of chronic health conditions in certain communities. As spatially defined burdens, energy insecurity is important to view in terms of place.
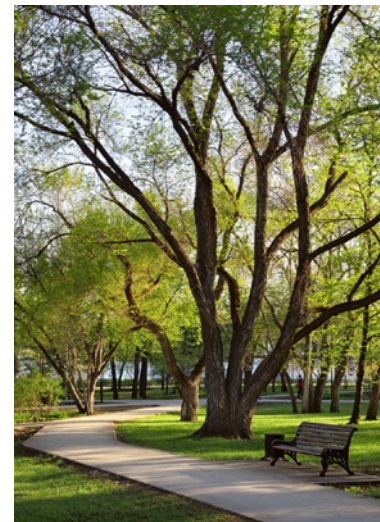
Energy Insecurity and Place

Urban Heat Islands and Passive Cooling

As defined by the United States Environmental Protection Agency (EPA), urban heat islands occur "when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat."[15] The heat retention caused by this phenomenon increases the energy costs for residents and increases the likelihood for heat-related illnesses, air pollution and related environmental health risks.[15] In response to this, it has been reported that the inclusion of passive cooling measures (e.g. trees, cool and green roofs, etc.) can reduce the overall temperature by providing shade by repelling the sun's radiation, reduce energy costs, and improve survival to extreme indoor heat.[15]

Green Spaces

In addition to the above, green spaces include parks and outdoor recreational locations that are available to a community, as well as green infrastructure such as trees or rain gardens. These spaces contribute to reducing the impact of greenhouse gas emissions/pollution, managing storm water and reducing the need for energy run temperature control measures such as air conditioning. This reduces energy costs for residents living in close proximity during the summer months, and households do not need to solely rely on their homes for temperature management and recreation.[17] For many families of color, these spaces are either less accessible or simply do not exist to the same magnitude as predominantly white and/or wealthier neighborhoods (e.g. average park size of 6.4 acres for those in poor neighborhoods versus 14 acres in wealthy areas).[18] Those with higher education and income have greater access to urban green space compared to areas with larger Black/Latino populations.[18] This disparity in access to green space then subsequently creates a disparity with temperature control and environmental impacts.

Regional/Neighborhood Differences

Racial segregation disproportionately impacts minoritized groups, especially Black individuals and households, and further contributes to exacerbated energy insecurity risk through underinvestment at the housing and community levels. Many racially disenfranchised families have been restricted to being long-term renters in response to historic redlining and discriminatory home lending practices, which have made the prospects of homeownership dim for some groups.[19] This often means that Black, Indigenous, Latino and other people of color are relegated to homes in poor condition, and the status of renter offers little ability to improve the physical conditions of these homes.

A 2019 study by Dr. Hernández and Siegel showed that long-term residents in a gentrifying neighborhood were more likely to experience energy insecurity than newer residents, raising the question about the role of gentrification promulgating the experience of energy insecurity.[20]

When we zoom in on different regional areas of the U.S., we can also see the degree of variations of energy insecurity exposure. Though the South has the lowest electric rates, the region represents the highest residential bills. The numbers are starker where 15.4 million households (35% of all households) in the South reported some experience with energy insecurity.[21] This has been partly attributed to higher cooling loads, but there is also something to be said about the environment that also fosters this increased energy load. For one, non-regulation means that providers can charge higher rates than in other areas, but housing stock also makes an impact as mobile homes and less efficient dwellings drive up energy costs and increase energy insecurity-related risks.[21]

Minoritized, low-income communities often live in homes in less-than-ideal physical conditions furthering demand on energy consumption if their homes are not energy efficient.[3,5] This may take the form of drafty windows, use of old appliances, and poor insulation.[2,4]

Energy Insecurity Impact on Health Outcomes

It is critical to outline the health implications of energy insecurity. Children who live in households experiencing energy insecurity are more likely to experience food insecurity, have poor overall health, and have developmental concerns/impediments.[22] Often energy insecurity is associated with tradeoffs as reflected by the "Heat or Eat" dilemma, where households have to sacrifice one or the other to save on costs.[5,8,23,24] In 2020, nearly 25 million households reduced their food and/or medicine or went without completely just to offset energy costs.[5,8] This estimate was reportedly higher for those reporting receiving a notice of disconnection or having limited heating/cooling equipment.[5] This also comes with heavy implications for chronic stress and strain on mental health. It should be noted that those who have chronic conditions may also demand greater energy consumption if their health relies on electronic equipment.[25] Many chronic conditions disproportionally impact low-income communities and communities of color.[26] Thus, these individuals are put at even greater risk of experiencing energy insecurity or suffering greater health consequences when faced with this hardship.

Energy Insecurity, Climate Change and the Just Energy Transition

Times of extreme weather, natural disasters and climate changes increase the risk for energy insecurity. Extreme heat can lead to a heavier reliance on energy to run air conditioners while also reducing outputs from sources like solar and wind power. This increased demand for energy can lead to overworking the electrical grids to the point of shutdowns of power.[27] Droughts, wildfires, and other extreme weather events can cause grid collapses or physical destruction of electrical supplies.[27] With temperatures rising due to climate change, increased demand for energy will inevitably place further strain on what is the current energy infrastructure, and will, in turn, exacerbate any existing disparities in regards to energy access and affordability.

With the effects of climate change already taking hold, there have been greater calls for a clean energy transition. This refers to switching to energy sources such as hydro, wind and solar that do not emit greenhouse gases, unlike traditional fossil fuel sources.[28] The concept of a just transition is relevant to the clean energy transition as it advocates for steps to be taken to ensure that the transition to clean energy occurs in a manner that maximizes access while accounting for social impact on communities directly involved.[29] Often, low-income communities and communities of color are directly impacted by energy production and live in "energy sacrifice zones". These zones are areas that have experienced or are currently experiencing pollution and environmental hazards due to nearby industrial facilities.[30] While these populations are burdened by energy production, they are often overlooked or are deprioritized during conversations on clean energy practices. The just transition is meant to center these communities and include them in these discussions.

A critical step in centering community perspectives is to hear directly from community members and better understand elements of their lived experience in the interest of validating their truths and supporting efforts to improve their reality and empower change.

