Garbett Homes: Zero Energy Ready in 2017

Jon Nieporte
My power bill is $5. What’s yours?

- Heather Robbins, Garbett Homeowner

garbettHOMES.com
Now you’re living.
Denice breathes easier in her Garbett home.

-Denice
Solaris Homeowner

watch her story
Garbett Homes

- Bryson Garbett started Garbett Homes in 1983
- Garbett Homes has built 4,000 homes, in more than 30 communities, in the U.S. and Mexico.
- Single family (40%) and town homes (60%)
- 108 units sold in 7 communities in 2016
- $325,000 average sales price
- We strive to offer the most up-to-date technology, innovative designs, in a comfortable and functional home.
- “We believe there’s more to business than the bottom line. As we’ve been fortunate enough to experience great success over the years we’re filled with a sense of responsibility to give back.”
Awards

• Professional Builder – Single Family Production Under 2,000 SF or Below – 2013

• U.S. DOE – Housing Innovation Award Challenge Home Winner - 2013

• Gold Nugget – Residential Project of the Year 2012 – Detached Product

• UBEES – Utah Energy Champion – 2012

• Hearthstone Builder – Lifetime Public Service Award – 2013
Escalera

Escalera helps children who do not have the opportunity to continue their education after primary school.
Our Progress

• 174 schools built
• 26,500 students served by schools
• 49,900 students served through scholarships
Homes for Schools

• Utah’s first one-for-one real estate gifting model. Similar to Tom’s Shoes

• In our HTC community in Herriman, Utah we have designated 30 homes that, when purchased, will provide a school for children in Chiapas, Mexico
Homes in Mexico inspired change

• Utah buyers liked contemporary Mexico designs on our website

• The Daybreak collection was the first development in the US with modern & solar

• This shift to a niche market helped us weather the recession and develop high-performance homes
Thermal Imaging
The Camera
Thermal Imaging
Heat Loss Comparison
HERS (Home Energy Rating System)

Standard Home (HERS Score: 100+)

Garbett Home (HERS Score: 40)
Thermal Imaging
Heat Loss Comparison
HERS (Home Energy Rating System)

Comparison Standard Home  Garbett Home (HERS Score: 40) in TerraSol, South Salt Lake, Utah with a $14 Gas bill in Dec/Jan 2012
Thermal Imaging

The outlet provides an illustration of some of our limitations and the importance of sealing everything that can be sealed well and economically - it’s not ideal to have any place in a house that has heat loss like this, but because the envelope is so well sealed, this tiny spot doesn’t have much affect. This home came in under 4 ACH/hr (Air Changes Per Hour)
Two corner fans - these are identical locations and equipment in two different adjacent homes. This illustrates the importance of air-sealing practices and diagnostic techniques. Working closely with subcontractors from all the trades and getting everyone on board with owning their piece of the objective of energy efficiency is very important.
Where do you start?

Pick the lowest hanging fruit

• Windows
• Light bulbs
• HVAC
• Attic Insulation
• Wall Insulation
• Infiltration (ACHs)
• Water Heating
Windows

- Multiple glazings
- Low-E coating
- Gas fill
- Warm edge spacer
- Improved frame material

Glazing types:
- Single
- Double
- Triple

Space between glass may be gas-filled.
Glass may be low-E type.

Often has storm window, screen or combination.
Windows

What changes can we make?

• Change U-.35 to U-.30
• Change U-.30 to U-.20
• Change SHGC .35-.30
Windows

What is the cost of the window change?

• U-.35: baseline
• U-.35 to U-.30: $1,200
• U-.35 to U-.20: $12,000

What did that change do to your score?

• U-.30 score: 74 to 72 (2 points)

• U-.30 to U-.20 score:
  72 to 69 (3 points)
Windows

Cost per HERS point: HERS 70 Range

• U-.35 to U-.30: $600/HERS point
• U-.35 to U-.20: $4,000/HERS point

• 40’s:
  • $600/point
  • $6,000/point
Thermal Control
Wall Insulation
Wall Insulation

How does insulation affect my efficiency score?

• What affects it?
  – **R-value**, blown-in vs. batt vs. open cell spray vs. closed cell spray (performance value), installation quality
  – Continuous vs. cavity
  – Effective R-value (what does this mean?)
    • the average R-value of the overall wall area using cavity area R-values, window area U-values, stud ratios in walls and continuous exterior insulation if applicable
  – ACHs
Wall Insulation

What changes can we make?

• R-19 batt to R-21 blown-in
• R-21 blown-in to R-23 blown-in
• R-23 blown-in + R-5 continuous
Wall Insulation

What is the cost of the wall insulation change?

