

A BRIEF OVERVIEW OF BIRA'S PROJECTS IN THE NORTHWEST | BUILDING AMERICA'S MARINE CLIMATE ZONE

SYSTEMS



Builder: Martha Rose Construction
Project: *The Homestead*
System: Evacuated Tube Solar Collector
Location: Shoreline, WA

The BIRA team is currently performing advanced monitoring on the evacuated tube solar hot water systems at three super-efficient Martha Rose homes. Using data logging equipment, BIRA is able to evaluate multiple system configurations within each home.



Builder: New Tradition Homes
Project: *Serena Estates*
System: Crawlspace Design
Location: Vancouver, WA

BIRA seeks to determine which crawlspace and HVAC configuration is the most energy efficient in the Marine Climate Zone. Ongoing work confirms that ducts inside conditioned space outperform all other designs, including an insulated crawlspace.

PROTOTYPES



Builder: Shirey Contracting
Project: *Zero Energy Idea House*
Location: Bellevue, WA

The Zero Energy Idea House—featuring a “green” roof, a “living wall,” and a solar electric system—shows that smart choices can result in a home that minimizes energy use while maximizing comfort and style.



Builder: Fazzolari Custom Homes
Project: *Felida Living House*
Location: Felida, WA

Designed to meet The Living Building Challenge—one of the toughest building certifications available—the Felida Living House is projected to be almost entirely self-sufficient. Not only will the house be highly efficient with SIP walls, but it will also be able to generate all of its own power and manage its own wastewater.



Builder: Kaya Construction
Project: *SIPs Modern House*
Location: Portland, OR

Working closely with Seed Architecture Studio, the design team developed this project with the goal of demonstrating a sensible, next-generation approach for the envelope and the heating system that can be replicated by other builders on a large scale.

COMMUNITIES



Builder: Schneider Family Homes
Project: *Village at Miller's Creek*
Location: Burien, WA

Village at Miller's Creek is a cozy European style gated community. All homes come standard with highly insulated walls and tankless water heaters. Like the four other 40% Marine communities featured here, Village at Miller's Creek features ducts located inside conditioned space.



Builder: New Tradition Homes
Project: *Landover Commons*
Location: Vancouver, WA

New Tradition Homes is one of the best examples of a proactive Building America builder in the Marine Climate Zone. Their dedication to continual improvement will create an opportunity for them to build a community that displays 50% energy savings in the near future.



Builder: Quadrant Homes
Project: *Kentlake Highlands*
Location: Kent, WA

Quadrant Homes' pair of innovative 12,000 square foot showrooms allow prospective homebuyers to carefully choose each option in their home—including energy efficiency features. Quadrant Homes successfully markets these efficiency features as the only home options that pay you back.



Builder: Ruhoff Home Builders
Project: *Crescent Village*
Location: Eugene, OR

The “urban village” design of Crescent Village creates a lively atmosphere that engenders a sense of community. Ruhoff Home Builders helped develop this community through unique three-story townhomes that combine energy efficiency measures with solar domestic hot water.



Builder: Tom Walsh & Co.
Project: *New Columbia*
Location: Portland, OR

Aimed at budget-conscious buyers, this groundbreaking Housing Opportunities for People Everywhere (HOPE VI) project in Portland, Oregon was an excellent opportunity to build a cost-effective 40% community in the Marine Climate Zone.

BIRA PARTNERS IN THE NORTHWEST

Washington State University (WSU)

The WSU Energy Program is a self-supported department within the university's Extension Service. Leading BIRA's efforts in the Pacific Northwest, WSU provides quality control, commissioning, ENERGY STAR rater training, and consulting services. Among other sources, the program receives project funding from federal government agencies, federal power marketing agencies, and the nonprofit Northwest Energy Efficiency Alliance.

More at: www.energy.wsu.edu

Oregon Department of Energy (ODOE)

ODOE is an essential BIRA partner, driving efforts to build energy efficient homes in the state of Oregon. The office offers technical expertise, formulates energy policies, advances the development of renewable energy resources, and evaluates whether proposed energy facilities are economically and environmentally sound.

