

**VERMONT BUILT GREEN (VBG)
PROGRAM
Version 3.2a (4/17/2003)**

A PROJECT OF:



**BUILDING FOR SOCIAL
RESPONSIBILITY
AND
VERMONT ENERGY
INVESTMENT CORPORATION**

Vermont Built Green

Program Description

Thank you for your interest in the *Vermont Built Green* (VBG) Program. This program has been in development for almost three years. The *Vermont Built Green* Scorecard is the intellectual property of Building for Social Responsibility (BSR) and is propriety information. Any use or reproduction of the Scorecard without the express written permission of BSR is forbidden. However, we welcome input. It is our plan that this document will evolve and improve over time as more homes are evaluated and we fine-tune the program. The following is an outline of the VBG Program along with the *VBG* Scorecard (version 3.2a).

Overview

The VBG Program, an initiative of BSR, certifies residential buildings that are constructed to sustainable criteria. The criteria, as detailed in the Scorecard, have been created and supported by regional experts and can be changed and updated periodically through an open review process. The focus of the program is to promote the construction of homes that are healthy, durable and have reduced impact on the immediate environment and the global resources that support our built environment. This initial program is for new residential construction and substantial renovation. It is our hope that we will more fully consider moderate renovation and remodeling at a future date.

Oversight for the program occurs by the VBG Program Committee that has been appointed by the BSR Board of Directors, which has ultimate oversight over the program. The program is likely to be initially administered in Vermont through the Vermont Energy Investment Corporation (VEIC). The VBG Scorecard is also being used in other residential sustainable-certified programs in the Northeast, including Massachusetts' Cape Light Compact. Membership in BSR is open to all that are interested and pay the minimal annual dues.

Certification

In order to receive VBG certification, applicants must 1) incorporate all of the required approaches and 2) score a minimum of 100 points. Points are achieved through a combination of sustainable strategies and approaches, including house size. To receive recognition beyond the minimum certification threshold, applicants accumulate points as designated on the Scorecard.

Certification is by a combination of self-documentation, inspections as part of certification of achieving the required home energy rating and spot inspections for other green features. Applicants seeking certification must document each of the approaches found in their building by submitting a completed VBG checklist. VBG staff or their designees reserve the right to inspect any building or the records of any building seeking or having sought certification. Certifications are awarded as "Vermont Built Green Certified with XX Points".

There will be a fee for certification that will be established by the VBG Program Committee and approved by the BSR Board of Directors.

Program Components

The VBG Program components (existing and envisioned) include the following:

- *Scorecard*: A multi-page list of approaches, including the basic requirements with the available points that determine a building's score. A minimum number of points (100) must be achieved in order to receive the basic level of certification. Points are also awarded for house size and can be determined using the House Size Point chart found at the end of the Scorecard.
- *VBG Handbook*: An accompanying guide that details exactly what is required to obtain points for each approach, provides supplemental details and explanations, and lists information on materials and product resources.
- *Certification Documentation*: Programmatic procedures and forms to document certification of buildings.
- *Web Site*: It is envisioned that much of the VBG Program materials would be made available over the Internet at www.bsr-vt.org.

Oversight

The VBG Program Committee is made up of designees of the BSR Board of Directors and is comprised of a dozen individuals with expertise in construction and sustainability. Committee members shall be appointed for one-year terms with the option of renewal as determined by the BSR Directors. The BSR Directors have ultimate oversight over all aspects of the VBG Program.

Criteria Modification and Updates

VBG Criteria are modified and updated according to the following procedures:

- Changes are submitted in writing with:
 - a) a specific suggestion of the modification being proposed;
 - b) substantiation, research and justification for the change; and
 - c) contact and affiliation information of the person proposing the change.
- Suggestions are reviewed and acted on by the Program Committee not less than once a year. Review and action by the Committee may occur more often if deemed warranted by the Committee or BSR Board of Directors. The BSR Board of Directors approves any VBG Program changes.
- Additional points created from action taken on suggestions and changes would be available retroactively to buildings on which these approaches had been installed.

