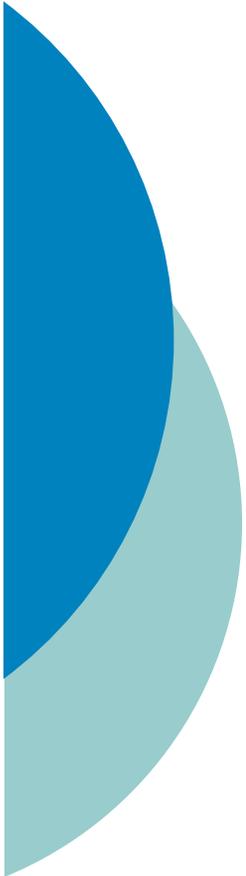


Southeast Solar Summit: New Residential Construction

Energy Efficiency | Solar Opportunities | Sustainable Benefits

Presented by Elizabeth Eason, AIA, LEED AP
Elizabeth Eason Architecture, llc

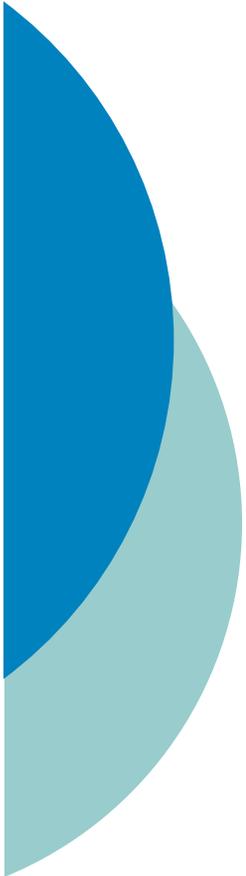


US Green Building Council



LEED Rating Systems

- New Construction
- Commercial Interiors
- Existing Buildings
- Core & Shell
- Schools
- Homes



US Green Building Council



- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality

Strategies for Sustainability

sustainable site

- erosion control
- reduce heat island effect
reflective roofs & shaded paving
- light pollution reduction



protected habitat



shaded paving



fully shielded light fixture

Strategies for Sustainability

water efficiency

- native & water efficient landscaping
- reduction in water use
- rainwater capture or graywater use



native plants



dual flush toilet



rain barrel

Strategies for Sustainability

energy efficiency

- less energy used
- occupancy and light sensors
- on demand water heaters
- highly insulated



occupancy sensor



on-demand water heater



bio based insulation

Strategies for Sustainability

indoor quality

- low emitting materials especially paints & carpet
- carbon dioxide monitoring & fresh air
- daylight and views for all occupied spaces



