Emerging Approaches to Neighborhood-Scale Decarbonization

Emily Sims, American Council for an Energy-Efficient Economy

ABSTRACT

There is a need for innovative, locally led approaches to decarbonization projects that cut across silos, help scale and accelerate decarbonization, and ensure equitable distribution of benefits. This research identifies examples of these approaches in practice with recommendations for how they can be applied by policymakers in various policy and regulatory contexts, with communities at the center.

In this paper, we highlight three examples of neighborhood-scale decarbonization, with a focus on disadvantaged communities. Through conversations with local stakeholders and subject-matter experts, we outline key elements of emerging practices. We identify the community engagement strategies, financing strategies, and enabling policies that helped these projects succeed and could be leveraged by other local governments. Additionally, we examine project impacts including job opportunities, energy savings, and increased resilience.

The goal of this paper is to offer a synthesis of promising approaches that can be applied by communities and policymakers in other settings. By exploring emerging approaches to building decarbonization at the neighborhood scale, we aim to highlight strategies for financing and developing projects that deliver measurable community benefits.

Introduction

The rapid pace of climate change necessitates an acceleration of the decarbonization transition, with an approach that prioritizes the communities with the highest energy burdens. While many efforts are underway to electrify buildings, these efforts are generally scattered across cities or utility territories. This patchwork approach does not address barriers to decommissioning gas infrastructure, and the upfront costs associated with these retrofits often make them more accessible to higher-income households, meaning low- and moderate-income (LMI) households may not be able to access the benefits of electrification in the absence of supportive policies (Fadali et al. 2024). As a greater number of higher-income households transition off the gas system, households still reliant on fossil fuels may face higher bills, increasing the energy burden experienced by LMI households who may not be able to afford electrification (Cina-Sklar and Jessel 2026).

Policymakers can achieve greater, more equitable impacts at a quicker rate by taking a coordinated approach to decarbonization with communities at the center. Neighborhood-scale decarbonization was defined by the Building Decarbonization Coalition (BDC) in partnership with Gridworks as a gas transition strategy that involves decarbonizing and electrifying streets, developments, or neighborhoods (George Bagdanov et al. 2023). Recent literature further emphasizes that neighborhood-scale decarbonization should be implemented holistically to deliver public health and housing justice benefits in addition to emissions reductions (Cina-Sklar and Jessel 2026).

Building on this literature, this paper synthesizes emerging approaches to neighborhood-scale decarbonization. We focus on projects that enable gas line decommissioning. We draw on

three examples of this approach in practice, identifying lessons learned to inform the replication of these approaches by policymakers and communities in a range of policy and regulatory contexts. We then outline key factors that can help neighborhood-scale decarbonization projects succeed, including community engagement, financing strategies, and enabling policies. Through this work, we aim to equip policymakers with tools to approach neighborhood-scale decarbonization in future project locations.

Examples of Neighborhood-Scale Decarbonization in Practice

To illustrate the principles of neighborhood-scale decarbonization in practice, we highlight three projects currently underway. These examples draw on case-study research conducted for ACEEE by master's students at Columbia University, which included stakeholder interviews and literature research (Avila et al. 2025). Through a combination of this work and additional interviews and research conducted by ACEEE, we highlight projects in Ann Arbor, Michigan; Framingham, Massachusetts; and Ithaca, New York.

These case studies involve plans for transitioning neighborhoods off the gas system through development of thermal energy networks (TENs). TENs are one of two main technological approaches to neighborhood-scale decarbonization, the other being an electric network, where electric appliances are connected to the electric grid (George Bagdanov et al. 2023). While there are multiple types of TENs, which power ground-source heat pumps in buildings, one type of TEN is a geothermal network, featured in the case studies here. We have chosen the three case studies because all are currently underway and can showcase early learnings. These examples include a local government-led project (Ann Arbor) and two utility-led projects (Framingham and Ithaca).

