

Spring/Summer 2023

BuildingWell

A NOTE FROM THE PRESIDENT

After many years working to demonstrate the benefits of high-performance affordable housing to developers, building owners and governments, New Ecology is taking on a new challenge: how to scale our work to have even more impact.

Over the past year, we have seen an increase in the number of owners and developers embracing decarbonizing their existing stock and developing new carbon neutral buildings. Simultaneously, states and municipalities have accelerated efforts to incentivize building more high-performance affordable housing, decarbonize the existing stock, and address the underserved naturally occurring affordable housing (NOAH) market. A few examples from the markets we serve help explain this trend: new funding sources for deep energy retrofits in MA, advances in energy codes in many states, funding to support efficient, electrified NOAH in DE and a draft of an aggressive building energy performance standard in MD. On top of this is the promise of tax credits, rebates and low-cost financing provided by the Inflation Reduction Act.

New Ecology is gearing up to meet the challenge of providing more services in more places while helping others meet the growing demand. This is essential to ensure that high performance is done right. We are helping to train tribal leaders on maintaining their housing stock; expanding our efforts to help contractors (especially MBE contractors) meet the demand for services; hosting the first PHIUS builder training in DE; developing tools needed to more rapidly and accurately assess buildings for decarbonization; sharing our learnings with our peers; and working with finance entities to incorporate high-quality technical assistance in their programs.

We know we will not be able to meet all requests that come our way, but we remain committed to playing our part in transforming the market so that the benefits of high-performance, low-carbon living is enjoyed by those who live in affordable housing and underserved communities.

— Edward F. Connelly
New Ecology President

Treehouse at Easthampton Meadow

BY LAUREN BAUMANN, CONSULTANT; MARTY JOSTEN, PRINCIPAL DIRECTOR, BUILDING DECARBONIZATION; MICHELLE MORAN, SR. ASSOCIATE; JOHN BEAUMONT, DIR. OF ENGINEERING; EDUARDO RAMOS, SR. ENERGY ENGINEER; FRANK STONE, PROJECT MANAGER; KRISTIN GLOSSNER, PROJECT MANAGER

Location: Easthampton, MA • *Size:* 60 units in 23 low-rise residential buildings plus a community building and a maintenance building • *Developer:* Beacon Communities • *Owner:* Treehouse Foundation • *Owner's Representative:* Waypoint KLA • *Architect:* Davis Square Architects • *Mechanical Engineer:* Petersen Engineering • *Contractor:* Keith Construction

Project Background

The Treehouse at Easthampton Meadow is an intentional, intergenerational community that integrates family housing for households who have adopted children out of the foster system with households aged 55+ who agree to mentor the children. Originally built in 2006, the development is undergoing a refinance process supported by tax credits that will enable retrofit and improvement of the buildings. New Ecology worked with the project design team to develop a data-driven deep energy retrofit scope of work for the property. Specifically, the project team aimed to maximize energy and carbon emission reductions, eliminate fossil fuel consumption, improve resident comfort and indoor air quality, and work within the financial limitations of the retrofit project budget and available operating resources.



Photo courtesy of Treehouse at Easthampton Meadow website.

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As a developer, owner, and manager of affordable housing, Beacon Communities leverages building retrofits to improve the performance and comfort of their properties. Their approach to building decarbonization aligns well with federal, state, and local policy priorities for reducing emissions in existing buildings.

Deep Energy Retrofit Scope Development Process

Considering energy conservation and electrification packages, the design team utilized its experience and expertise to streamline the number of different packages that required pricing and energy calculations. A number of steps were involved:

