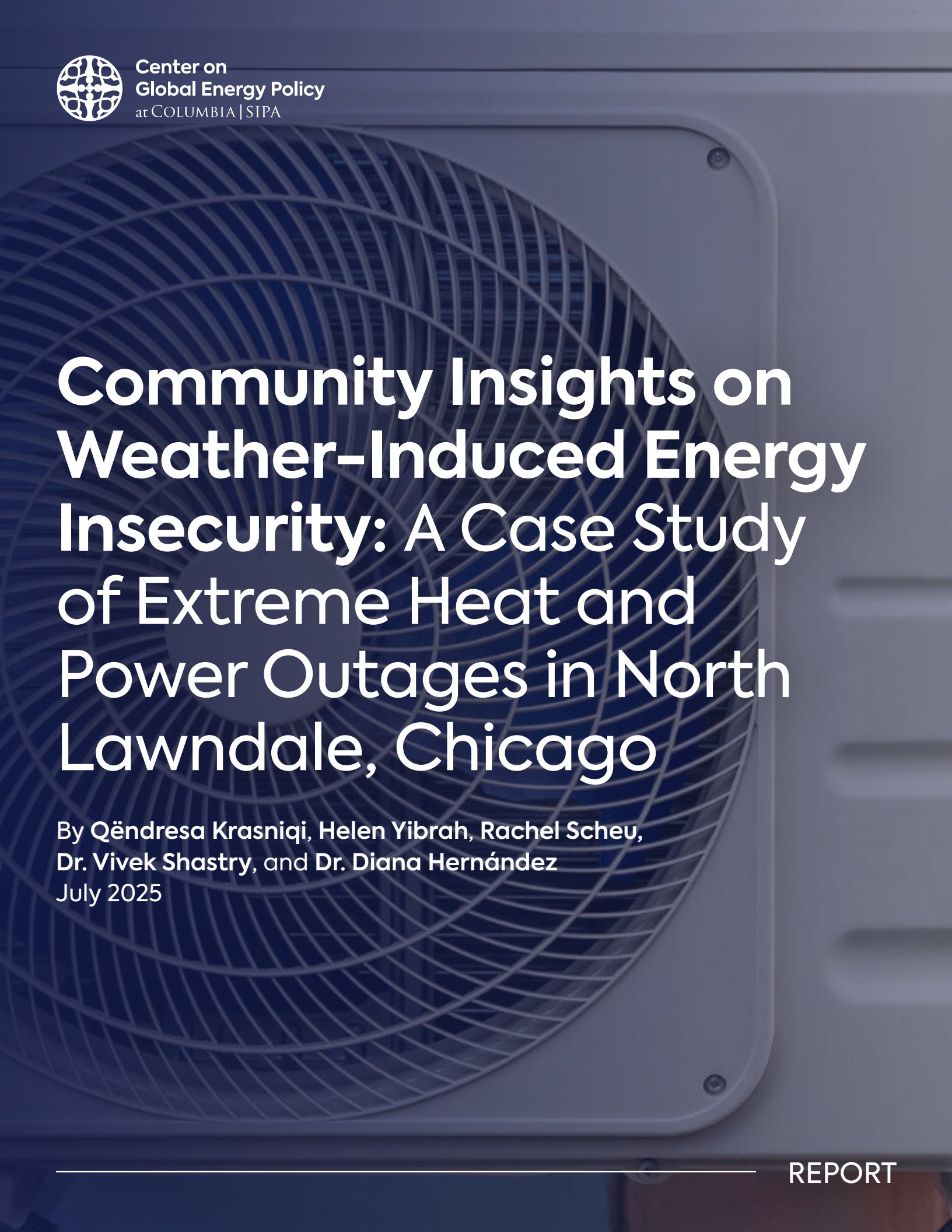

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Community Insights on Weather-Induced Energy Insecurity: A Case Study of Extreme Heat and Power Outages in North Lawndale, Chicago

By **Qëndresa Krasniqi**, **Helen Yibrah**, **Rachel Scheu**, **Dr. Vivek Shastry**, and **Dr. Diana Hernández**

July 2025

REPORT

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Acknowledgements

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Contributions to SIPA for the benefit of CGEP are general use gifts, which gives the Center discretion in how it allocates these funds. More information is available here. Rare cases of sponsored projects are clearly indicated.

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Helen Yibrah previously served as a student research assistant in the Energy Opportunity Lab at the Center on Global Energy Policy. She is a rising senior at Columbia University pursuing a B.A. in Sustainable Development.

