# Advancing Energy Equity in the City of Orlando

*Ashley Pennington, City of Orlando*
*Brittany C. Sellers, Ph.D., City of Orlando*

## ABSTRACT

In Orlando, some residents spend 130% above the national average on their energy bill. At the same time, 60% of the population identify as renters, yet the city has the second-lowest availability of affordable homes for extremely low-income tenants of all U.S. metro regions.

The rise in average temperatures and number of extremely hot days has further exacerbated the cost of utility expenses and highlights a growing climate resilience and public health issue.

Unfortunately, low-income residents of color - who experience the highest rates of energy burden – are often not effectively engaged in the design of efficiency programs.

In pursuit of impactful results for the most vulnerable residents, the City of Orlando partnered with the Institute for Market Transformation, Greenlink Analytics, and local Community Based Organizations, Poder Latinx and the regional NAACP chapter, on a more inclusive outreach approach to collaboratively design solutions.

Guided by human-centered design principles, Rosa Gonzalez's "Spectrum of Community Engagement to Ownership," and an Energy Burden Analysis to prioritize specific neighborhoods, this effort has sought to remove barriers to participation by hosting weekend workshops with on-site childcare, language translation, meals, and stipends to compensate participants for their time and insight.

With guidance from community members, the City established an Energy Burden Task Force to evaluate the efficacy of existing programs, define equitable building policy options, and explore innovative retrofit models to accelerate energy equity, avoid displacement, and creatively address the split incentive between landlords and tenants, all informed by the lived experience of those most impacted.

# Introduction

## Energy Burden: A Multi-faceted Issue

Vulnerable populations are disproportionately impacted by disparities within the built environment, including a higher prevalence of lower-performing, inefficient housing, and buildings (Kontokosta, Reina, and Bonczak 2020). Communities of color often spend a higher percentage of their income on monthly utilities – a ratio referred to as energy- and water-burdens (Baik, Hines, and Sim 2023). High and severe energy burdens negatively impact quality of life (Reames, Daley, and Pierce 2021), while also affecting community resilience, public health, and the climate (Maxin and Grubert 2022). Exacerbating the issue of affordable cost of living is the limited availability of affordable housing. The National Low Income Housing Coalition's March 2023 "The GAP" report states that Black, Latino, and indigenous households disproportionately represent extremely low-income renters and are thus disproportionately impacted by the nationwide shortage in affordable[1] rental homes. Energy burden is compounded by additional factors, including:

- With a heavily tourism- and service-oriented local economy, there are a high percentage of lower wages jobs in Orlando (Bureau of Labor Statistics 2020), which contributes to **income burden at large** (Massachusetts Institute of Technology [MIT] Living Wage Calculator 2024).

---

[1] City Code: Chapter 67: Affordable. Unless the context otherwise clearly requires, affordable means monthly rents or monthly mortgage payments, including taxes and insurance, do not exceed thirty (30) percent of that amount which represents the percentage of the median adjusted gross income limits adjusted for family Size for the households qualifying under the definitions of Very Low Income, Low Income, or Moderate-Income Persons.

- Orlando's municipal utility rates - while lower than some state peers as well as national trends – remain subject to volatility, with global affairs impacting local fuel prices in recent years through multiple rate increases.
- Even with **lower-than-average rates, higher consumption within inefficient housing** leads to high bills (U.S. Energy Information Administration 2022). As in many places across the country, **the cost of housing has skyrocketed**, as both rents or home values and home insurance premiums accelerate at a faster pace than wages. In 2018, 18.2% of central Florida households were extremely cost-burdened with spending 50% or more of their monthly income on housing and utilities (Orlando Economic Partnership 2023).
- A recent analysis of U.S. Census Household Pulse Survey Data revealed that Florida is the **fifth-most-expensive state for groceries**, leading to deeper financial strains for residents. (HelpAdvisor 2023).

In Orlando, some residents spend 130% above the national average on their energy bill (Greenlink Analytics 2023). Based on U.S. Census data for the period of 2018-2022, roughly 60% of the population identify as renters, yet the city has the second-lowest availability of affordable homes for extremely low-income tenants of all U.S. metro regions (U.S. Census Bureau 2022; Aurand, et. al. 2023). The rise in average temperatures and number of extremely hot days in Central Florida has further exacerbated the cost of utility expenses (Fache and Bhat 2022) and highlights a growing climate resilience and public health issue (Jessel, Sawyer, and Hernandez 2019). Unfortunately, low-income residents of color - who experience the highest rates of energy burden – are often not effectively engaged in the design of efficiency programs (Berelson 2014; Brown et al. 2020).

## Toward Community-Led Design Solutions

In this paper, we describe the approach taken by the City of Orlando in pursuit of impactful results for the most vulnerable residents, beginning with a first-of-its-kind partnership with the Institute for Market Transformation, Greenlink Analytics, and local Community Based Organizations, Poder Latinx and the regional NAACP chapter, toward a more inclusive outreach approach to collaboratively design solutions. Guided by human-centered design principles, Rosa Gonzalez's "Spectrum of Community Engagement to Ownership," and an energy burden analysis to prioritize neighborhoods experiencing the highest levels of burden, this effort has sought to remove barriers to participation by hosting weekend workshops with on-site childcare, language translation, meals, and stipends to compensate participants for their time and insight. With guidance from community members, the City established an Energy Burden Task Force to evaluate the efficacy of existing programs, define equitable building policy options, and explore innovative retrofit models to accelerate energy equity, avoid displacement, and creatively address the split incentive between landlords and tenants, all informed by the lived experience of those most impacted.

# City of Orlando's Approach Toward Addressing Energy Burden

The City of Orlando's focus on energy burden began in 2018 when Orlando was selected as one of 25 cities to take part in the American Cities Climate Challenge. Funded by Bloomberg Philanthropies, this three-year grant provided resources and support toward high-impact climate actions across the buildings, energy, and transportation sectors, along with a full-time Climate Advisor. Participating cities were provided with technical assistance for both identifying strategies with significant potential for reducing greenhouse gas reductions, as well as exploring ways to address issues pertaining to equity and environmental justice in their communities).