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VERMONT BUILT GREEN
Scorecard
(for Residential Certification)
Version 3.2a

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In order to receive certification as a "Vermont Built Green" home, all of the applicable basic "Required Approaches" must be installed and a minimum score of 100 points (the "Vermont Built Green Threshold") must be earned by doing the following:

1. Ensure that all applicable "Required Approaches" are installed.
2. Determine points earned from "House Size Points" (see House Size Points sheet).
3. Tally points from any additional Approaches incorporated in the home beyond the Required Approaches.
4. Total House Size Score points and Approach points for Vermont Built Green Total Points.

Category	Strategy	Approach	Points
1. SITING AND LAND USE			
1)	Location: Choose location to reduce the dependence on automobiles		
a	Locate site within 3 miles of public transport stop. (within 1 mile - 2 pts., 1/4 mile - 3 pts.)		1
b	Locate within 3 miles of public school. (1 mile - 2 pts., 1/4 mile - 3 pts.)		1
c	Locate within 3 miles of a food store. (1 mile - 2 pts., 1/4 mile - 3 pts.)		1
d	Provision for pedestrians, including pathways, bicycle routes and bicycle storage facilities.		2
e	In-fill development – locate housing in empty lots in an existing neighborhood.		3
f	Build on a brownfield site or previously built-on site. (Brownfield: previously occupied site where ecosystems are damaged, requiring at least some landscape restoration)		3
g	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).		TBD
2)	Optimize land use to minimize damage to the environment and, where possible improve the environment.		
a	Do not build on currently usable prime agricultural land.		Required
b	Do not build on wetlands or sensitive wildlife habitat. (as defined by the state of Vermont)		Required
c	Protect against erosion during construction and landscaping.		Required
d	Do not build in the 100 year flood plain.		Required
e	Provide and implement responsible storm water management plan for site, including: Avoid storm sewerage where possible; Minimize impervious ground coverings and reduce roadway widths & lengths; Provide vegetative swales for storm water infiltration.		3
f	Preserve existing trees and vegetation, except within 30' of buildings, except for driveway, solar access, areas cleared for food production and as required for grading for drainage requirements.		3
g	Protect existing ecosystems during construction through the use of snow fencing and other access barriers.		2
h	Design roadways and parking to not intrude upon open space.		2
i	Restore damaged ecosystems.		3
j	Preserve topsoil on site. Restore after construction.		2
k	Use trees cut from site in house construction		2
l	Grind stumps and limbs for mulch.		1
m	Cut and reserve non-millable hardwood for firewood.		1
n	No trenching, covering or compacting tree root zones in building and site-work areas.		1
o	Preserve wildlife habitat and wildlife corridors.		2
p	Permeable pavement driveway/parking.		2

q	Integrate public transportation access into site plan.	2
r	Mowed lawn and landscaping area total less than 1/4 acre.	2
s	Lawn species selected to minimize mowing/lawn maintenance.	2
t	Landscape with at least 75% native species. One additional point for 100%.	2
u	Landscape with northern hardy edible plants/trees.	2
v	Landscape with wildlife habitat enhancing species.	1
w	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
3) Community: Promote community and security through site and building design.		
a	Creation of conservation and property sale restrictions to preserve sustainable intent.	3
b	Minimize visual impact of new structures from open fields, mountains and water bodies.	2
c	Developments of more than one home must utilize at least three (3) of the following approaches in order to receive these points:	
i	Porches oriented toward neighbors or public right of way.	2
ii	Minimize front yard set-back.	2
iii	Cluster buildings in order to preserve land or foster community.	3
iv	Indoor spaces common to multiple units.	2
v	Outdoor spaces common to multiple units.	2
vi	Neighborhood parks.	2
vii	Creation of deed-protected affordable housing lots.	2
d	Unit in co-housing development.	3
e	Unit in multifamily housing development.	3
f	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
2. BUILDING DESIGN		
1) Efficient building design		
a	Incremental design (e.g. building only what is needed at the present with documented provisions to expand to meet growing needs).	2
b	Flexibility of design (e.g. adaptable for changing use in future such as stubbing plumbing for additional bathroom, running hardwood floors under partitions for changing room layout, etc.) Point per documented strategy, max of 3 points.	1
c	Multiple use areas (e.g. desk area with provisions for computer center/sewing space/work space or great room area for living/dining/recreation) (Point per area, maximum of 3 pts.)	1
d	Novel storage (e.g. using dead areas like knee walls for storage). (Point per area, maximum of 3 pts.)	1
e	Cold storage room cooled by outside air (i.e., root cellar).	2
f	Building without full basement, shallow frost protected slab on grade.	2
g	Earth-sheltered house (significant portion of walls and roof are earth sheltered)	3
h	Earth-bermed house (significant portion of walls are earth bermed).	2
i	Airlock at least 50% of exterior entrances. Additional point for 100%.	1
j	Mudroom.	1
k	No garage	3
l	Location of unheated garage on the north and winter windward sides.	2
m	Location of utility spaces on the north and winter windward sides.	1
n	Building orientated within 15 degrees of true south, with the long axis of the building east/west.	3
o	Improve day lighting with more than 60% of all glass openings higher than mid-height of the average interior wall.	2
p	Restrict heat loss by limiting skylight/monitor area to no more than 6% of the total net floor area of the room in which it is located.	2
q	Unobstructed south facing roof for future PV or solar hot water. Pitch within 10% of latitude (35-45 degrees).	2
r	Automatically controlled high R-Value insulating window shades and shutters.	2
s	Chimney within building envelope.	1
t	Inclusion of comprehensive green criteria in project construction document specifications.	3
u	Inclusion of green and energy conserving details and assembly instructions in project construction document drawings and/or specifications.	3
v	Efficient circulation design (circulation areas less than 10% of gross square footage).	2
w	Dedicated business office in home. (2 points per area, maximum 4 pts.)	2
x	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD

3. QUALITY/DURABILITY		
1)	Choose quality materials and details for minimum maintenance requirements.	
a	Install materials with proper detailing to control degradation from sun, heat and moisture, including: Wood>8"above soil; Roof/wall flashing with siding cut 2" above roofing; minimum 10" overhang size at eaves with a sloped roof.	Required
b	Minimum 25-year expected lifetime roof warranty.	Required
c	10 year warranty on vertical insulated glass.	Required
d	Reduced ice dams: No non-airtight recessed light fixtures in insulated flat ceilings; no non-airtight recessed fixtures in insulated cathedral ceilings.	Required
e	Reduced ice dams: At least R-30 attic/roof-slope insulation R-value extending over outside of exterior walls.	Required
f	Effective flashing on all rough openings, including membrane flashing on bottom of all rough openings for windows and doors using adhesives compatible with drainage plane materials and window and door head casing flashing.	Required
g	Detail deck to house connection to shed water away from house.	Required
h	20 year insulated glass warranty.	2
i	Beyond 25 year roofing warranty. (an additional 1-point for each five year increase in warranty or expected life time)	1
j	Reduced ice dams: R-38 attic/roof-slope insulation R-value extending over outside of exterior walls.	1
l	Minimum 10" gable overhangs over wall siding.	1
m	Stainless steel fasteners. 1 point for each of the following applications:	
i	Siding.	1
ii	Trim.	1
iii	Decking.	1
n	40 year siding warranty or expected life time.	1
o	50 year siding warranty or expected life time.	2
p	Brick or stone siding 90% (or more).	3
q	Exterior siding/veneer built over vented drainage plane.	3
r	If wood, six sides of siding primed.	3
s	Crushed stone or other material below roof drip line to minimize splash on siding.	2
t	Provide detail drawing and/or photo documentation of roof assembly identifying materials used to ensure roof assembly sheds exterior moisture effectively and is protected from degradation due to interior heat and moisture migration.	3
u	Fiberglass composite framed windows.	3
v	Clad windows.	1
w	Entryway protection by roof overhang (minimum 3 feet).	1
x	Plan landscaping so that mature plantings will be at least 24" from house.	1
y	Install all insulated, non-wood exterior doors.	1
z	At grade stone, masonry or concrete patio in place of wood.	3
aa	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
4. ENERGY USE		
1)	Envelope and Systems: Implement a comprehensive approach to energy-efficient design.	
a	Certified as ENERGY STAR® Home (5-Stars or 86 points on the Home Energy Rating System scale) for new construction; 4-Stars Plus (83 points) for existing homes.	Required
b	Mechanical equipment must be accessible for service, including AC condensate drain pan and trap.	Required
Ducted Heating and/or Cooling Systems:		
c	Installation of all heating and cooling ducts and mechanical equipment within the building envelope or ducting tested to be less than 1% leakage to outside.	Required
d	Air conditioning equipment sized within 10% or next available size of ACCA Manual J.	Required
e	Forced air heating/cooling ductwork for primary space conditioning system complies with ACCA Manual D design criteria.	Required
f	If necessary, any ducts that run in outside walls must have at least R-7.5 between ducts and outside.	Required
g	Central air conditioning refrigerant charge and air flow documented to be within 10% of manufacturer recommendation.	Required
h	Air filter housings must be air-tight to prevent bypass or leakage.	Required
i	Air flow for each register measured and complies with Manual D design.	2
j	Returns OR transfer grill in each room with closeable door.	2