Ann Arbor, Michigan

Background. The Bryant Neighborhood Decarbonization Project is a building retrofit and geothermal energy network project located in the Bryant neighborhood of Ann Arbor, Michigan. This neighborhood is primarily a low- to moderate-income community, and it was selected for the decarbonization project by the City of Ann Arbor through its A²ZERO Carbon Neutrality Plan, which prioritizes decarbonization in energy-burdened and vulnerable neighborhoods in progressing towards the city's 2030 net-zero emissions target (Avila et al. 2025; City of Ann Arbor 2025).

Project details and outcomes. The Bryant Neighborhood Decarbonization Project, which began in 2021, has included whole-home energy retrofits, such as health and safety upgrades, weatherization, energy efficiency measures, electrification, and rooftop solar installations (Avila et al. 2025; BDC 2025). As of the end of 2025, the project has retrofitted 61 homes, and gas appliances have been replaced with electric appliances in most of the homes (Avila et al. 2025). Additionally, seven of the homes have added solar. Forty additional homes are enrolled for the next round of retrofits (Avila et al. 2025).

In 2024, the project began planning and fieldwork for the geothermal network in the Bryant neighborhood, which will fully replace any remaining gas appliances and connect to more than 260 homes. In combination with the energy efficiency and electrification upgrades, the

geothermal network is expected to result in a 77% reduction in neighborhood households' energy bills (BDC 2025).

Community engagement. Early in the project design, the City of Ann Arbor's Office of Sustainability and Innovations partnered with the Washtenaw County Community Action Network (CAN), a nonprofit addressing poverty and expanding opportunity in under-resourced communities in Washtenaw County, Michigan. Bryant is one of the seven neighborhoods where CAN operates, and CAN had existing relationships and trust with the community (Avila et al. 2025). CAN led community engagement in the Bryant neighborhood, engaging with individual households and supporting residents in selecting appliances for the building retrofits (D. Miller, executive director, CAN, pers. comm., May 19, 2026). In planning for the geothermal network, CAN and city staff engaged residents for one year, sharing information through community events and engaging residents in community design charrettes for the geothermal network (BDC 2025).

Financing. In 2022, Ann Arbor residents voted to pass the Community Climate Action Millage, which provided funding for climate work under the city's A²ZERO Carbon Neutrality Plan (City of Ann Arbor 2026). The millage enabled the city to dedicate staff resources to the Bryant neighborhood project. State funding from the Michigan State Housing Development Authority and the Michigan Public Service Commission provided financing for home energy retrofits for the project (Avila et al. 2025). Ann Arbor also received funding for the project from philanthropic organizations, including the McKnight Foundation. Planning for the geothermal network was funded by a U.S. Department of Energy (DOE) planning grant in 2024, after which Ann Arbor received a DOE Community Geothermal Grant for design and construction of the geothermal network (DOE 2026).

Ownership model. Michigan law allows municipalities to own and operate utilities. The City of Ann Arbor established a Sustainable Energy Utility, which will own and operate the geothermal network (BDC 2025). The Sustainable Energy Utility makes the geothermal network resource community owned, which represents an innovation from traditional utility systems owned by investor-owned utilities and provides an important model for neighborhood-scale decarbonization projects.

Framingham, Massachusetts

Background. In Framingham, Massachusetts, Eversource Energy launched a Networked Geothermal Pilot in 2024. The thermal energy network replaced gas pipelines and serves 135 customers, including some low- and moderate-income customers, multifamily affordable housing buildings, single-family homes, and commercial buildings (McKenna 2024).

Project details and outcomes. Pilots for TENs were first proposed to Massachusetts gas utilities in 2017 by the nonprofit Home Energy Efficiency Team (HEET) (McKenna 2024). The initial Eversource network that launched in 2024 serving 135 customers, is in a pilot and testing phase through 2026. A diagram of the Framingham pilot site is shown in Figure 1. Eversource, HEET, and the City of Framingham plan to expand the geothermal network in 2026, pending approval from the Massachusetts Department of Public Utilities (DPU) (Eversource 2026). Plans for the

expansion include 37 buildings, including 13 affordable housing units, single and multifamily homes, and a school (Eversource 2026).