However, as with the other two-dozen cities across a diverse range of geographical locations and climate regions, political environments, community demographics, and other factors, the City of

Orlando's pathway toward equitable climate solutions would be shaped by the sustainability work done in the years predating this effort.

## Related Work To-Date

Under Orlando Mayor Buddy Dyer's leadership, the "Green Works Orlando" initiative was created in 2007 to advance sustainability, enhance residents' quality of life and wellbeing, generate diverse economic growth, and create equitable access to resources and services for the entire Orlando community. In its early years, the city adopted and updated Municipal Sustainability Operations and Community Sustainability Action Plans, developed a "Sustainability" chapter in the City's Municipal Code, and later became formalized as the City's first Office of Sustainability and Resilience.

City staff engaged the community in the development of each of these plans by creating a Task Force comprised of leaders from local businesses, institutions, and non-profits, and hosting focused roundtables, public forums, and online surveys. As a result of this feedback, the city established several ambitious mid-century goals, including a community-wide target to reduce greenhouse gas emissions by 90%, paired with related strategies to reduce electricity consumption by 20% through energy efficiency and power the city with 100% renewable energy.

To lead by example, the City of Orlando has participated in the U.S. Department of Energy's Better Buildings Challenge since 2014, retrofitting nearly 60 buildings across the city's portfolio, resulting in annual savings of nearly $2.5 million attributable to a 23% reduction in energy consumption (U.S. Department of Energy, 2022). Additionally, all new municipal construction projects are required to obtain a Leadership in Energy and Environmental Design (LEED) 'Silver' distinction or higher (City of Orlando n.d.). Finally, Orlando is transitioning all its buildings to clean energy sources through a combined approach of on-site and community solar (Castro et al. 2019).

To improve building energy efficiency across the community, the City has taken a multifaceted approach that includes programmatic, financing, and regulatory elements. Partnering with the local utility, Orlando Utilities Commission (OUC), the City has shared information and resources regarding home and business energy conservation, including available rebates and incentives, as well as opportunities to take part in community solar programs. Similarly, the city has collaborated with Solar United Neighbors, a solar co-op designed to provide both education about on-site photovoltaic (PV) installation and financing, as well as the option to pursue a lower-cost contract made possible through a bulk-purchase model.

To reduce the barrier of upfront capital required for household energy efficiency improvements, the city has supported the work of the Solar and Energy Loan Fund, a community development financial institution and non-profit that provides low-interest financing to low-to-moderate income residents who may not meet traditional qualification criteria. The City also enabled commercial and residential Property Assessed Clean Energy, a financing mechanism to pay for building improvements through their annual property taxes, in 2016.

Additionally, supported by the City Energy Project, the City passed the Building Energy and Water Efficiency Strategy, a policy that requires both municipal and the largest privately-owned commercial and multifamily buildings across Orlando to benchmark and publicly disclose their annual energy use. Beginning in 2020, lower-performing properties are also required to complete audits or retro-commissioning (City of Orlando 2023).

Throughout the development of these strategies, integrating social and racial equity considerations emerged as key area for growth. Beginning in 2017, City sustainability staff began to conduct research on equity metrics and indicators and developing environmentally just solutions. Staff also participated in various peer learning groups, such as the Urban Sustainability Director's Network (USDN) Equity Foundations program and hosted a monthly internal equity and sustainability training open to all city staff. The City of Orlando also hired its first Chief Equity Officer in 2020.

## Partnership and Funding

To support cities in the creation of equitable solutions, the Climate Challenge and their partner organizations offered a variety of peer learning opportunities. For example, the City of Orlando participated in the Energy Benchmarking and Equity learning cohort, a community of practice co-led by Kapwa Consulting, Institute for Market Transformation (IMT), and National Resource Defense Council (NRDC), who worked with cities to better understand how benchmarking policies intersect with equity issues and how to address these concerns in future policy efforts. The feedback garnered from this group resulted in the development of the "Incorporating Equity into Energy Benchmarking Requirements: Guidance for Policy and Program Practitioners," which emphasized the need for cities to engage in more strategic resident engagement and align policy goals with larger community needs and priorities (City Energy Project 2021).

The City also took part in the Building Performance Standards cohort, led by Building Electrification Institute, New Buildings Institute, Kapwa Consulting, IMT, and NRDC. This cohort's research and discussion topics included the role of building policy in advancing economic recovery and achieving energy efficiency goals while ensuring equitable outcomes. Participating cities were asked to explore foundational equity considerations, such as understanding racial or ethnic groups most impacted by inefficient buildings and to consider concurrent needs, such as provisions for tenant protections to avoid displacement and considering opportunities for often-under-resourced spaces such as schools and houses of worship. Findings from this effort were utilized in the creation of the USDN's "Building Performance Standards: A Framework for Equitable Policies to Address Existing Buildings" (2021).

Beyond the Climate Challenge, City staff also participated in the American Council for an Energy-Efficient Economy's (ACEEE) Energy Equity for Homeowners learning group, serving as a city advisor for the initiative's planning and resource development. Members of this group reviewed peer examples of residential programs, evaluated program effectiveness, and explored best practices in community engagement, which ultimately informed the scope and structure of future technical assistance opportunities (ACEEE 2024). A common theme of discussion that mirrored national trends, was the need for more granular and accurate equity data to better understand the needs of a community.

To this end, Greenlink Analytics and Upright Consulting Services partnered to launch the Greenlink Equity Map (GEM) and Process Guide, designed to "help residents, community organizations, city leaders and policymakers use equity data visualizations to build stronger city-community partnerships and design climate solutions." As one of the first cities to utilize this map, City of Orlando staff were able to select and layer more than 20 social, economic, and sustainability-related indicators, at the neighborhood/census tract level to better visualize and measure multi-factor equity issues, specifically energy burden (Welch 2020). In addition to the localized datasets and visualization capabilities included in the tool, in 2021 Greenlink Analytics also provided the City of Orlando with a report detailing the energy burden impacts over the six-year period from 2013 – 2019, and an updated version in 2023 (Greenlink Analytics 2023). Key findings included:

- Energy burdens in Orlando are 3.9% comparable to the national trends of 4.1%, though it is higher than the state, where average energy burden in Florida is 3.8%.
- The 5% most burdened tracts in the city had an energy burden of 9.8% in 2013 and 9.2% in 2019, indicating continuing levels of severe energy burdens in these neighborhoods across time. In 2019, 136,455 households faced high energy burden, while 71,500 households faced severe energy burden.
- Since energy burden is often co-related to other equity considerations, like healthcare access and race, cities, counties, and other organizations may be able to work across departments and agencies to share resources and develop solutions to several issues simultaneously.