UNDERSTANDING ENERGY INSECURITY IN COMMUNITY SETTINGS

Community Engagement

There are regional/neighborhood differences that often contribute to nuanced energy insecurity experiences. Energy insecurity takes on varied expressions depending on local factors such as temperature, housing stock and sociodemographic characteristics. When taking a localized approach to understanding energy insecurity in community settings, it is important and vital to center the voices of those with direct encounters with this phenomenon. As such, there is a demonstrated need to include community members in the information-gathering and decision-making processes that directly impact their energy realities. Community members are best equipped to inform the ways in which they cope with energy insecurity and what resources and support they need to reduce energy insecurity-related hardships and harm.

Data and Methods

A critical aspect to engaging the community is conducting a community assessment of what is happening in the local context, who is most impacted, and what drives energy insecurity locally. There are a few different mechanisms to do this.

Surveys, maps, and existing administrative data

There are a number of resources and tools available that can help you gather specific information about energy consumption and energy burdens. Some examples include:

- **Residential Energy Consumption Survey (RECS):** The U.S. Energy Information Administration collects the RECS survey from a nationally representative sample. The survey includes an assessment of energy usage patterns and household demographics at the federal and state-level. Additionally, the Household Pulse Survey was collected by the U.S. Census Bureau during the Covid-19 pandemic (with final collection in October 2023)[31] and collected information on three questions related to household energy insecurity[32]. The links for more information are:[32,33]

 https://www.eia.gov/consumption/residential/about.php
  https://www.eia.gov/consumption/residential/energy_insecurity.php

Additionally, the Energy Insecurity Dashboard provides an interactive display combining national and state-by-state data from both RECS and the Household Pulse Survey which can be found here:[34]
https://energyinsecuritydashboard.shinyapps.io/shinyappDeploy/

- **American Community Survey (ACS):** The Census Bureau conducts this survey every year by contacting over 3.5 million households to participate. The goal of the ACS is to create up to date statistics and calculate estimates for various stakeholders to use. The link to learn more is:[35] https://www.census.gov/programs-surveys/acs

- **American Housing Survey (AHS):** This survey is conducted by the Census Bureau as well but is sponsored by the Department of Housing and Urban Development (HUD). This survey collects information on the physical condition of homes/neighborhoods, costs of homes, and demographics information. The link to learn more is[36]
https://www.census.gov/programssurveys/ahs.html

- **Low-income Energy Affordability Tool:** This tool from the U.S. State and Community Energy Programs will help you determine energy burden/energy cost by state and adds in contributing factors to supplement this information including median age, building age, etc.[37] https://www.energy.gov/scep/slsc/lead-tool
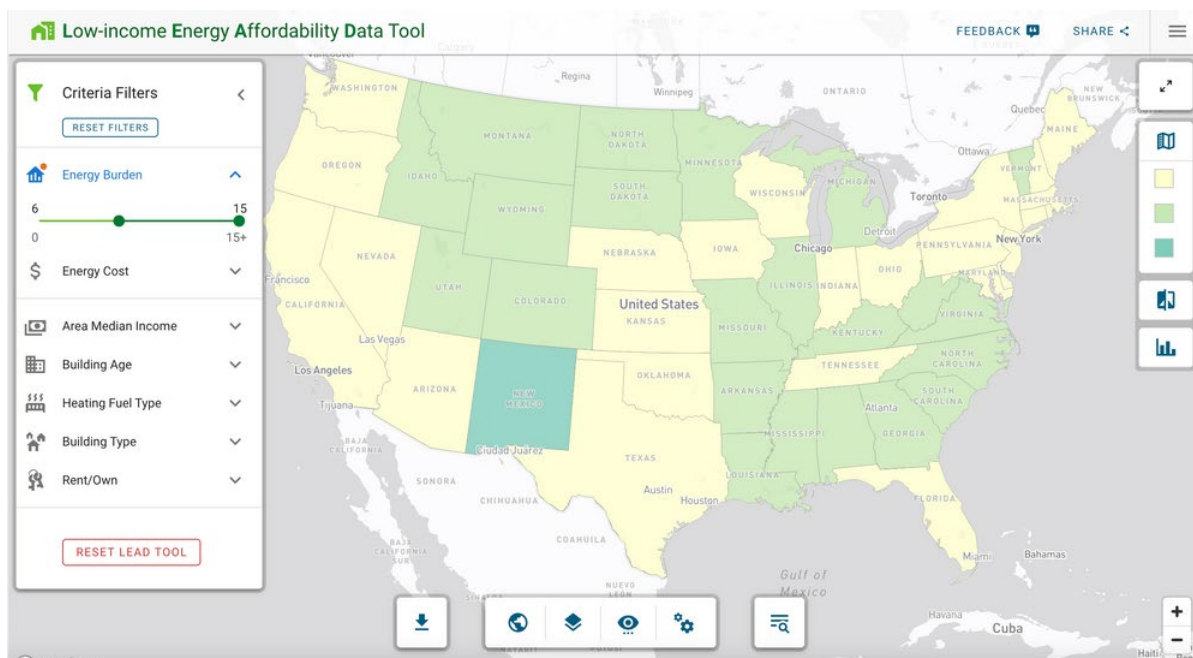
From LEAD Tool, Department of Energy[37]
This image depicts states with an energy burden ratio of 6 or more.

Public Health Data

Linking to public health data can be useful to get an understanding on the different manifestations of energy insecurity based on primary or secondary data sources. Local and state-level health departments can help identify appropriate and available data sources.

Some helpful public health data may include information on hospitalizations, deaths, and emergency room visits during extreme heat, for instance. The CDC and other federal agencies may also provide access to helpful data resources that link energy insecurity to health.

Qualitative Data

Qualitative data offers a unique opportunity to gather information from community members not only covering what they're experiencing but also how and why. Qualitative data takes the form of in-depth interviews with local stakeholders, key informant interviews with influential figures with community members that fosters discussion across different viewpoints. Various examples of using qualitative research to understand energy insecurity exist in the academic and grey literature. The narratives are particularly compelling for sharing the personal impacts of this phenomenon.

This toolkit outlines the process of conducting focus groups to understand energy insecurity in community settings.

