researching deep-energy retrofits of wooden, residential structures of common typologies, at the intersection of climate and social justice.

retrofitMAINE: PHASES

The goal of retrofitMAINE is to investigate and develop prototypes, strategies and best practices for deep energy to passive house standard retrofits of typical Maine buildings which can be replicated and shared with regional and international partners with similar climates and housing stock. End goals: high quality renovation, resulting in healthier buildings, which are more resilient in severe weather, and aiming for a net-negative carbon footprint through the use of materials which embed carbon rather than emit it.

outcomes + impacts

- Website and database summary of best practices for high performance building renovations, and prototype case study projects. Extensively documented case studies.
- Develop a community for regional professionals, disseminating best practices for wider adoption. Sharing the understanding of high-performance building renovations in northern latitudes such as Maine.
- Development of Maine’s Building Science/Renovation Center, recognized as innovative and supportive of new construction and renovation as a training center and destination.
- Establish a Building Institute in Maine committed to promoting Maine’s building design, using Maine’s natural resources to create quality buildings for Mainers and acting as a beacon for building standards for all.
current projects

House #1: Tree Streets Redevelopment: Triple decker, 74 Birch St Raise-Op- Manager: Craig Saddlemire, Lewiston Housing Authority- Executive Director: Christopher Kilmurray, GO Logic- Principal: Alan Gibson

House #2: The Ecology School: Single family, Farmhouse renovation, Executive Director Drew Dumsh

partners

United Nations Economic Commission for Europe: High Performance Building Initiative - Scott Foster, Director Sustainable Energy Division

Institutes of Energy and The Environment at Penn State: Jim Freihaut - retrofitMAINE Senior Advisor

Ali Memari, Penn State - 50 Houses Steering Committee

Richard Yancy, BE-Ex, Building Exchange, NYC Executive Director, phME Advisory Council

University of Maine, Orono – Will Manion, Construction Engineering Technology, University of Maine: PhD Candidate at Virginia Tech, retrofitMAINE Steering Committee

Jesse Thompson, Kaplan Thompson Architects, architectural consultant to Tree Sts - phME Advisory Board

Further partnership in development: UNE, Institute for North Atlantic Studies, Maine North Atlantic Development Office, Island Institute, Efficiency Maine, Maine Housing Authority

Maine’s Wood Product Development and potential sources for building materials and systems

Russell Edgars, UMaine (Leading Cross Laminated Timber (CLT) research)

HP Timber, Matt O’Malia

GO Logic, Alan Gibson panel renovations

LignaTerra, Ralf Meier: CLT

images courtesy of Richard Price.
phases + approach

PHASE I Feasibility and Development (2019-20): The initial phase of six months solidifying partnerships and begin initial rounds of cost assessment and fundraising. A single structure will be fully reviewed for an EnerPHit renovation, drawings and costs projections developed to provide a map for renovation. This phase will also mark the beginning of exploration of the “Open Source” system.

PHASE II Initial Framing (2020-21): Summarize current high-performance/passive house building retrofit practices in northern latitudes. To begin, a review of written published practices will be conducted. A survey and interviews of regional design, construction, research and development, manufacturing, municipal and academic professionals. Drawing from published practices and regional expertise, a summary of current practices in northern climates will be developed. Opportunity for our academic partners to participate in the research, familiarizing all with current best practices while forming cross-institutional relationships. The initial building identified in PHASE I will serve as a prototype for design, actual construction, documentation, process sharing, data collection, analysis and storage.

PHASE III Hammers Swung (2 years): Renovations on the second and third houses will have begun. Project will be to use the summary of current practices to develop, analyze, test and construct up to 50 high-performance retrofit prototypes. Communication, expertise and data-sharing between academic and trade institutions develops. A Research Director will be hired to take the initiative to the next levels of growth and development.

PHASE IV Multiple Hammers and International Sharing (3 years): It’s anticipated that by this point we will have demonstrated multiple improvements of systems through iterative and shared approaches. We will create a “Building Science/Renovation Center” which will be a destination for Maine and Pennsylvania professionals, regional and international building, design and efficiency professionals.

BPHASE I Feasibility and Development
5/2019 - 6/2020 (funded)

| Project Management passivhausMAINE | $15,000 |
| Research/Analysis of cost/benefits for statewide renovation (Fundraising materials) | $10,000 |
| Fundraising Consultant for PHASE II | $5,000 |
| Architectural Consultant for initial project | $10,000 |
| Monitoring for initial project | $5,000 |
| **Total PHASE I budget** | **$45,000** |

Phase II Initial Framing Budget
9/2020 - 6/2021 (funded)

| Project Management passivhausMAINE | $15,000 |
| Spring/Summer Intern (research asst) | $5,000 |
| Monitoring for Five Projects | $5,000 |
| Website Development | $10,000 |
| Development Consultant | $5,000 |
| **Total PHASE 2 budget** | **$35,000** |

FMI: naomi@passivhausMAINE.org
online at retrofitmaine.org