16 Transitioning Out of Vulnerability Using the Neighborhood Energy Center Model

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16.1 Introduction

Neighborhood Energy Centers (NECs) are a Philadelphia-based network of grant-funded offices that help households address energy vulnerability. In operation for decades, NECs have been described as "one-stop-shops" where households can apply for different forms of aid, receive budget counselling, and obtain referrals to other programmes. In this chapter, we explain why the NEC model is particularly well suited to address the structural and multifaceted nature of energy vulnerability, particularly through attempts to get at some of the root causes and intertwined issues in ways that are locally situated.

This study is based on a three-year ethnographic study[1] of energy vulnerability in Philadelphia, Pennsylvania (2019–2021). Data collection included 234 structured interviews between May 2020 and June 2021; interviews focused on subjects' ability to make utility bill payments and receive assistance. This was followed by 101 open-ended interviews in summer 2021. We also conducted participant observation at dozens of energy assistance events during this period, including public energy education workshops, national conferences and regional webinars for professionals working in the energy assistance sector, and monthly administrative meetings for Philadelphia's network of energy counsellors. This was followed by 20 key informant interviews with experts working in the energy assistance sector.

Our findings show that the NEC model is particularly robust because it is situated in micro-local ways (such as within community centres rather than state-level social service organisations), builds specialised expertise among energy counsellors, and leverages a broad network of adjacent programming that can help alleviate socioeconomic stressors that intersect with energy vulnerability. On the other hand, NECs also work within structural constraints that can drastically limit their impact. Some constraints include strict programme requirements that make the application process unforgiving and unable to recognise complex vulnerabilities; increased competition from utility companies looking to expand their own assistance infrastructure; and shifting accessibility needs, for both staff and clients during the pandemic.

In what follows, we first elaborate on the concept of energy vulnerability and what it looks like in Philadelphia. Next, we describe the NEC model, including its current network, application process, and activities. The following section elaborates on some of the above-described constraints that make the work of NECs more challenging and ultimately less effective, often because of the way that these constraints prevent access to assistance and counselling. We spend the final sections looking at what energy expertise looks like, in the context of energy vulnerability, and imagining how this expertise could translate into more robust programming and policy.

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16.2 Background

16.2.1 Defining energy vulnerability

Sociologists Rosie Day and Gordon Walker define energy vulnerability as a household's inability to "achieve sufficient access to affordable and reliable energy services, and as a consequence is in danger of harm to health and/or well-being" (2013: 16). The term resembles but is distinct from energy poverty (Bednar & Reames, 2020) and energy insecurity (Hernández, 2016) in its emphasis on the locally contingent and temporal dynamics of access and harm, which are produced at the intersection of social, technological, and ecological spheres. Concretely, energy vulnerability emphasises that households may fall into and out of harmful or insecure conditions based on changes to household composition, acute and chronic health conditions, weather extremes related to climate change, public health crises, and disruptive technologies or policies. Despite its pervasive reach, many people who experience energy vulnerability may not recognise their predicament as such (Bouzarovski et al., 2013), including Philadelphia's own middle-to-low-income families who struggle to meet their utility bills on a monthly basis or periodically. This can make addressing the problem – at the scale of the household and also nationally – all the more difficult.

NECs are particularly well suited to address this phenomenon, as understood in this expanded definition, because of the way they are nested within neighbourhoods, communities, parent organisations, and a well-structured energy servicescape.

16.2.2 Energy vulnerability in Philadelphia

Philadelphia is a late industrial city (Kenner, 2020) that suffers from high rates of household energy burden, defined as the percentage of gross household income spent on energy costs. According to a study conducted by Greenlink Analytics, Philadelphia experiences energy burdens 86% higher than the national average; Philadelphian households spend on average around 6.7% of their income on energy. This phenomenon can be traced in part to the city's aged housing stock and infrastructural disinvestment in redlined neighbourhoods, which have produced widespread household energy inefficiency.[2] According to the US Census, 72% of Philadelphia's current housing stock was built more than 60 years ago, and 40% was built before 1940 (Tooher, 2014). Other factors contributing to household energy burden include high poverty rates in Philadelphia, with many households living on limited or fixed incomes. Research has also shown that households in predominantly Black neighbourhoods also experience higher energy burdens (Drehobl et al., 2020; Hernández, 2016; Jessel et al., 2019; Memmott et al., 2021).