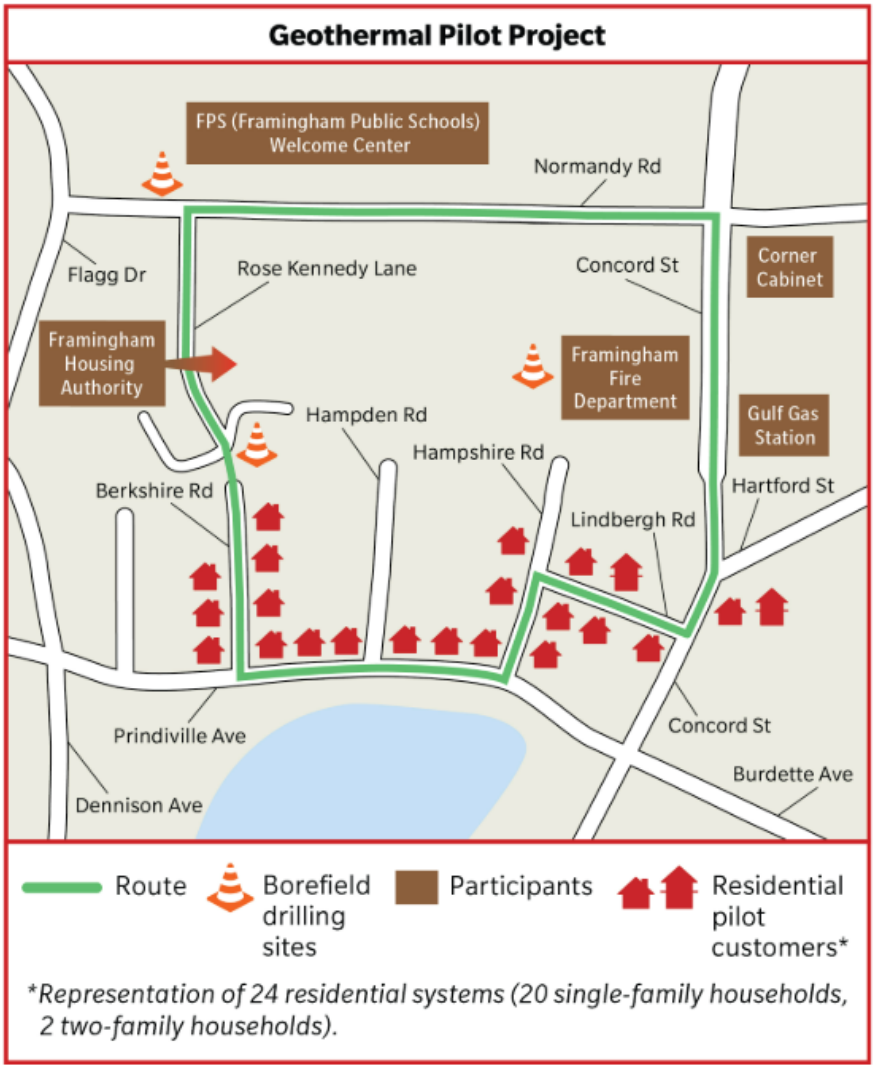

Figure 1: A diagram of Eversource Energy's Framingham geothermal pilot project site (Eversource 2026).

Community engagement. Eversource held information sessions, webinars, and meetings for pilot participants to provide project updates (Eversource 2026).

Financing. The Massachusetts legislature allowed gas utilities to develop geothermal network pilots in 2021. In 2024 legislation reformed the gas utilities' "obligation to serve," allowing utilities to provide thermal energy instead of gas to customers (BDC 2026). Following these policies, regulatory provisions allow cost recovery for Eversource's funding of the TEN pilot**.** Eversource, HEET, and the City of Framingham also received a Community Geothermal Grant from DOE in 2023 for design of the expansion of the geothermal network system (McKenna

2024). In December 2025, HEET, Eversource, and the city received an additional grant from DOE to execute the project expansion (Eversource 2026).

Ownership model. Owned and operated by Eversource, the Framingham project is the first utility-owned geothermal network pilot in the United States. The utility-owned project has regulatory oversight by the Massachusetts DPU.