low VOC paints



views



daylight

Strategies for Sustainability

materials & resources

- low maintenance
- local
- recycled content
- reduce construction waste



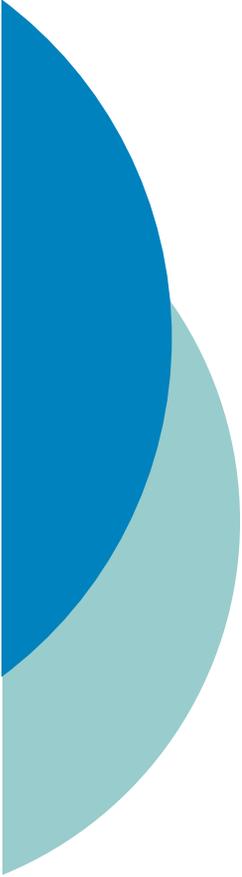
local stone



soy beans



construction waste recycling



Sustainable Benefits

Job Creation & Training

Manufacturing

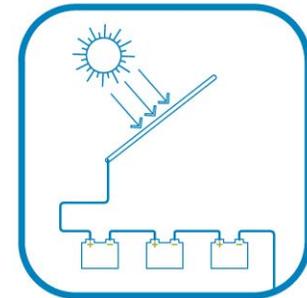
Specialties

Utilities

Housing Authorities

Government and Property Owners

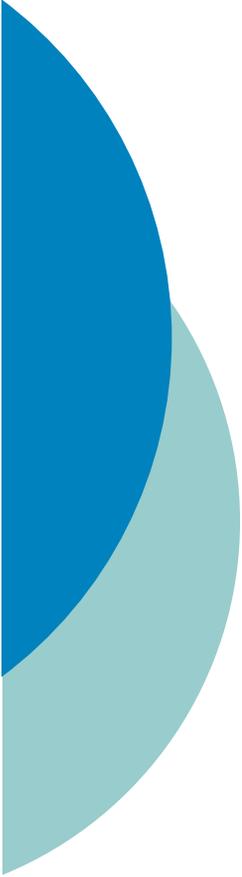
Education, productivity, retail sales



Whole Building Approach

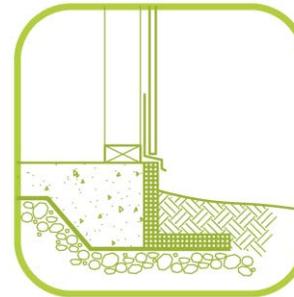
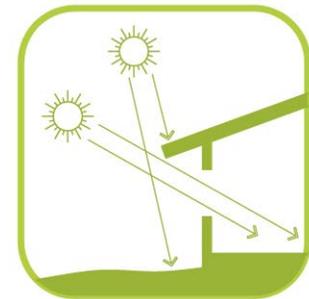
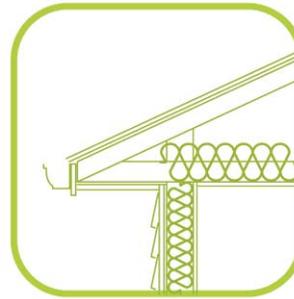
Generation House





Energy Efficiency Integration

- Orientation
- Envelope Design
- Materials
- Systems
- Equipment



Whole building approach

Generation House



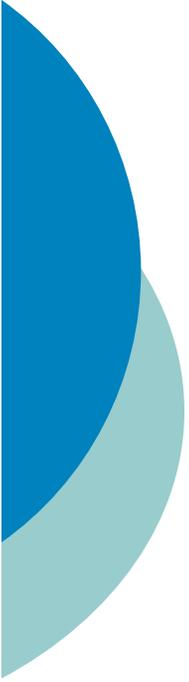
generation
house

[one story bungalow]

[floor plan]

1. living room
2. dining
3. kitchen
4. guest bath
5. hall
6. laundry closet
7. master bedroom
8. master closet
9. master bath
10. office/
guest bedroom





Whole building approach

Generation House

Eco-Home Features

Solar Power

- Solar electric home power system
- Solar hot water system
- Solar generation monitoring panel

Structure

- Recycled metal studs
- Engineered wood
- Structural insulated panel wall and roof system

Building Envelope

- Soy based spray foam insulation
- Drain mat and house wrap system
- Durable fiber cement siding
- Standing seam metal roof with "Cool Roof" coating
- Low E "Energy Star" windows

Plumbing Fixtures

- Dual flush water saving toilets
- Water conserving plumbing fixtures

Efficiency

- "Energy Star" light fixtures
- "Energy Star" exhaust fans
- "Energy Star" appliances

Mechanical System

- Geothermal mechanical system (two story)
- High efficiency heat pump (one story)
- Duct work within the conditioned space
- ORNL designed and tested mechanical