These findings indicated the need to address energy burden as a top community concern, particularly in certain neighborhoods. Furthermore, when considered in conjunction with emerging lessons learned across peer cohorts and resources developed, these trends also revealed the need to take a more community-led (rather than informed) approach toward solution development.

### Engagement Framework and Goals

To better understand the community's lived experiences relation to the data, the City of Orlando embarked on a first of its kind partnership with Institute for Market Transformation (IMT) to employ a Community-Based Organization (CBO) to conduct community engagement around sustainable building strategies. In March 2021, IMT issued a Request for Proposals to "community-based organizations serving Orlando, FL communities to engage stakeholders, residents, and the City of Orlando in the development, implementation, and evaluation of a building performance standard (BPS) policy to ensure the passage of equitable and successful community solutions to energy efficiency challenges" (Institute for Market Transformation 2021). The goal of this collaboration was to co-develop and pass local equitable policies to improve energy efficiency in commercial buildings (including multifamily apartments, learning centers and daycares, retail, and strip-mall properties, etc.). In conjunction with Orlando and/or greater Orange County stakeholders and residents, the selected community-based organization will work toward the following objectives:

- Work to help us understand the community perspective on energy efficiency and other issues that residents experience because of poor construction and maintenance of rental and/or commercial business buildings;
- Ensure community priorities are accurately represented and, when possible, included in any draft programs or policy;
- Identify and vocalize community concerns, including possible unintended consequences;
- Assist in the development of solutions to produce a policy that reflects community priorities and full community engagement;
- Advocate with community in support of co-created policies and programs, including providing testimony at city council meetings when appropriate." (IMT 2021).

IMT led the selection process, evaluating five proposals alongside feedback from the City of Orlando. Criteria included alignment of communities represented with those experiencing energy burden (as reported in the GEM tool), work to-date, and strength of application. IMT selected Poder Latinx, an organization dedicated to building the political power of Latinx communities to engage on economic, immigration and environmental issues. "Many of Orlando's residents are struggling right now to pay their rent and their energy bills, particularly in the wake of the pandemic. We need to modernize our approach to energy efficiency and ensure all voices are heard as we take action to lower carbon emissions, lower energy costs, and create a more inclusive city," said Esteban Garces, Poder Latinx's Co-Executive Director, upon being selected as the community partner (Laney 2021).

The partnership kicked off in June 2021, with Orlando's Sustainability, Equity and Community Affairs offices each presenting an overview of their mission, goals, and efforts to-date, as well as Poder Latinx sharing a closer look at their mission, current objectives, and expectations for the project and partnership. As part of this orientation and project launch, city staff and the CBO separately used Rosa Gonzalez's "Spectrum of Community Engagement to Ownership" to evaluate the city's current community engagement posture to date (Gonzalez 2019). Perhaps not surprisingly, the city staff assigned higher scores on efforts to-date: while city staff felt current efforts scored a "3" (Involve) and sometimes a "4" (Collaborate), Poder Latinx ranked the City primarily as a "1" (Inform), at times being a "2" (Consult). This exercise alone highlighted the importance of establishing honest and open relationships with community leaders and being willing to listen and learn from their perspective. It revealed that while the city often took newly-developed initiatives to the community for feedback before implementation, the community was not asked to provide input on what initiatives to develop in the first place, and thus not fostering trust or focusing resources and capacity in the most effective ways. With additional funding from the Energy Foundation, the National Association for the Advancement of Colored People (NAACP)'s Orange County chapter was brought on as a second CBO to engage predominantly Black communities within Orlando city limits.

# Model for Collaboratively-Designed, Community-Driven Solutions

## Community Outreach: Part One

### Poder Latinx's community engagement from July 2021 - March 2022.

Beginning in summer of 2021, Poder Latinx (PL) began to reach out to residents in the specific neighborhoods identified in the GEM tool as experiencing high to severe energy burdens (6% or greater, and 10% or greater of income spent on utilities, respectively). They embarked on a series of community engagement efforts and utilized various forms of outreach to promote these opportunities, ranging from advertisements on Spanish media and social media, phone and text bank messages to over 10,000 contacts, and door-to-door canvassing, all of which was provided in both English and Spanish. PL conducted one-on-one engagements across several days at local grocery stores located in or near the high energy burden zip codes with predominantly Hispanic households. These interactions were designed to meet community members "where they are," addressing potential time or transportation constraints for providing feedback, as well as reaching a representative sample of residents. Seven community meetings were hosted throughout this period for more in-depth discussions. These meetings were hosted over the weekend to better meet the availability of participants and provided on-site childcare and meals. Additionally, all participants received a stipend to compensate them for their valuable time and insight.

*"My energy bills were so high because of my old AC unit. I informed my landlord that my bill was increasing too much and requested a new AC. They only came to clean it instead of replacing it, which was only a temporary solution and left me in the same situation." -Community member engaged by Poder Latinx*

These events culminated in a roundtable meeting with a goal to determine how the community's feedback would be incorporated into a summarized report with recommendations. (Note: All engaged community members were contacted in March 2022 to ensure that their feedback was properly addressed in the report.) As with outreach, all interactions were conducted by bilingual staff.

### Orange County Chapter of the NAACP's engagement from October 2021 – June 2022.

The local NAACP chapter conducted a series of one-on-one interactions and door-to-door surveys in the predominantly Black communities identified with high to severe energy burdens. This approach was taken to minimize barriers to participation and, like Poder Latinx's tabling, meet residents where they already are located. Throughout this outreach period, the NAACP team spoke with community members about their lived experiences with energy burden, asking how they would like to see their home and buildings within their neighborhoods perform.