Ithaca, New York

Background. Ithaca, New York is the site of one of the three utility TEN pilots that the New York State Electric & Gas Corporation (NYSEG) and Rochester Gas and Electric Corporation (RG&E) currently have underway. New York's 2022 Utility Thermal Energy Network and Jobs Act required each regulated utility to propose at least one TEN pilot in a disadvantaged community. The New York State definition of a disadvantaged community is based on criteria developed by the Climate Justice Working Group, including factors related to historical discrimination and disinvestment, climate change risks, and pollution exposure (NYSEG & RG&E 2026; NYS 2026).[1]

The 2022 Act resulted in 13 TEN pilots being proposed by the New York regulated utilities in total. In 2023, the New York Public Service Commission (PSC) issued a guidance order for utility TEN pilot implementation, including five stages of the process (NYPSC 2023):

Stage 1: Pilot project scope, feasibility, and stakeholder engagement.
Stage 2: Pilot project engineering design and customer protection plan.
Stage 3: Customer enrollment and pilot project construction.
Stage 4: Pilot project operation and management.
Stage 5: Pilot project review, recommendations.

Project details and outcomes. NYSEG and RG&E filed their Stage 1 proposal in 2023, including project scope, feasibility, and stakeholder engagement (NYPSC 2025). The Ithaca TEN pilot is in a disadvantaged community; the TEN pilot site in Ithaca is located in NYSEG's service territory and includes 27 residential buildings and 9 non-residential buildings (NYSEG & RG&E 2026). A diagram of the Ithaca pilot site is shown in Figure 2. NYSEG has received signatures to a letter of intent to participate in the pilot from 63 customers in the 36 buildings, representing around 88% of eligible buildings within the project site (NYSEG & RG&E 2026).

The Ithaca pilot will be an open-loop groundwater system, which was determined to be best suited to the geological conditions of the area (NYSEG & RG&E 2026). It is the only New York utility TEN pilot using thermal energy of an aquifer (NYPSC 2025). In 2025, NYSEG filed the Stage 2 plan for the Ithaca pilot, including engineering, design, and consumer protection plans. The utility will install heat pump systems for each building in the pilot area, selecting either air-to-water heat pumps or geothermal heat pumps based on the buildings' existing HVAC systems, in addition to heat pump water heaters (NYSEG & RG&E 2026).

NYSEG plans to construct the distribution system and conduct HVAC upgrades in five buildings by fall 2027 and conduct a test period of operation in the 2027–2028 heating season

[1] Details on the criteria for the disadvantaged community distinction in New York State can be found here: https://climate.ny.gov/resources/disadvantaged-communities-criteria/.

with those five participants (NYPSC 2025). NYSEG plans to connect the rest of the pilot customers in 2028 to begin the five-year pilot period in fall 2028 (NYPSC 2025).

Figure 2: A diagram of NYSEG and RG&E's Ithaca TEN pilot site (NYPSC 2025).

Community engagement. The utility has conducted stakeholder engagement through community events, customer site visits, and providing energy efficiency kits for home education (NYSEG & RG&E 2026).

Financing. NYSEG will provide bill protection for customers participating in the pilot to ensure that customers' bills do not exceed what they would be with traditional electric and gas service rates (NYSEG & RG&E 2026).

Ownership model. The Ithaca pilot will be owned and operated by NYSEG. NYSEG's Gas Long-Term Plan includes scaling thermal energy networks and the utility plans to use lessons learned from the Ithaca pilot to inform design of future pilots and technology advancements, particularly with the pilot's unique design of an aquifer-based TEN (NYPSC 2025).

Factors Enabling Neighborhood-Scale Decarbonization

To guide future neighborhood-scale decarbonization efforts, we draw on these examples, policies across the country, and established best practices to identify key factors for local policymaker action. As the featured projects are specific to their jurisdiction and utility territory context, replicability of the approaches in other jurisdictions is dependent on a variety of factors such as local government capacity and the policy and regulatory environment. To synthesize learnings for a variety of contexts, we identify key community engagement practices, financing strategies, and enabling policies that can set up neighborhood-scale decarbonization projects for success. We then define the types of impacts and benefits that these projects may deliver, both for participating communities and for jurisdictions more broadly.