Healthy Interiors

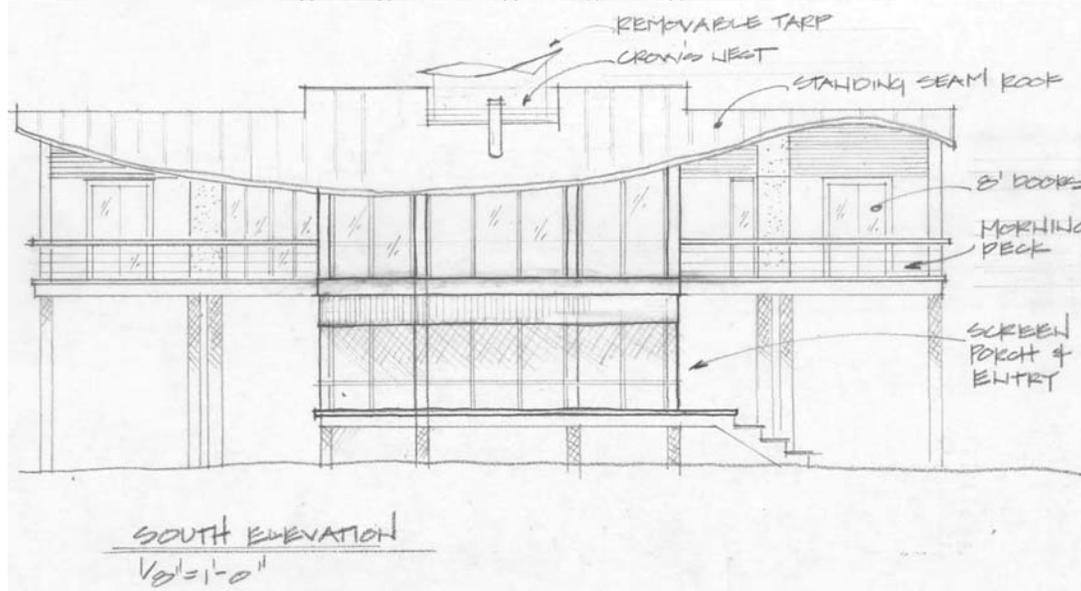
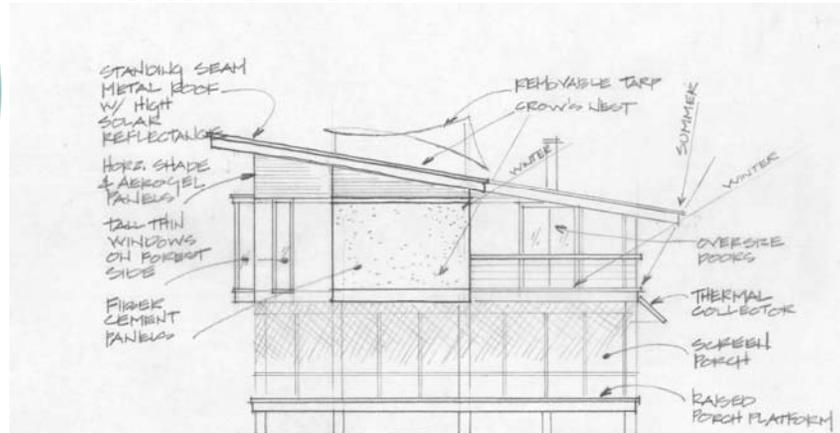
- Low VOC paints
- Controlled fresh air ventilation

Extras

- Composite decking material (two story)
- Construction waste recycling
- Federal tax credits
- Home Energy Rater inspection
- Energy Star Certification
- Energy use monitoring

