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# High Performance at the Right Price.



Photo courtesy of Mutual Housing

Four ways to use fiberglass batts in new home construction to achieve outstanding thermal performance that costs less.

# Introduction

Maximizing performance to cost is every builder’s goal, and every home buyer’s expectation. When it comes to insulation, lofty energy targets are impressive but the proof is in performance, whether it’s a HERS score in the low 50s or Zero Energy Ready Home status. Both are achievable with insulation’s best value product: the fiberglass (FG) batt. The case studies that follow highlight four award-winning builders across market segments who trust fiberglass batts to deliver exceptional energy efficiency and tight thermal performance in the homes they build while keeping insulation costs in check. All are consistently achieving results that others strive for, and here they share how they do it. This begs the question, if you can achieve these targets with batts, why use more expensive insulation products?

## AT A GLANCE

# Batts for Every Project: Four Winning Strategies

Project Type	Multi-family & Townhome	Custom: Mid-volume (20-30 homes per year)	Custom: Small-volume (<10 homes per year)	Large-volume builds (roughly 200 homes per year)
<b>Builder</b>	<a href="#">Mutual Housing California</a>	<a href="#">Addison Homes</a>	<a href="#">PD&amp;M Contractors</a>	<a href="#">Providence Homes</a>
<b>Award</b>	U.S. Department of Energy’s 2015 Housing Innovation Awards-ZERH. <a href="#">See the DOE case study</a>	U.S. Department of Energy’s 2015 Housing Innovation Awards-ZERH. <a href="#">See the DOE case study.</a>	2015 EarthCraft “Home of the Year” Award Winner	Energy Star Certified
<b>Project</b>	Mutual Housing at Spring Lake, Woodland, California	Cobbler Lane, Greenville, South Carolina	Shorefront properties in Smith Mountain Lake, Virginia	Multiple Northern Florida developments
<b>Insulation and Sealing Overview</b>	2x6, 16 in. on center with R-21 FG batts, R-44+ blown FG in attic; sealing done per Energy Star Thermal Enclosure checklist	2x4, 16 in. on center with R-13 FG batts, R-5 continuous exterior (walls), R-38 FG loosefill (attic), sealing caulk and attention to detail	0.5 in. of ccSPF for sealing (not as air barrier) and R-19 FG batts	2x6, 24 in. on center construction with R-21 FG batts paired with standard caulk
<b>HERS Rating</b>	N/A	41	40-50	54 or lower
<b>ACH50 Score</b>	2.3 - 4.0	1.65	3 or lower	1.5



Photo courtesy of Izzy Schwartz Photography

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Vanessa Guerra,  
Mutual Housing California

## Case Study 1: Batts Score for California Multi-family Project

Mutual Housing California’s 62-unit Mutual Housing at Spring Lake Development in Woodland, California, is the first affordable multi-family rental development to receive the U.S. Department of Energy’s Zero Energy Ready Home (ZERH) status. This developer’s business operation system proves that fiberglass batts can meet high performance targets if properly installed.

Mutual Housing’s Spring Lake units are 35% more energy efficient than the state’s 2008 building energy code, offer an ACH50 of between 2.3 and 4.0 for the townhomes and apartments, and, thanks to solar installations, reward residents with energy bills averaging just \$12 a month.

The multi-family builder achieved these impressive numbers with cost-effective fiberglass batts, installed with care, oversight and proper air sealing techniques: “Proper installation is critical,” observes Vanessa Guerra, Mutual Housing project manager. The company’s secret, she explains: “By having our HERS rater meet with the project team, we ensured expectations on quality were clear and the team was prepared to deliver on them.”



Photo courtesy of Addison Homes

“We have found that good air sealing combined with the excellent performance and cost-effectiveness of fiberglass allows us to build some of the highest performing homes in our region.”

Todd Usher, Addison Homes

## Case Study 2: Triple-Team Approach Meets Ambitious Targets

Green builder Addison Homes has been recognized with the U.S. Department of Energy’s 2015 Housing Innovation Award in the Zero Energy Ready Home category for its Cobbler Lane homes in Greenville, South Carolina.