Community Engagement

As identified in the Urban Sustainability Directors Network's (USDN) buildings and equity framework, impacted communities should be central to building decarbonization planning by local policymakers (USDN 2021). The USDN equity framework recommends that local policymakers design strategies that enact community-driven planning, which advances equity beyond traditional community engagement practices (USDN 2021). Community priorities should be integrated into the design of building decarbonization projects through early and sustained engagement, including partnerships with community-based organizations that enable shared decision making, feedback loops, and accountability (USDN 2021). Community co-creation is also a best practice identified by the Building Electrification Institute (BEI) in its report outlining equitable building-electrification strategies for TEN projects (BEI 2026). By centering community perspectives, TEN projects can be designed to generate maximum benefits for the communities where they are located (BEI 2026).

As illustrated by the Ann Arbor project, partnering with a community organization that has a trusted presence in the neighborhood is an important community engagement practice for jurisdictions, particularly where resident trust and participation are crucial to project success. Community organizations are a pivotal partner in building relationships among residents, getting resident feedback, and centering resident priorities in a project. Especially in neighborhood decarbonization projects, where resident buy-in is key to a project's success, community organizations are a trusted source that can help residents connect to and understand the project benefits.

Consumer protections are an essential element of any neighborhood-scale decarbonization project, regardless of whether the TEN or energy source is owned by a utility or municipality. As shown in the Ithaca example, bill protection agreements—such as those established by NYSEG—can hold utilities accountable for ensuring that decarbonization measures do not increase residents' energy bills.

Financing Strategies

As illustrated by the examples above, there is a range of financing options available for jurisdictions to pilot neighborhood-scale decarbonization projects. These include utility investments, utility programs, federal grants, state programs, and local grants. In practice, successful neighborhood-scale decarbonization projects often combine multiple financing mechanisms, aligning with utility investment, public funding, and local incentives in targeted neighborhoods.

Utility investments. In states like Massachusetts and New York, utility regulatory commissions have ordered utilities to propose TEN pilots and allow cost recovery for investments in these pilots. In these cases, utilities can directly invest in neighborhood decarbonization projects like TENs, achieving a coordinated gas transition approach in those neighborhoods. Further detail on these enabling policies like regulatory provisions and legislation that reforms utilities' obligation to serve are discussed in the next section.

Utility programs. Some utilities also implement programs that are designed to incentivize electrification for households on aging gas pipelines. For example, in addition to the three TEN pilots that Consolidated Edison Company (ConEd) is running, similar to the NYSEG's Ithaca

pilot discussed above, ConEd offers a targeted electrification incentive program. This program is called the Energy Exchange and provides incentives to replace gas appliances with electric equipment for customers on gas service lines that are due for replacement (ConEd 2026). This program effectively serves as a non-pipeline alternative (NPA) program, which are clean alternatives to investments in gas pipeline replacements or expansion. With the Energy Exchange program, ConEd can coordinate electrification incentives which could enable them to decommission gas pipelines instead of replacing them.

Federal grants. As shown in both the Ann Arbor and Framingham examples, federal grants are another source of financing for neighborhood decarbonization projects. The DOE Community Geothermal Grant provided funding to both of these jurisdictions for TEN project design and installation (DOE 2026). However, it is important to note that both jurisdictions relied on complementary funding sources for their community decarbonization projects. Federal funds for the Inflation Reduction Act's Home Efficiency Rebates and Home Electrification Appliance Rebates programs, while subject to changing federal requirements and state administration, can also be strategically applied to homes in given neighborhoods for coordinated decarbonization projects if available. Additionally, the federal Section 48 tax credit covers a share of the cost of various energy equipment, including geothermal energy equipment. Jurisdictions may look to braid funding streams among the various sources discussed here.

State programs. State programs can provide other funding streams that may complement other sources. For example, the Ann Arbor project received funding from the Michigan State Housing Development Authority for home retrofits and the Michigan PSC for income-qualified solar, battery, and electrification upgrades (Avila et al. 2025). Climate and green banks can serve as an additional source of statewide funds, such as the Illinois Climate Bank, which provides funding opportunities for community geothermal projects (ACEEE & BPRC 2026).