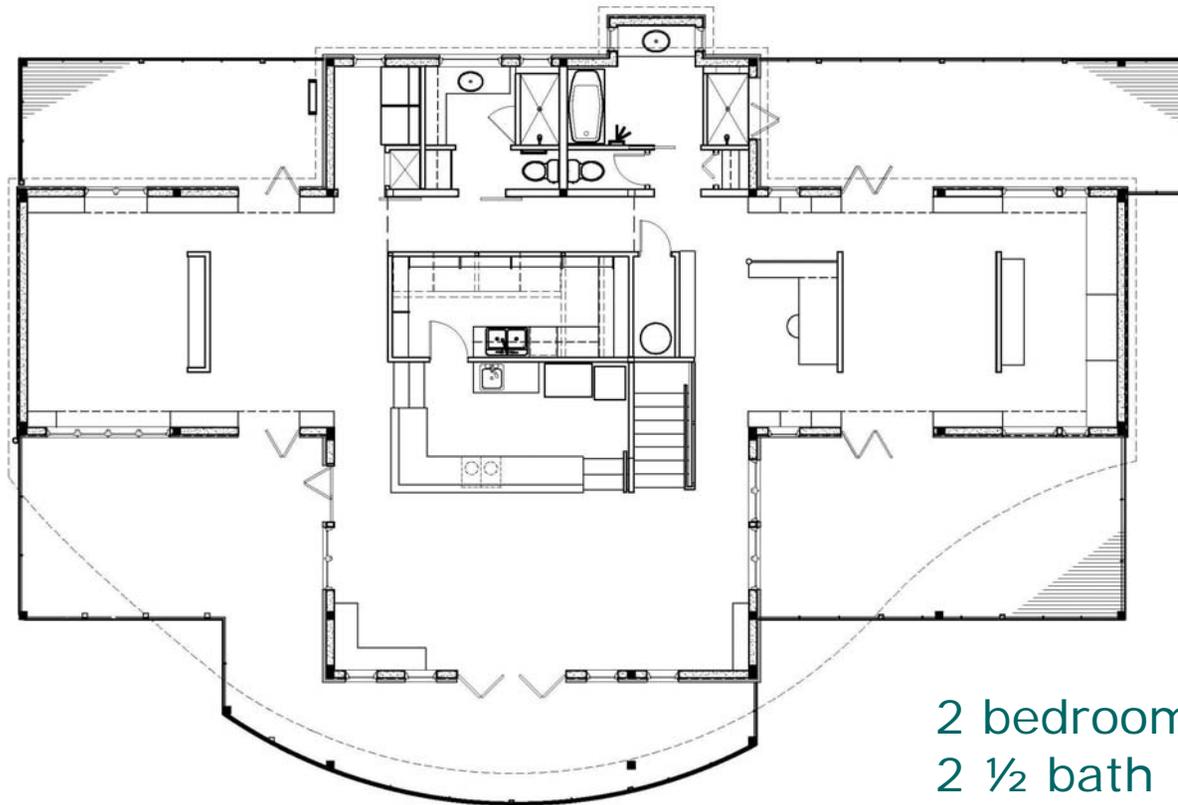
LEED for Homes

Island Home



LEED for Homes

Island Home



2 bedroom
2 ½ bath
1850 sf

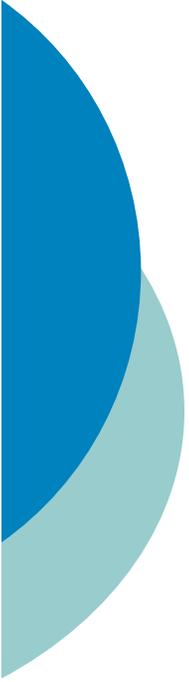
LEED for Homes

Island Home

Key Features

- Passive heating & thermal mass
- Night insulation
- Adjustable exterior shading
- Natural ventilation
- Well insulated envelope
- Rainwater collection
- Composting toilets
- Grey water system
- Low flow fixtures
- Fluorescent & LED lighting
- Sustainable & recycled finishes
- Mold resistant, paperless drywall
- Induction cook top
- High efficiency appliances
- PV solar electric
- High efficiency wood furnace
- Solar hot water





LEED for Homes

Island Home

Energy Model

Projected HERS Rating

HERS Index of 13

with a 6 kW PV system and solar water heating

Total Emissions (lbs/year)

Type of Emissions	Reference Home As Designed	Difference	% Difference
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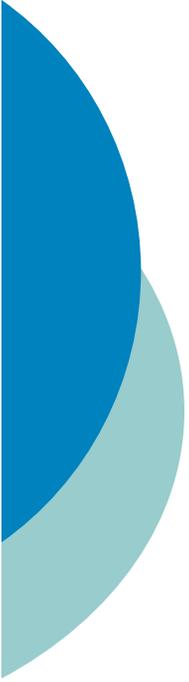
Carbon Dioxide (CO ₂)	-78.8%
-----------------------------------	--------

