ELEVATE

# Best Practices in Community-Based Program Design for Paths to Single-Family Decarbonization

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# About Elevate

- Elevate seeks to create a world in which everyone has clean and affordable heat, power, and water in their homes and communities — no matter who they are or where they live

# Background on Elevate

## Elevate has retrofitted over 100,000 units of affordable housing over the past 20 years

- Our programs span energy and health retrofits, solar, demand response and dynamic pricing, and contractor and workforce development
- We are developing an implementation model to electrify and decarbonize the affordable housing market as quickly and as equitably as possible

# Our Approach to Building Electrification

- We believe affordable housing should be high quality and low-carbon, and we need to move quickly to combat the climate crisis
- Residents with lower wealth, renters, seniors, and other vulnerable groups are more likely to:
  - Live in older buildings
  - Lack cooling
  - Disproportionally experience the effects of climate change
  - Be left behind in climate mitigation efforts
- Building electrification retrofits may shift energy costs, this can be done while still addressing energy burden

# Partnering to Go Far

*“If you want to go fast, go alone; if you want to go far, go together.”*

**African Proverb**

# Our Partners in Single Family Building Electrification

CHICAGO BUNGALOW ASSOCIATION

- Chicago Bungalow Association (CBA): helping homeowners maintain, preserve, and adapt their 30+ year old homes through programs, community learning and educational resources for over 20 years
- Serves low- to moderate-income homeowners by implementing housing preservation and energy efficiency programs
- Long-time partner with Elevate for both research and pilot implementation over last 10 years

DNR CONSTRUCTION, INC.

- DNR Construction: Family-owned, specializing in exterior remodeling and weatherization work in the entire state of Illinois for over 16 years
- Elevate-vetted contractor, has worked on several utility, city programs, and state Weatherization Assistance Program
- Performed weatherization through the local utility energy efficiency program within 12 months prior to electrification work

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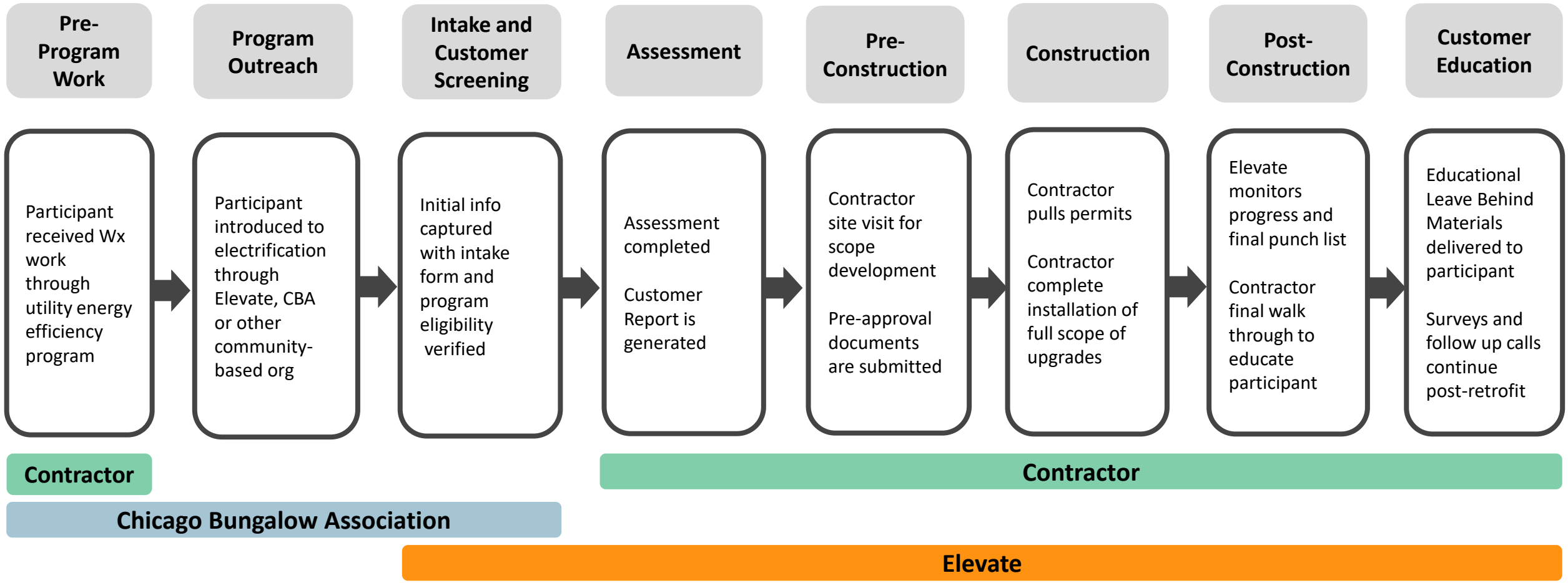
- Nick and Eddie Construction, family owned, over 20 years experience
- Minority Business Enterprise (MBE) and Elevate Vetted contractor, has worked on several utility, city programs, and state Weatherization Assistance Program
- Led the Heating, Ventilation, and Air Conditioning portions of Elevate's electrification work