*"I'm on a fixed income and I can't afford a rental increase. Will these repairs cause my rent payments to increase? My grandson is currently living with me, so I can afford to live in this location." -Community Member engaged by NAACP Orange County*

The NAACP Chapter summarized their findings in a report and presentation that included both general feedback and concerns, as well as recommendations provided directly by the community members.

## Results

Based on the qualitative responses garnered from community members by both CBOs, many similarities emerged in the feedback from residents. The following represent the top insights from the community members engaged. Residents were:

- Concerned that building related policies will increase rent without protections in place.
- Worried they would be excluded and left behind.

- Afraid of retaliation by landlords and skeptical they would be held accountable.
- Distrustful of government use of funds, particularly which communities would benefit from investments.
- Living in homes that were energy inefficient, uncomfortable, and unsafe, but still barely affordable.
- Unaware of various support programs available to them.

However, many residents expressed a desire for community involvement in designing and planning building policy and programs, with considerations given to the timing, location, and language spoken to ensure their participation was viable. Specific recommendations included:

- Centering equity as the main priority of a building policy and understanding potential unintended consequences.
- Reducing energy burden as main goal.
- Listening to communities before acting.
- Investing in energy efficiency and renewables in LMI and BIPOC communities.
- Engaging early as a critical step.
- Providing the utility analyses needed to shape and target building benchmarking and performance policy design.

## Internal Review and Planning

Poder Latinx and NAACP Orange County presented these findings and recommendations to City of Orlando Mayor Buddy Dyer and senior city leadership in March 2022, and later to OUC, followed by an Office of Sustainability and Resilience briefing on additional analysis conducted in tandem with this community engagement effort.

To explore the relationship of energy burden to residential building types, Greenlink Analytics subsequently completed a multifamily building stock assessment which revealed that most of the high-to-severe energy burdens occur within buildings that are 30,000 square feet or smaller. This finding was significant because it demonstrated that the building size threshold utilized in the city's benchmarking policy (50,000 square feet), selected for its potential emissions reductions, would not likely achieve substantial energy burden reduction. As such, this analysis highlighted the importance of understanding the built environment through the lens of energy equity to ensure communities with a higher need for efficiency improvements are not left behind from city policies and programs, nor face unintended consequences if brought under the fold of requirements to comply. Significantly, this analysis also revealed that only majority black communities experience severe energy burdens (>10%), while predominately-Hispanic communities see the highest number of households facing high (but not severe) energy burdens (>6%). White residents are the only race that does not experience high-to-severe energy burdens within the City of Orlando.

Upon the close of the Climate Challenge in June 2022, Orlando's Bloomberg Climate Advisor provided Mayor Dyer with four key recommendations to address energy burden across the community: (1) Establish a City (Interdepartmental) Equitable Building Performance Task Force; (2) Create a Stakeholder Equitable Building Performance Standard (EBPS) Task Force, under Clean Energy Green Buildings (CEBG) Subcommittee; (3) Facilitate robust end-to-end community engagement on EBPS; and (4) Establish priorities: data & analytics, program design, marketing, community engagement.

## Creating the Energy Burden Task Force

In August 2022, the City of Orlando's Office of Sustainability and Resilience launched an Energy Burden Task Forces comprised of representatives from various City departments whose work impacts and/or is impacted by energy burden in the community, including the Chief Equity Official, and members

of Planning, Future Ready, Economic Development, Housing and Community Development, Community Affairs, Communications and Neighborhood Relations, Hispanic Outreach and Local Assistance, Emergency Management, as well as OUC. The goals of this group were to:

1. Provide insight on policy and program solutions that can achieve equity, health, sustainability, and resilience goals related to buildings:
   a. Reduce greenhouse gas emissions in Orlando 90% by 2040 (Orlando's 2018 Community Action Plan).
   b. Alleviate high and severe energy burdens in disadvantaged communities.
   c. Increase resilience toward climate risks, with an emphasis on high heat and heat waves.
2. Respond to the community's key findings and recommendations. Provide mapping of City authority and other quasi-government authorities' ability to institute policies and programs that support energy burden mitigation.
3. Consider pathways to integrate solutions that reduce energy burden and increase resilience to urban heat throughout City operations, such as critical cooling during emergencies, tree canopy growth, and home weatherization.
4. Identify time-bound equity indicator goals for community review, including severe energy burden alleviation (e.g. consider needs beyond energy burden, such as workforce development and opportunities to retrofit and operate net zero energy buildings).
5. Continue to build trust with community groups through transparent and inclusive planning processes and co-created solutions.

Members met five times throughout the fall of 2022 and winter of 2023 to gain a shared understanding of energy burden rates and patterns within Orlando; evaluate existing policies, programs, and services relevant to reducing energy burden; and explore best practices and examples from peer jurisdictions. From there, Task Force members used the Johns Hopkins Bloomberg Center for Public Innovation's Innovation Training on human-centered design to frame the energy burden challenge within the local context, map key stakeholders to interview to gather qualitative data on residents' lived experience, and ultimately identify strategies and solutions to accelerate residential energy efficiency.

As noted by the Bloomberg Center for Public Innovation, "Human-centered design is an approach to creating a program, policy, service, or product that is tailored to the needs of the person(s) who will use or be impacted by it. [Human-centered design] is all about understanding the people you're serving…In fact, the people you're designing for are deeply involved in every step of creation — from the initial research into defining a problem, to creating solutions and then testing and implementing them" (Bloomberg Cities 2019).

Through a series of meetings and exercises, the Task Force developed the following problem frame:

> The problem is many city residents have very high energy bills in proportion to income, and this problem is worsening as the cost of energy and costs of living broadly keep rising.

> This is a problem for **low-to moderate income residents, [2] multicultural residents** whose communities experience higher rates of energy burden, and **renters.**

> This is a problem because these residents often cannot address the root causes of these financial strains, and sometimes must make difficult decisions around what necessities to prioritize. They often cannot afford or are not allowed to make energy efficiency improvements or know about available resources. Many programs are also not available for renters, and there is a lack of

---

[2] According to the U.S. Federal Reserve, under the CRA, the term *low- and moderate-income* refers to communities that in certain geographies that have income levels that fall between certain ranges, as determined by the Census Bureau. A low-income community means there is a median family income of less than 50 percent of the area median income. A moderate-income community means that the median family income is at least 50 percent and less than 80 percent of the area median income.

incentive for landlords to make upgrades. These residents continue to have large energy bills that limit them from saving money to improve their quality of life.