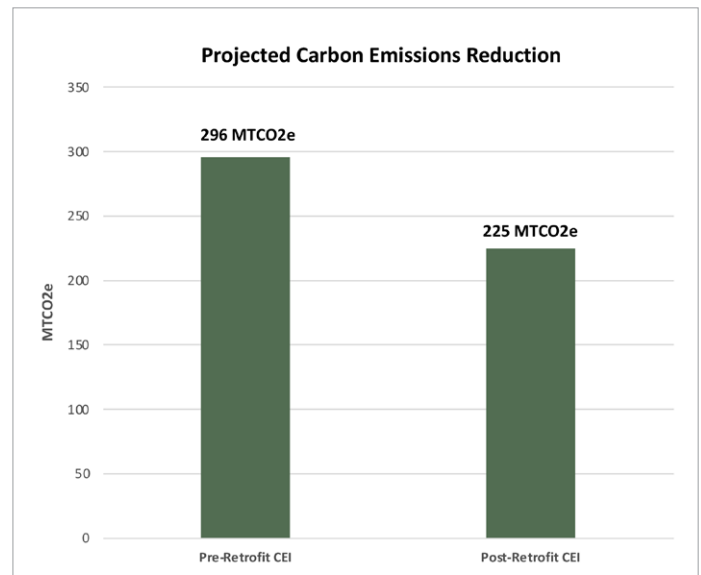
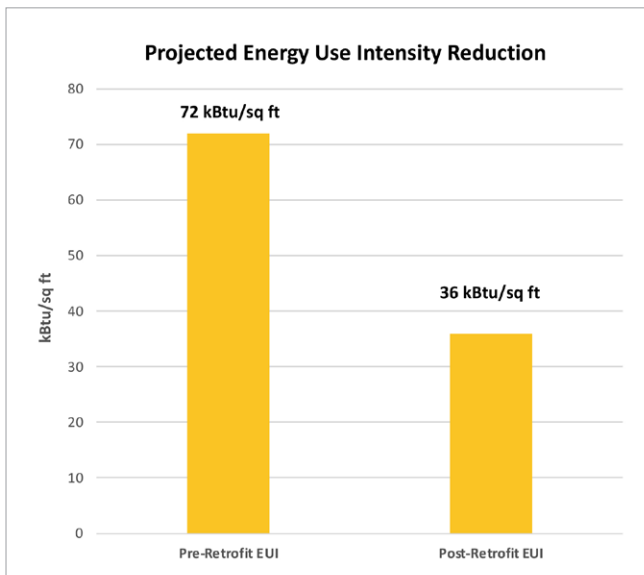
- A kick-off meeting to define goals and process
- Building performance benchmarking using historical utility data
- Building inspections/audits, air infiltration blower door testing, and operations team interviews
- Renewable energy analysis
- Integrated design team meetings to review preliminary findings, evaluate opportunities and limitations, and narrow down retrofit options
- Development of a Conceptual Design Narrative with preliminary retrofit approaches for energy calculations and cost estimating
- Integrated design team meetings to review results of energy calculations and cost-estimating and refine project retrofit approach
- Revised energy calculations and cost estimating to determine the scope of work that achieves cost and performance goals

Selected Retrofit Measures

Using the process outlined above, the team decided on the following set of Deep Energy Retrofit measures:

- Roof insulation retrofit (conversion to 6" closed cell spray foam at the underside of roof sheathing)
- Window replacement (U=0.25, SHGC = 0.30)
- Building envelope air sealing (target 2 ACH50)
- Conversion of gas furnaces to electric air source heat pumps (18 SEER, 3 COP)
- Conversion of gas to electric resistance domestic hot water heaters (to eliminate fossil fuel)
- LED lighting upgrade
- Efficient toilets and faucet aerators to deliver water savings
- Energy Recovery Ventilators (ERVs) to improve indoor air quality (88% heat recovery)

Note on graphs: Carbon Emissions calculated using The National Renewable Energy Laboratory (NREL) Cambium's data (Electric) 2022 NREL Cambium Dataset - LRMER; NEWE Grid - Mid-case w/ 95% Decarbonization by 2050 Combustion + Precombustion.