k	More than one return per zone.	1
Hydronic Heating Systems:		
l	Hydronic distribution system located 100% within house envelope.	2
m	Hydronic distribution system pipes insulated where they run through unconditioned (i.e. no thermostat) spaces (e.g. basements, crawlspaces, etc.).	1
n	Hydronic distribution system designed and sized to match room-by-room loads (submit sizing plan).	2
o	Hydronic boiler with less than 4 gallons water content and/or "low mass".	2
p	Boiler controls set up to "cold start" (i.e. does not maintain boiler water temperature 24/7, but allowed to drift down).	2
q	Modulating aquastat/outdoor temperature sensing controls to adjust circulating boiler water.	2
Other Energy Saving Strategies:		
r	Points per added Home Energy Rating point above 5-Star 86 point Rating for new and above 83 points for existing homes (use conventional rounding up or down to nearest whole Rating point).	2
s	No air conditioning installed.	3
t	Points for each heating zone beyond one (excludes semi-conditioned basement).	1
u	Shade with trees at least 50% of all sidewalks, roadways, and parking areas within 50' of the house.	1
v	Planted (or building sited with) windbreak on north or northwest.	2
w	Preserve or plant new shade trees and vegetation for shading west sides of building.	2
x	Additional interior mass by adding second layer of (minimal 1/2") gypsum wall board.	3
y	Trellises to shade west side glass.	1
z	Low-solar admittance glass on west, whole window SHGC <.40.	2
aa	Awnings or overhang designed to reduce summer heat gain.	1
bb	Locate hot water heater within 20 feet pipe run of all showers/baths and kitchen.	2
cc	Whole house cooling/"night flushing" fan with tight insulated winter closure system.	2
dd	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
2) Efficient Lighting and Appliances		
a	At least 10 (6 in homes <1,500 sq.ft) ENERGY STAR [®] or Vermont ENERGY STAR [®] Homes (VESH) qualified fluorescent light fixtures in VESH qualified high use locations [High Use = 2 or more hours/ average daily use].	Required
b	ENERGY STAR [®] or equivalent Refrigerator. (See www.energystar.gov).	Required
c	ENERGY STAR [®] or equivalent Dishwasher, if dishwasher installed. (See www.energystar.gov).	Required
d	ENERGY STAR [®] or equivalent Clothes washing machine, if washing machine installed. (See www.energystar.gov).	Required
Lighting:		
e	Per fixture of high-use ENERGY STAR [®] or equivalent lighting fixtures beyond required fixtures (maximum 10 points).	2
f	Per hard-wired incandescent fixture with ENERGY STAR [®] screw-in bulbs installed (maximum 10 points).	1
g	Use a comprehensive approach to high-quality lighting design – points for lighting design submitted.	3
h	Light pollution minimized through avoiding no direct beam illumination beyond visible property lines.	1
i	Common spaces such as hallways that would otherwise require 24 hour lighting (e.g. multi-family) utilize day lighting and automatic lighting controls.	2
j	Interior motion sensor with photocell. (1 point per fixture, maximum 3 points)	1
k	Exterior motion sensor with photocell. (1 point per fixture, maximum 2 points)	1
Appliances:		
l	Other ENERGY STAR [®] appliances (See www.energystar.gov). (1 point per appliance)	1
m	Gas-fired clothes dryers with electronic ignition, if dryer hookup provided.	1
n	Install a clothesline – 2 points each for indoor and outdoor permanent clotheslines. (max. 4 points)	2
o	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
3) Sustainable Equipment		
a	No electric resistance space heat.	Required

