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Build Tight, Ventilate Right Provides Homeowners with Complete Control of Home Ventilation

Back in 2003, builder <u>New Tradition Homes</u> began investigating how to build the most efficient, healthiest homes for future homeowners. Efficient building has always been a priority for New Tradition, a home builder that primarily focuses on new construction projects in Tri-Cities and Vancouver, Washington. As energy code has evolved over the years in Washington, New Tradition has kept up and has even built above and beyond code requirements. Their goal? To implement energy efficient building practices now to prepare for and exceed future energy codes.

In 2006, project manager Steve Tapio and his team at New Tradition started talking with local energy Raters as well as regional and nationally recognized building science experts about efficient building strategies. They planned out two- and five-year goals and discussed ways to achieve optimal efficiency in homes, while also evaluating where code was headed in Washington. On the advice of the building science experts—who Tapio noted "stressed the energy saving potential and superior comfort of the system"—Tapio decided to implement the build tight, ventilate right (BTVR) building method into all their projects moving forward.

New Tradition was also able to leverage two utility incentive programs, <u>Energy</u> <u>Trust of Oregon's EPS™ New Construction</u> and <u>Clark Public Utilities' New</u> <u>Homes Performance Program</u>, to help deliver BTVR in new homes. New Tradition also received incentives from NEEA's Next Step Home pilot program, as well as Washington State University's Energy Program regarding ventilation effectiveness.

Build Tight, Ventilate Right (BTVR)

The concept behind BTVR is to build homes with two separate but connected goals - first, building as tight as possible to control leakage, and then installing a ventilation system that is efficient and can properly filter in fresh air throughout the house without sacrificing benefits of the home's building tightness.



The AeroBarrier Connect system.



HRV ductwork coming out of the mechanical room. It is tied in directly to the main air return.

Connect with Raters and contractors, who can help you integrate BTVR in your homes, by visiting <u>BetterBuiltNW's Find</u> <u>a Professional page.</u> Learn more about

BTVR strategies by accessing ondemand trainings and resources at the following links:

- <u>BetterBuiltNW</u>
 <u>Trainings</u>
- <u>EEBA Academy</u>
- <u>Construction</u>
 <u>Instruction Building</u>
 Science Library
- Building America Solutions Center

To achieve BTVR, New Tradition switched to independently targeting building tightness levels that are even more stringent than energy code requires with automated air sealing processes (more about this below regarding AeroBarrier®). As New Tradition's homes became tighter, Tapio recognized the need for a better ventilation system than what he was using, so he also moved from whole house ventilation to heat recovery ventilation systems (HRVs) on all projects. Likewise, BTVR lowers a home's energy consumption, by retaining much of the heat of exhausted air, which can enable builders to earn tax credits and utility incentives, improve HERS scores, and achieve higher certifications and recognition.

New Tradition has chosen to integrate HRVs into the central air handler for each home (e.g., central heat pump or furnace). Their homes are testing at 1.5 to 1.8 air changes per hour (ACH) at 50 pascals – which equates to about half of the building leakage of an average code-built home. To achieve this impressive ACH, New Tradition instituted a two-pronged approach:

- 1. They placed their in-house design team in the field during construction to ensure correct installation, and
- On the advice of building science experts, they began using the AeroBarrier air sealing system, which is an interior-applied air sealing system that seals all building envelope leaks up to 1/2"

Tapio noted, "The AeroBarrier system was a way to guarantee a specific ACH on our homes. [Before we started using AeroBarrier], our internal air-sealing process, in conjunction with our insulation contractors' efforts was good, but it was at times inconsistent and ... not effective enough to get us to the lower ACH threshold we desired in order to claim the necessary energy credits with the Washington energy code."

Beyond the energy saving benefits, New Tradition has received positive feedback from homeowners commenting on how comfortable the homes are. Homeowners also appreciate that BTVR results in low utility bills and more control over indoor air quality when outdoor conditions are unfavorable.

The biggest challenge New Tradition faced when implementing BTVR was cost. To overcome this, Tapio and his team searched for the right products at an affordable price to reduce the financial burden of making these building upgrades. Extensive research on different products and processes is key to lowering the upfront cost of BTVR, and New Tradition maintains excellent relationships with industry sales representatives including Broan-NuTone® and AeroSeal® (maker of AeroBarrier). Tapio mentioned that, "Sales representatives kept us up to date with product information and pricing, which helped us incorporate advanced building strategies, while maintaining affordability". In addition to cost, Tapio noted the importance of marketing BTVR correctly to help buyers understand the value of the added upfront cost to their homes. While challenging, Tapio trained his sales staff to communicate effectively about their building methods and the value they present to buyers-specifically that a home's draftiness can cause room temperature variation, and BTVR not only eliminates excessive draft, it also gives homeowners full control of the ventilation in their homes.

If you are a builder who is interested in BTVR but are not sure where to begin, start by developing partnerships with key trades including heating, insulation, HVAC, Home Energy Raters, and weatherization contractors. Likewise, work with key trades to get their input on how to best meet BTVR standards today and develop goals for years to come. From there, research building practices and product costs associated with your chosen BTVR approach.

Tapio and his team are already anticipating future code advancements. They are currently looking to groups like ENERGY STAR for the latest guidance on improvements New Tradition can make to advance their building practices in the future.