• R-19 batt to R-21 blown-in: $300
• R-21 blown-in to R-23 blown-in: $100
• R-23 blown-in + R-5 continuous: $2200
Wall Insulation

What is the cost of the wall insulation change?
• R-19 batt to R-21 blown-in: $300
• R-21 blown-in to R-23 blown-in: $100
• R-23 blown-in + R-5 continuous: $2200

What did that change do to your score?
• R-19 batt to R-21 blown-in: 74 to 72 (2 points)
• R-21 blown-in to R-23 blown-in: 72 to 71 (1 point)
• R-23 blown-in + R-5 continuous:  –71 to 69 (2 points)
  –ACH improvement
Wall Insulation

Cost per HERS point: HERS 70 Range

• R-19 batt to R-21 blow-in:
  – $150/HERS point

• R-21 blown-in to R-23 blown-in:
  – $100/HERS point

• R-23 blown-in + R-5 continuous:
  – $1,100/HERS point
Advanced Framing
Advanced Framing
Advanced Framing

- 2x6 studs
- 24” on center
- Drywall clips
- No ladder blocking
  - Drywall clips
- Savings on costs of studs vs. drywall clip costs
- Gain volume of insulation
- Reduce total thermal bridge area
Reduce Air Leakage
Reduce Air Leakage

Reduction Values in 40’s-50’s Range

Garbett Standard Package

- 7 ACH: 56
- 5 ACH: 53
- 4 ACH: 51
- 3 ACH: 50
- 2 ACH: 48
- 1 ACH: 47
- 0.8 ACH: 47

When scores in 70’s the average was 2 points/ACH. In the 40’s HERS range 1.5 points/ACH.
How to Reduce Air Leakage

• Sealing between gaps in wood
• Sealing holes cut in the side walls
• Air leaking from electrical outlets
• Air leaking from attic down interior walls
• House wrap
• Panelization
Air Control

Air Sealing
Air Control
Spray Foam
Air Control

House Wrap
Where do you start?

Pick the lowest hanging fruit

- Windows
- Light bulbs
- HVAC
- Attic Insulation
- Wall Insulation
- Infiltration (ACHs)
- Water Heating
High-performance homes can be a tough nut to crack:

• Tough sell to buyers
• Tough selling technical information in a value-driven emotional way
• Tough sell to lenders
• Tough to get values from just any appraiser or lender
Garbett’s two-pronged approach

• Sales Training – selling high performance homes
  – Education process
  – Translation process
  – Change of focus
  – Implementation process
  – Successes and challenges

• Mortgage and Appraiser partnership – financing and appraising high performance homes
  – Process
  – Mortgage and sales partnership
  – Work in process/lessons learned
Sales Team Training
Nuts & Bolts

• How do we build energy efficient homes?
  – Advanced framing
  – Tight building envelope
  – Renewable energy sources
    • Photovoltaic (PV) Solar
    • Solar-thermal hot water
  – Efficient equipment

• Agent training
  – Green Home Specialist, CSP, Master CGP

• Agent to customer translation
  – How and when to communicate included green features
Nuts & Bolts - How?

Advanced Framing

Air Control

Thermal Imaging

Advanced Framing

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Attic Insulation

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Wall Insulation

The outlet provides an illustration of some of our limitations and the importance of sealing everything that can be sealed well and economically. It’s not ideal to have any place in a house that has heat loss like this, but because the envelope is so well sealed, this tiny spot doesn’t have much effect. This home came in under 4 ACH7/60 (Air Changes Per Hour).

Heat Loss Comparison

HERS (Home Energy Rating System)

Comparison Unsealed Home

Garbett Home (HERS Score: 49)

In Terra Bella, Scotts Valley, CA, USA

with a 4.14 Int (175 ft²) In Dec 2012

Note: The lower the HERS® score, the better.

The National Home Energy Rating System (HERS®) is an accurate measurement of a home’s energy efficiency. A home energy rating of a new home allows buyers to compare the energy efficiency of homes they are considering buying.
Education Process

• Less nuts and bolts and more the experiential value of those things – more about comfort than the R-value of the insulation
  – Lives better
  – Works better (focus)
    • $40/month heating/cooling bill
    • Even room-by-room temperatures
    • No outdoor draft
    • Outside noise reduction
    • No excessive humidity
  – Lasts better
    • Fewer call backs

• Getting geeky with buyers doesn’t usually work
• Can’t just list features – not effective – at least not upfront
Display in model home
Signage in model home

Implementing a combination of strategies we are able to provide the highest performing homes in Utah.

Photovoltaic (PV) Solar panels. Using Solar to generate electricity means a lower utility bill for you and it's great for the planet!

Compact Fluorescent (CFL) light bulbs use 70% less power, emit less heat and last 15 times longer than traditional light bulbs.

Using less water for everyday uses: Low-flow faucets and optional dual flush toilets save up to 60% of water and help to keep your costs low.

We use 2” x 6” walls & 24” on center framing. Meaning more room for insulation. Using blown in fiber insulation to fill in all voids and gaps in the framing to keep your home comfortable. Our framing strategy conserves wood while making our homes structurally stronger than any other Utah builder.