### *Community Outreach: Part Two*

Using the Bloomberg Center for Public Innovation's approach to conducting in-depth research, the Task Force's process included 1) stakeholder mapping, 2) developing an interview guide with thoughtful questions designed to prioritize the participant's lived experience, and 3) devising a detailed plan for how interviewees will be recruited and on what timeline. Applying this problem frame to their specific expertise and area of work in the city, members mapped various groups of stakeholders across the three key audience areas within the Orlando and Central Florida community whose members could provide valuable insight toward further understanding potential energy burden solutions.

From these recommendations, Task Force members conducted 25 interviews of residents who identified as experiencing or having experienced energy burden, and service providers who assist residents in need with either paying their utility bills, making improvements to their homes, or pursuing other avenues to reduce their energy use. These interviews were one-on-one with key contacts, or in some cases two representatives from an organization who worked closely together in this space.

The four key elements of each interview are to Define Purpose, Create Comfort, Understand Experience and then Wrap-Up (Sylver 2022). Each interview was led by a single city staff member of the Task Force, with a goal to have two-to-four additional participants there to listen only and take robust notes.

### *Community Outreach: Part Three*

The City of Orlando also hosted two community forums on the Energy Efficiency Conservation Block Grant program in fall 2023. These workshops were designed to engage community and nonprofit leaders by sharing insight on energy burden and the city's efforts with potential partners; exploring energy burden challenges and opportunities broadly; brainstorming and collaborating on short- and long-term strategies for success; and identifying funding priorities of the community for the program. At these events, registration was required, and breakfast was provided. Spanish translation was available, however other languages prevalent in the region, such as Haitian Creole, Portuguese, and Vietnamese were not yet accommodated. Both were held in-person during morning business hours, as they were designed to engage professionals working with energy burdened residents through their respective agencies and organizations, and both were held in City-owned neighborhood centers located within communities with high rates of energy burden, where ample free parking and access by other modes of transit existed, albeit wide-ranging transit reliability and access barriers impact the city and region at large. Across these two two-hour workshops, 22 people were engaged.

## Findings

These one-on-one conversations both supported insights previously gathered from secondary resources, and critically provided a deeper understanding of the lived experiences Orlando residents endure in regarding energy burden. Key themes and takeaways include:

**Trust – in information, in utility service providers, and in government – is at best tentative, and at worst altogether lacking.** Whether there is skepticism in the message, the messenger, or both, distrust of programs, resources and agencies is a barrier to participation and spreading of misinformation. Local governments need to reckon with the reality of historic injustices impacting residents right now and embrace the discomfort of acknowledging the distrust that exists. They need to interrogate the ways services and programs do not deliver equally or with priority to communities facing decades of disinvestment. They need to be open to critical feedback and respond accordingly.

**Fear is a real and pervasive barrier.** Whether fear of retaliation by a landlord in the form of fees or rent increases when requesting home improvements, to undocumented immigrants concerned

about the repercussions to asking for help, fear holds many residents back from even seeking the support of programs intended to close inefficiency gaps.

**Acknowledgement and valuation of the power of community leaders must be elevated.** They are essential to legitimize programs and bring lasting solutions. These leaders need to be supported and compensated, and they should define the support needed to succeed.

**Punitive policies perpetuate existing injustices.** Utility deposits were cited as an initial hurdle, which many payment assistance programs do not cover. Interviewees also noted that eligibility for payment assistance programs sometimes required going past-due on a bill. Unfortunately, delays in approval could lead to a shut off, which then incurred late fees and potential reconnection costs, compounding the overall expense, and limiting the benefit to the assistance provided. Additionally, those straddling a low-to-moderate-income status may not qualify for support, but this rejection could be a lynchpin to the problem growing larger and more complex overtime. Instead, since such programs provide only temporary relief and do not address root causes driving high energy bills and an inability to pay, those seeking this assistance should be the first to receive tailored guidance and support.

**Marketing and outreach efforts continue to miss opportunities on culturally-relevant mediums and exclude non-English speakers.** Literacy is also an issue, as well as using jargon that can be confusing or exclusive. In addition to making messaging simple and available in multiple languages, interviews highlighted the platforms resonate most with various communities. It was suggested that a letter, showing respect and formality, would be a powerful method to reach Haitian-Creole residents, which they may reshare important tips across WhatsApp ads and information on Spanish radio and television channels should be part of any strategy intending to reach Hispanic communities. Short YouTube videos can be effective, but multiple conversations suggested residents in their service populations were unlikely to follow government social media accounts.

**Success will be sustained when paired with wraparound services, like financial literacy education.** Financial challenges remain as a key limitation toward experiencing the full potential savings across many energy efficiency programs. While various organizations have espoused the practice of braiding resources to maximize their reach and impact, the provision of additional complementary support services that equip residents with knowledge and tools for setting and managing a budget, understanding and accessing other assistance programs, and providing connections to opportunities that can lead to income growth could further contribute to a more profound and lasting quality of life improvement. Additionally, behavioral energy conservation education should remain a critical component, particularly for residents who are less familiar with new or more effective appliances.

**Inefficient housing can be a life-or-death issue in a warming world.** According to the Centers for Disease Control and Prevention, heat has been the number-one weather-related killer in the United States, on average, over the last 30 years. The warmest eight years on record have all occurred since 2015, with July 2023 as the hottest month on record. Scientists attribute the frequency and intensity of these heat waves to human-caused climate change due to rising carbon emissions (EPA 2023; NASA 2023). Extreme heat has a disproportionate effect on residents of low-income areas, the elderly, and outdoor workers. Multiple interviewees shared personal anecdotes of friends or family needing to relocate due to a home without adequate cooling. One service provider who was interviewed described pivoting quickly in the summer of 2023 to open more space to combat the heat, provide ice and water, and mobilize other area agencies and partners to develop a coordinated response to the dangerously hot climate that is increasing in Florida each year**.** Agencies that provide or promote community resources must consider digital access and literacy for seniors, as well as program eligibility for various types of residents to provide expanded opportunity for reducing energy costs. Elderly residents who are medically vulnerable often turn to 911 for support during a power outage or even if their power is shut off due to delinquent payments. These residents face quite literally life or death consequences; identifying them and prioritizing resilience retrofits could save lives.