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interdisciplinary research, he brings many years of strategic planning, partnership building, and program implementation experience through his prior work with SELCO Foundation.

Dr. Shastry earned a PhD in Public Policy from the University of Texas at Austin, where his doctoral research focused on understanding the consequences of poor electricity at rural health facilities, and the impacts of adopting productive uses of renewable energy among rural entrepreneurs. He also holds master's degrees in Sustainable Design, and Community and Regional Planning from the University of Texas at Austin, and a bachelor's degree in Civil Engineering from National Institute of Technology Karnataka, India.

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Dr. Hernández is a pioneering sociologist and leading authority on energy insecurity, a concept she defined and operationalized through groundbreaking mixed-methods research. Rooted in community engagement and policy innovation, her work addresses systemic barriers to energy access for disadvantaged populations and tests promising interventions. She is lead author of Powerless: The People's Struggle for Energy (with Jennifer Laird, Russell Sage, April 2025), the first major book on energy insecurity in the U.S.

Dr. Hernández has authored nearly 100 peer-reviewed articles as well as book chapters, and policy briefs in top-tier journals and secured nearly $10 million in competitive funding from federal agencies and philanthropies. A sought-after thought leader and speaker, Dr. Hernández has delivered more than 250 invited lectures and presentations. She is regularly featured in national media, has served in key leadership roles including as a mayoral appointee to NYC's Environmental Justice Advisory Board and is the recipient of multiple honors, including induction into Columbia's Academy of Community and Public Service.

As native of the South Bronx, Dr. Hernández has led small-scale social impact real estate projects where she has implemented clean energy and energy efficiency deep retrofits. A proud product of NYC public schools and Section 8 housing, she earned a BA from Hunter College and a PhD from Cornell University in Sociology.

Executive Summary

Extreme heat and power outages are two growing climate-driven threats that endanger the health and safety of vulnerable households and communities. Heat waves are among the deadliest natural hazards in the United States, and they are becoming more frequent, longer lasting, and more intense. Power outages, also on the rise, compound the risks posed by heat waves. These threats not only intersect, they also disproportionately impact communities with high economic, health, and social vulnerability—many of which have been shaped by a legacy of structural discrimination. The US Environmental Protection Agency estimates that Black residents are 40% more likely to live in areas with higher mortality rates from rising temperatures than non-Black residents.

This report, part of the Energy Opportunity Lab at the Center on Global Energy Policy at Columbia University's School of International and Public Affairs, explores how residents of North Lawndale, a predominantly Black and historically under-resourced neighborhood on Chicago's West Side, experience the compounded effects of heat waves and power outages. With rates of chronic health issues, poverty, unemployment, and energy burden (the percentage of income used to pay energy bills) well above state averages, North Lawndale contends with more frequent and longer outages as well as greater barriers to coping with extreme heat compared to wealthier neighborhoods in Chicago.

By sharing concerns expressed by local residents during a focus group discussion, this report adds community voices to existing research on weather-induced energy insecurity to ensure that the experiences of affected people are better understood by policymakers weighing reform options. Participants described significant impacts from outages—from trauma and food loss to isolation and disruption of caregiving responsibilities. Additional participant experiences during extreme heat include the following:

- **Insufficient outage preparedness by utilities:** While participants took household-level steps to prepare—such as stocking water, canned food, fans, portable chargers, and, when feasible, securing generators—they expressed frustration that utilities did not seem similarly prepared, such as by planning for common equipment failures during heat waves and having a backup ready.
- **Disparities in power restoration by place and privilege:** Participants perceived differences in how quickly power was restored, depending on neighborhood. They observed that downtown areas received immediate attention while disinvested communities like North Lawndale were deprioritized.

- **Inadequate heat wave coping strategies and intersectional vulnerabilities:** Even in the absence of outages, residents said extreme heat poses serious challenges. Participants described limiting their use of air conditioning due to high electricity costs, and/or leaving their apartments altogether to get cool elsewhere, such as on air-conditioned public buses. Participants also described elderly and low-income residents facing difficult choices between running air conditioning and avoiding disconnection, often resulting in unsafe conditions and distress.
- **Barriers to accessing renewable energy programs:** Participants were not aware of a new clean energy program in Illinois, making clear the shortcomings with outreach. Better information, however, isn't the only hurdle to access: renters among the participant group would not be eligible for this program, preventing those most affected by energy insecurity from benefiting from such state assistance.