Energy vulnerability in Philadelphia goes beyond energy burden in a number of key ways, however; it stems from the intersection of housing stock, inequitable income structures, and other compounded socioeconomic vulnerabilities, but can also be related to chronic or acute medical conditions (Hernández, 2013, 2016; Kenner et al., 2022), hotter summers due to climate change, regional and international energy politics, and growing technological demands that force households to have an increasing number of devices. Place matters, too, and neighbourhood location shapes households' energy environments (Petrova & Prodromidou, 2019).

16.2.3 Situating energy vulnerability in the welfare state

In the United States, assistance of all kinds, including Temporary Assistance for Needy Families and Supplemental Nutrition Assistance Programs, is tied to work in some form (Hacker, 2016).

Loss of employment can create dual economic vulnerability by exposing a household to the loss of welfare assistance that is critical in post-job loss periods (Falk et al., 2014). While energy assistance programmes such as the Low-Income Household Energy Assistance Program and the Weatherization Assistance Program are not tied to work requirements, they *are* tied to income guidelines (Berman et al., n.d.). To receive energy assistance, vulnerable households become dually dependent on earning a salary but not earning too much – where the state controls how the households spend the welfare assistance received (Daguerre, 2017a, 2017b).

NEC counsellors we interviewed often cited income guidelines as an inherent weakness in the assistance sector, giving voice to critiques that circulate in the scholarly literature (Haveman et al., 2015; Hernández & Bird, 2010; Prasad, 2011).

> All these programs have income requirements and that person, that working poor person, or the person on a fixed income, who their pension may be a little higher than somebody else, who may be a dollar over that income threshold, cannot receive the services.

Government assistance is tied to work here too, but differently than other federal or state programmes. The working poor, as noted by the counsellor above, are often excluded from assistance, even when they clearly need it.

With the widespread recognition that energy assistance programmes are an extremely limited approach to a deeply structural problem, the NEC model is designed to supplement education, resource distribution, weatherization and repair referral, and investment in renewable infrastructure.

16.3 NEC model

Philadelphia's NECs are a critical interstitial layer within the broader system working to address energy inequity, which includes more progressive energy transition efforts, legal and regulatory advocacy, and social services. In 2022, there were seventeen NECs: nine were identified as Community Development Corporations, seven were identified as social service organisations such as food pantries or senior centres, and one NEC provided energy assistance only. All but one NEC are nested within larger organisations that provide other forms of social service, including housing assistance, childcare, food pantries, referral programmes, and educational series; eleven NECs are also City of Philadelphia Neighborhood Advisory Committees – community organisations formally charged with connecting residents to City services. In 2021, some of the organisations that housed NECs also hosted vaccination clinics and heavily campaigned to provide accurate information about public health throughout the COVID-19 pandemic. In short, NECs work as a critical matrix of care for neighbourhoods, where people can access information on many types of governmental and private assistance, as well as other needed resources. The core activities NECs undertake can be divided into three categories: supporting applications for energy assistance, budget counselling, and conservation workshops.

16.3.1 Energy assistance

Energy assistance programmes help reduce energy burdens so that households are more likely to meet their energy needs. In Philadelphia, there are four primary forms of assistance available to households struggling with energy costs; these include federal and local grant programmes, weatherization programmes, and budget programmes made available through the utility companies.

Launched in 1981, LIHEAP (Low-Income Home Energy Assistance Program) is the principal federal energy assistance programme in the United States. In Pennsylvania, LIHEAP benefits help pay off heating costs. Benefits are distributed to households with low incomes (150% or below the Federal Poverty Guidelines, or 60% of the state median income), particularly those that have a high energy burden (percentage of income that goes to heating and cooling bills) and/or have members who are elderly, disabled, and/or have young children. A similarly structured private programme, the Utility Emergency Services Fund, is also available for Philadelphians and can be used to supplement LIHEAP and other forms of financial assistance.

Another way for households to cope with outstanding utility bills is to enrol in their local utility suppliers' assistance programmes. In Philadelphia, PECO (electricity supplier), PGW (gas supplier) (PGW, n.d.-a, n.d.-b), and the Philadelphia Water Department offer utility-sponsored programmes that tie customers to a cycle of bill payment that is meant to prevent their utilities from being shut off.