PROJECTED SAVINGS

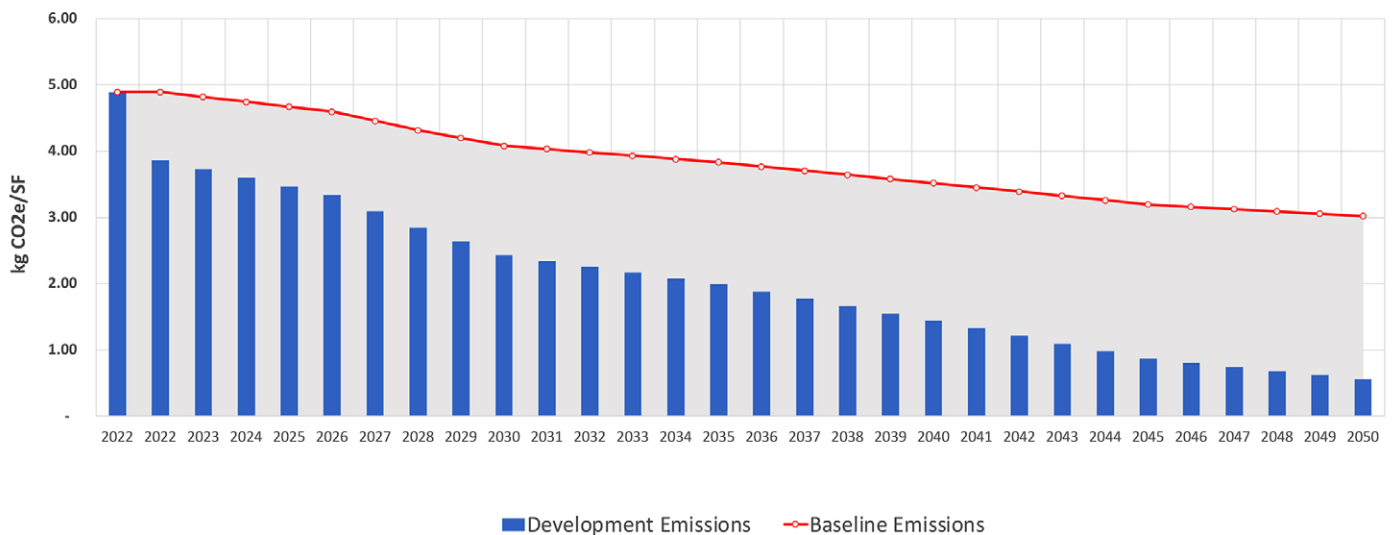
- 50% energy use reduction
- 24% carbon emissions reduction
- 21% water use reduction

Given competing priorities, selecting the domestic hot water system proved challenging. The installation of electric heat pump water heaters would have reduced the carbon emissions and operating utility costs, but would have increased capital costs and added challenges to design. Gas-fired systems would have reduced operating utility costs, but prevented the development from being fossil fuel free. Through the implementation of an electric resistance approach, the team decided to prioritize the electrification of the system and the future emissions reduction potential of the grid.

A priority for the project team was reducing the overall emissions of the retrofit project by carefully examining the embodied carbon impact of specific materials and components. In addition, care was taken to ensure that components and systems that still have useful life, are not adversely impacting energy use, and can be easily replaced in the future (such as roofing) are not replaced prematurely. The existing ductwork and vinyl siding will also be constructed and reused wherever possible.

As a result of integrating the selected measures, the site's energy consumption and carbon emissions are predicted to be significantly reduced. As the carbon intensity of the electric grid improves, electrification of the HVAC systems at the development will further facilitate emissions reductions. By reducing carbon emissions and optimizing energy, the team not only enhanced the performance and comfort of the property, but also fosters a supportive environment where adopted children from foster care can thrive alongside the mentorship of 55+ households, fulfilling our mission of creating a truly remarkable home for these families.

Projected Carbon Emissions Intensity Over Time



NOTABLE NEWS IN THE FIELD

■ The US Department of Energy has launched the new **Funding and Incentives Resource Hub** on the Better Buildings Solution Center. This tool can help teams to understand, navigate, and review funding and incentive opportunities for sustainability projects, and is able to be filtered by sector, technology, and building type.

■ Massachusetts has enacted new Heating requirements: Per 105 CMR, “The owner shall provide heat in every habitable room and every room containing a toilet, shower, or bathtub from **September 15 through May 31**...”



Looking to make a direct impact on your community? New Ecology is looking to expand our team of mission-driven individuals. We are successfully working to on-board and train new hires remotely. We are currently hiring for:

- HERS Rater (Boston)
- LEAN Energy Engineer (Boston)
- Senior Project Manager (Boston)
- Program Manager (Wilmington/Philadelphia)

Visit <https://www.newecology.org/category/jobs/> for more information and to apply.

Pass this along to your professional networks!