b	No electric resistance domestic hot water systems except as solar back-up (electric back-up consumption may not exceed 2,000 kWh/yr).	Required
c	EPA, Canadian or MHA certified wood burning appliance as a primary heat source with an output capacity greater than 50% of Manual J or IBR heat load.	3
d	EPA, Canadian or MHA certified wood burning appliance as an auxiliary heat source with an output capacity less than 50% of Manual J or IBR heat load.	1
e	Drain heat-recovery system (I.e. "GFX" or "Drain Gain") 2 points per system.	2
f	Grey water heat recovery system.	2
g	Rough-in of plumbing and wiring and roof orientation for future solar hot water or photovoltaics.	2
h	Solar water heating.	2
i	Points per peak Watt photovoltaics and/or rated Watt of wind or hydro site generated power installed.	0.01
j	Points per peak Watt photovoltaics and/or rated Watt of wind or hydro site generated power with grid connection (bonus).	0.02
k	Intake air solar preheating system (e.g. Solarwall, etc.).	2
l	On-site fuel cell.	3
m	On-site fuel cell powered by a renewable fuel source (additive with above).	3
n	On-site district heating system.	3
o	On-site district district heating system powered by a renewable fuel source (additive with above).	3
p	On-site co-generation.	3
q	On-site co-generation powered by a renewable fuel source (additive with above).	3
r	Electric vehicle recharging station.	2
s	HFC refrigerant in air conditioning system.	1
t	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD

5. RESOURCE IMPACTS

1)	Resource-efficient and environmentally responsible materials	
a	Only tropical wood that is third-party certified sustainably harvested (includes luan plywood).	Required
b	Use only ACQ wood where treated wood is needed.	Required
c	No old-growth wood, (except reused) including clear redwood, Western cedar, Douglas Fir.	3
d	No CFCs or HCFCs in building materials or in manufacturing process (excluding refrigerants in refrigerators or air conditioning systems).	3
e	2 points for each 5% of total value of materials in the building products made with salvaged, recycled or waste-stream content. Examples include re-habilitation of a used house, used doors or cabinets, cellulose insulation, straw-based particle-board, fly-ash-content concrete, re-sawn salvaged wood, recycled plastic lumber, etc.	2
f	Per 10% of the value (\$) of solid structural wood that is third-party certified as sustainably harvested.	2
g	Per 10% of the value (\$) of non-solid structural wood that is third-party certified as sustainably harvested.	2
h	Per 5% fly ash type "C" or type "F" in concrete .	1
i	Non-petroleum concrete form release oil.	1
j	Engineered wood or steel beams (90% minimum).	1
k	Engineered wood headers (90% minimum).	1
l	Engineered floor framing (90% minimum).	2
m	Engineered roof framing (90% minimum).	2
n	Engineered wall framing (90% minimum).	2
o	Steel interior wall studs (90% minimum).	2
p	OSB (without added urea formaldehyde adhesive) roof decking .	1
q	OSB (without added urea formaldehyde adhesive) floor decking.	1
r	OSB (without added urea formaldehyde adhesive) wall sheathing.	1
s	Interior finger-jointed trim, minimum of 50%.	2
t	Agricultural by-product based panels.	1
u	Straw bale, earth sheltered or other natural mass material system (not including log) construction: per 20% of component (i.e. walls) construction.	2
v	Cellulose insulation in walls.	3
w	Cellulose insulation in roof/ceilings.	3
x	Recycled mineral fiber insulation.	2
y	100% recycled fiberglass insulation with larger (less toxic) fibers.	2