Utility bills can often increase due to inefficiencies in the home, a fact that was recognised at the federal level in 1976 with the creation of the Weatherization Assistance Program (WAP) (Energy.gov, n.d.; Fowlie et al., 2018). This programme seeks to help households address the previously discussed inefficiencies to help reduce utility bills and create a comfortable indoor living environment (Fowlie et al., 2018).

In addition to positive forms of assistance, the Pennsylvania Public Utility Commission also institutes an annual moratorium on utility shutoffs between December 1st and March 31st. During this period, income-qualified households (at or below 250% of the FPL) with outstanding bills cannot have their gas or electricity shut off between December 1st and March 31st, annually. This is intended to protect limited income households from losing heating during the winter months.

16.3.2 Budget counselling and referrals

When utility customers visit an NEC to learn about or apply for energy assistance, they also receive one-on-one budget counselling. As part of the process of determining whether a household qualifies for the above energy assistance programmes, an energy counsellor uses a budget template to help the client determine monthly expenses, which can be useful for households that are moving into a payment plan contract. This process helps clients see different expenses that may not be visible unless there is a query and things are marked on paper. Financial literacy and budgeting are not a practice formally taught in the United States, and many residents must figure out how to balance expenses without support.

16.3.3 Energy conservation workshops

The last core activity undertaken by NECs is energy education; each winter, staff members from ECA and Philadelphia's NECs teach dozens of energy conservation workshops around the city. These workshops are funded by Philadelphia Gas Works and Grandom Oil and help residents learn strategies to reduce their utility bills. NEC and ECA staff members also periodically facilitate off-season workshops that focus on cooling in the summer months or water conservation. Every workshop participant receives a free weatherization kit, which includes seasonally relevant conservation materials, such as rope and tube caulk, door sweeps, LED light bulbs, a surge protector, and plastic wrap for windows. Workshop facilitators give live demonstrations using kit items; each presentation also includes advice on lowering utility bills, information

on federal and local assistance programmes, and the benefits of professional weatherization. The Q&A segments of the workshop allow the facilitator to get into specific details that are relevant to the community in attendance.

16.4 Cultivating energy expertise

The NEC network is managed by the Energy Coordinating Agency (ECA), a 35-year-old nonprofit that has been at the forefront of urban energy innovation. ECA is unique in that it specifically addresses energy inequity derived from structural conditions, such as redlining, lack of career opportunities, and aged housing stock, by providing various forms of energy assistance, weatherization, and green jobs training (Adams et al., 2022). This systems approach is also what sets Philadelphia's NEC network apart from other approaches; as Bednar and Reames argue, part of the problem in the United States is the lack of recognition, at the federal level, that energy poverty (or vulnerability) is a national issue requiring policy attention (2020).

NEC counsellors are trained energy experts. Monthly meetings, hosted by ECA, feature workshops and presentations from experts in different sectors of the energy servicescape. Counsellors bring this information back into their client work, where they are able to make referrals to other programmes and services. Some examples observed during fieldwork include solar energy programmes, community legal services, and basic systems repairs. Additionally, each summer, all NEC counsellors complete a week-long training to go over updates to UESF, LIHEAP, WAP, and other programmes.

Counsellors work together with clients to guarantee they receive the assistance they need. Many counsellors noted that a fundamental part of their work is making sure clients have all the documents they need before submitting their assistance applications, including the client's latest utility bill and pay stubs. Some counsellors also noted they go the extra mile for their clients, even adding hand-written letters to the applications to advocate for their clients' need for energy assistance.

Prior to the pandemic, the NEC model was highly dependent and modelled on the walk-in system; this system allowed anyone in the neighbourhood to easily access counselling and other energy literacy services. NEC counsellors help clients figure out whether they are eligible for assistance to help meet utility expenses or even retrofit their homes, if and when needed.

16.5 Structural limitations

While the NEC model offers myriad advantages compared to other approaches to energy vulnerability, there are also structural factors that prevent NEC from working. By highlighting these limitations, we hope we can inform organisations seeking to adopt this model on potential issues that may arise and offer advice on how to handle them.