The focus group discussion illuminated policy opportunities for utilities, regulators, and state legislatures, including equitable and transparent infrastructure investments, outage response protocols that account for vulnerability, and electricity affordability through income-based rates and bill assistance. It also highlighted the importance of ensuring disconnection protections are established and enforced during extreme heat and that renewable energy and weatherization programs are designed to include renters and low-income households.

Introduction

Disadvantaged communities[1] disproportionately bear the impacts of extreme weather events linked to climate change.[2] The combination of exposure to extreme heat and power outages exacerbates existing social and medical vulnerabilities.[3] Heat waves present severe health risks, particularly for individuals without access to adequate cooling, either because they lack air-conditioning units or because of the cost of operating them.[4] Power outages—whether due to such extreme weather events, infrastructure failures, inadequate maintenance, or other causes—hinder carrying out daily tasks and powering life-sustaining medical equipment.[5]

Heat waves, one of the most common and deadliest extreme weather events, are predicted to increase in frequency, duration, and intensity.[6] They are associated with elevated mortality, stroke, cardiovascular disease, respiratory disease, renal disease hospitalizations, out-of-hospital cardiac arrests, heat-related illnesses, and work-related injuries and diseases.[7] Heat waves pose a greater risk for the elderly, children, and those with chronic illnesses. Socioeconomic factors also significantly influence heat susceptibility.[8]

At the same time, the number of weather-induced major power outages (affecting more than 50,000 customers) increased by 78 percent from 2011 to 2021 compared with the period from 2000 to 2010.[9] Energy infrastructure is under threat as hurricanes, wildfires, tornadoes, flooding, and heat waves[10] grow in frequency and severity, increasing the risk of damage to transmission lines, power plants, substations, and pipelines—disruptions that can lead to widespread outages and population impacts.[11] Studies have identified significant health impacts of power outages, including all-cause mortality, carbon monoxide poisoning, temperature-related illness, gastrointestinal illness, and hospitalization related to cardiovascular, respiratory, and renal disease, especially among those who rely on electrically powered medical devices.[12] The health impacts of co-occurring power outages and extreme weather events remain underexamined, particularly in terms of any compounded effects on vulnerable populations.

How do disadvantaged communities experience the dual burdens of extreme heat and power outages? How can community-informed interventions address the challenges faced by those most vulnerable to heat waves and outages? To answer these questions through community voices and experiences, the authors collaborated with Elevate—a Chicago-based nonprofit focused on access to clean and affordable heat, cooling, power, and water—to conduct focus group discussions with residents from three disproportionately affected neighborhoods in the city of Chicago. This series of focus groups aimed to deepen the understanding of climate-induced dimensions of energy insecurity in real-world settings.

This report examines the findings of one focus group, detailing the experiences of residents from the North Lawndale neighborhood of Chicago. Based on participant responses and existing research, it finds that while many residents actively prepare for outages, economic and health risks are intensified by prolonged power failures, often compounded by elevated urban temperatures, limited utility investment, and delayed response efforts. Even when the power remains on, high electricity bills can dissuade the use of air-conditioning during extreme heat, for fear of disconnections. The paper concludes with actionable recommendations for utilities, public utility commissions, and government entities to address power outage and heat wave vulnerability.

Background

Centuries of discriminatory economic, social, and housing policies, including redlining, have rendered racially segregated and socioeconomically disadvantaged communities more susceptible to and less prepared to cope with acute heat waves and chronic energy insecurity,[13] defined as the inability to adequately meet household energy needs.[14] These policies have led to underinvestment, making Black, Hispanic, and low-income residents more vulnerable to extreme heat.[15] A 2023 study found that previously redlined neighborhoods are more vulnerable during power outages, with 94% of these areas hotter than non-redlined ones.[16] Black households, in particular, are more exposed to power outages and utility disconnections and have a greater energy burden (the percentage of income put toward energy expenses).[17] The Environmental Protection Agency estimates that Black residents are 40% more likely to live in areas with higher mortality rates from rising temperatures than non-Black residents.[18]

Utility response and recovery practices, as well as investment patterns, are also likely influenced by these racialized dynamics, though there has been a lack of research quantifying the relationship between redlining and grid investments on a nationwide scale. For example, in cases of infrastructure failure, utility response is guided by bureaucratic decision rules that prioritize areas near critical infrastructure and key resources such as public safety buildings, hospitals, nursing homes, emergency shelters, and schools.[19] Because of historical redlining, many disinvested areas lack these essential resources, leading to their exclusion from priority response.[20] Consequently, these neighborhoods are often underserved in terms of utility investments and response efforts.