More at: www.oregon.gov/energy

High Performance Home:

The ODOE Conservation Division has developed a new program called the Oregon High Performance Home (HPH). An HPH is defined as a new residential home constructed by a licensed builder that has its own space conditioning and water heating systems, complies with the specifications listed in the Business Energy Tax Credit Technical Requirements, and features a renewable energy system. The HPH program can qualify homebuilders for up to \$12,000 in tax credits. BIRA hopes that this program will help to transform Oregon's residential homebuilding market and encourage more energy efficient building.

More at: <http://www.oregon.gov/energy/cons/bus/tax/betc-homebuilders.shtml>

Northwest ENERGY STAR®

Providing energy performance guidelines and quality control, the Northwest ENERGY STAR program is an ideal starting point for Northwest builders looking to build with a greater focus on energy efficiency. These well established protocols also make Northwest ENERGY STAR a gateway program for Building America builders.

In addition to being up to 30% more efficient than homes built to state code, other benefits of owning a Northwest ENERGY STAR home include energy bill savings throughout the life of the home, reduced greenhouse gas emissions, and improved indoor air quality for occupants of the home.

More at: www.northwestenergystar.com

MARKET TRANSFORMATION IN THE NORTHWEST

Research led by the WSU Energy Program, working under BIRA, has helped to shape a market transformation for Northwest builders. While investigating methods for improving heating and cooling energy efficiency in the Marine Climate Zone, the idea of moving ducts into conditioned space continually arose as the best option.

From the theoretical perspectives of technology and design, this technique is neither new nor advanced. From the real-world perspective of construction, however, it is hardly a mainstream practice, and it represents a very significant step towards increasing a home's heating and cooling energy efficiency. In the world of production building, change means time, liability, and money. Thus builders are reluctant to adopt new techniques—but now that homebuyers are beginning to recognize the value of energy efficiency, change can mean profit. In fact, many techniques to bring ducts inside are affordable both in first costs, because they make use of construction efficiencies, and in operational costs, because they save energy.

Quadrant Homes, the region's largest builder, has moved ducts inside almost exclusively. This represents approximately 1,000 homes a year in the region, each with a significantly better performing HVAC system.

More at: <http://www.bira.ws/files/HE-Ducts-Inside.pdf>

LINKS

Systems

Martha Rose Construction: www.martharoseconstruction.com

New Tradition Homes: www.newtraditionhomes.com

Prototypes

Shirey Contracting: www.shireycontracting.com www.zeroenergyideahouse.com

Fazzolari Custom Homes: www.fazzohomes.com www.felidalivinghouse.com

Kaya Construction: www.kayaconstruction.com www.seed-architecture.com

Communities

Schneider Family Homes: www.schneiderhomes.com

New Tradition Homes: www.newtraditionhomes.com

Quadrant Homes: www.quadranthomes.com

Ruhoff Home Builders: www.ruhoffhomebuilders.com

Tom Walsh & Co.: www.tomwalsh.com

About the Building America Program and BIRA

The U.S. Department of Energy's Building America program is a public/private partnership that provides energy solutions for production homebuilders through seven teams. The Building Industry Research Alliance (BIRA), led by ConSol, is a diverse coalition of industry partners focused on energy efficiency and renewable energy. The Zero Energy Homes program is a Building America research project aimed at achieving net Zero Energy Homes by 2020 that builders across the country can successfully build and market.

BIRA's main activities include:

- Providing energy analysis and design to reduce a home's energy bills by 40-70%
- Researching promising new and innovative technologies
- Working with cities, jurisdictions, states, utilities, and other stakeholders to mainstream energy efficiency and renewable energy technologies
- Presenting and publishing research findings aimed at educating the building industry
- Creating proven solutions for production homebuilders that make high performance homes both cost-effective and marketable

About ConSol

ConSol has been the leading developer of energy solutions for production builders for over 25 years. Their services include mechanical engineering, energy code compliance, ComfortWise products, and energy and resource consulting. ConSol's residential construction partners have been able to increase their profitability and quality while reducing their risk through services ConSol provides.

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