Community Energy, Energy Burden, and Affordability: Evidence from Houston

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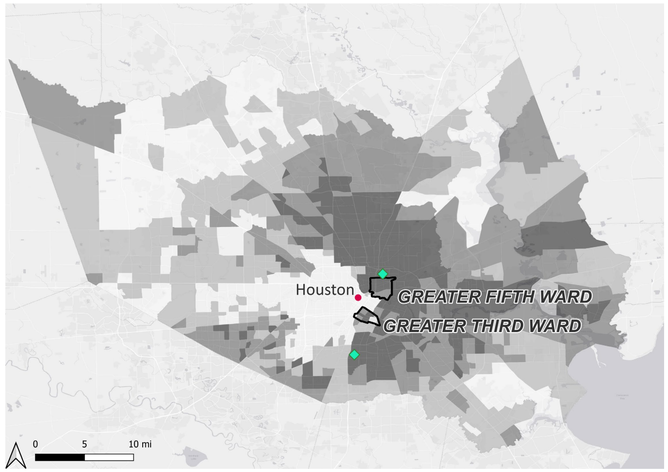
I. Motivation and Background

Rising energy costs and increasing household **energy burden** have intensified **affordability** concerns particularly for the most vulnerable. **Community energy** projects (e.g. community solar, resilience hubs, energy efficiency programs) emerge as a possible solutions.

- Houston
- Cancelled Community Solar Projects
- Neighborhoods: Greater Third and Fifth Wards

Energy Burden (percentile)
0 - 0.19
0.19 - 0.41
0.41 - 0.66
0.66 - 0.99



- High climate exposure
- Recurring grid disruptions
- Substantial income inequality
- Central role in energy system

II. Objectives

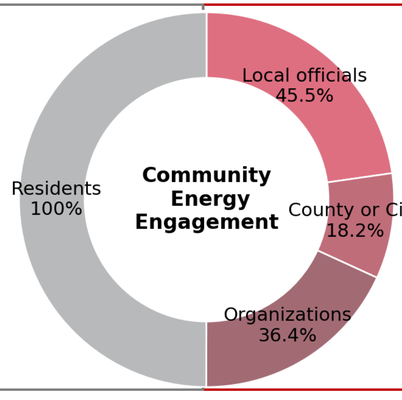
Collect evidence on how **community-based energy projects:**

1. Are **perceived by residents**?
2. Interact with existing **institutional structures**?
3. Impact or reduce **energy burden** in **vulnerable communities**?

Surveys

September 2025

Ntx=1,500;
Nhou=240



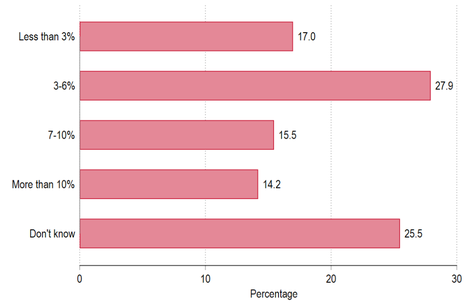
Interviews

May-August 2025

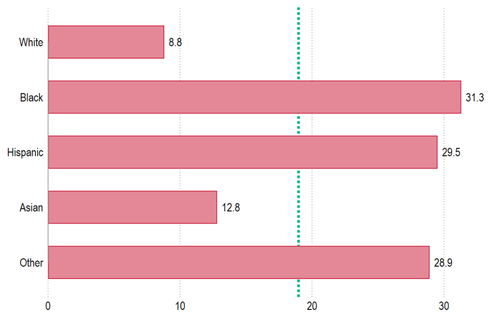
N=11

III. Survey and Interview Results

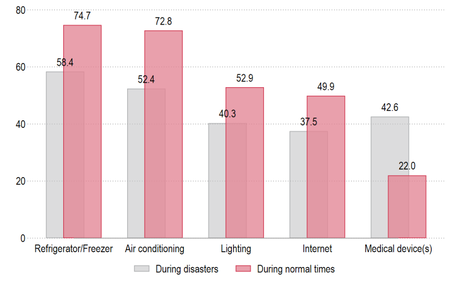
Energy bills & burden:
45% pay more than $200 per month for electricity while **30% spend 7% or more of their household income on summer electricity**—> the high-burden threshold.



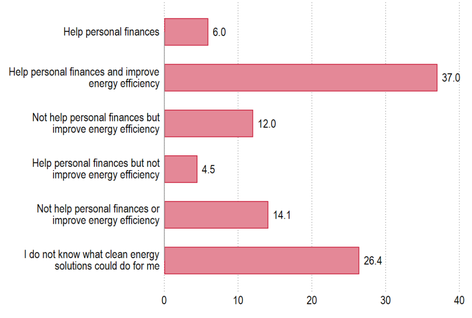
Affordability:
40% struggled to pay energy bills, especially minorities forced to choose between paying their electric bills and necessities like food, medicine, or rent.



Disaster vs. normal times:
Consistent with surveys. **Needs change during disasters** particularly for elder and disabled.



Education & outreach gap:
for clean energy solutions and for interventions. For residents but also for local authorities.



Stakeholder Interview Highlights

- Pros and cons of community energy projects were outlined (map ◆)
- There are barriers to energy solutions success and to resilience;
- Potential project sites were identified (by churches, schools, NGOs)
- Energy needs are community specific
- Stakeholder mapping and project partners were identified
- Provided new and supplementary data sources (cooling centers)

IV. Findings

- **Energy burden disproportionately affects vulnerable households** —Black, Hispanic, low-income, food insecure, elderly, and disabled, gentrifying areas— who report higher bills and greater exposure to extreme heat.
- **Information gaps persist.** Younger and Hispanic residents are less aware of programs like cooling centers and community solar, despite strong support for affordability and efficiency policies.
- **Institutional coordination is limited.** Community organizations and agencies report weak long-term coordination and limited system-level alignment, reducing program effectiveness.
- **Legal alignment matters.** County authority must better align with indirect mechanisms for microgrid implementation and outreach.
- **Water is a parallel concern**, signaling broader utility affordability challenges.

V. Conclusion

Affordability extends beyond rates. Energy burden is a matter of policy design, information access, and institutional capacity — not just prices.

- **Targeted design principles can improve impact**, especially in high-risk urban areas.
- **Electricity affordability policies have broad appeal**, benefiting households across partisan and socio-demographic groups**.**
- Further steps include securing strategic collaborations for solar project deployment