Conservative income guidelines – which prevent many households from qualifying for federal and state programmes – are consistently announced as the greatest hurdle to addressing energy vulnerability. These guidelines are based only on gross income, not taking into account mortgage or rent costs. Medically vulnerable residents who are above the poverty line but most spend a large portion of their income on medical treatments may not qualify for assistance. In other words, most grant programmes do not take into account other financial burdens and expenses that households carry. One counsellor went as far as saying that their biggest struggle is working within power structures that are designed to help only the lowest of low-income households while moderately low-income and middle-class incomes, who still struggle to afford

their energy bills, get overlooked. When asked what the hardest part of their job was, one NEC counsellor stated,

> I'd say just getting the powers that be to understand the needs that people have, the challenges that low income people have. And they only want to deal with the low, low income people and they don't have any consideration for the low income people or the middle income people, that blue collar worker that's trying every day.

Documentation is consistently named as the greatest barrier to energy assistance. Both NEC counsellors and utility customers shared stories about the excess and strict application materials. Paperwork needs to be up-to-date for applications to be successfully submitted. Missing paperwork or documents that are not from a specific time period – month or year, for example – meant that the application process could be delayed by 6–8 weeks. In other words, energy assistance applications have rigid time-based requirements for supporting documents; an utility bill and income documentation that did not match the time-period in question meant that the application was denied.

Staffing issues have been identified as a challenge for many NECs; while turnover or staff shortages are an issue common in social service industries, the pandemic exacerbated this dynamic. Most NECs have between one and four staff members, and depending on the size and location of the organisation, an energy counsellor could meet with anywhere from five to 25 clients a day. On high-traffic days, counsellors would often not be able to see everyone who came to the NEC, with some having to cut off entry after a certain number had signed up as walk-in clients. According to one counsellor, "In the past, about 8 years ago, they would have lines out the door for people waiting for services and would have to cap it at 50 people per day." Some clients desperately needed one-on-one help, however; some counsellors assist clients with reading their bills and even filling out applications, if a client has arthritis. Staffing issues have caused some NECs to cut back on programming as well, due to the time investment those programmes require. At the same time, with new forms of assistance offered during the pandemic, some counsellors were splitting their time between multiple programmes, such as rental assistance applications.

Staff shortages were not the only challenge brought on by or exacerbated by the COVID-19 pandemic. As large portions of social interaction, services, and cultural life shifted to remote and online platforms, already-vulnerable community members – such as seniors, people experiencing homelessness, and low-income families without broadband – became increasingly hard to reach. Many NEC clients are elderly, although this does vary from neighbourhood to neighbourhood. According to one energy counsellor, whose NEC serves a large senior population, even though most people have smartphones, "seniors still have trouble using them and acquainting themselves with this technology." Seniors struggled the most adapting to remote applications and appointments while also being more at risk for in-person appointments, causing many to simply not seek assistance. "Largely with the older folks that we work with, they were not in the least interested in coming in, even if it was just to meet in the parking lot and exchange paperwork. They were going to try to find some other kind of way, and were not necessarily plugged into technology." A large number of counsellors reported a stark decline in appointments, even when clients could opt for phone-based or in-person, socially distant appointments.

Numerous counsellors reported that their online outreach fell short in comparison to utility companies, which doubled down on efforts to get customers to apply for assistance directly through them as an energy provider. In some cases, this meant that customers were unable to apply funds across utility bills, which some NEC counsellors stated could have been handled

more strategically. Younger clients, who are more tech-savvy we were told, will frequently apply for assistance through their utility company or through COMPASS (Pennsylvania's online portal for Health and Human Services programmes) instead of making an appointment with an NEC. While this may be more convenient, in such cases, the customers miss out on the adjacent services and programmes that NEC counsellors perform, including a more thorough check on every programme you apply for in an attempt to reduce energy burdens more than utility companies. They can also offer assistance outside not directly related to energy bills such as rental assistance. One NEC counsellor attributed their lack of appointments to "the fact that people can apply for LIHEAP online, and since younger generations are tech savvy they are applying for assistance themselves instead of coming in person." She also attributes it to utility companies conducting more outreach to clients, so individuals are applying on their own as opposed to going to NECs.

16.6 Solutions

The NEC's relative autonomy allows each organisation to find unique solutions to the structural problems and limited resources they face. For example, one understaffed NEC began providing energy counselling in groups, which allowed staff to help more people and leverage a group dynamic. According to one of the counsellors who implemented group counselling, "Sometimes we would have a group. We would do it in a group format. So, we would have a workshop as what we would call it, where people would come to fill out their applications all at once. And in that event, I would help with copying documentation, guiding people on how to fill out the applications. So, I would act a lot as if I was another intake specialist as well." The average group size at this NEC was 20 clients.