# Partnership Roles and Benefits



# Partnership Benefits

- **Outreach** – CBA and DNR Construction referred a long list of homes that underwent weatherization, reducing the amount of effort needed in outreach and provided a steady stream of pipeline with electrification ready homes
- **Assessments** – DNR Construction and Nick & Eddie Construction (N&E) performed assessments providing consistency and familiarity to the homeowners
- **Scoping** – N&E were able to bulk purchase heat pumps, heat pump water heaters, and electric appliances, reducing the lead time between scoping and construction, and mitigating increasing material costs due to supply chain issues
- **Construction** – N&E facilitated installation of full electrification scope with minimal disruption to owner (considered consecutive or parallel install timing of electrical upgrade, HVAC, appliances)
- **Post-Construction** – The partnership between Elevate and the Trifecta (CBA, N&E, & DNR) provided “a village” of support in the post-construction phase for each of the homeowners through education and ongoing technical support

# Single-Family Electrification in Chicago, IL

**Electrification system scope**

- Air source heat pump (ducted)
- Heat pump hot water heater
- Heat pump dryer
- Induction stove
- Electrical service upgrade
- Potential for solar
- Previously weatherized

**Benefits**

- Added cooling
- Improved indoor air quality
- One less utility bill to manage

**Environmental Benefits**

- **75 tons** reduction in carbon emissions over 30-year lifetime

**Costs and Savings**

- $41,800 total project cost
- Free to owner, leveraged two grants and income eligible utility program
- **$970** annual cost savings

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# Single-Family: Sample Chicago Electrification Project Scope

| Electrification Measure | Average Cost Per Unit |
|---|---|
| Air source heat pump | $23,000 |
| Heat pump domestic water heater | $3,800 |
| Heat pump dryer and induction stove | $3,000 |
| Electrical service upgrade | $12,000 |
| **Total** | **$41,800** |

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# Single-Family: Electrification Costs + Savings

- $970 annual cost savings
- Full electrification

| Current Energy Profile | Building Total |
|---|---|
| Therms usage | 1,235 |
| Gas expense | $1,944 |
| kWh usage | 17,340 |
| Electrical expense | $1,639 |
| **Total current energy costs** | **$3,583** |

| Current Energy Profile | Building Total |
|---|---|
| Therms usage | 0 |
| Gas expense | 0 |
| kWh usage | 29,777 |
| Electrical expense | $2,613 |
| **Estimated savings** | **$970** |

# Impact in Year 1

Together we:

- Engaged 57 interested homeowners
- Assessed 51 homes
- Electrified 37 homes
- 64% conversion rate!

# Lessons Learned from the Field

- Electrification must be integrated with the other pillars of building decarbonization, especially energy efficiency, and will often require braiding of funds and incentives, calling for partnership across utilities, government, and local organizations.
- Targeting previously weatherized homes allows programs to stretch budgets further, and keep homeowners engaged in the process.
- The ability to bulk-buy equipment facilitates a more seamless and timely construction schedule. It may be beneficial to allocate program funding to support contractors who do not have capacity to bulk order or warehouse equipment.
- Established relationships with homeowners eases the transition to new and unfamiliar technology.
- Working with partners allows for efficiencies of scale when roles are defined.

# Thank you!


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