Local grants. Local jurisdictions may be able to directly allocate funds to neighborhood-scale decarbonization projects. For the Bryant neighborhood project, the City of Ann Arbor's Community Climate Action Millage allowed the city to allocate funds for residential solar installations that complemented other federal, state, and philanthropic funding streams (Avila et al. 2025). Other jurisdictions may use millages or bonding to direct funds to neighborhood-scale decarbonization projects. Cities may also provide coordinated incentives for decarbonization, such as Denver's District Energy Conversion Incentive, which provides funding to building owners, developers, geothermal installers, and others to transition to thermal energy systems (City of Denver 2026). The incentives can be applied to scoping and design studies and implementation projects, with eligibility criteria that projects serve more than one building or are in downtown Denver to lay the groundwork for connected district TENs (City of Denver 2026). Local jurisdictions can consider such programs that fund targeted neighborhood-scale decarbonization.

Enabling Policies: Utility Regulation

Several types of utility regulation can support the scaling of neighborhood-scale decarbonization efforts. This section is primarily relevant for state policymakers, regulators, and local governments seeking to influence utility planning and investment decisions.

Non-pipeline alternatives regulation. To mobilize the gas transition, utility regulators can require utilities to evaluate NPAs. NPAs can include energy efficiency measures, electrification, and TENs. Some utility commissions have required gas utilities to analyze NPAs prior to gas pipeline replacements, such as the Massachusetts DPU, which is requiring gas utilities to propose pilot NPA communities in 2026. However, the Massachusetts utilities have yet to propose any NPA projects in the first half of 2026.

Additionally, Colorado utilities are required to file Clean Heat Plans with their PUC (ACEEE & BPRC 2026). In its 2025–2028 Clean Heat Plan, Xcel Energy, a regulated Colorado utility, identified NPAs and initiated a pilot process with five jurisdictions (Denver, Boulder, Breckenridge, Winter Park, and Golden) (ACEEE & BPRC). Another example is in Oregon, where Avista Utilities is required to study and develop a neighborhood-scale gas transition pilot for 2027 (ACEEE & BPRC 2026). Further, Avista Utilities will be required to do an NPA analysis for any capital projects of $500k or higher (ACEEE & BPRC 2026).

Future of gas proceedings. Regulations that require utilities to undertake gas transition processes support neighborhood-scale decarbonization. As of 2026, 13 states and Washington, D.C. have active future of gas (FOG) proceedings. For example, in Illinois, FOG proceedings ordered by the Illinois Commerce Commission in 2024 have resulted in pilot proposals for scaling retrofits in targeted locations and developing TENs (ACEEE & BPRC 2026). Similarly, Maryland has an ongoing gas transition proceeding to determine if current utility gas planning processes are consistent with the state's climate goals (ACEEE & BPRC 2026).

Gas utility rate cases. Another avenue for enabling local decarbonization is through gas utility rate cases. For example, the Michigan PSC issued a ruling that requires DTE Gas to include a gas transition plan in its rate case analysis and proposals, including an emissions reduction plan, NPA considerations, and stakeholder engagement (ACEEE & BPRC 2026).

Enabling Policies: Legislation

Various types of legislation can enable localized decarbonization, through directives to regulatory bodies and utilities and through setting state goals for decarbonization. Some legislation results directly in the types of regulatory action discussed above, such as in Maryland, where legislation requires that any new gas pipeline replacement with special consideration be evaluated against NPAs (ACEEE & BPRC 2026).

TENs legislation. State legislative bodies can enact policies that allow gas utilities to develop TENs. For example, 2021 legislation in Massachusetts allowed gas utilities to develop geothermal network pilots, resulting in the Framingham project. Similarly, New York's 2022 Utility Thermal Energy Network and Jobs Act required utilities to propose at least one TEN pilot in a disadvantaged community, which resulted in the Ithaca project and twelve others across the state. Legislative directives are an important mechanism for permitting regulators and utilities to direct investments into community decarbonization projects.