Founder Todd Usher attributes the company’s success to educating trade partners on his construction requirements, following prescriptive requirements for insulation and caulking, and sealing thoroughly.

For the project, trades used insulated headers and drywall clips at two stud corners and wall intersections, and drywall was glued to ceiling plane top plates. Insulation requirements aligned with 2012 International Energy Conservation Code levels combined unfaced R-13 fiberglass batts with R-5 continuous exterior insulation for the walls, and R-38 loosefill fiberglass insulation in the vented attic. Proper sealing, caulking and attention to detail finished the job. Thanks to these strategies, Cobbler Lane homes achieve a HERS rating of 41, 1.65 ACH50, and lower energy bills for its homeowners, all at a cost of less than \$160 per square foot including land.

“We have found that good air sealing combined with the excellent performance and cost-effectiveness of fiberglass allows us to build some of the highest performing homes in our region,” Usher observes.



Photo courtesy of PD&M Inc. General Contractors

“We’re delivering homes that meet HERS 40–50 targets. We’re able to get there in large part because we selected the right insulation contractor, clearly articulated the expectation of Grade I installation and have a quality control process built in.”

Eddie Fort, PD&M Contractors

## Case Study 3: Grade I Installation Delivers Value and Performance

Custom home builder PD&M Contractors is known for its high-end homes, but the company trusts its cost-efficient flash and batt hybrid insulation technique over the popularized and costlier option of spray foam insulation. Winner of the 2015 EarthCraft “Home of the Year” award, PD&M builds shorefront properties in Smith Mountain Lake, Virginia, achieving impressive HERS and ACH50 numbers.

PD&M’s Eddie Fort explains that the company uses R-19 batt insulation plus ½ inch of closed cell spray foam as a flash layer to air seal the cavity. If properly installed, he observes, the combination ensures a tight thermal envelope.

“We’re delivering homes that meet HERS 40–50 targets,” Fort says. “We’re able to get there in large part because we selected the right insulation contractor, clearly articulated the expectation of Grade I installation and have a quality control process built in.” In line with the 2012 International Energy Conservation Code requirements observed in Virginia, PD&M also achieves ACH50 scores of 3 or lower in all of its homes.

The company works with its insulation contractors before and after each installation to communicate expectations and ensure installation quality. The company’s HERS rater and building inspector examine each job for high quality as well.

“This approach helps keep costs down and provides a high performance wall system,” Fort shares.



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Sean Junker,  
Providence Homes

## Case Study 4: Repeatable Practices Bring Cost-Effective Results

Northern Florida-based Providence Homes has built more than 1,000 Energy Star Certified homes, all using fiberglass batt insulation. In this competitive market, the large-volume builder has distinguished itself by offering high performance at a reasonable price, explains Providence President and COO Sean Junker. Its construction and insulation strategies are two key ways the company has done just that.

Providence worked with Building Science Consultant Steve Easley to identify repeatable construction practices and train Providence’s building trades on the two-pronged approach of proper air sealing techniques with quality insulation installation. Easley also developed a quality assurance program incorporating rigorous inspection and measurement. The builder’s resulting program uses advanced framing techniques that allow for the use of high-density R-21 batt insulation. In addition, trades receive continuous installation training, projects are inspected for quality, and homeowners receive affordable, energy efficient homes with average HERS scores below 54 and less than 1.5 ACH50 per hour.

“We are able to get a better insulation system at a cost-effective price,” Junker observes. “This is about the same performance that we could get with 5.5 inches of open cell spray foam, but for far lower cost.”

# NAIMA

NAIMA (North American Insulation Manufacturers Association) is the recognized voice of the insulation industry, bringing together North American manufacturers of fiberglass and mineral wool insulation products.

Through the Insulation Institute,™ we leverage the collective insulation expertise of our organization and our members to empower homeowners and professionals to make informed insulation choices. Our mission is to enable a more comfortable, energy efficient and sustainable future through insulation—and we are constantly working with building professionals, homeowners, government agencies, and public interest, energy and environmental groups to realize that vision.

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