Since NECs are often nested within larger nonprofit organisations, many counsellors have found ways to leverage their parent organisation's resources. One counsellor who operates an NEC inside a housing preservation organisation stated that they collaborate across units within their organisation and leverage referrals to external programmes as well. Coalition work was identified as crucial. This counsellor explained that the housing preservation organisation that houses this NEC created a dumping advisory board, which is a group of individuals concerned about waste in the neighbourhood, the health of their environment, and the health of residents and their community. They are also a part of the North Philadelphia Community Collective, which assesses the impacts of the COVID-19 pandemic and reports on vaccination rates. The counsellor added, "These examples of collaboration and coalition building are indicative of strong and well organised social service networks in North Philadelphia, that includes social service organisations, other community groups, residents, and partners such as Temple University."

During the pandemic, several NECs reinvented themselves by deploying mobile services that would (1) allow them to conduct more outreach into Philadelphia communities and (2) allow NECs to reach those individuals who did not want to expose themselves to pandemic-related risks. These mobile services enabled counsellors to bring energy assistance information to non-mobile clients. One NEC used "door bags" which the counsellor explained was part of a collaboration: "I partnered with an organization called the Resource Pop-up Bus, and we bag up information, put it in a bag, the newsletter or flyers, whatever we're doing. We take the bags and put them on people's doors throughout the neighbourhood because everybody, I don't know if there's an assumption, but everybody's not connected, particularly our seniors."

With elderly clients feeling that in-person appointments were unsafe yet struggling to connect to remote appointments, one NEC began travelling to elderly living facilities to offer assistance

directly. As one NEC counsellor puts it, "If people are not coming in, you got to find other ways to help them. I make appointments and go to the senior place, and I do their applications there."

Another NEC counsellor set up a small booth in the lobby of senior apartment centres, offering to sign up residents for LIHEAP. This counsellor had used a broad range of tactics to reach community members: social media, phone calls, flyers attached to free meals as part of their free meal programme, and calling past clients directly as outreach for energy assistance. She found that "setting up shop" in senior centres was the most effective means of signing people up for assistance "I definitely think going to senior housing buildings, kind of setting up shop in other places is probably going to be what really helps."

16.7 Conclusion

Energy vulnerability is not so much a singular issue as it is a complex and dynamic problem space, one that emerges at the nexus of many different kinds of (social, political, economic, infrastructural, epistemic, climatic, etc.) issues. Accordingly, the forms of assistance developed to address this kind of vulnerability must be similarly dynamic and wide-ranging enough to yield a flexible and responsive landscape of care (Bowlby, 2012). As we have shown, NECs (especially those housed within larger, more general assistance organisations) are well positioned to enhance a local energy-governance structure's dynamism and flexibility, serving, metaphorically, as the structure's "connective tissue" of care. That is, working between government and industry and both within and outside extant assistance structures, they have a remarkable capacity to bend their focus, to extend into new problem areas, and to reallocate vital resources.

Traditionally, however, these organisations have been simultaneously underutilised and overextended. That is, they are underutilised in that the NEC's unique position as a more flexible and locally attuned assistance infrastructure has yet to be adequately appreciated by decision makers. And they are overextended in that they tend to lack the staff and resources necessary to attend to the forms of energy vulnerability that they are best positioned to understand. In this chapter, we have attempted to redress these oversights, arguing that NECs provide a critical layer of flexibility within and between the otherwise well-stratified and ossified scales of energy assistance, developing a living network of deeply embedded and responsive care actors.

Notes

1 Ethnographic research is defined by descriptive analysis that is based on participant observation, a method where the researcher traditionally spends long periods of time conducting immersive fieldwork. See, for example, Marcus and Fischer (1986) and Fortun (2003).
2 Redlining emerged after the Great Depression, when the US federal government initiated low-interest lending (Jackson, 1987). In the lending process, federal institutions denied credit lending in neighbourhoods they considered hazardous and designated them as "red zones" (Jackson, 1987:362). These "red zones" were often populated by Black households (Hillier, 2003; Jackson, 1987). Studies defining and analysing redlining practices discuss its role in deepening neighbourhood segregation, racial divides, and inequalities (Hillier, 2003).

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