Reformed obligation to serve. As illustrated by the Framingham example, legislation that reforms the gas utilities' obligation to serve is a key factor enabling utility investment in TENs, particularly where utilities would otherwise be required to maintain or replace aging gas infrastructure. Several states have enacted legislation addressing this issue, including

Washington State, where the legislature passed a bill allowing gas utilities to fulfill their obligation to serve by providing TENs instead of gas (Cina-Sklar & Jessel 2026). In California, legislation allows zonal electrification pilots to proceed with approval from at least two-thirds of participating residents, providing a mechanism for coordinated electrification at the neighborhood scale (Cina-Sklar & Jessel 2026).

State decarbonization goals. State policy governing electrification, building decarbonization, and clean-heat goals can also enable action at the local level by providing clear direction to regulators and utilities. For example, Michigan has a goal of reaching net-zero emissions by 2050, and regulators require that these state goals be incorporated into gas utilities' long-term delivery plans (ACEEE & BPRC 2026). Similarly, Colorado's Clean Heat Standard directs utilities to develop Clean Heat Plans that align utility investment decisions with the state's emissions-reduction goals.

Project Impacts

Neighborhood-scale decarbonization projects can result in several benefits for participating residents, surrounding communities, and the jurisdiction at large, when projects are designed with equity, coordination, and consumer protections in place. In addition to emissions reduction and energy savings, these projects have demonstrated the potential to reduce energy burdens in communities facing high energy costs, as illustrated by the Bryant neighborhood in Ann Arbor. Neighborhood-scale decarbonization can also deliver resilience benefits, increasing the comfort and safety of residents' homes during severe weather events and reducing susceptibility to power interruptions. As a result of the Ann Arbor project, the Bryant Community Center operates as a resilience hub for the neighborhood, supported by solar generation, battery storage, and geothermal energy systems, that enable continued operation during grid outages (Avila et al. 2025).

Decarbonization projects of this scale also can generate job opportunities and new revenue streams for communities, which may be particularly important for disadvantaged communities. BEI highlights as a potential benefit of TENS the creation of high road jobs, which are jobs that pay family-supporting wages, offer career advancement, provide worker representation, and include historically underrepresented workers (BEI 2024; BEI 2026). To promote local benefits of TENs development, BEI recommends that TENs developers foster workforce development and hire workers in the local community (BEI 2026). Further, BEI identifies TENs projects as creating opportunities for workers to transition from fossil fuel-related jobs to those in the clean energy economy (BEI 2026). Creating pathways to high road jobs in clean energy industries is an essential element of creating a just decarbonization transition, and neighborhood-scale decarbonization is an important approach for achieving this.

Conclusion

The range of benefits associated with neighborhood-scale decarbonization provides a strong case for widespread adoption of these strategies. In states where regulation, legislation and financing opportunities create conditions conducive to locally led decarbonization projects, policymakers can take steps to design, fund, and execute these projects. In states where enabling policies are not yet in place, local policymakers can advocate for their advancement by partnering with stakeholders such as utilities, nonprofit organizations, and industry actors. This

paper aims to provide policymakers with a suite of factors that can be adapted to a jurisdiction's specific context to enable project opportunities. With guidance on elements of success and characteristics of promising approaches, this paper is intended to support policymakers in pursuing decarbonization strategies that are developed in tandem with—and deliver meaningful benefits to—the communities they serve.

References

ACEEE and BPRC (American Council for an Energy-Efficient Economy and the Building Power Resource Center). 2026. *Scaling Publicly Managed Residential Retrofit Projects.* BPRC. static1.squarespace.com/static/6669fb2dd3d6e8386afd9574/t/69bd59a329186f3da58b8b7f/1774016931328/Residential_Retrofit_Programs_2026_FINAL.pdf .

Avila, A., A. Aggarwal, A. Ramanathan, A. Zoe Gladstone Ellis, B. Hansen-Bundy, H. Talsania, J. Widmann, K. Abhiman Makeshwar, P. Bansod, R. Pandit, S. Hirawat, S. Mathewson, T. MacDowell, W. Wira Wahid, and Y. Fei. 2025. *Unlocking Local Climate Impact: A Framework for Community-Centered Decarbonization.* New York, NY: Columbia University School of Professional Studies. afddf8e8-2dfc-4526-9ba6-71e1899413f3.filesusr.com/ugd/92e3aa_39c9e5dc5f6f43e7a227f4a6cbc06ccb.pdf.