Even when the power stays on, residents in disadvantaged communities face heightened risk during extreme heat. Previously redlined neighborhoods have significantly less tree canopy coverage and higher levels of impervious surfaces, such as concrete or asphalt, compared with areas that received favorable lending grades.[21] These disparities contribute to higher surface temperatures, which intensify the urban heat island (UHI) effect, a measurable increase in ambient urban air temperatures resulting primarily from the replacement of vegetation with buildings, roads, and other heat-absorbing infrastructure.[22]

In addition to heightened exposure to extreme heat, affordability concerns can drive coping strategies that further increase health risks. Households experiencing or at risk of energy insecurity often engage in energy-limiting behaviors,[23] such as avoiding air-conditioning use to prevent unaffordable bills. This behavior can significantly increase the risk of heat-related illness and death.

This paper uses the city of Chicago and its North Lawndale neighborhood to examine how the vulnerability of disadvantaged communities to heat waves and power outages intersects, to inform policy interventions that reduce these compounding risks.

Chicago Heat Waves and Power Outages

In 1995 Chicago experienced one of the most intense heat waves on record, which claimed over 700 lives.[24] Recent analyses show that the same risks persist, driven not only by rising temperatures but also by infrastructure patterns that intensify exposure through the UHI. For instance, a 2023 analysis of the UHI index in 44 US large cities found that Chicago has the third-highest population-weighted average UHI, following San Francisco and New York, with 52% of the population living in areas with a UHI index of 8°F or higher. This means that on a day when temperatures in a park outside the city are 90°F, it feels like 98°F or higher in these areas.[25] Further, a mapping of ambient (air) temperature and humidity (heat index) across Chicago showed that some areas were up to 22°F hotter than other areas of the city.[26] Heat peaked predominantly on the south and west sides of Chicago, which have a higher density of residential buildings and a lack of "sufficient tree canopy cover to keep residents cool."[27]

In addition to experiencing higher surface temperatures, these areas have been documented to experience more frequent and longer power outages. For instance, one analysis[28] found that in 2021 outages[29] experienced by Equity Investment Eligible Communities (EIECs) in Chicago were 83% more frequent and 140% longer compared with those in non-EIECs. EIECs were also over 10 times more likely to have four or more outages in that year and were over four times more likely to have an outage lasting more than 12 hours than non-EIECs in Chicago. EIECs are defined by the Illinois Power Agency as geographic areas throughout Illinois that would most benefit from equitable investments by the state to combat discrimination.[30] Specifically, EIECs are (1) areas where residents have historically been excluded from economic opportunities, including opportunities in the energy sector,[31] which are "high need, underserved, disproportionately impacted by historical economic disinvestment, and ravaged by violence as indicated by the highest rates of gun injury, unemployment, child poverty rates" and (2) environmental justice communities, "where residents have historically been subject to disproportionate burdens of pollution, including pollution from the energy sector."

This case study of North Lawndale seeks to understand how residents of communities with high economic, health, and social vulnerability (as defined below) experience heat waves and power outages, to better inform policies that affect them. What are their most pressing priorities and concerns? What are their experiences with and expectations from utilities and the local government? Based on their lived experiences, what policy options show the greatest promise?

A detailed description of the focus group neighborhood selection process and discussion methodology, including recruitment, facilitation, and guiding frameworks, is available in the appendix. The one-hour focus group involved 10 residents of the North Lawndale area of Chicago.

Attributes of the North Lawndale Neighborhood

North Lawndale is an EIEC on Chicago's West Side and is a predominantly Black community (80% of the population).[32] The area has a UHI index of 8°F[33] and faces a high heat wave risk,[34] with a score of 94.6.[35] North Lawndale's energy burden of 8% is higher than the energy burden of Chicago overall, at 2%.[36]

The neighborhood has also been facing an affordable housing crisis, as homeownership has continuously declined in the past decade. In North Lawndale 76% of households are renters, and 65% of these renters are cost-burdened, meaning they spend more than 30% of their income on rent.[37] Among homeowners, who make up 24% of all households in the area, 43% are cost-burdened, spending more than 30% of their income on their mortgage.[38] In fact, one study of the period 2015–2019 found that 23.8% of households with a mortgage paid 50% or more of their income on housing, far exceeding that of the city average, at 13.6%.[39]

