

The “Equitable Grid Interactive Homes (E-GIH)” is a field demonstration project that will address the following:

1. Demonstrate intelligent building controls that capture load flexibility to reduce energy usage and avoid or minimize electrical panel upgrades and/or home rewiring
2. Evaluate low-cost pathways to electrification of aging, distressed buildings
3. Participate in grid services (i.e., utility demand response programs) to improve stacked health and economic value for building owners/occupants

### **Phase A: Site Engagement, Enrollment, and Coordination**

The ultimate beneficiary of the E-GIH are residential building owner/occupants or “homeowners”. This project will place an emphasis on disadvantaged community homeowners, as part of this project because of their integral importance in achieving national and state carbon pollution and GHG emission targets. In our interviews with homeowners in disadvantaged communities, we found that upfront costs are the biggest barrier to the adoption of energy efficiency measures, as well as energy literacy to make fully informed decisions.

The project team will work with our community partners, building upon extensive experience engaging with their communities, to develop engagement strategies that are tailored for the community. We will work with municipality partners (Albany County and City of Schenectady) to conduct a series of top-down focus groups (community leaders, affordable housing partners, etc.) and bottom-up community meetings (public forums, community surveys, first adopters, etc.) to reach the target community, implement participatory processes, and facilitating community-based decisions. Therefore, the engagement strategy will be to build trust within the target community, demonstrate the technology with first adopters, and incorporate community response to reach, engage, and distribute to end-use customers (homeowners/occupants).

The E-GIH project will be demonstrated at two host demonstration sites (Albany County and City of Schenectady) and target 30 residential units or homes, within LMI communities in New York state.

### **Albany County, New York: Albany County Land Bank**

Albany County Land Bank (ACLB) was established to remove harms posed by vacant, abandoned, and tax-foreclosed properties and restore them to productive use throughout Albany County. ACLB will help to coordinate integrating this program into existing NYS Homes and Community Renewal programs to rehab existing buildings through the Legacy Cities Program as demonstration projects. The Land Bank

anticipates being able to pair the E-GIH project with existing Land Bank programs, including working directly with new homeowners completing their own rehabilitation project under our Equitable Ownership Program for first-time homebuyers or with independent development projects. The buildings that are selected from ACLB's portfolio will be evaluated for low-cost pathways to electrification of these rehabilitation-ready homes.

### **Phase B: Installation and Commissioning**

The E-GIH project will encompass retrofitting and evaluating low-cost electrification pathways within residential buildings by demonstrating a secure residential energy management system, DER as a Service or "DaaS", that controls loads within the building to reduce energy consumption and extract load flexibility. Furthermore, the load flexibility captured from the building assets would be grid-interactive, therefore, allowing the building owner/occupant to be compensated for providing load flexibility to the grid.

### **Phase C: Baseline and Data Collection**

The E-GIH project will focus on the single-family residences in LMI communities in Albany County and City of Schenectady. The baselining and data collection of the proposed technology solution, e.g., DaaS platform (hardware and software), will be deployed into newly constructed affordable single-family fully electric and partially electric dwellings with energy-efficiency upgrades, including solar PV and energy storage systems. The long-term measurement and assessment of the performance of those affordable single-family units provide critically needed datasets to benchmark the performance of affordable homes across New York State. Such benchmarks are also critical for rehabilitated/retrofitted residential units for comparative analyses.

### **Phase D: Conduct Load Tests**

The E-GIH project encompasses retrofitting and evaluating low-cost energy efficiency and electrification pathways within residential buildings by demonstrating a secure residential energy management system that controls loads within the building to reduce energy consumption and extract load flexibility. Furthermore, the load flexibility captured from the building assets would be grid-interactive, therefore, allowing the building owner/occupant to be compensated for providing load flexibility to the grid.

## **Phase E: Independent Evaluation**

The E-GIH is a demonstration project that includes an independent evaluation phase of the project that will be conducted by an independent evaluator. Project partner, Pacific Northwest National Laboratory, will be the independent evaluator and complete a comprehensive evaluation of the energy performance and customer satisfaction of the proposed product and installation. The measurement and verification process includes the deployment, operation, maintenance, and monitoring of the performance of E-GIH and capturing the necessary data, results, and analysis that support a cohesive program design, development, and evaluation to ultimately scale up the deployment of the E-GIH project beyond the proposed project period.