z	Structural Insulated Panel (SIP) construction: per 20% of component (i.e.. Walls/roof construction).	1
aa	Tile - minimum 50% recycled content of tiles (1 point per 33% of total tiled area).	1
bb	Carpet - minimum 50% recycled content of carpet (1 point per 33% of total carpeted area).	1
cc	Carpet pad - minimum 50% recycled content of carpet pad (1 point per 33% of total carpeted area).	1
dd	Non-wood outdoor decking - minimum 50% recycled content of non-wood decking (1 point per 33% of total decking area).	1
ee	Recycled content gypsum board.	3
ff	Natural-based product for finish siding (includes wood, masonry, fiber cement, stucco).	2
gg	Natural-based product for finish trim (includes wood, masonry, fiber cement, stucco).	2
hh	Exposed concrete floor with sealer and optional stain finish in living areas.	1
ii	Zero Ozone depleting spray foam insulation - all walls	2
jj	Zero Ozone depleting spray foam insulation - all ceilings	2
kk	No PVC piping.	2
Use of local or regional materials:		
ll	Points per 10% of value of solid structural wood that is regionally sourced (3 points within 200 miles, 2 points within 400 miles, 1 point within 800 miles), excluding concrete.	1
m	Points per 20% of value of non-structural wood that is regionally sourced (3 points within 200 miles, 2 points within 400 miles, 1 point within 800 miles), excluding concrete.	1
nn	Points per 10% of value of non-wood materials that are regionally sourced (3 points within 200 miles, 2 points within 400 miles, 1 point within 800 miles), excluding concrete.	1
oo	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
2) Reduce, Re-Use and Recycle		
Minimize waste and encourage diversion of waste for re-use and recycling during the construction process:		
Definitions: <i>Re-use</i> : to separate for later re-use by the builder or by others. <i>Recycling</i> : to separate and transport material to a central location for re-manufacturing by others		
a	Create and implement a plan for construction to provide for the efficient separation of materials which are reusable or recyclable, including separate containers, covered where required, for the following: wood, cardboard, metal, drywall (grind or recycle on site) plastics, asphalt shingles, other materials for re-use for which local infrastructure exists (comply with your local solid waste management plan)	Required
b	Optimize material use by designing for standard ceiling heights, wall lengths and building dimensions in 2 foot increments.	3
c	Avoid waste from structural over-design. (Points for submitting engineer's calculations showing beam sizing)	2
Use typical OVE (Optimal Value Engineering) framing details:		
d	24" center studs (<i>OVE</i>).	2
e	Eliminate jack studs in rough openings (<i>OVE</i>).	2
f	Non-structural headers in non-load-bearing walls (<i>OVE</i>).	2
g	Single top plate with stacked framing (<i>OVE</i>).	2
h	2-stud corners with drywall clips or plywood drywall nailers (<i>OVE</i>).	2
i	Job-site framing plan in architectural plan set and cut list on site.	3
j	Donate excess and re-usable materials for re-use.	2
k	Insulated concrete forms for foundation which stay in place or walls using at least 50% recycled content.	3
Countertops:		
i	Install re-used countertops (minimum 75% of countertop area).	2
ii	Install countertops made from recycled materials (minimum 75% of countertop area).	1
iii	Install re-usable countertops (minimum 75% of countertop area).	1
iv	Install recyclable countertops (minimum 75% of countertop area).	1
l	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
3) Encourage diversion of waste for recycling during occupancy		
a	Provide space for recycling containers at convenient location for storage of recyclables (Define space)	Required
b	Provide composting and/or worm bins on site.	1
c	Built-in kitchen recycling center.	1

