



ENERGY STAR® Certified Homes: Affordable Housing Case Study



From individual measures to whole-house improvements and new construction, ENERGY STAR® offers proven, turn-key solutions that can be implemented by affordable housing stakeholders to improve energy efficiency. Greater energy efficiency helps improve resident comfort, reduce operating costs, and decrease greenhouse gas emissions.

NeighborWorks Toledo—Cherry Legacy Project

The U.S. Department of Housing and Urban Development (HUD) estimates that 12 million renters and homeowners are spending more than 50% of their income on housing costs¹. Energy efficiency provides an opportunity to reduce costs for low-income communities that are housing cost burdened. This includes constructing ENERGY STAR certified homes, which deliver energy savings up to 30% compared to typical new homes.

Background

NeighborWorks Toledo Region began serving the greater Toledo, Ohio area in 1976 as Neighborhood Housing Services of Toledo, Inc., and became a chartered member of NeighborWorks America in 1993. In 2014, the organization began doing business as NeighborWorks Toledo Region (NTR). The mission of NWTR is to “restore and revitalize neighborhoods, primarily for the benefit of current and future inhabitants, by providing services and programs which renew pride, stimulate reinvestment and restore confidence and trust.” The organization achieves its mission by providing homeownership and rental opportunities, weatherization of existing homes, financial education classes, and first-time home buyer education classes.



Workers set roof trusses on a home at Cherry Legacy.

Project Description

NTR completed the first phase of the Cherry Legacy Homes project in 2014. At the end of the first phase, 40 ENERGY STAR certified single-family homes were constructed on in-fill lots in the Cherry Legacy neighborhood. Five house plans and seven designs were developed to match the existing neighborhood and accommodate a variety of resident family sizes and needs. All homes were designed to allow for aging-in-place, with at least one bedroom and bathroom on the first floor. The homes ranged from 1,240 to 1,800 square feet.

¹ “Affordable Housing” Department of Housing and Urban Development.

http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing

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Residents can rent the homes at an affordable price for fifteen years with an option to buy at the end of the rental period. To provide affordable housing to those with the greatest need, NTR caps the maximum household income at 60 percent of the area median income (AMI)². NTR does not have a minimum residency requirement, but no residents have moved out since the Cherry Legacy homes began leasing. Some residents have even shared with NTR staff that they appreciate their homes so much that they never intend to leave.

Building Process

With this project, NTR sought to provide residents with energy efficient homes built to ENERGY STAR program requirements, which require at least 15% higher efficiency performance than the Ohio state code, which is equivalent to the 2009 International Energy Conservation Code (IECC). Before the start of the Cherry Legacy Homes Project, NTR built prototype homes to learn the details and expectations of building an ENERGY STAR certified home. Building prototype homes proved to be a vital piece of the construction process for NeighborWorks Toledo because of the lessons learned and relationships formed. Contractors in Toledo were largely unfamiliar with the ENERGY STAR specifications and energy efficient construction practices when NTR began building their prototype homes. Building the prototypes allowed NTR and their contractors to learn best practices and enabled contractors to become familiar with expectations for the Cherry Legacy Homes project.

The focus of the Cherry Legacy Homes project was to combine durable and energy efficient housing at an affordable price-point, with the goal of each home earning the ENERGY STAR label, as well as a Home Energy Rating System (HERS) rating of 40. NTR received a recommendation for a Home Energy Rater through their architect, and the Rater proved to be a vital asset for the success of the project. During the design and pre-construction phases, the Rater worked closely with the architect on efficient design features and would lead meetings with NTR and the contractors to discuss issues that were expected to come up during the construction process. During construction, the Rater walked through every home with contractors, especially the insulators, to help identify areas in each home that required close attention to detail to ensure that all ENERGY STAR requirements were met. To keep construction costs down and ensure consistent performance, NeighborWorks Toledo selected factory-cast panel foundations and panel walls rather than constructing the walls and foundations on-site. The foundations were insulated with closed-cell foam to an R-level of 12.5. The exteriors were insulated to an R-21 level using faced batt insulation.