Our raised heel roof truss system offers the most energy efficient roof framing. Conventional roof truss assembly (insulated with standard batt insulation) does not allow adequate ceiling insulation and the air passing through vents are restricted. The Garbett raised heel system uses baffles to allow ample air flow above the insulation. Blow-in fiber is used to insulate the ceiling and spray foam is used to air-seal the raised heel achieving a true and consistent R-49 thermal rating.
Signage in model home

Health
advanced homes

Garbett’s tight building envelope helps keep impurities out of your home. Keeping you and yours healthy.
Signage in model home

Comfort
relaxed homes

Garbett’s insulation strategies keep your home at a steady temperature keeping you comfortable everyday of the year.
Signage in model home

**Your dollar goes further with Garbett.**

Over the life of a home, built with similar dimensions as this one, utilities will cost you $78,000 and even a brand new home you’ll spend around $75,000. When you buy a new Garbett home in Layton your utility costs could be almost half that at around $41,000 saving you roughly $35,000!

- **Garbett - HERS 46**: $41,370
- **Other Builders - HERS 94**: $75,390
- **Used Homes - HERS 101**: $78,240
$35,000 may not seem like much...

Specifically when you’re talking about the 6 figure numbers that are tossed around when purchasing a home. So we want to try and put $35k into real world spending.

- A brand new hybrid + electric vehicle paid off.
- 7.25 Years of Day Care services. ($400 monthly)
- 5 Years of in-state tuition. (non-private school)
- 4.5 Years worth of groceries. (2 adults, 2 children)
- 700 Visits to the Zoo. (2 adults, 2 children)
- 9,700 Gallons of gasoline.
- 875 Oil changes

- 175 Tandem sky dive jumps.
- 70,000 Pounds of banana’s.
- 27,000 Fiji apples.
- 466 Pairs of shoes.
- 400 Concert tickets.
- 35 Years worth of cat care.
- 19 Years worth of dog care.

As you can see 35k can go a very long way. So save money while saving Utah’s resources by going green with a Garbett Home purchase.
Fewer features - more focus on health, comfort & savings

Need we say more?

When the average combined utility bill in Utah is $180/month, it’s a no-brainer!

My power bill is $5. What’s yours?
- Heather Robbins, Garbett Homeowner
Sales Team Implementation

• Change the sales script
  – Framework for selling
  – Energy efficiency is another feature
  – When green is sold in this order buyers will pay more for green

• Right words to translate value
  – How buyers experience the home
  – Check-up vs. audit
  – Lower cost vs. payback
  – Garbett builds a better home

• Role playing – practice using metaphors new terms

• Less focus on green features in model homes
Working with the Mortgage Company
How did it happen?

- Garbett Mortgage closed 2011 – moved to Citywide Home Loans
- Appraisers/lenders not valuing sustainable features and their savings properly
- Citywide underwriting in-house - loans close in Citywide’s name
- Underwriting requirements very clear to appraisers
- Citywide formed a niche “green panel” of appraisers with Home Base Appraisals (an AMC)
- Panel appraisers located throughout Garbett’s market to serve each location
Appraisers

• Chosen based on green knowledge, experience, & training, as well as location
• Chosen based on willingness to get more green education
• Certified through Appraisal Institute
• Look at comparables in locations where Garbett has sold green
• Where Garbett has not sold green, appraisers look for other means
A Work in Process
Developing a think tank for selling green

- Citywide Home Loans frequently attends Garbett Home’s monthly sales meetings
- Feedback loop from construction & purchasing to sales & marketing to improve processes
- Buyers communicate things to construction and lender that they don’t communicate to sales associates
Digital Resources
Website Resources

2x4 Walls & 24" on Center Framing:

Using 2x4 exterior walls instead of conventional 2x6 walls, and spacing studs 24" on center (instead of the standard 24") we’re able to make significant gains in insulation. Wood is a poor insulator, so by incorporating these innovations we’re able to include more insulation and give you a higher performing home.

Drywall Clips & Blown In Fiber:

Drywall clipfasteners eliminate the need for wooden stud blocking where drywall is attached to the studs. Garbett homes is able to eliminate over 50 studs per home, thereby increasing your insulation up to 51 cubic feet. More Insulation means more energy savings.

We can blown in fiberglass insulation in all exterior walls to achieve an R-26 thermal rating (standards R-19). We use blow-in insulation in our ceilings to achieve a true R-38 thermal rating. Blown-in fiberglass has many advantages:
-It is resilient, non-flammable, non-settling, and eco-friendly (50% recycled glass & sand), won’t absorb, won’t rot, and is fire resistant. And let’s not forget: no batts on floor, no gaps, or gaps, creating a tighter seal and allowing a higher R-value per inch than standard insulation.

Raised-Heel Roof Truss:

Low E Windows:

Attic Access Insulation:

The erj part carries a significant source of air leakage. Trusses can be paired through the House in a way that can be created by placing panels and electrical work. Garbett homes uses Kyron<c>®</c> water blown open cell spray foam in an air leak and insulates the rim joists. Unlike conventional batt insulation, the spray foam leaves no gaps or voids and won’t stay while perforating a super tight air barrier and insulator.

Standard Builder

Standard Builder

Standard Builder
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Passing the mic to our customers

My power bill is $5. What’s yours?
- Heather Robbins, Garbett Homeowner

Denise breathes easier in her Garbett home

Mason & Erika Allred love their Garbett home.

Hear what they have to say