d	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
4) Water efficiency		
a	Landscaping that requires no irrigation system once mature.	3
b	Install 2.0 gpm shower heads (all).	1
c	Install 1.5 gpm shower heads (all).	2
d	Install high quality water-efficient toilet using 1.0 gallon or less per flush (all).	2
e	Separate and re-use gray water.	3
f	Install composting toilet.	3
g	High-efficiency drip automatic irrigation system for gardens.	1
h	Collect and use rainwater for garden use.	1
i	Collect and use rainwater for potable use.	3
j	Innovative wastewater technology (constructed wetland, etc.).	3
k	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
6. OCCUPANT HEALTH/INDOOR AIR QUALITY		
<i>This includes using materials and systems that minimize pollutant introduction into the home as well as the use of ventilation to dilute and remove any pollutants that are introduced. It also includes health and safety of builders and workers that produce materials.</i>		
1) Minimize sources of pollutants		
a	All combustion appliances (excluding gas ovens/ranges) must be vented to the outside and either sealed-combustion, direct vent, power-vented, induced draft, or aerodynamically de-coupled from the indoor air.	Required
b	All solid fuel heating and water heating appliances (including fireplaces) must have tight-fitting doors and dedicated outside combustion air. Non-closed combustion systems must be aerodynamically de-coupled from the indoor air	Required
c	Garages to be 100% air sealed from adjacent living spaces.	Required
d	Furnaces in garage must have completely sealed duct, cabinet and filter systems.	Required
e	Provide smoke detectors per code (hardwired with battery backup).	Required
f	Provide carbon monoxide detectors if there is any open combustion equipment (gas range) or an attached garage (hardwired with battery backup).	Required
g	Non-mercury thermostats.	Required
h	Foundation continuous footing drain with stone covered with filter fabric, drained to daylight or if necessary to drain to the interior, use a sealed sump pump system. (Drainage system not required in pure sand.)	Required
i	Basement foundation walls use porous backfill material.	Required
j	Provide continuous crushed stone under footings or provide pipe through footing for drainage of any accumulated water under slab to drainage.	Required
k	Vapor retarder (poly or rigid insulation) directly under slab.	Required
l	Exterior of below grade foundation damp proofed.	Required
m	Crawlspaces not vented; crawlspace walls insulated; crawlspace floor with complete, continuous sealed vapor retarder, also sealed to walls. (Must complete all approaches.)	Required
n	Provide swales to divert surface water from hillsides.	Required
o	No carpet in kitchens, bathrooms, spa areas, or within 3' of entry doors.	Required
p	Carpet installed on slab on grade or on concrete basement floor, must have: minimum R-10 continuous insulation under slab and minimum R-5 slab edge insulation break at foundation wall intersection and R-10 slab edge insulation outward of any walk-out slab edge	Required
q	No adhesives for carpet attachments unless zero VOC (100 grams per liter or less).	Required
r	Insulate and sheath using rigid draft stop, and air seal bathroom exterior walls behind showers and tubs before installing showers, tubs and spas.	Required
s	Seal top of footing prior to pouring foundation wall OR provide continuous crushed stone base under footings.	1
t	Exterior of below grade building envelope sealed with moisture barrier assembly system (e.g. Rub-R-Wall system, etc.).	3
u	Slope top of backfill to achieve settled slope of 1" per foot to at least 3' from foundation. Pitch final grading to direct this water away from the building.	1
v	Insulation over cold water pipes to avoid condensation on pipes in basements and crawlspaces.	2
w	Zero urea formaldehyde interior panel products or seal with water-based sealer.	2
x	No petroleum-based flooring materials in house.	3
y	Low VOC adhesives for sheet goods	1