FOCUS GROUPS

A Featured Method for Understanding Energy Insecurity Using a Localized Approach

HOW TO LEAD FOCUS GROUPS TO LEARN ABOUT ENERGY INSECURITY

DIFFERENCE BETWEEN QUANTITATIVE AND QUALITATIVE RESEARCH is rooted in the data collection process, the findings and the insights that are drawn.[38] As shown in the table on the next page, we draw on qualitative research for providing deeper understanding of context and complexity based on small, purposive samples and informed by various qualitative approaches. Focus groups are one of several qualitative methods used to achieve the goals of qualitative research while leveraging a collective process, that is well-suited for community-based science.

Difference between quantitative and qualitative research is depicted here:

	Qualitative	Quantitative
Purpose	Understand a phenomenon	Discover causal relationships or describe a phenomenon
Sample	Purposive sample, small	Random sample, large
Data	Focus groups, interviews, field observations	Tests, surveys, questionnaires
Methods/Design	Phenomenological, grounded theory, ethnographic, case study, historical/narrative research, participatory research, clinical research	Experimental, quasiexperimental, descriptive, methodological, exploratory, comparative, correlational, developmental (cross-sectional, longitudinal/prospective/cohort, retrospective/ex post facto/case control)

Table from Stevenson Libraries [38]

You can find more information and details for the above table here:[38] https://stevenson.libguides.com/c.php?g=236343

What makes focus groups special?

- You can capture the depth of an issue.
- While quantitative data can tell you WHAT is happening, qualitative data can tell you WHY something is happening and provide further nuance that can get lost in binary, categorical data.
- Focus groups in particular allow participants to share their experiences while also responding and reflecting on the experiences of others. This gives them the opportunity to either expand their thoughts or think of their experiences in a larger context that they may not have previously recognized but is accurate to their own personal experiences.

Here is a free training module discussing the different types of qualitative work:[39]

https://region2phtc.org/2018/12/14/introduction-to-qualitativeresearch/

How to do Focus Groups

Generally speaking, a focus group is designed to guide a conversation and give participants the chance to discuss and reflect on the questions presented and each other's responses. Here is a 30 minute training covering facilitating focus groups:[40]

https://region2phtc.org/2018/12/14/facilitating-focus-groups/#moreinformation

What is covered in the training:[40]

- Planning and logistics prior to the focus group
- Focus group moderating skills including
  - » Open-ended questioning (giving participants space to answer as they deem appropriate)
  - » Probing techniques (probing ensures participants are able to answer the questions you'd like answers to and/or redirects the conversation to maintain the key focus of the conversation)
- Managing the logistics during the focus group

Three key things to remember when facilitating focus groups:

- Build rapport: Converse with participants in the beginning to make them feel comfortable
- Express gratitude and empathy: Participants are taking time out of their day to meet with you—make sure to acknowledge this and show your appreciation; Express empathy where you can since the topic may be sensitive
- Be naïve: Think of yourself as the expert on questions but not on the answers
  - » Don't express your own opinions on responses
  - » Give participants space to answer completely

3 STEPS TO CONDUCTING AND ANALYZING FOCUS GROUPS

Step 1: Targeting, Recruiting and Enrolling Participants

Recruitment methods vary depending on the type of participants you'd like to include in your focus groups. Some factors that may influence your recruitment methods include:

1. Whether the focus groups will be conducted virtually and/or in person
2. Who are you targeting as participants based on factors such as community of residence, age, housing tenure and household composition or participation in existing programs (e.g. individuals who have used energy assistance resources in the past year)

Consider your population of interest

Energy insecurity impacts different communities in various ways. It is important to center communities impacted most in order to truly understand the depth of the issue and to learn the most salient ways to tackle energy insecurity directly from those affected. The table on the next page is a list of populations that are disproportionately affected by energy insecurity and experience greater climate vulnerability.

Priority Populations

Population	Climate Vulnerability
Limited English language proficiency	Language barriers can hinder individuals from receiving information in their language that alerts and educates them on climate disaster preparedness.
Unhoused persons	One study found that chronic disease, social isolation, substance use, psychiatric conditions, and living in urban or suburban areas prone to the heat island effect increase morbidity and mortality in unhoused persons.[41] It has also been found that the risk of heat related death is 2–3x higher for people who are unhoused.[42]
Persons living with disabilities	Limited mobility can make it difficult to evacuate. In addition, ongoing medical care, which may be disrupted before, during and after a climate emergency, may be needed.[43]
Persons living with chronic health conditions	They may be less likely to sense and respond to changes in temperature and/or may be taking medications that can make the effect of extreme heal worse.[43]
Older adults	Aging bodies may be less able to respond to certain climate hazards like air pollution. Additionally, older adults are more likely to have health conditions, limited mobility, and compromised immune systems.[44]
Low income individuals	11% more likely to live in areas with the highest prediction of heat-related deaths.[43]
Black and African Americans	40% more likely to live in areas with the highest prediction of heat-related deaths.[44]

Outreach Strategies and Size

Consider how and where to reach potential participants

You should think about the best ways to interact with possible participants and these strategies may include:.

1. Using your exisiting databases/connections to recruit participants via phone, text or email
2. Distributing flyers in person or at strategic locations or community settings (i.e., business districts, churches, energy assistance offices, clinics and public health etc)
   - Include a QR code and/or phone number and email to share basic information about the study assist in participant sign up
3. Partnering with a community-based organization or other local group.

Consider the size and number of focus groups

The size of your focus group can contribute to the way the conversations and ideas emerge, and it's important to consider this when recruiting and scheduling. When a group is too large, there may not be ample room to reflection on ideas that emerge but when a group is too small, the conversation may seem less engaging. For virtual focus groups, smaller groups tend to be easier to manage since you'll simultaneously need to consider the technical elements of conducting a virtual meeting. For an in-person focus group, you may be able to hold a larger group. Still, it is crucial to engage all participants and manage how much or how little each participant offers to the group.

Here is an example of a recruitment flyer.

HOT & COLD NYC STUDY

Title: "Make sure to have a title that resonates with your community of interest."

Columbia researchers are interested in understanding New Yorkers' experience with utilities, temperature inside their homes, and general energy usage, cost, and conservation.

