

Thrive Home Builders

Hyland Village
Westminster, CO



BUILDER PROFILE

Thrive Home Builders, Denver, CO
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FEATURED HOME/DEVELOPMENT:

Project Data:

- Name: Hyland Village
- Location: Westminster, CO
- Layout: 4 bdrm, 3.5 bath, 2 fl + bsmt, 3,322 ft²
- Climate Zone: IECC 5B, cold
- Completion: June 2015
- Category: production

Modeled Performance Data:

- HERS Index: without PV 39, with PV 28
- Projected Annual Energy Costs: without PV \$1,312, with PV \$903
- Projected Annual Energy Cost Savings (vs home built to 2009 IECC): without PV \$1,404, with PV \$1,644
- Projected Annual Energy Savings: without PV 7,271 kWh, 416 therms, with PV 10,869 kWh, 416 therms
- Added Construction Cost: without PV \$12,690, with PV \$20,406

Teaming with the U.S. Department of Energy has been a successful partnership for Denver-based production builder Thrive Home Builders. The builder signed on to DOE's Zero Energy Ready Home program in 2013 and has certified 197 single- and multi-family homes to the program's high-performance specifications (as of 12/2016). In 2014, Thrive committed to certifying all of its homes to the DOE program specifications. The builder expected to close on 220 homes in 2016 and plans to complete 240 homes in 2017. Thrive has brought a lot of attention to zero energy construction for production homes, both locally and nationally. Thrive's CEO Gene Myers is a vocal advocate for the DOE Zero Energy Ready Home program and speaks on zero energy construction at regional and national building conferences.

"DOE has been a great partner for Thrive," said Myers. He points to "the marketing advantage it [the DOE program] gives us by separating us from the other builders who do not take their homes to this level of energy conservation and indoor air quality." Perhaps one of the most important aspects of being a DOE Zero Energy Ready builder is that it helps position Thrive as a "forward-thinking, conscientious, 'builder of choice' for land owners and municipalities," according to Myers.

That reputation has increased Thrive's opportunities to acquire lots, a huge benefit in land-constrained Denver where available lots for new construction are in short supply. "The DOE and ENERGY STAR labels go a long way in helping to validate the story and put us at the head of the line for many A+ project opportunities," said Bill Rectanus, vice president of operations for Thrive Home Builders. According to Rectanus, this reputation "was a major contributing factor in Thrive having the opportunity to acquire the Hyland Village property" and it has allowed the company "to command advantageous acquisition terms." Hyland



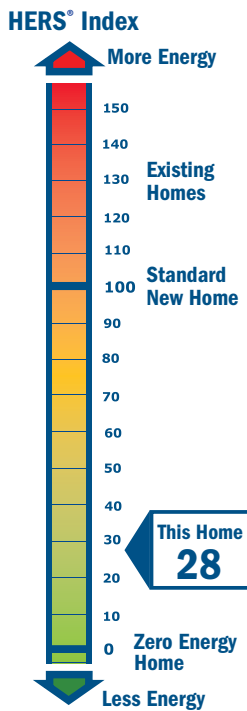
The U.S. Department of Energy invites home builders across the country to meet the extraordinary levels of excellence and quality specified in DOE's Zero Energy Ready Home program (formerly known as Challenge Home). Every DOE Zero Energy Ready Home starts with ENERGY STAR Certified Homes Version 3.0 for an energy-efficient home built on a solid foundation of building science research. Advanced technologies are designed in to give you superior construction, durability, and comfort; healthy indoor air; high-performance HVAC, lighting, and appliances; and solar-ready components for low or no utility bills in a quality home that will last for generations to come.

Thrive Home Builders built this 3,322-ft² home in Westminster, Colorado, to the high performance criteria of the DOE's Zero Energy Ready Home program. For additional energy savings, the home has ENERGY STAR-rated, double-pane, argon-filled, vinyl-framed windows; ENERGY STAR appliances; and CFL lighting. Every Thrive home is equipped with an Internet-based real-time monitoring system that helps home owners track energy production and use.



What makes a home a DOE ZERO ENERGY READY HOME?

- 1 **BASELINE**
ENERGY STAR Certified Homes Version 3.0
- 2 **ENVELOPE**
meets or exceeds 2012 IECC levels
- 3 **DUCT SYSTEM**
located within the home's thermal boundary
- 4 **WATER EFFICIENCY**
meets or exceeds the EPA WaterSense Section 3.3 specs
- 5 **LIGHTING AND APPLIANCES**
ENERGY STAR qualified



- 6 **INDOOR AIR QUALITY**
meets or exceeds the EPA Indoor airPLUS Verification Checklist
- 7 **RENEWABLE READY**
meets EPA Renewable Energy-Ready Home.

