Why zHome?

The whole is greater than the sum of its parts”

Buildings by the numbers – buildings in the US:

- 38% of carbon dioxide emissions
- 39% of energy use
- 72% of electricity consumption
- 90% - time average American spends indoors
- 41% of water use
- 60% of non-industrial waste
- 40% of all raw materials use
History of Issaquah’s Green Building Initiatives

- 2000  Start of informal program
- 2003  Fire Station 73 (First LEED Fire Station in the U.S.)
- 2004  Built Green Idea Home
- 2004  Sustainable Building Resolution

Results to date:

- 1750 Built Green 4+5 star homes
- Eight LEED buildings
How did we get here?

- BG Idea Home – prototype
- BedZED & Hockerton
- March 06 – City creates partnership with King County GreenTools, Built Green, and Washington State University
- Fall 06 – Property sought
- Spring 07 – Property negotiated with PBC; initial Council approval
- Summer 07 – Builder RFQ; PSE joins partnership
- Sept. 07 – Final Council approval
- Fall 07 – David Vandervort selected as architect
Collaborative Goals:
Catalyzing Change
Replicable Strategies
Aggressive Benchmarks

- Designer, builder, consumer and government education
- Open book accounting
- Media
- Consumer classes
- Extended open house period
- 5 year demonstration unit
- Zero net energy use
- Zero net carbon emissions
- 60% water use reduction
- Deep green materials
- Low toxic, healthy interiors
- Low impact storm water mitigation techniques
- 660 Built Green Points
Timeline

- Construction Fall ‘08 – Fall ’09
- Grand Opening Fall ’09

Ongoing Education [www.z-home.org](http://www.z-home.org)
Who is Howland Homes?

- Founded in 1998 – Single Family / Townhomes
- Today – Full Service Urban Infill Developer, Innovator, Builder
- Single Family, Multifamily, and Commercial.
- Numbers – 42 / 14 / 200 / 50-100 / 1000 / 5 days / 10
Why zHome
o Urban Infill – Our Passion, Our Market, Our Company, Our Future
o It is time - Boutique or Production, Complex or Simple
o Innovation, Education, Healthy Living, and Stewardship

Market Reality - #@%^&*#@!
Our zHome Team:
David Vandervort Architects - Project Architect
Stantec Consulting, Inc - Energy & Mechanical Engineer
Darwin Webb Landscape Architect
Core Design, Inc – Civil Engineering
2020 Engineering - Water/Storm
Harriott Smith Valentine - Structural Engineer

Oversight / Insight: (TAC) City of Issaquah, King County, MBA, PSE, WSU Energy Office, Port Blakely - ARC
Project Considerations: Builder / Developer View
  o Site, Design, Permitting, Construction, Sales
  o Cost Drivers for Affordable Living: 1) Land / Zoning 2) Time 3) Material / Labor Costs 4) Regulations – Changes, Interpretations (No Maybe Ok)
Design Goals

- Flexible for Modern Living
- Connected to the Land
- Replicable
- Low Tech / High Tech Hybrid
Site Plan Concepts

- Cultivate Community
- Integrate Buildings to the Land
- Solar Courtyard
- Vertical Gardens
- Parking + Services off Woonerf
- Smart Car Parking w/ Electrical Hook Up
Town home Unit Types

- (2) 1-Bedroom 791 Conditioned Sq.Ft. (+Garage & Decks)
- (4) 2-Bedroom 1,344 Conditioned Sq.Ft. (+Garage & Decks)
- (4) 3 Bedroom 1,537 Conditioned Sq.Ft. (+Garage & Decks)
### Benchmarks
- Environmental
- Water Conservation
- Materials
- IAQ
- Construction Waste Recycling
- Low Impact Storm Water Runoff

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### Baseline Energy Breakdown

#### Optimized Energy Breakdown

### Heating Technology Considerations

<table>
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<th>Heating Technology</th>
<th>Seasonal Efficiency (COP)</th>
<th>lbs CO2 per MMBtu Heating</th>
<th>kWh per MMBtu Heating</th>
<th>PV (ft2) per MMBtu Htg</th>
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Lessons Learned
- Passive and Active Energy Strategies Must be Integrated
- Occupant Behavior Will Ultimately Determine Zero Energy Success

www.z-home.org