BDC (Building Decarbonization Coalition). 2025. "Case Study: Ann Arbor, Michigan." Building Decarbonization Coalition. buildingdecarb.org/resource/case-study-ann-arbor-michigan.

_____. 2026. "Thermal Energy Networks (TENs) State Legislation." Building Decarbonization Coalition. buildingdecarb.org/resource-library/tens-state-leg#massachusetts.

BEI (Building Electrification Institute). 2024. *Inclusive Workforce Development Strategies for Building Electrification*. Building Electrification Institute. static1.squarespace.com/static/5b6a482db27e39e8fcf65bbf/t/67913fad67dfa823a2cafe0a/1737572269865/BEI_Inclusive+Workforce+Development+Strategies+for+Building+Electrification_Sept+2024.pdf.

_____. 2026. *Equitable Building Electrification with Thermal Energy Networks (TENs)*. Building Electrification Institute. beicities.org/equitable-tens?utm_medium=email&_hsenc=p2ANqtz--9rH6hgNlqISDVlyyV94Rkg6Myf7AqwIBF4wbHsXNOobk-xHRTUxFhn0qAf0e7sDxlJQl8zAuADYSrKIIJL7k8kMHaxw&_hsmi=406946138&utm_content=406946138&utm_source=hs_email.

Cina-Sklar, Z. and S. Jessel. 2026. *Neighborhood-Scale Building Decarbonization: a toolkit for advocates and implementers*. Building Power Resource Center and Climate and Community Institute. climateandcommunity.org/research/neighborhood-scale-decarb.

City of Ann Arbor. 2025. "The A2Zero Plan." City of Ann Arbor. www.a2gov.org/sustainability-innovations-home/carbon-neutrality-home/the-plan/.

_____. 2026. "2022 Community Climate Action Millage." City of Ann Arbor. www.a2gov.org/sustainability-innovations-home/2022-community-climate-action-millage/.

City of Denver. 2026. "District Energy Conversion Incentive." www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Cutting-Denvers-Carbon-

Pollution/Efficient-Buildings-and-Homes/Rebates-for-Building-Decarbonization/District-Energy-Conversion-Incentive.

ConEd (Consolidated Edison Company). 2026. "Energy Exchange Program." www.coned.com/en/save-money/rebates-incentives-tax-credits/rebates-incentives-tax-credits-for-residential-customers/energy-exchange.

DOE (U.S Department of Energy, Geothermal Technologies Office). 2026. "District-Scale Geothermal Energy Pilots." Energy.Gov. www.energy.gov/eere/geothermal/district-scale-geothermal-energy-pilots.

Eversource. 2026. "Geothermal Pilot Project in Framingham." www.eversource.com/residential/about/transmission-distribution/projects/massachusetts-projects/geothermal-pilot-project.

George Bagdanov, K., C. Halbrook, and A. Rider. 2023. *Neighborhood Scale: The Future of Building Decarbonization.* Building Decarbonization Coalition and Gridworks. buildingdecarb.org/resource/neighborhoodscale.

McKenna, P. 2024 "First-In-The-Nation Geothermal Heating and Cooling System Comes to Massachusetts." Inside Climate News, June 4. insideclimatenews.org/news/04062024/massachusetts-geothermal-heating-cooling-system/.

NYPSC (New York Public Service Commission). 2023. *Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act, Order Providing Guidance on Development of Utility Thermal Energy Network Pilot Projects*. Case 22-M-0429.

_____. 2025. *New York State Electric & Gas Corporation's Ithaca Utility Thermal Energy Network Pilot Stage 2: Pilot Project Engineering Design and Customer Protection Plan*. Case 22-M-0429. documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=22-m-0429.

NYS (New York State). 2026. "Disadvantaged Communities Criteria." climate.ny.gov/resources/disadvantaged-communities-criteria/.

NYSEG & RG&E (New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation). 2026. *Utility Thermal Energy Network Pilot Projects Progress and Expenditures Report*. documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=22-m-0429.