Village is located in the City of Westminster. “Westminster insisted that the developer seek us out,” said Rectanus.

Thrive Home Builders won a DOE 2016 Housing Innovation Award for a production home it constructed at Hyland Village. The 3,322-ft² two-story plus basement home is the first of 84 homes Thrive plans to build in the 151-unit development. Originally planned and developed before the recession of 2008 as a new-urbanist mixed-use walkable neighborhood with single-family, multi-family, retail buildings on narrow streets with wide sidewalks and alley-loaded garages, the development was bought out of bankruptcy by a developer willing to uphold the initial vision, who invited Thrive to participate at the city’s request, along with another builder. Despite already established lot orientations and municipal design regulations which put constraints on roof availability for solar, Thrive still offers an optional net zero energy package, which it refers to as Z.E.N. (Zero Energy Now) at Hyland Village. In 2009, Thrive became Colorado’s first production builder to equip homes with solar panels as a standard feature. In 2012, Thrive became the first production builder to offer a zero energy option on all of its single-family homes at the Stapleton development in Denver. And, in 2013, Thrive built an entire community of its Z.E.N. homes at Stapleton.

While not every home buyer at Hyland Village upgrades to Z.E.N., every home is sold with a minimum of 2.60 kW of photovoltaic panels on the roof. And, every home is constructed to the DOE Zero Energy Ready Home program criteria, providing a highly energy-efficient, solar-ready home. The DOE Zero Energy Ready Home program requires homes to meet all of the requirements of ENERGY STAR Certified Homes Version 3.0 and the U.S. Environmental Protection Agency’s Indoor airPLUS program as well as the hot water distribution requirements of the EPA’s WaterSense program and the insulation requirements of the 2012 International Energy Conservation Code. In addition, homes are required to have solar electric panels installed or have the conduit and electrical panel space in place for future photovoltaic panel installation.

The award-winning home is constructed using Thrive’s Eldorado plan, which was inspired by homes in Denver’s historic residential neighborhoods, with oversized front porches, alley-loaded garages, 9- and 10-foot ceilings, and full basements. To achieve the high energy-efficiency requirements in this cold climate location, Thrive used WUFI hygrothermic modeling to come up with a wall design that provides walls with a total insulation value of R-40 with low risk of moisture accumulation. Thrive chose double-wall construction consisting of two 2x4



This home is supplied with continuous hot water from a .97 EF tankless gas water heater. Water conservation features include WaterSense plumbing fixtures and a hot water recirculation loop that speeds hot water delivery to the tap. Outside, water use is cut with drought-tolerant, climate-specific species and drip irrigation. The home meets EPA Indoor airPLUS requirements, including low- or no-VOC finishes; good water management practices to reduce the likelihood of mold; and good ventilation practices.

24-inch on-center walls with staggered studs. The walls were spaced 2.5 inches apart to provide a 9.5-inch-deep wall cavity. After installing half-inch OSB sheathing and sealing all seams with a sprayer-applied sealant, the wall cavities were filled with R-40 of blown fiberglass. House wrap provides a drainage plane behind the fiber cement and brick veneer siding.

The home's vented attic was constructed with 14-inch raised-heel trusses to allow space for the full depth of insulation over the eaves. All of the top plates were air sealed with a sprayer-applied sealant before installing R-50 of blown fiberglass. The roof was protected with ice-and-water shield at all valleys and from the eaves up 24 inches past the wall line. A synthetic water-resistant underlayment and metal drip edge were also installed then topped with asphalt shingles. ENERGY STAR Cool Roof colored shingles could not be used due to municipal design constraints.

All homes in Hyland Village, including this model, have basement foundations with 8.75-foot basement walls to accommodate optional or future basement finishing. The foundation rests on 24-foot straight shaft piers to protect the structure from expansive soils in the area. This model also has a crawl space under a one-story area occupied by the nook and laundry room that connects the two-story main living area to the garage. Underneath the slab is a 6-mil vapor and radon barrier that is sealed to the foundation with a capillary break of polyurethane sealant. Beneath the barrier is a 4-inch-thick layer of ¾-inch rock above compacted soil. A passive radon venting system is incorporated into the foundation drain system. It draws soil gases from the foundation and vents them through the roof via a 4-inch plastic pipe. This vent stack can easily be upgraded to an active vent when a fan is added. The unfinished areas of the basement were insulated along the inside of the poured concrete foundation walls with R-19 perforated vinyl-faced drape insulation. Finished areas of the basement were framed and insulated with R-15 cavity insulation.