NEWSLETTER CONTRIBUTORS:
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Making an Impact on Tribal Housing

BY MARTY JOSTEN, PRINCIPAL DIRECTOR OF BUILDING DECARBONIZATION

The *Native American Housing and Self-Determination Act* created the Indian Housing Block Grant (IHBG), the primary funding mechanism for Tribal housing. The IHBG has stagnated since it was signed over 25 years ago, and the annual allocation has not increased to account for inflation.

As a result, IHBG funding often does not cover the full cost of regular maintenance and operations of managed units. Tribal housing authority rents are typically too low to serve as a sufficient source of revenue to cover operational costs. In the face of these obstacles, Tribes have persevered to provide safe and healthy housing to their members in creative ways, one of which has been to establish their own maintenance work force.

New Ecology is working to help provide for more affordable housing and economic development of Tribal lands. We are currently providing maintenance training to Nations across the country for The HUD's Office of Native American Programs via a contract with LISC. Through this initiative, we aim to provide guidance to tribal members through detailed, interactive trainings.

The first such training engaged 50 individuals representing the maintenance staff of 10 Tribes, including the hosting Northern Circle Tribe, in Hopalong, CA. Over two days, Jonah DeCola, Senior Energy Engineer, made quite an impact. Jonah is known for his ability to connect with students and make them glad they invested time in training. Here, his past experiences working for Indigenous Alaskan and Mexican Guamare people helped to create needed trust. One of Northern Circle's leaders said to Jonah, "As a white guy saying that you are here to help, I assumed you would be an infector...but instead, you're an excellent instructor and were an inspiration. I look forward to chapter two!"



Jonah delivered a breadth of directly applicable information and hands-on skills training. As his training partner, Principal Director of Decarbonization Marty Josten provided information on the best practices to build and run a maintenance function and to understand the impacts of each decision, and the importance of planning to achieve good long-term decision-making versus reacting to chaotic events.

These trainings will have our team traveling to Albuquerque, Standing Rock, Phoenix, Takoma, and more throughout the year. This is a special assignment for New Ecology, and we are honored to be doing such important work.

Learning About Sustainability for HEAF 2022 Cohort

BY MICHELLE MORAN, SENIOR ASSOCIATE



In April, Joshua Galloway, Director of Green Building Services, spoke with the Housing Equity Accelerator Fellowship (HEAF) 2022 Cohort at the Capital Impact Partners (CIP) office in Washington, D.C. HEAF aims to support developers of color in the affordable housing field in the D.C. Metro area by facilitating new opportunities and trainings for experienced real estate developers of color.

Joshua shared his expertise on Sustainable Development with the Cohort, reviewing the regulations, building certification systems, and policies that drive high-performance building, and provided real-world case studies as examples of what can be achieved in affordable housing while maintaining a high-performance building standard. He also reviewed what goes into planning and achieving specific standards, including an overview of construction and operating costs, and available rebates and incentives.

Joshua highlighted the current electrification and decarbonization opportunities with federal and state funding and the efforts required to maintain affordable utility costs with fuel switching.

If your organization is interested in learning more about a Sustainable Development session about finding a path through the increasingly complex maze of sustainability requirements, funding, and opportunities within the context of equity, electrification, and decarbonization, please contact us at info@newecology.org.

CHARLES RIVER CLEANUP FOR EARTH DAY

On Friday, April 21, several members of New Ecology’s Boston-area staff participated in a volunteer cleanup event to celebrate the 53rd annual Earth Day. As a celebration of our earth and natural resources, New Ecology staff members gathered for The Earth Day Charles River Cleanup. This builds on a national effort by American Rivers’ National River Cleanup, which has removed over 25 million pounds of trash from our country’s waterways. The Charles River initiative brings together over 3,000 volunteers each year to pick up litter, remove invasive species and assist with park maintenance along all 80 miles of the Charles River.

We are happy to have been a part of this event and the effort to preserve our natural spaces and resources.



Upcoming Training Announcement

HOSTED BY:
ENERGIZE DELAWARE
NEW ECOLOGY, INC.
GREEN BUILDING UNITED



**CERTIFIED
BUILDER
TRAINING**

● JULY 19-21, 2023

● \$1,550

● IN-PERSON, NEWARK, DE

● TUITION REIMBURSEMENT AVAILABLE*

*see registration link for details



For more information and to register, visit
<https://www.energizedelaware.org/passive-buildings>

West County Elementary School Update

BY JUSTIN IOVENITTI, SENIOR ENERGY ENGINEER

Update from Integrative Design for K-12 Schools from the [Spring 2022 newsletter](#)

Future media center and courtyard visible before the application of continuous insulation and air barrier.