In addition to energy and housing affordability issues, broader economic, medical, and social vulnerability in North Lawndale demonstrate multiple layers of disadvantage. As shown in Table 1, the poverty rate in North Lawndale is over three times the state average, its unemployment rate is more than double, and its median household income is a little more than a quarter of the state median. Rates of chronic health conditions such as chronic obstructive pulmonary disease (COPD) and chronic kidney disease are also elevated compared with the Illinois average. Beyond the indicators captured in the table, the area has 4,663 Medicare beneficiaries who depend on electrically powered medical equipment, an especially critical risk factor during power outages.[40]

Table 1: North Lawndale economic and health data, relative to Illinois

Indicator	North Lawndale (Tract 8430)	Illinois
Median household income*	$21,726	$81,702
Percent of households in poverty*	40.52%	11.6%
Unemployment rate*	11.32%	4.5%
COPD prevalence**	11.9%	6.5%
Chronic kidney disease prevalence**	5.10%	3.5%
Heart disease prevalence**	8%	7.9%
% of population with disabilities**	23%	11.9%

*Source: *US Census Bureau. (2023). "American Community Survey 5-Year Estimates (2018–2022)" [Dataset]. Social Explorer. https://www.socialexplorer.com; **Centers for Disease Control and Prevention. (2023). "PLACES: Local Data for Better Health" [Data tool]. US Department of Health and Human Services. https://www.cdc.gov/places.*

The area has a high social vulnerability index (SVI) for all SVI components, which include socioeconomic distress; share of the population caring for elderly, children, and individuals with disabilities; share of single-parent households; share of the population with minority status and language barriers; and share of the population living in vulnerable housing situations, such as multi-unit or mobile homes, overcrowded conditions, or group quarters, and being without access to a vehicle.[41]

Key Topics Emanating from the North Lawndale Focus Group Discussion

Participants in the focus group (n = 10) represent a diverse group of residents of North Lawndale, including renters and homeowners from various backgrounds. They work in social services, construction, or property management, occupations associated with low and moderate incomes. All participants are Black and Latino/a, and their ages range from 20s to 50s. Some are parents, while others care for elderly family members.

Findings from the focus group are presented thematically in narrative form, incorporating firsthand accounts from participants to highlight and illustrate the following six key topics that emerged from the discussion:

- Challenges during outages
- Insufficient outage preparedness by utilities
- Power restoration disparities by place and privilege
- Heat wave coping strategies
- Heat waves and intersectional vulnerabilities and impacts
- Access barriers to renewable energy programs

Challenges During Outages

Power outages can strike at any time, leaving residents vulnerable and scrambling to respond and cope. The risk of power outages increases during heat waves or other extreme weather events such as storms.[42] While most major outages are weather-induced, equipment failure (often due to deferred maintenance) and overloaded infrastructure (often exacerbated by weather events) also contribute to these service disruptions.[43]

Focus group participants described the impact and lasting effects of losing power. Reflecting on a three-day outage on her block, Tina mentioned the disruption to learning and her struggle to save her food while taking care of four grandchildren.

> *"I was on remote for school, in the middle of doing my final, where we had to do the presentation, and then [the power] just [went out], and it did not come back on. And so I had*

> *to text my teacher and let her know, and she was gracious enough to allow me to come to the school and do it the next day...So now I'm trying to barbecue everything that I can think of, give away what I can't barbecue, and just keep the family occupied. Because at the time I had four of my grandkids over...I did the board games with them to keep them settled. And then finally, on the third day, they must have put a rush on whatever the piece [that caused the outage] was, [and the power] came back on." – Tina*

Andrea described how she and her family lost power during a thunderstorm that flooded her basement apartment, damaging the circuit breaker, which led to a four-day outage.

> *"FEMA declared [the apartment] uninhabitable. I lost a lot. The water level got so high that it covered the circuit breakers, and it totally just wiped out all my power. We called [the utility] to find out the status of assistance, and I was basically told, "We have trees down and other things. We will get to you when we can." The power was out for four days. Mind you, we still had water sitting in our apartment. So trying to get food out to put in a cooler really wouldn't do me no good, as everything was floating in the water. But when [the power] did turn back on, on the fourth day, I asked for resources to help me replace my food, and I was told there's nothing they can do to help. So that whole ordeal has me really traumatized. Even though I'm not in the basement now. I still live that experience whenever it rains." – Andrea*

Another focus group participant, Evelyn, got emotional while describing her experience in a three-day outage with a newborn baby, unable to cook or purchase food.