Sulfur Dioxide (SO ₂)	-97.1%
-----------------------------------	--------

Nitrogen Oxides (NO _x)	-97.1%
------------------------------------	--------

The energy and emission values are calculated by comparing the Rated Home to an all-electric version of the Reference Home as defined in the "Mortgage Industry National Home Energy Rating Systems Standards" as promulgated by the Residential Energy Services Network (RESNET). Site-to-source energy multipliers and air emission data were taken from the USEPA E-GRID97 database

Energy Model provided by Brett Dillon Vice President/General Manager IBS Advisors, LLC Builders Energy Rater, LLC www.buildersenergyrater.com 17325 Bell North Drive, Suite 1 Schertz, TX 78154
Integrating building science, design and best construction practices



LEED for Homes

Island Home

Rating System

Innovation and Design Process
Location and Linkages
Sustainable Sites
Water Efficiency
Energy and Atmosphere
Materials and Resources
Indoor Environmental Quality
Awareness and Education

November 2007

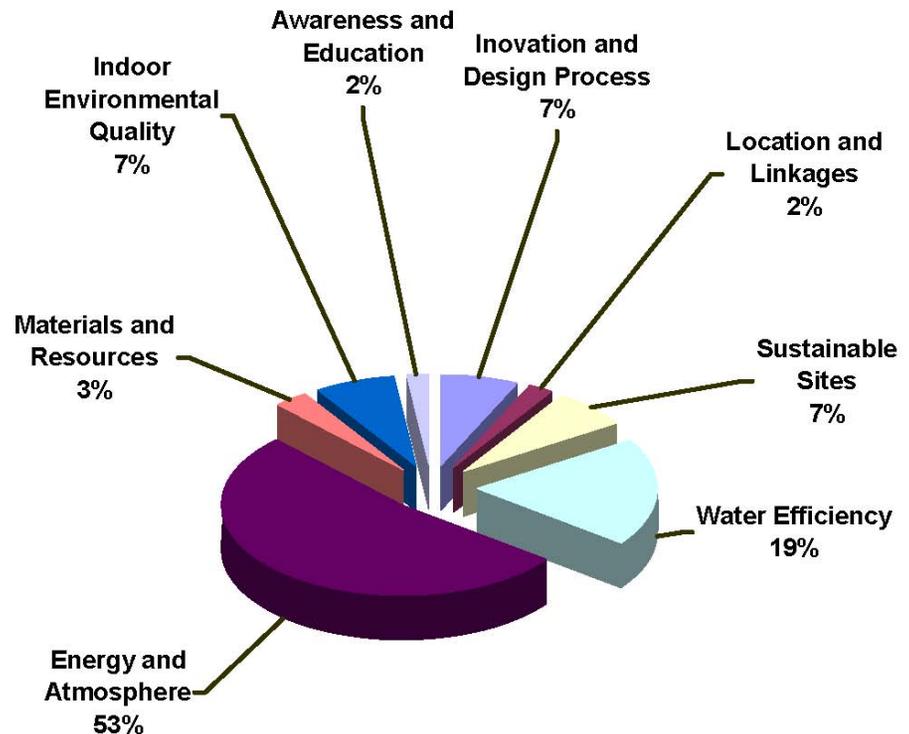


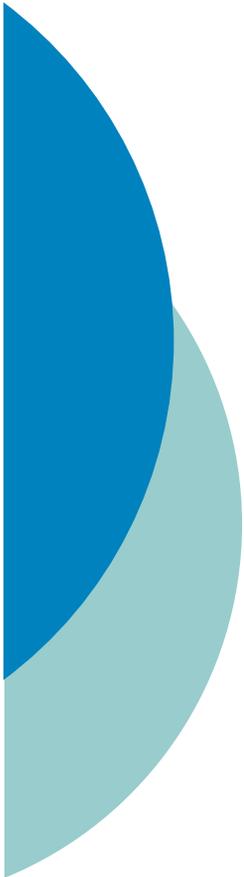
LEED for Homes

Island Home

LEED for Homes

We estimate that this home could achieve a silver rating from the LEED for Homes Program with the majority of points in the energy and atmosphere category.





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