Participation will involve:

- An hour-long interview about your experiences with heating (in the winter) or cooling (in the summer) in your household
- Photo documentation of heating- and cooling-related objects in your home like poor insulation and draft stoppers

Participation: "Insert a brief summary of what you're asking individuals to do so they have a clear understanding of expectations."

You may be eligible if you:

- Are a NYC Resident
- Are experiencing household energy issues

Eligibility: "Clearly define who can participate. Even if someone isn't eligible, they might share the flyer with someone who **is.**"

You can receive up to $ 50 for your participation. Additional family members may be able to participate (up to $200/family).

Compensation: "To assist with recruitment, always include compensation details."

If interested in participating, please reach us by phone at 347-509-6861 or by email at e2h2@cumc.columbia.edu

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Logo: "Include your organization's logo to add legitimacy and showcase your work. The placement can be at the top or bottom."

Step 2: Conducting the Focus Group

Focus groups are guided conversations with usually 6–12 participants. The person "leading" the focus group is acting as a moderator and facilitates the conversation by asking different questions related to the topic of focus. The moderator pulls participants in and encourages a thoughtful discussion by having participants not only respond to the questions asked but also engage with each other's responses. Often, a semi-structured guide is used as a tool to help the conversation remain focused but sometimes slight deviations are made in response to new engaging but related discussions. The next page is an example of a semistructured interview guide that can be further tailored to your needs in exploring energy insecurity in local contexts.

Focus Group Semi-Structured Guide

[Note: this should be modified depending on your needs, this is designed to take approx.90 minutes]

Assessing the Impact of Climate on Health and Energy Burden in Your Community

Introduction

Hi my name is _____ with [name of institution/organization].

First, I want to thank you for participating in this focus group. We are appreciative you've decided to be a part of this important discussion on energy, climate change and health. As a reminder, we are recording this session so that we have an accurate record of your opinions and thoughts. All information will be stored on secure servers and data will not be shared outside of the study team. Recordings will be deleted once we have verified the transcripts are complete and accurate.

The goal of today will be to get your insights on your household energy use and experiences with climate/weather fluctuations and health. As community members, you are the experts here—we want to know what your opinions are and what you think. You are free to pull from your experiences, and react to and build on what others discuss as you see fit.

At the end of our meeting, as a thank you for your time and participation, you will receive a gift card.

Before we get started, there are some expectations that I need to be sure that everyone in the group agrees with. The first is that everyone here treats each other with respect which includes not interrupting one another when talking. The second expectation is about keeping things private by making sure everything we talk about in this session stays in this session. Please do not record this session yourselves. This is very important so that everyone feels safe and comfortable speaking. The final expectation is that it is important that everyone here feels like they can speak at any time—it is always your turn to speak as long as you are not interrupting anyone else.

Lastly, I want to remind you that this is not a discussion with me, this is a group discussion. Jump in when you're comfortable, when you hear something you can relate to, and do not worry about order—there is none. For those of you who tend to be on the quiet side, I might ask for those who have not spoken to jump in if they want to. For those of you who speak up a lot, I may ask you to pause for a bit to make sure others have some space to contribute. There are no right or wrong answers, it's always OK to have a different opinion. And if I say something that doesn't sound right to you, or if you think I'm not understanding you, please stop me and let me know.

Your home and family

I'd like to start by getting to know a little more about you.

1. Let's start off with an icebreaker. Can everyone share their names and tell us what their favorite season is?
2. Since the focus of our conversation will be on your experiences and views on energy use, I'd like to ask the group to list the things that come to your mind when you're thinking about energy.
   - How much of this is shaped by the things you've learned growing up either from family/friends or elsewhere?
   PROBE
   - How do you think renting or owning a home affect the way you b. think about energy?

Energy insecurity and extreme weather

Now that we know a little bit about how people are thinking about energy, let's discuss how the weather might be impacting you and your energy bills.

Let's begin with discussing your energy use in the summer months

1. Can everyone share a little bit about your cooling strategies? What are some of the ways that you keep cool during hot weather?
   - How do you decide what strategies to use?
   - Based on what's been discussed, what strategies do you think work the best? The least?
   PROBE
   - Air conditioners are most often used by people.
   - Has anyone noticed changes in the way they use their air conditioning unit?

2. Do you know of any passive cooling strategies such as tree planting, rain gardens, or using more porous pavements? Passive cooling strategies are ones that help control temperature in hot weather

PROBE
- Have you implemented any of these or know anyone who has?
- What was that experience like?
- What are the barriers?

Now I'd like to know the group's energy use in the winter months

1. Can everyone share a little about your heating strategies?

PROBE
- Based on what's been discussed, what strategies do you think work the best? The least?

I'd like to have everyone think about energy costs/bills.

1. How would you say these strategies both in the summer and winter may impact your energy bills?

2. Can you collectively brainstorm how individuals/families might respond to rising energy costs? Use your examples from your own experience.

PROBE
- Are there specific strategies that you can think of that would minimize costs?
- Would there be seasonal differences associated with energy costs?

3. How would the efficiency of someone's home to control temperature impact bills?

PROBE
- What issues would contribute to a home's energy performance (e.g drafty windows)?
- How do you think people would respond to these issues?

4. How often do people in this group reduce their energy use to uncomfortable or inconvenient levels to save on energy costs? Explain your strategies.

5. Can the group list some places anyone would go outside their home to gain relief from extreme temperatures?

PROBE
- How accessible are these locations in this area?
- How would someone determine whether or not to leave their home to gian relief from extreme temperatures at these locations?

6. I'd like to ask the group to think about a scenario where you were inviting guests over. Would you do anything differently with the temperature of your home when you have visitors at home?
- Explain why you take those actions.

PROBE
- Would this change depending on how long the invited guests would be staying over (e.g. an evening versus a longer stay)?
- Would this vary depending on who is visiting (i.e. friends, family, church group, etc).

I'd like to have the group think about disconnections and shut off notices.

1. What experiences have group members had with utility disconnections? How have you all responded to disconnections/ shut off notices in the past?

PROBE
- What resources do you rely on to prevent or respond to disconnections?

Related to disconnections and shut offs, I'd like to have the group now think about power outages.