> *"I had no car, just me and my son. The Link machine [at the store] wasn't working. So I was just, like, what do we do? The whole block was out. It was a difficult experience. So when the electricity went out, I was literally stranded. The situation that I was living in was traumatizing." – Evelyn*

Prolonged outages and their aftermath include further losses, disruption of routines, and trauma that can be devastating, particularly for vulnerable populations.

Outages and Insufficient Preparedness by Utilities

Participants described a variety of steps they took to prepare for power outages, such as preparing coolers to preserve food, coordinating with neighbors and family to share resources and stay connected, and stocking up on canned foods, water, portable chargers, battery-powered fans, and so on. While these actions reflect residents' efforts to plan ahead, participants emphasized that preparedness should not rest solely on households but also requires utility companies to adopt a more proactive approach to readiness.

Citing repeated outages in North Lawndale caused by heat-induced infrastructure failure and the lack of preparedness by the utility, Evelyn expressed her frustration.

> *"Power outages are an ongoing problem in North Lawndale because when it gets really hot, you can hear the transformers pop from the heat. And it doesn't seem to be an urgency, although it happens yearly. So why are they not prepared? Just like we are preparing for a power outage, why are they not doing some type of intervention to make sure it doesn't happen at all?" – Evelyn*

Similarly, Tina expressed her indignation over the outage she experienced, caused by failing equipment, which took the utility company three days to replace.

> *"How in the world do you not have another piece on hand in case of emergency? I just could not fathom the thought. I have my little grandbabies that require a lot of work, need feeding, and now I've got to detour everything. And they were feeling a little type of way, which made me feel some type of way. So that's why I was a little bit hurt. And then it ain't like they replaced anything [referring to food and other losses]. So that was all out of my pocket." – Tina*

Deferring infrastructure maintenance and deprioritizing response in vulnerable communities, for example, not only disrupt daily life but also intensify financial burdens in disproportionately affected communities.

Power Restoration Disparities by Place and Privilege

Participants noted significant differences in how service restoration seems to be prioritized, pointing to disparities in response times that mirror the documented outage pattern discussed above, where EIECs experience more frequent and longer outages.[45]

Susan mentioned the overall conditions for people downtown compared with those in more disadvantaged areas of the city.

> *"They don't have emergency cooling centers downtown. Not like they do over here. And that's on purpose. You see the trucks with the equipment right away ready to fix it when you're downtown. And here [on the West Side], I am doing the commute from downtown [to my] home, and you see the difference. You don't see much action being taken here. And during those storms, same thing. Even yesterday, it was really windy, but it was hot. And on the way home, you start seeing it where the trees are down. So around here the trees were down. But the closer you get to downtown, they're already there picking [them] up and with the chainsaw and taking action." – Susan*

Residents outside the city's central district perceived a sense of inequity and unfairness, feeling they were given lower priority in the aftermath of outages.

Heat Wave Coping Strategies

Affordability was a significant concern during extreme heat. Participants mentioned limiting air-conditioning use because of cost, even in sweltering temperatures—a practice noted beyond the focus group.[46] Examples of engaging in this and other sometimes unhealthy or inconvenient coping strategies were described by participants.

> *"In my personal experience, I've taken public transportation with the kids and just prayed for a bus with air-conditioning and just rode the bus to stay cool. I have a window unit, and they say that they break down if you don't use [them]. I love hearing when they recommend running it throughout the day. But keeping the AC on is a luxury. Not everyone can afford it. I'll just walk outside to anywhere with AC or run the cool water in the shower to cool off the immediate space, and we huddle around that. I have a tiny apartment, and my energy bill is still so high. I budget it carefully to limit it to $100 per month/$1,200 a year. You know how many weeks I gotta work to get a $1,200 check?" – Susan*

> *"But you need it, though. AC is not a luxury. Just like in the wintertime you need heat." – Jerry*

Jerry's rebuttal reinforced the need to recognize cooling as equally essential as heating. However, for Susan it was cost, not lack of desire, that prevented her from properly cooling her home.

Heat Waves and Intersectional Vulnerabilities and Impacts

The focus group conversation highlighted the multifaceted and interconnected nature of health, economic, and social vulnerabilities and how heat waves and power outages exacerbate all of them.

Evelyn, who helps community members process energy assistance applications, shared examples of elderly residents who, despite being unable to afford it, must run their AC units during heat waves. This often leads to disconnections, trapping them in a deleterious cycle of risks and trade-offs.