West County Elementary School in Odenton, Maryland will welcome its first students in summer 2024. Construction is currently moving along rapidly and slightly ahead of schedule. Designed by GWWO Architects, the building will be Anne Arundel County Public Schools' latest LEED certified facility. New Ecology is providing whole building commissioning services for the project. All foundation work is complete, and steel erection is winding down. Mechanical, electrical and plumbing rough-ins are in process. Roof decks are currently being set in place, and temporary roofing work will begin within weeks. New Ecology was recently on site to check on overall progress, participate in the roofing preinstallation conference and review the building enclosure mockup. The design features a brick cavity wall with concrete masonry unit backup. The cavity contains 3" of polyisocyanurate (polyiso) insulation, and the face of polyiso acts as the air control layer. The commissioning process includes in-unit air and water leakage testing. Once complete, the school will serve 600 students in nearly 90,000 square feet. JVS/Quandel is the construction manager.



NEW ECOLOGY AT NESEA

*In March, New Ecology staff members Maciej Konieczny, Mark Norton, and Nick Hernandez presented the session **How Will You Meet the Demand? Scaling Passive House Certification for the New Energy Code** at NESEA's Building Energy Boston conference.*



With the upcoming updates to building energy codes, there is an anticipation of growth in the volume of passive house buildings. It is important to have a fully-scalable approach to successfully guide teams from scope development through certification. This session provided a "behind the scenes" look into this process and demonstrated how to best handle the expansion of passive house projects with a look at the perspective of the project manager, the energy modeler, and the PHIUS verifier.



Staff Profile

Name: Norm Horn

Title: Construction Project Manager

What does your job entail? I work with developers, architects, and tradespeople to implement high-performance elements in new construction and retrofit projects in the “naturally occurring affordable housing” segment. I might be in the office working on a plan and spec review one day and then out in the field teaching a crew how to install building envelope components the next. I am working in the Climate Smart Homes arena, which centers on gut rehabilitations of vacant, existing row homes and new construction of similar homes on vacant lots. The majority of these projects will be sold to low- to moderate-income households. The work also provides local trainings on high-performance homes.

What is the most inspiring/interesting part of your job? Much of my work involves educating people and exposing them to building performance and building science concepts that are likely new to them, like envelope airtightness. I always enjoy seeing people have that “a-ha” moment when they first see a blower door test demonstrate air leakage in a way they can see or feel, or when an infrared scan shows them what heat loss looks like. When these concepts start to resonate with builders, they in turn realize how the work they do affects how a building functions and how that functionality affects the residents of the building.

What is a challenge that people in this industry face that you would like to solve? Trades education and exposure to principles of green building for both people entering the industry and those who have been at it for years.



Norm and Joyce in Rome.

What do you like to do outside of work? I've been spending a lot of time plotting and planning a strategy for all of the projects we're planning to take on for the house we bought last summer: a new bathroom, a new kitchen, and of course, more insulation and lots of air sealing!

Favorite movie/TV show/band? Movie: *The Big Lebowski*. TV: “The Wire.” Band: It's hard to pick a favorite, but when I can't decide what to play, I always come back to The Clash.

What have you been doing lately to keep happy and healthy? The last 18 months have been pretty hectic with changing jobs, buying and selling houses, moving to a new state, and getting settled in a new routine, so getting some quiet time to relax means a lot. My wife Joyce, our two Boston Terriers, Wilbur and Annie, and I have spent a lot of weekend time exploring the parks around our new home.

LET'S TALK

New Ecology is eager to work with partners who are interested in learning more about our work and how we can help you to achieve your project's goals. We have worked on hundreds of projects for owners in market sectors including housing, office, retail, education, healthcare, government, arts, and nonprofit.

Our passion and commitment is best demonstrated by the fact that we have been at the leading edge of community-based sustainable development since 1999.

At the same time, our reach, approach and successful model have helped us attract and retain a talented staff known for its desire to make advances in a new and growing field.

Interested in learning more? Contact info@newecology.org or call 617-557-1700.

NEW ECOLOGY

Community-Based Sustainable Development

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