1. Describe any past experiences with power outages. When did they occur? What caused them?
- How might power outages affect health when they happen?
- What added costs, do you think, would come out of experiencing a power outage, if at all? (i.e., needing to eat out, stay at a hotel, lose hours of work, replace spoiled food?)

PROBE
- What resources/services are you aware of to help someone during an outage?
- If a power outage were to occur in this area, how many of you would feel prepared for it? Why do you feel prepared or not?
- What kind of notices have been or would be helpful in relaying information related to outages?

We've spoken a little about strategies and resources. I'd like to transition the conversation to access to the resources we've discussed.

1. [Facilitator should provide an overview of resources that had been discussed to this point] Are there other resources that can be helpful for community members when confronting energy issues in [INSERT LOCATION]?
   - What are some barriers and facilitators to seeking the resources?

   PROBE
   - PHow often do you think resources brought up in this conversation are utilized? How would you say people learn about these resources?
   - How well known do you think these services are among those that might benefit?

2. We talked about a few different resources. What type of information is covered in these resources?
   - Do you think these resources cover all the information people need?

   PROBE
   - What challenges do you think individuals may face when using them, if any?
   - How accessible do you think these resources are?
   - PWhat can make them more accessible?

3. How do people receive information about extreme weather or power outages?
   - Do you think this method is helpful?

   PROBE
   - Would you prefer using another method?

4. In the event of an extreme weather event, do you think people in this region have a reliable relocation site to evacuate to?

   PROBE
   - How accessible is this location?
   - What is the process, to your knowledge, on knowing when someone should relocate to this site?

We've spoken a bit about how we respond to extreme weather and energy costs. I'd like to have us think about the other ways extreme weather and energy use may impact people.

1. To start, what are your immediate thoughts on the ways extreme weather impacts people?

2. What factors regarding the climate and/or your environment do you think impact people's health?

   PROBE
   - What specific aspects of health are impacted?
   - What can be done to counter negative impacts from these experiences? What interventions would help support health for people experiencing extreme weather or burdens with household energy?

3. In an ideal world, what resources would you need to make sure your health was not impacted by the weather or energy issues?

Closure

We have talked about extreme weather, household energy use, how we cope with energy costs, and different resources.

1. So it sounds like [summary statement]?

2. Is there anything else you think we should know?

3. What is an immediate step that can be taken based on this conversation?

Thank you so much for taking the time to share your ideas with me. I know you have put a lot of hard work into this discussion, and we have learned a great deal from you.

Supplemental Survey Guide

Either at the start or end of your focus group you may want to distribute a survey to capture demographic and household information. This survey can be digitally programmed on Qualtrics or Google sheets or printed on paper. Here are some possible questions/prompts you may want to ask:

Name: _____

1. What is your preferred language [Note: This question is pertinent if material is translated]?
   ☐ English   ☐ Spanish   ☐ Other Language, specify:_____
   2. Do you own or rent?   ☐ Own   _____
   ☐ Rent

3. Which best describes where you live?   ☐ An apartment_____
   ☐ A home   ☐ A mobile home

4. In what year did you move into your home?   Specify _____
   5. How many people live in your household?

6. What are the ages of the people in your household? (Specify) _____
   7. Does anyone have any medical conditions?
   ☐ Yes (Specify)   ☐ No

   Assessing for energy insecurity (Note: We usually identify households as insecure if they say yes to 3 or more of the questions below)

8. In the past 12 months, have you received a disconnection notice for your electricity or gas services? ☐ Yes   ☐ No

9. In the past 12 months, was your electricity, gas, or heat service turned off because you did not have enough money at the time to pay the bill?*   ☐ Yes   ☐ No

10. During the heating season, did you ever use your stove or oven as an additional source of heat?* ☐ Yes   ☐ No

11. This winter, did you ever not have heat at home for at least 6 consecutive hours when you felt cold?* ☐ Yes   ☐ No

12. In the past 12 months, has your home ever been extremely cold (for example, you had to wear a heavy coat inside or felt extremely cold for more than just a short time)?*   ☐ Yes   ☐ No

13. Last summer, did you ever ration your air conditioner use due to the cost of bills?* ☐ Yes   ☐ No

14. In the past 12 months, has your home ever been uncomfortably hot (for example, you sweat a lot even if you were not doing any physical activity or you had trouble sleeping because of the heat)?*   ☐ Yes   ☐ No

15. Over the past 12 months, did you use less energy because you were worried about not being able to afford the bill?*
    ☐ Yes   ☐ No

16. In the past 12 months, were you ever unable to pay your electricity and/or gas bill in full, missed a payment, or been late paying because you could not afford it?*   ☐ Yes   ☐ No

17. In the past 12 months, was your electricity, gas, or heat service interrupted for more than 6 hours for reasons other than not having enough money to pay the bill (for example, due to weather, maintenance, or construction)?*
    ☐ Yes   ☐ No

Here are some questions on your demographics.

18. How old are you? _____

19. What is your ethnicity?   ☐ Hispanic/Latino/   ☐ Not Hispanic/Latino/   ☐ Unknown/Not reported

20. What is your race?   ☐ American Indian/Alaska Native   ☐ Asian   ☐ Native Hawaiian or Pacific Islander
    ☐ Black or African American   ☐ White   ☐ More than one race   ☐ Unknown/Not reported

21 What is your gender? _____

Step 3: Data Management and Analysis

Reaching Saturation

You'll know you've done enough focus groups when you start to hear the same or similar things discussed in the groups. This is the point that you've reached saturation. Usually at this point, you don't receive as many new insights as you did when conducting earlier focus groups. There is no set number of focus groups determining when you'll reach saturation as it depends on the population of focus and what is discussed in the focus groups.

Debriefing

Once you complete a focus group, it is helpful for the moderator and the notetaker (if there is one) to come together to debrief. A debrief is useful to begin discussing the information shared in the focus group while it is still fresh in your minds. You can list your key takeaways and note anything that stood out. You should also make note of things that worked/didn't work so that you can modify accordingly for your next focus group.