> *"I do a lot of the CEDA47 applications, our energy assistance program, which many seniors use with their utility bills. So I see a lot of the people coming in with fixed incomes and unable to pay their bills either during the summer or winter and are facing disconnection, and they're constantly in a disconnection rotation. It's so heartbreaking. – Evelyn*

Janet explained quitting her job as a property manager after witnessing multiple fatalities following heat waves and extended power outages.

> *"For some reason in that area the power was always down. And so I left that job because it was too much for me, because within the time frame that I worked there, three senior citizens had passed away from heat exhaustion. I would do wellness checks, and I walked into it three different times! I did what I could to try to help them on a day-to-day basis, by picking up air conditioners from storage and taking it upstairs. But if there's no power, then there's nothing that I can do. – Janet*

Evelyn and Janet reflected on the vicarious experiences of hardship faced by fellow community members. Both expressed a deep desire to do more to help but felt constrained by the lack of resources and power.

Access Barriers to Renewable Energy Programs

Toward the close of the focus group, a representative from Elevate shared information about a new energy efficiency and heat pump installation program. She emphasized the simplicity of the application process and urged everyone to apply quickly, as the application deadline was just two days away. It soon became clear that this was the first time the information had reached these community members, and it turned out the program was only available to property owners. This experience underscored that even while initiatives to address energy insecurity exist, there are still many gaps—affordability, access, effective outreach, and inclusive program design—that need to be closed to reduce the disproportionate impact of climate-induced heat waves and power outages on disadvantaged communities.

Policy and Practical Implications

The experiences of North Lawndale residents highlight the need for targeted interventions to enhance resilience and safeguard public health to combat weather-induced energy insecurity. Upstream, utility-centered policy solutions such as ensuring equitable and transparent infrastructure investments, prioritizing rapid outage response in vulnerable areas, making electricity affordable through fair utility rates and bill assistance, and implementing disconnection moratoria during extreme heat are proactive ways to minimize the frequency, duration, and impact of disruptions. (More downstream, complementary measures to expand access to safe and affordable cooling, while not the focus of this report, include establishing community cooling rooms in residential buildings,[48] investing in tree canopy expansion to mitigate UHI effects,[49] expanding existing bill assistance programs to cover cooling benefits in addition to heating,[50] and linking eligible households to efficiency and electrification programs.[51])

Equitable and Transparent Infrastructure Investments

Steps toward equitable infrastructure investments are currently underway in Illinois. In accordance with the Climate and Equitable Jobs Act and following the recommendation of a coalition of environmental organizations known as the Joint Non-Governmental Organizations, the Illinois Commerce Commission has approved multiyear grid plans that require utilities to incorporate equity into infrastructure investment strategies.[52] As part of this effort, an equity benefits framework developed by the Environmental Law & Policy Center and its coalition partners was adopted to ensure that at least 40% of grid modernization benefits reach EIECs.[53] Similar efforts have also called for greater transparency around infrastructure decisions in marginalized communities and for utilities to prioritize these neighborhoods in both planning and implementation.[54]

Outage Response That Considers Vulnerability

While proactive, long-term changes are being implemented, it is critical to prevent fatal impacts of outages today by prioritizing vulnerable communities for power restoration, as emphasized by participants. Similar to the abovementioned disparities in Chicago, studies have found patterns in weather-induced outages across the US showing that economically, socially vulnerable,[55] and non-White[56] households often experience more frequent outages and slower restoration across a range of extreme weather events.

These inequities underscore the need for utilities and regulators to develop outage response protocols that explicitly account for community vulnerability in restoration planning and prioritization. In particular, relying on proximity to critical infrastructure to guide restoration decisions can inadvertently deprioritize historically marginalized neighborhoods, which, because of discriminatory housing and infrastructure policies, are less likely to be located near facilities such as hospitals, emergency shelters, or government centers.

Bill Affordability

As discussed throughout, even when no outages occur, extreme heat can pose serious health risks when high energy costs dissuade people who have air-conditioning units from using them, often leading to unsafe and unhealthy conditions, as specified by participants and prior research.[57] These findings highlight the importance of bill affordability to protect vulnerable populations during extreme heat events. One key strategy some states have adopted is income-based electricity rates and rate discounts for low-income households.[58]