**Understanding the building stock of energy burdened communities is critical.** Size thresholds are utilized in building benchmarking and/or performance standard policies are often designed to drive decarbonization. As such, the strategy for the City's BEWES ordinance focused on larger buildings that

were only 4% of all buildings in the city but represented 50% of total covered building space; yet, the additional energy burden analyses revealed that most multifamily structures in energy burdened communities in Orlando are 30,000 square feet or smaller. To design a more equitable building policy, City staff must incorporate those buildings to ensure these communities are not left out of the intended benefit, as well as identify and work to mitigate potential unintended consequences, like increased rent that could displace residents.

Specific to **resource accessibility**, like utility home assessments and retrofit programs, rebates, or federally funded programs like the Low-Income Home Energy Assistance Program (LIHEAP) and Weatherization Assistance Program (WAP) administered at the county level, several common challenges emerged, including:

**Program participation eligibility criteria was prohibitive for some who needed help the most.** A resident who may be suffering from extremely high energy bills is more likely to fall behind on payments, but this would make them ineligible for certain programs until they are in good standing. Reassessing either eligibility criteria, or service protocol across agencies and organizations could help connect residents to immediate bill payment assistance resources in tandem with scheduling the next steps for a home energy assessment.

**Applications present numerous challenges, including the terminology and language used, as well as complexity or format.** Language proficiency and literacy level can present a barrier as some materials are presented only in English or include jargon that may not be well-understood by the general public. Additionally, some programs require a phone call to request a paper application or use a webform in English to request a customer service call-back to schedule. Considering that access to high-speed internet (the digital divide) may be a limitation for some applicants, including those who may lack an email or other identifying credentials, applications that are available in multiple formats would ensure additional accessibility for these programs.

**Taking advantage of programs and resources requires scheduling flexibility and the ability to wait for upgrades.** When scheduling a home energy assessment, the next available appointment may be several weeks away, with additional time needed for improvements to be implemented. This lead time of weeks-to-months can be prohibitive for households facing a high energy burden who need immediate relief and may have to choose between paying for power and water, medicines for ill family members, or putting food on the table. Additionally, the homeowner or tenant must often be available for a window of time for the auditor to arrive (for example, "sometime between 8am and noon"), which are primarily offered during traditional business hours from Monday through Friday. For low-income families who may be juggling multiple jobs and responsibilities, lack remote work options, and/or simply do not have several hours to dedicate to a one-hour assessment, evening and/or weekend options, along with a more specific appointment time, would greatly enhance the accessibility of these programs.

**Many lack the capital upfront to make improvements, and interest free payments spread out over multiple bills may still too much even after energy savings.** For residents struggling with high utility bills, the ability to save for the future or larger purchases is not viable, and sometimes difficult choices over what expenses – all essential – can be covered in each month is required. For some customers, absolute bill reduction is needed as soon as possible. For those eligible for various programs and resources, the out-of-pocket costs may be unmanageable even with a short return on investment. For others still who may not be able to utilize such programs, appliance changes are usually made from necessity when something fails, rather than a voluntary upgrade for a newer, more efficient model. This also presents limitations in taking advantage of rebates.

**The landlord/tenant dynamic creates a split incentive to make property improvements.** Renters whose inefficient homes could be improved by retrofits are often unable to pursue them unless their landlord is willing to make the necessary investment. Some interviewees also cited a sentiment of some "waiting for a windfall" when given an attractive offer to sell their property/ies to a developer. Objectively this circumstance was identified in initial research, but interviews highlighted the extent to which some tenants' requests are ignored and/or they are fearful to ask for repairs or updates for fear of rent increase or other retaliatory actions. Without better incentives and/or regulations that require

upgrades, renters are often forced to live in inefficient housing and pay resulting high utility bills.

## What Do We Think This Means?

Reducing energy burden and improving quality of life for residents – from the comfort and safety of their home and lower energy bills that stretch incomes further, to the shared economic development and resilience of a decarbonized community – requires a strategy as multi-faceted as the issue of energy burden itself. This approach must first be concentrated in communities with the highest need, being mindful of the connection to the host of health, wealth and environmental challenges faced. Additionally, since one of the most significant barriers to community engagement is distrust in organizations who offer and deliver efficiency resources, cultivating partnerships with trusted community representatives is key to maximize the potential of existing programs and ensure they're reaching residents who stand to benefit the most from home upgrades. Finally, specific strategies and suggested actions for the City of Orlando, informed by this outreach, will be reflected in a forthcoming Energy Burden Task Force report.

# Limitations, Key Takeaways, Future Work, & Conclusion

### *Limitations and Lessons Learned: What We Would Do Differently*

Based on the City of Orlando's experience, we provide the following three primary recommendations to peers pursuing collaboratively designed solutions are to:

**Balance a focused approach with flexibility and let the scope evolve.** When embarking on the CBO partnership alongside IMT, the initial focus was community engagement on a building performance standard (BPS). That specific initiative served as a launchpad for wider interrogation around building efficiency and the more personal impacts experienced by residents. We wanted to engage end users to understand their needs to inform the design of an equitable building policy. Along the way, we learned important ways a BPS would and would not address the most pressing challenges in their daily lives, and in some cases might exacerbate them.

**Acquire and allocate resources to multiple community partners whenever possible.** Initially we only had funding for one community-based organization partner through the American Cities Climate Challenge. We fortunately received some additional funding a few months later to bring on another CBO and did a second round of onboarding, introduction to key stakeholders, and advisement. This may be outside of your control, and it's always better to start somewhere, but if it's possibly to employ a few community leaders in tandem, the added value of that shared learning and collaboration of community partners is invaluable.

**Be practical with the timeline.** Aside from logistical complications due to the COVID-19 pandemic, which certainly provided a unique disruption, our initial timeline was overly ambitious. The terms of the collaboration allowed six months for project kickoff and initiation, planning, implementation, and reporting. There is a clear need for urgent action, but taking time to set realistic expectations will ensure that this action is as impactful and sustainable as possible.