Most of the home's heating and cooling is provided by a 16 SEER heat pump with an HSPF of 9.5. A highly efficient 97.4 AFUE gas furnace provides back-up heat on rare very cold nights. All of the mechanical equipment is located in conditioned space, including the mastic-sealed metal ducts.

For additional energy savings, the home has ENERGY STAR-rated, double-pane, argon-filled, vinyl-framed windows; ENERGY STAR appliances; and CFL lighting. Every Thrive home is equipped with an Internet-based real-time monitoring system that helps home owners track energy production and use.

HOME CERTIFICATIONS

DOE Zero Energy Ready Home Program

ENERGY STAR Certified Homes

Version 3.0

EPA Indoor airPLUS



Every DOE Zero Energy Ready Home combines a building science baseline specified by ENERGY STAR Certified Homes with advanced technologies and practices from DOE's Building America research program.



The double-stud walls will hold 9.5 inches (R-40) of blown fiberglass.

While every home at Hyland Village comes with a 2.60-kW solar electric system, home buyers have the option of upgrading to a larger system. This home was upgraded to a 3.64-kW system. With the PV added, the home achieves a Home Energy Rating System (HERS) score of 28 (far lower than the HERS 80 to 100 of typical new homes) and the home owners should enjoy energy bills of about \$903 a year or \$75 a month. Even if the PV were not included, the home is so energy efficient it would achieve a HERS score of 39.

Thrive also incorporated disaster-resistance features. This home includes shear walls and framing and roof reinforcement to accommodate 100 psf snow loads and wind resistance for 100 mph gusts. To reduce fire risks, Thrive specified fire-retardant siding and shingles and installed residential fire sprinklers as required by local code.

Thrive cites its adherence to the DOE Zero Energy Ready Home program as one reason it is known for high-quality homes. “By conforming to the third-party standards of the DOE Zero Energy Ready Home program; training our people and our subcontractors; providing detailed construction documents; implementing a multi-level construction review by designers, the City, and our third-party peer reviewer; doing an energy rating on every home; and offering a third-party energy usage guarantee, we back up our efforts to ensure our performance for the benefit of our customers,” said Rectanus.

Thrive also takes the extra step of employing a third-party consultant to conduct home-owner customer satisfaction surveys with every new Thrive home owner at the time of closing, move-in, mid-year, and year end. Thrive’s management team reads every survey. “Home owners have told us Zero Energy Ready homes were the primary reason for seeking out and buying a Thrive home,” said Myers. Home buyers have also recognized the value with a higher price per square foot than most builders achieve in the Denver area. “We know we are succeeding when the market rewards us with sales,” said Myers.

Photos courtesy of Thrive Home Builders

KEY FEATURES

- **DOE Zero Energy Ready Home Path:** Performance.
- **Walls:** Double walls, 2x4 24" o.c. staggered with space for 9.5" R-40 blown fiberglass, sprayer-applied sealant, .5" OSB sheathing, house wrap, fiber cement and synthetic stone siding.
- **Roof:** Ice-and-water shield, waterproof underlayment, drip edge, asphalt shingles.
- **Attic:** Vented attic, R-50 blown fiberglass, 14" raised-heel trusses, sprayer-applied sealant at all top plates.
- **Foundation:** Basements with R-19 perforated vinyl-faced drape insulation on interior of walls.
- **Windows:** ENERGY STAR double-pane, argon-filled, vinyl-framed, U=0.22, SHGC=0.25.
- **Air Sealing:** 2.62 ACH 50.
- **Ventilation:** Continuous exhaust fan.
- **HVAC:** Heat pump SEER 16, HSPF 9.5; gas furnace 97.4 AFUE.
- **Hot Water:** Tankless gas water heater .97 EF.
- **Lighting:** 100% CFL.
- **Appliances:** ENERGY STAR refrigerator, dishwasher.
- **Solar:** 3.64-kW solar PV.
- **Water Conservation:** WaterSense fixtures, drip irrigation.
- **Energy Management System:** Internet monitoring.
- **Other:** EPA Indoor airPLUS, low-VOC paints, low-formaldehyde wood products, fresh air intake, passive radon mitigation, fire sprinkler system.