Currently in Illinois, programs designed to help low-income households manage electricity costs are mostly funded by the federal Low Income Home Energy Assistance Program (LIHEAP) and administered by utilities.[59] While LIHEAP provides one-time bill assistance primarily focused on heating during winter months, the Percentage of Income Payment Plan, also funded through LIHEAP, offers year-round support by allowing eligible households to pay a fixed percentage of their income toward monthly utility bills.[60] Recent cuts to LIHEAP administrative funding[61] place these core programs at risk. Outside of LIHEAP, Illinois utilities offer a limited set of smaller-scale assistance programs, including extended payment plans, one-time hardship grants, and donation-based relief funds. Households most dependent on diminishing federal energy assistance face heightened risk of energy insecurity and related health emergencies, particularly as extreme heat events grow more frequent and severe.[62]

These challenges underscore the need for alternative programs to alleviate energy insecurity among low-income households. In Illinois, one such initiative is the recently approved, ratepayer-funded Low Income Discount Program from Commonwealth Edison (ComEd), which will provide eligible customers across Chicago and northern Illinois a bill credit—with specific discount levels to be determined closer to launch—beginning October 1, 2025, and reaching full implementation by January 1, 2026.[63]

Disconnection Protections

Separate from outages, participants emphasized that the threat and the experience of disconnections during extreme heat are particularly troublesome manifestations of energy insecurity. Implementing strong disconnection protections for the elderly and socially and medically vulnerable populations would ensure access to vital cooling during heat waves.[64]

Illinois has already taken several important steps to protect vulnerable residents from utility disconnections. The Public Act 103-0019, effective January 2024, prohibits gas and electric disconnections for nonpayment when temperatures reach 90°F or higher or when the National Weather Service issues an excessive heat watch, advisory, or warning.[65] Under Illinois Commerce Commission rules, residents can also submit a medical certificate from a licensed physician or health board to prevent disconnection for 60 days if loss of service would aggravate a medical condition, with eligibility for an automatic payment arrangement.[66] While Illinois has made strides in establishing utility disconnection protections, their effectiveness ultimately depends on consistent enforcement. Reports of disconnections during protected periods point to enforcement gaps, often caused by utilities lacking accurate information on which customers qualify for protections or by weak monitoring mechanisms, highlighting the need for stronger oversight and accountability.[67]

Addressing the compounded challenges of extreme heat and power outages in communities requires targeted interventions that foster resilience, enhance security, and promote long-term solutions. With such interventions in place, communities can be better protected from escalating climate impacts and more equipped to withstand these interconnected stressors to ultimately achieve greater household energy security.

Appendix

Methodology: Focus Group Identification and Discussion

The authors analyzed census tracts across Cook County, which includes Chicago, using a set of intersecting indicators. They focused on this area because of Chicago's well-documented history of extreme heat events, as well as their existing partnerships with local stakeholders. The authors first identified tracts in the top decile (90th percentile) for the social vulnerability index (SVI). From these tracts, they selected areas with an energy burden exceeding 6%, which is a threshold grounded in the 30% housing-cost benchmark and widely adopted by state affordability programs to signal unaffordable energy costs,[68] resulting in a total of 82 census tracts. The team collaborated with a community-based partner, Elevate, to review this short list of neighborhoods (census tracts) and identify three locations with existing partnerships and logistic feasibility for focus group recruitment and hosting.

These census tracts were further analyzed using an Outage Vulnerability Balanced Scorecard framework developed by Columbia University's National Center for Disaster Preparedness.[69] This framework evaluates and monitors grid investments and community vulnerability based on economic indicators (e.g., income, poverty rate, unemployment), health metrics (e.g., the prevalence of COPD, cardiovascular disease, disability, reliance on electrical medical equipment), and proximity to FEMA-defined critical infrastructure. North Lawndale was one of the neighborhoods identified through this review.

Elevate staff partnered with the North Lawndale Employment Network to arrange the focus group logistics and recruit participants. The one-hour focus group included 10 participants and was moderated by Columbia University's Diana Hernández, associate professor of sociomedical sciences, Mailman School of Public Health, and director of domestic programs, the Energy Opportunity Lab (EOL) at the Center on Global Energy Policy (CGEP), with Qëndresa Krasniqi, staff associate, EOL, CGEP, and the National Center on Disaster Preparedness at the Columbia Climate School serving as co-moderator. Elevate staff provided additional logistical support and observed the discussion.

The authors' methods were informed by the "Understanding Energy Insecurity in the Field" tool kit co-designed by members of Columbia University's Energy Equity, Housing, and Health Program and the Center on Global Energy Policy's Energy Opportunity Lab, along with the American Public

Health Association's Center for Climate, Health, and Equity.[70]

This project was approved by the Columbia University Irving Medical Center's Institutional Review Board Protocol [# AAAU0130].

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