### *Key Takeaways: What We Would Suggest to Other Communities*

When embarking on energy equity work, the foundational first step is to better understand the extent of local energy burdens and the communities most impacted by them.  By conducting an energy burden analysis, city staff can explore the various factors related to energy burden in your community, including the potential for cross-analyses with other relevant datasets to deepen understanding regarding the systemic nature of this issue, as well as observe the changes over time in terms of access and utilization. From these results, city staff can identify both the specific residents most in need and begin to consider the potential organizations and leaders who can most effectively reach those residents, positioning your organization to advocate for the necessary resources to engage residents in collaborative solution design.

More universal recommendations on how to innovate around entrenched social, economic and/or environmental challenges growing the inequities in your local jurisdiction include:

**Direct empowerment of CBOs is key.** When hiring a community partner(s), compensation for their time and output should be a given. Their expertise and relationships are invaluable; defer to their knowledge and connections in pursuit of a shared goal, rather than aim to drive their approach or product. Trusting the process and people will lead to the most revealing results.

**Anticipate reluctance internally.** A lack of familiarity with emerging trends in the public sector, and an inherent discomfort with change are not unique to any community. Just as the intent is to meet residents where they are, challenging peer staff should be done with some acceptance of differing priorities and perspectives across departments and agencies within the same organization. KPIs may vary, but lean on the shared mission of your municipality, and do not be discouraged if some progress faster than others in embracing a human-centered strategy.

**This work takes people, power, and patience.** Local governments, even those working to develop and deploy innovative approaches to service design and delivery, are still beholden to protocols, budget limitations and staff constraints. It takes time to identify and connect with residents, build trust, and leverage the lived experience insights into cohesive solutions, but the most lasting and impactful interventions require that connection.

**Be willing to confront the uncomfortable, listen and learn.** Your lack of authenticity will show quickly if your community engagement is to check a box on the number of meetings held or people you talked with. One of the most powerful moments in Orlando's early partnership with Poder Latinx, was breakout groups for city government to self-rate themselves on Rosa Gonzalez's Spectrum of Community Engagement, and for the CBO to rank the city from their vantage. Unsurprisingly, City staff ranked themselves higher in the genuineness, effectiveness, and breadth of community engagement, but getting feedback on existing or already designed programs, is not the same as entrusting the voices of the community to inform whether a program, or something else, is needed, and if so, the best shape it should take. This friction is where progress takes shape, trust can begin to develop, and innovation leads.

## *Future Work & Next Steps: What We Plan to Do Next*

In 2024, the City of Orlando will be launching a new **energy burden reduction pilot program** in partnership with the Homeless Services Network and Orlando Utilities Commission. This pilot focuses on lowest barrier affordable housing units and will retrofit three units within a landlord's portfolio to measure energy savings as well as the resulting cost savings to tenants. The pilot would involve upgrades to the two highest consuming appliances – a heat pump, with bypass of existing infrastructure where possible, and window air conditioning unit - aiming to reduce utility bills while improving efficiency and occupant comfort. Tenants will also receive a toolkit containing LED lightbulbs and faucet aerators to further reduce energy and water consumption for resource conservation and financial savings. A small scale, portable solar installation will also be piloted where suitable. In addition to providing immediate benefit to the participants, the intent is to inform a scalable solution designed specifically for renters who could bypass the landlord and make changes directly. It will also inform opportunities for additional incentives, such as a rebate for window air conditioning units which are prevalent throughout many Orlando neighborhoods. The pilot is a pragmatic approach to deliver quick improvements that can be rapidly deployed through federally funded opportunities, circumventing some of the challenges tenants often face, and in the meantime of more robust policy changes or programs to compel investments in building upgrades.

Also in 2024, the **Energy Burden Task Force will publish a report of findings and identified strategies for a holistic approach to reduce energy burden**. Two of the foundational elements of the Task Force's work, were to identify all existing funding streams and resources pertaining to residential energy efficiency and establish an understanding of how these programs do (and don't) work together, including opportunities to stack resources or fill gaps in offerings; as well as address barriers to participation in these existing programs. The report will offer a systematic approach to synergize

resources across partners, optimize programs for maximum eligibility and impact, and innovate around persisting challenges to access and implementation.

Lastly, the pursuit of **state, federal and private funding opportunities** will be critical to accelerate work and scale programs, especially considering some residential energy resources that were refused at the state level. Orlando qualifies for formula funding through the Department of Energy's Energy Efficiency Conservation Block Grant program, with the intent to use these funds for community facing energy efficiency retrofits and will continually seek out other avenues for acquiring and deploying dollars in Justice40 communities.

### Conclusion: Where We Hope this Will Lead & Why All of This Matters

Fundamentally, the goal of this work is to systemically reduce energy burden in Orlando, cutting it at least in half by the end of this decade. In so doing, we want to see an improved quality of life for our most vulnerable residents; for them to be more resilient to shocks and stressors driven by climate change as well as other socio-economic limitations. To that end, we hope this will lead to upward economic mobility: that, as residents see lower utility bills, they might be able to save toward things that can open doors to new career opportunities and wealth.

Equity, sustainability, and resilience work best when considered and pursued in tandem. With established equity indicators, like households served and reduction in energy burdened households, emissions reduction and resource conservation are also achieved. By focusing on upgrades that can increase efficiency, improve building performance, improve thermal comfort and indoor air quality, and strengthen a building's envelope against the elements, resilience is increased while delivering results that people feel directly in their pockets. In prioritizing outcomes that support quality of life for vulnerable populations, there is a net environmental benefit. An environment-first lens might identify strategic pathways for the most effective climate action, but in turn it may leave behind those impacted first and worst by a changing climate, deepening existing disparities resulting from historical injustices. hen the foundations of the household are strengthened, with an eye toward efficiency first and lasting demand management, this naturally becomes a powerful strategy for greenhouse gas reduction and community-wide decarbonization.

## References

American Council for an Energy Efficient Economy. 2024. "Energy Equity". https://www.aceee.org/topic/energy-equity.