Post Focus Group Debriefing Guide

Date: _____ Group #: _____Time:_____

Who: (Description of participants – age, gender, and any other characterizations):

_____
_____

Description of overall flow of focus group:

_____
_____

Highlight any key insights that struck you (significant points, ideas, quotes):

_____
_____

Anything else that struck you as salient, interesting or important:

_____
_____

Describe any problems:

_____
_____

Summarize any information you failed to get (e.g., any categories not discussed):

_____
_____

In completing this debriefing process, the facilitator will start on the path of data analysis helping to make sense of what was learned and also informing the process for future data collection, especially in addressing gaps in information or improving the process through this reflective process

Analysis

Once you've completed all of the groups for your study, you will want to "code" the transcripts of the recorded audio. There are a number of free or low-cost online-based transcription services such as Temi or REV.

Here are two articles discussing how to embark on the analysis process: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1475-6773.2006.00684.x [47] and https://delvetool.com/guide[48]

The first thing you'll want to do is create a codebook by either sitting down with the transcripts and jotting down what ideas/suggestions come up frequently in the first few transcripts or use the question guide to provide a general idea of what codes you'd like to use from the outset and modify as needed. Once you've created a codebook, you can apply the codes to the transcripts.

To complete this task, you will identify and organize the contents of the focus group by themes. In the timestamp, you will document the timestamp of the audio/video recording. In the "insert quote" column, insert a quote that you found striking, topically relevant and illustrative of an important idea that surfaced in the interview. You should pick quotes that summarize key concepts discussed in the focus group. Sometimes you'll be able to find a quote that touches on several points. When you enter a code, which can be generated from the codebook or it can be emerge from doing this process, you will want to apply a descriptive label and then link these codes to an overarching theme when looking across the focus groups and in discussion with team members. These larger thematic categories will be your main findings. When writing your report, refer to the main themes and use the corresponding quotes as supporting evidence.

In the following section, we provide various examples of how your insights can be disseminated and used to inform policy and practice.

Codebook Guide

	Timestamp	Quote	Code	Theme	Updated Theme	List of Possible Themes
Focus Group 1						
Focus Group 2						
Focus Group 3						

DISSEMINATION

YOU CAN TAKE THE INFORMATION YOU GATHER FROM YOUR FOCUS GROUPS and highlight key findings on energy use/insecurity to inform resources, policies, and practices:.

These can take the form of:

1. Websites
2. Story maps
3. Academic articles
4. Op-Eds
5. Policy briefs/Reports
6. Social media pages and posts
7. Local advocacy

By disseminating your work and findings, you can raise awareness of these issues and empower the voices of impacted populations. In the following pages, you will find a number of examples that disseminate energy insecurity related findings in effective and meaningful ways.

Websites

- **What it is:** A central hub where all information, research, and resources about energy insecurity are hosted.
- **Purpose:** Provide easy access to information and resources for the public, policymakers, and advocacy groups. It can host fact sheets, toolkits, reports, and actionable steps.
- **Example:** On this website, you'll see highlighted quotes presented as part of an effort to directly share findings in a way that is accessible to the county's constituents[49] https://www.maricopa.gov/5723/Energy-Insecurity

Story Maps

- **What it is:** Interactive, visual tools that combine maps, narrative text, images, and data.
- **Purpose:** These are particularly effective for showing geographical disparities in energy access and helping the public visualize the impact of energy insecurity in different regions.
- **Example:** Presented here is information in a story-telling format to present a growing issue: https://storymaps.arcgis.com/stories/4377299f586a493984222bfc6ee84e6

Academic Articles

- **What it is:** Peer-reviewed journal publications.
- **Purpose:** Contribute to scholarly debates and ensure that findings are recognized in academic and professional circles. These articles can inform future research, policies, and funding opportunities.
- **Example:** You may want to publish your work in an academic journal for others to replicate your work and/or to reach the academic audience[4] https://www.sciencedirect.com/science/article/pii/S0277953616304658

Op-Eds

- **What it is:** Opinion pieces in newspapers or other media platforms.
- **Purpose:** Raise public awareness about the issue and call for action. Op-eds can influence public opinion and push policy-makers to prioritize energy insecurity.
- **Example:**
  Link[23]: https://www.usatoday.com/story/opinion/voices/2021/10/27/inflation-energy-costs-force-heator-eat/8551676002/

Policy Briefs/Reports

- **What it is:** Short, focused documents that summarize the key issues and provide policy recommendations.
- **Purpose:** Policymakers often use these as quick reference guides to understand complex issues. A well-crafted policy brief can propose new energy policies or changes to existing ones.
- **Example:** Link:[5] https://www.healthaffairs.org/content/forefront/ energyinsecurity-and-healthamerica-s-hidden-hardship

Social Media

- **What it is:** Platforms like Facebook, Instagram, or Twitter, where information is shared with the public.
- **Purpose:** Social media is an excellent tool for quick, impactful dissemination of information. It allows for broad outreach, particularly to younger audiences or communities directly affected by energy insecurity.
- **Example:** The Hot&Cold NYC social media campaign, in particular, shares information on what energy insecurity is, provides New Yorkers a platform to directly share their experiences, and provides information on helpful resources.
  Instagram: https://www.instagram.com/hotandcold_nyc/
  Tiktok: tiktok.com/@hotandcold_nyc
 **Youtube:** http://www.youtube.com/@hotandcold_NYC

Local Advocacy

- **What it is:** Local advocacy is a critical element to environmental justice and energy insecurity. Many impacted com[1]munities are either not centered or considered in conversations about environmental impact or energy production/use. Advocacy work protects these communities by advocating for their needs in spaces that traditionally exclude them.
- **Purpose:** Drive policy changes using focus group findings.

Smart Surfaces Coalition

Link: https://smartsurfacescoalition.org/cities-for-smartsurfaces

- Cities for Smart Surfaces initiative is a project of the Smart Surfaces Coalition, a group of more than 40 organizations dedicated to creating cooler, healthier and more resilient cities.
- Metropolitan areas increasingly face extreme heat and flooding, rising energy and health costs, and an environmental justice crisis. This project will bring together a dozen Smart Surface Coalition partners, including American Public Health Association, in an effort to enable, support and accelerate city-wide adoption of smart surfaces through data analysis, health research, city and community engagement, federal funding support, and policy guidance.