AFFORDABLE HOUSING IN TOLEDO

The City of Toledo contributed to the funding of the Cherry Legacy project in the form of a grant. The City's Department of Neighborhoods works toward improving the quality of affordable housing in Toledo. The Department of Neighborhoods administers affordable housing programs and helps existing homeowners by providing partially forgivable loans. The Department also works to reduce the number of vacant and foreclosed homes by requiring homebuyers to participate in homeowner training provided by a HUD-approved counseling organization.

² The AMI is determined by HUD and differs from county to county. In 2014, the AMI in Toledo was \$57,100.

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A home is considered “dried in” when the roof is completed; at this time the insulation can be added. The above home is in the process of being insulated.

NTR installed tank-less water heaters to lower the hot water usage, and used hydronic heating systems with air handlers to provide instant home-heating response. All flat ceilings were insulated to an R-50 level using blown-in insulation as an added efficiency measure to the conditioned spaces of the homes.

Barriers

A major challenge throughout the planning and building phases of the Cherry Legacy Homes project was the lack of familiarity with the ENERGY STAR Certified Homes program and energy efficient building practices. NTR spent significant time educating contractors, organizations, potential renters, code inspectors, and appraisers on the various aspects of building an ENERGY STAR certified home. The inspectors had to work

closely with contractors to ensure that the ENERGY STAR requirements and expectations were met for every home. The close engagement between NTR, the contractors and code inspectors was critical during the planning and building phases.

NTR overcame the barriers faced during the construction process with the expertise and knowledge gained from constructing the prototype houses. During the prototype construction process, NTR learned that the siding they had originally selected was too difficult to install and would slow down the construction process. A different siding manufacturer was selected for the larger project. NTR was also able to downsize the furnace because of expected high efficiency level of the homes, which further contributed toward affordability.

Since building to ENERGY STAR specifications on a larger scale was innovative for the Toledo area, NTR’s understanding of the building process was vital to ensuring efficient construction and verification processes. By identifying contractors during the prototype build, NTR established relationships with qualified contractors who were able to work smoothly throughout the construction of the 40 ENERGY STAR certified homes.



Finished homes in the Cherry Legacy neighborhood.

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Successes



NeighborWorks Toledo staff members are pictured accepting their ENERGY STAR Partner of the Year Award for Excellence in Affordable Housing in 2015.

NTR utilizes an online tool called Success Measures to employ a community development plan framed around a resident-based evaluation of the community. Success Measures allowed NTR to track responses from community surveys to calculate the value provided to the larger community by the Cherry Legacy project. NTR surveyed the residents of Cherry Legacy before and after the completion of the project and found that residents saw a 54 percent improvement within the community from the project. By selecting to build on infill lots, NTR was able to create a positive change in the community, as outreach efforts had identified the lots as a concern to local residents.

Another success of the Cherry Legacy project was the energy efficiency achieved in constructing ENERGY STAR certified homes. The average HERS rating of the 40 ENERGY STAR certified homes built was 42, with a high of 50 and a low of 40. (There is no single HERS rating requirement for every ENERGY STAR certified home, as factors like climate zone and home size impact the rating, but ENERGY STAR certified homes average a HERS rating between 68 and 75.)

NTR was awarded an ENERGY STAR Award for Excellence in Affordable Housing in 2015. This award is presented to an ENERGY STAR partner who has made exceptional or market-leading contributions to energy efficiency in affordable housing by constructing ENERGY STAR certified homes. Representatives from NeighborWorks Toledo joined ENERGY STAR in Washington, D.C. in April 2015 to be recognized for their efforts.

The Future

NTR intends to continue building to ENERGY STAR requirements. The organization is currently planning Phase II of the Cherry Legacy project and is committed to constructing every home in 2016 to be ENERGY STAR certified.

NTR was a pioneer in building to higher efficiency homes in the Toledo region. In building the Cherry Legacy homes, the organization was faced with the challenge of educating the community and building partners on the importance of energy efficient building practices. NeighborWorks Toledo sought to gain community support through education efforts. Despite the initial lack of understanding about energy efficiency and its importance to affordable housing in their service area, NeighborWorks Toledo achieved its goal and earned high energy efficiency ratings on all of the homes at Cherry Legacy.

For more information about ENERGY STAR certified homes visit www.energystar.gov/homes.

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