Aurand, A., D. Emmanuel, E. Foley, M. Clarke, I. Rafi, and D. Yentel. 2023. *The Gap: A shortage of affordable homes*. Washington, DC: National Low Incoming Housing Coalition. https://nlihc.org/gap

Baik, S., J.F. Hines, & J. Sim. 2023. "Racial disparities in the energy burden beyond socio-economic inequality." *Energy Economics 127*: 107098

Berelson, S. 2014. Myths of low-income energy efficiency programs: implications for outreach. In *ACEEE Summer Study on Energy Efficiency in Buildings*.

Bloomberg Cities. 2019. "Explainer: What Is 'Human-centered Design'?" https://bloombergcities.jhu.edu/ news/explainer-what-human-centered-design.

Brown, M. A., A. Soni,, M.V. Lapsa, & K. Southworth. 2020. *Low-Income Energy Affordability: Conclusions From a Literature Review*.

Castro, C., B.C. Sellers, M. Cox, L LaHiff, S. Choi, J. Fenton, and M. Omans. 2019. *Orlando Renewable and Resilient Roadmap*.

City Energy Project. 2021. *Incorporating Equity into Energy Benchmarking Requirements: Guidance for Policy and Program Practitioners*. https://www.cityenergyproject.org/wp-content/uploads/2021/04/CEP_Incorporating_Equity_Into_Energy_Benchmarking_Requirements.pdf

City of Orlando. 2023. "Office of Sustainability & Resilience". https://www.orlando.gov/greenworks

Fache, A. & M. Bhat. 2023. "Temperature Sensitive Electricity Demand and Policy Implications for Energy Transition: A Case Study of Florida, USA." *Frontiers in Sustainable Energy Policy 2*: 1271035.

Federal Reserve. 2023.Community Reinvestment Act (CRA). https://www.federalreserve.gov/consumerscommunities/cra_resources.htm

Gonzalez, R. 2019. *The Spectrum of Community Engagement to Ownership.* Facilitating Power. https://movementstrategy.org/wp-content/uploads/2021/08/The-Spectrum-of-Community-Engagement-to-Ownership.pdf

Greenlink Analytics. 2023. Energy Burden Impacts - Florida in Focus: Impacts of Energy Burden for Orlando. https://www.equitymap.org/_files/ugd/4aef44_2928e785bba240d0bc858ea96eb7584c.pdf

HelpAdvisor 2023. "The Average American Household Spends More Than $1,000 a Month on Groceries." https://www.helpadvisor.com/community-health/cost-of-groceries-report

Institute for Market Transformation. 2021. *Request for Proposals: Orlando/Greater Orlando County BPS Community Engagement.* https://www.imt.org/wp-content/uploads/2021/03/RFP_OrlandoCommunityEngagement_March.17.2021.pdf

Jessel, S., S. Sawyer, & D. Hernández. 2019. "Energy, Poverty, and Health in Climate Change: A Comprehensive Review of an Emerging Literature." *Frontiers in Public Health 7*: 357.

Kontokosta, C.E., V.J. Reina, and B. Bonczak. (2020). "Energy Cost Burdens for Low-income and Minority Households: Evidence from Energy Benchmarking and Audit Data in Five US Cities." *Journal of the American Planning Association 86*, no. 1: 89-105.

Laney, A. 2021. "Poder Latinx Selected to Give Orlando Residents Voice in Sustainable Building Strategies". Institute for Market Transformation (blog). https://www.imt.org/news/poder-latinx-selected-to-give-orlando-residents-voice-in-sustainable-building-strategies/

Massachusetts Institute of Technology Living Wage Calculator. "Living Wage Calculation for Florida." Accessed May 29, 2024. https://livingwage.mit.edu/states/12.

Maxim, A. & E. Grubert. 2022. "Anticipating Climate-related Changes to Residential Energy Burden in the United States: Advance Planning for Equity and Resilience." *Environmental Justice 15*, no. 3: 139-148.

National Aeronautics and Space Administration. 2023. "NASA Clock ls July 2023 as Hottest Month on Record Ever Since 1880. https://www.nasa.gov/news-release/nasa-clocks-july-2023-as-hottest-month-on-record-ever-since-1880/

Orlando Economic Partnership. 2023. "Orlando Prosperity Scorecard: Access: Cost Burdened Households." https://orlando.org/l/orlando-prosperity-scorecard-cost-burdened-households%20/

Reames, T.G., D.M. Daley, & J.C. Pierce. 2021. "Exploring the Nexus of Energy Burden, Social Capital, and Environmental Quality in Shaping Health in US Counties." *International Journal of Environmental Research and Public Health 18*, no. 2: 620.

Sylver, B. 2022. "Build an Interview Guide." (webinar from Centre for Public Impact, Evanston, IL). https://www.youtube.com/watch?v=ajIrRh_inAw.

Urban Sustainability Directors Network. 2021. *Building Performance Standards: A Framework for Equitable Policies to Address Existing Buildings.* https://www.usdn.org/uploads/cms/documents/bps-framework_july-2021_final.pdf

U.S. Bureau of Labor Statistics. "May 2020 State Occupational Employment and Wage Estimates: Florida." https://www.bls.gov/oes/current/oes_36740.htm#35-0000.

U.S. Census Bureau. 2022. "QuickFacts Orlando city, Florida." https://www.census.gov/quickfacts/fact/table/orlandocityflorida/PST045223

U.S. Department of Energy. 2022. "Partner Profile: Orlando, FL". Better Buildings Initiative. https://betterbuildingssolutioncenter.energy.gov/partners/orlando-fl

U.S. Energy Information Administration. 2022. "Electric Sales, Revenue, and Average Price". https://www.eia.gov/electricity/sales_revenue_price/

U.S. Environmental Protection Agency. 2023. "Climate Change Indicators: Heat Related Deaths." https://www.epa.gov/climate-indicators/climate-change-indicators-heat-related-deaths

Welch, K. 2020. "Greenlink Equity Map Provides Data Resources to Build Equitable Climate Solutions". Kresge Foundation. https://kresge.org/news-views/greenlink-equity-map-provides-data-resources-to-build-equitable-climate-solutions/