CITIES FOR SMART SURFACES
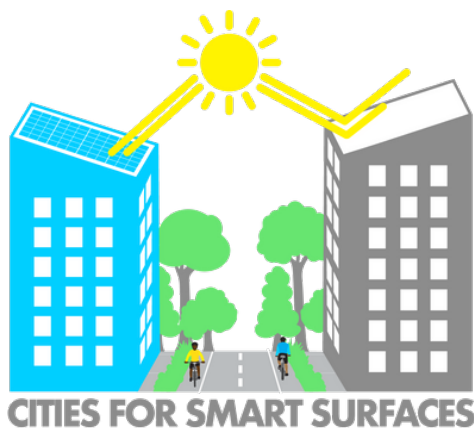
Reflective (or 'high albedo') pavements include light-colored roads, sidewalks, and parking lots. These pavements use a reflective sealant to bounce sunlight and heat away from cities to reduce surface temperatures.

Link: https://www.weact.org/campaigns/

Through a Heat, Health, and Equity Initiative, WE ACT for Environmental Justice is finding solutions to extreme heat and the forces of inequity that make the heat more dangerous for the community.

The 2023 Extreme Heat Policy Agenda Included:

- Allocate more funding to the LIHEAP program to subsidize summer utility bills
- Support legislation to codify cooling centers in New York City
- Introduce legislation to support the adoption of green infrastructure in environmental justice and heat vulnerable communities
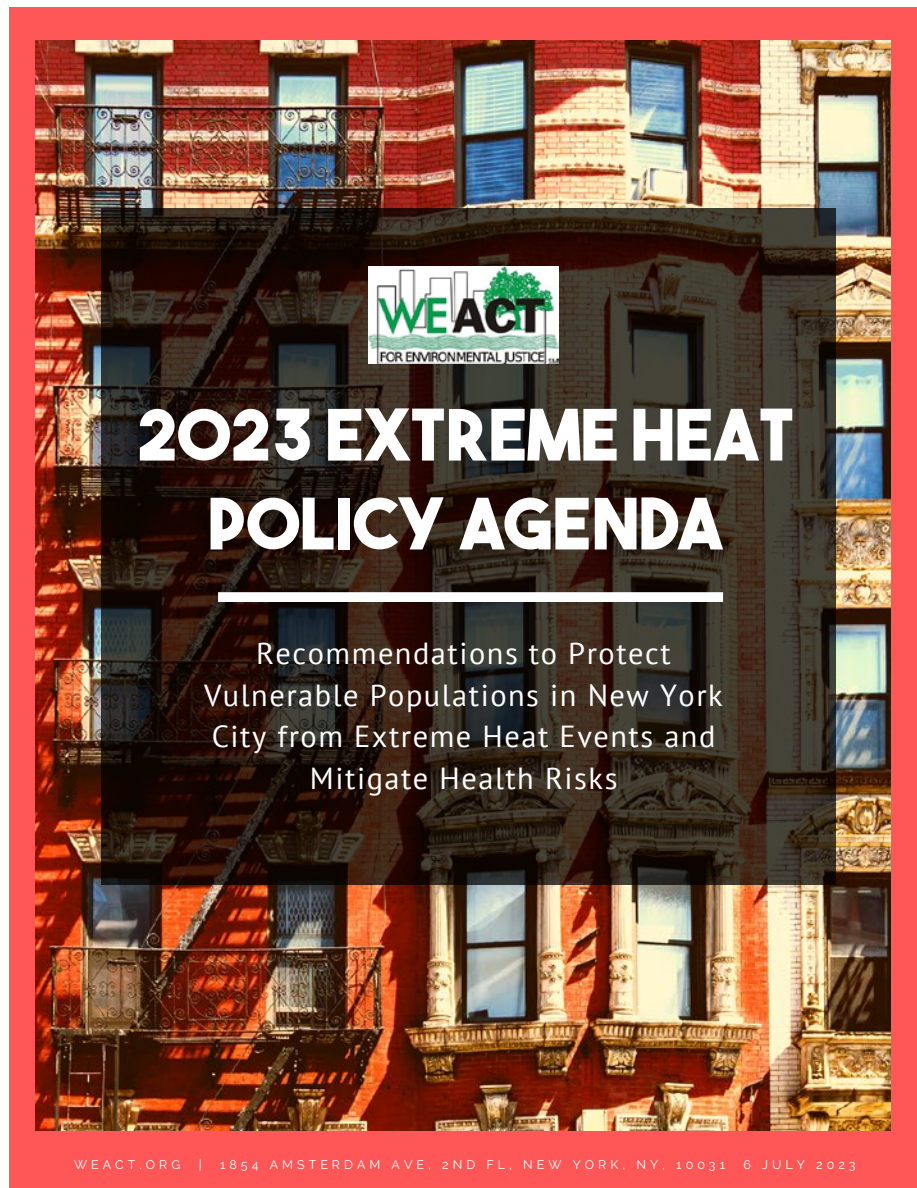
American Council for an Energy-Efficient Economy (ACEEE) (59)

Link: https://www.aceee.org/program/local-policy

The American Council for an Energy-Efficient Economy (ACEEE), a nonprofit research organization, develops transformative policies to reduce energy waste

■ ACEEE's Energy Equity for Renters initiative will help tackle the challenge of reducing energy waste in rental housing. By providing technical assistance to support those communities seeking to improve rental home energy efficiency while also preserving and/or expanding housing affordability.

Photo Credit: www.crainsdetroit.com

The Greenlining Institute

Link: https://greenlining.org/

The Greenlining Institute works towards a future where communities of color can build wealth, live in healthy places filled with economic opportunity, and are ready to meet the challenges posed by climate change.

■ Greenlining the Block is an initiative developed by The Greenlining Institute to support the leadership and expertise of communities of color. Greenlining the Block works to strengthen community-based organizations to advance climate justice neighborhood projects. To reverse decades of disinvestment and racist policies, we are doubling-down on community ownership of solutions.

By sharing your findings, you raise awareness and amplify impacted voices.

RESOURCE GUIDE FOR ADDRESSING ENERGY INSECURITY

In this section, we share a list of resources related to the topic of energy insecurity. We encourage tailoring this list to reflect local offices and forms of assistance available at your sites.

Energy/Bill Assistance

Low-Income Home Energy Assistance Program (LIHEAP) supports low-income households in reducing costs related to their energy bills. This may come in the form of support in heating/cooling energy costs and/or energy crisis support. To qualify for this program, households must be able to demonstrate financial need and assistance with their energy costs. Those in other benefit programs like SNAP, SSI, or TANF could be considered eligible without additional steps. More information on LIHEAP can be found here:[61] https://www.benefits.gov/benefit/623

Weatherization

As described earlier, the physical conditions of a home and/or apartment can directly impact energy costs by causing them to surge if conditions are poor. In recognition of this, the U.S. Department of Energy (DOE) has an established a Weatherization Assistance Program. This program is geared towards supporting low-income households by providing improvements and upgrades that will ultimately increase a household's energy efficiency and thereby reducing energy related costs.

More information about the program can be found here:[62] https://www.energy.gov/scep/wap/weatherizationassistance-program

Cooling Centers/Cooling Assistance

Cooling centers offer respite from extreme heat particularly for those who are houseless or do not have adequate access to cooling measures.[63] Cooling centers are becoming widely used in direct response to the number of households without access to air conditioning.

In fact, the hottest June on record was reported in 2024 followed by continued intense heat putting at risk populations under increased duress.[64] Information on where cooling centers are located could be found by contacting a state or city's information hotline and local news sources or directly here http://tinyurl.com/3a5k5m6p[63]

Smart Surfaces and Passive Cooling

Smart Surfaces—reflective, porous, and green urban surfaces along with trees, solar PV—are a suite of strategies that cost-effectively create cooler, healthier, and more resilient cities by managing sun and rain.

On individual buildings, the passive cooling capacity of Smart Surfaces can increase indoor comfort, reducing demand for cooling and lowing energy costs.

When deployed citywide, these passive cooling strategies can cut peak summer temperatures by 5°F or more, decrease flood risk, slow climate change, and improve public health, with the greatest improvements in low-income neighborhoods and communities of color.

Visit smartsurfacescoalition.org to learn more.

NYC CoolRoofs trainees coat a rooftop with white reflective paint.

Disconnections/Protections

In 2022 alone, it was documented that approximately 3 million households were faced with their electricity shut off after missing payments with 30% of these occurring in the summer months of 2022.[64] Most states offer protections and limitations on shutoffs during the winter months and some states also offer protections during the summer months. In response to disconnection notices, households may be able to negotiate payment plans with their utility company and/or create a deferred payment plan.[4] Households may also be able to leverage medical health conditions by obtaining shut-off protection letters from their health care providers should their health rely on consistent and reliable access to energy.[4] Households should consult with their energy service providers to learn more and enroll in disconnection protection programs.

Energy Literacy

The concept of energy literacy has been used in various ways across sectors. Energy literacy for one can refer to understanding energy pathways on a technical level within the industry but it has also been coined for describing "whether households are able to make a trade-off between long-term savings from energy efficiency investments and the upfront investments that are required to achieve improvements in energy efficiency."[67] Energy literacy can be a powerful tool in ensuring individuals and families are aware of how the conditions of their homes and environment contribute to their energy bills in addition to the resources available to them should they need support in managing energy costs

Alerts and Notifications

During extreme weather events, such as tornadoes, hurricanes, earthquakes, etc., it is imperative that information is distributed to impacted communities in a timely and organized matter. This information can be delivered from local utility service providers, public health agencies and community-based organizations via text alerts, on websites and on other channels where this information can be accessed by community members. Below we share information pertinent to energy insecurity that will be relevant in the context of acute energy and weather conditions.

Grid capacity

1. There are 7 regional transmission organizations (RTOs) managing 2/3 of America's electricity.[68]

2. The North American Electricity Reliability Corporation has reliability standards for Canada and the US called Energy Emergency Alerts. They are:[68]

   - EEA 1: all resources are used to a. meet current demand
   - EEA 2: a region is not able to meet energy demands and is taking on "load management" procedures to accommodate this
   - EEA 3: a region is not able to meet energy demands resulting in a power outage

3. There are measures taken to directly notify customers as well via "Flex Alerts" which urge customers to "turn down non-essential use" of energy when an RTO senses increased demand. However, most RTOs do not use this method.[68]

Air Quality

The National Weather Service will provide warnings and advisories for air quality risks and indicate who should avoid going outside. These advisories usually arise out of smoke and debris from surrounding fires.

Power Outages

1. Individuals can find information on power outages from their service provider or there are a couple of independent power outage trackers that collect this information. These are: The North American Electricity Reliability Corporation has reliability standards for Canada and the US called Energy Emergency Alerts. They are:

   - A power outage U.S. website collects information on live power outages from utility companies across the US and has the goal of becoming a singular resource to find complete information[69] https://poweroutage.us/
   - OFF THE GRID: United States Power Outage Tracker: This tracker is updated every 15 minutes and reports on power outages within the last 72 hours[70] https://data.usatoday.com/national-power-outage-maptracker/

Heat Wave Alerts

1. The National Weather Service provides warnings and advisories on excessive heat, rain, snow, thunderstorms/tornadoes among other emergency weather events. These alerts are made on their website here[71] https://www.weather.gov/alerts and via Wireless Emergency Alerts (WEA). WEA requires no sign up and gathers information from several, local, state and federal agencies. More information can be found here[72] https://www.weather.gov/wrn/wea

2. The National Integrated Heat Health Information System provides information on urban heat islands, provides tools and information, outlines at risk groups, planning and preparing information, etc. They also provide information and mapping of current extreme heat advisories, watches, and warnings that are implemented by the National Weather Service.[73] https://www.heat.gov/

Conclusion

With this toolkit, you have learned what energy insecurity is and how it disproportionately affects communities in nuanced ways. It also highlights the importance of incorporating such communities in conversations related to a just transition for cleaner energy use as well as policy development and implementation for energy insecurity more broadly.

This toolkit outlines how you can engage local communities to do just this by not only featuring how to effectively conduct focus groups but also by sharing other tools to obtain further information on available data sources and methods of data collection.

By using the background information on energy insecurity, how it manifests and its contributing factors, along with the tools we provide, you are now equipped to tailor these guides to your community as you embark on this task toward a more equitable and just approach to supporting communities most impacted.

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