z	No carpet in house.	3
aa	If Carpet is installed, must meet CRI low emission label standard.	1
bb	Carpet with no site-applied adhesives.	1
Design and build foundations to minimize soil gas entry:		
cc	Pipe all floor drains separate from footing drains; glue all floor drain joints.	1
dd	Provide above-grade cleanout of footing drains at high point of footing drains.	1
ee	Provide sub-slab 4" minimum crushed stone , connect sub slab drainage to footing drain.	1
ff	Provide exhaust fan in attached garage automatically controlled to run for pre-set period of time when garage door closes.	1
gg	Provide storage space sealed and isolated from the living space for toxic materials such as paint, gasoline cans, etc.	1
hh	Plumb/wire for central vacuum system.	1
ii	Central vacuum system.	3
kk	Non-chemical termite/carpenter ant barriers.	1
ll	Other non-chemical pest species resistant features.	1
m m	No paper faced gypsum under tiles in tubs, showers and spas.	2
nn	Built-in track-off mats or grates plus hard surface entry.	2
oo	Rough-in for sub-slab radon exhaust stack, 4" sub-slab crushed stone installed .	2
pp	Radon test after house is completed.	1
qq	Complete radon-exhaust system installed , if radon test is positive for radon.	2
rr	Heat detector (to automatically shut off heating system if fire).	1
ss	Non-radioactive smoke detector (per device).	1
tt	Low formaldehyde and low VOC-emission (250 grams per liter or less), including paints, solvents and adhesives.	3
uu	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
2) Provide ventilation to remove pollutants generated in the house		
a	Install filtered exhaust ventilation in kitchen.	Required
b	Install an automatic, effective ventilation system which is quiet (less than 1.5 sones for surface-mounted equipment) and has low energy consumption (less than .5 watts/cfm for bath fan EOVS systems), providing at least 15 cfm per bedroom plus 15 cfm, such as one of the following:	Required
i	Low-energy-use, quiet, durable bath fans with automatic control. As a minimum, the house must have an exhaust-only ventilation – EOVS system or the following:	
ii	Outside air ducted into furnace system return from outside, with fan-cycler control in conjunction with EOVS system (points - see below)	
iii	Ducted heat recovery ventilation system (points – see below).	
iv	Non-fan-powered ventilation system, if proven effective through performance testing.	
c	Insulate all ventilation exchanging exhaust ductwork (minimum R-8) outside of the insulated envelope.	Required
d	Use rigid duct or other methods to keep fan back-pressure below 0.2" for EOVS systems.	Required
e	Air seal ventilation ductwork.	Required
f	Exhaust fan or duct to central system in every bathroom that has a shower, spa or bathtub.	Required
g	Install furnace fan cycler control and automated damper fresh air inlet on return side of the distribution system with EOVS system for forced-air houses with ECM air handler.	2
h	Install automatically controlled balanced heat recovery ventilation system with fresh air ducted to all occupied living spaces, and exhausted from all bathrooms and other moisture producing rooms. Recovery efficiency minimum 75%.	3
i	Central air or ventilation system with minimum 30% dust spot efficiency filters.	2
j	Post-construction testing to meet minimum air flow requirements or IAQ performance standards (submit results).	2
k	Install all ventilation exchanging exhaust ductwork inside of the insulated envelope.	2
l	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
7. KEEPING IT GREEN -- OCCUPANT EDUCATION AND O&M		
1) Provide education for owners/occupants in the use and care of their dwellings		
a	Educate occupants about the buildings' goals and strategies and impacts on costs of operating the building, while addressing obstacles to occupant education, such as language, literacy or elderly. Provide training of owners/occupants for all control systems in the house	Required

b	Provide a "User's Manual" for the house, including written operation instructions for the house, maintenance schedule, maintenance instructions, equipment literature, equipment warranties	Required
c	Provide "VBG Scorecard" to owners/occupants.	Required
d	Provide wire and valve labeling, diagrams and descriptions of system controls adequate for future maintenance and repair by a professional.	2
e	Provide photo record of framing with wiring and utilities installed, photos taken prior to installing insulation and interior sheathing/drywall. Photos keyed to location in or around home.	3
f	Label occupant controls for ease of use.	2
g	In rental housing provide user manual for new occupants.	1
h	Install approach that meets the goal of this strategy not listed above (upon documentation and submission to VBG Program Committee).	TBD
TOTAL POINTS ACHIEVED (points awarded for Approaches incorporated into home beyond Requirements)		
POINTS AWARDED FOR HOUSE SIZE (see House Size chart)		
VERMONT BUILT GREEN TOTAL POINTS (Total Points Achieved + Points Awarded for House Size)		

Acknowledgements

This document draws from many sources and resources, including:

1. The New Jersey Department of Community Affairs/Public Service Electric and Gas Sustainable Design Affordable Housing Guidelines, developed by Blair Hamilton, Marc Rosenbaum, Andy Shapiro and Alex Wilson.
2. Earth Craft House, Southface Energy Institute.
3. Green Building Guide, A Sustainable Approach, A Program of the City of Austin, Texas.
4. A Blueprint for Greening Affordable Housing, Global Green USA.
5. Guide to Developing Green Building Programs, NAHB National Research Center.
6. Sustainable Is Affordable, The Affordable Housing Network of New Jersey.
7. Environmental Initiative Symposium Report, Habitat for Humanity.
8. Health House, American Lung Association.
9. The many knowledgeable members of Building for Social Responsibility (Vermont) and the Northeast Sustainable Energy Association.
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Vermont Built Green

House Size Points (version 6) for Scorecard v. 3.1 (4/2/03)

Average or Smaller Home								Min. Need	Additional Points Needed for VBG Eligibility		
Gross Square Footage of Home*	Bedrooms						Size Points				
	1	2	3	4	5	6					
	1700	2000	2300	2600	2900	3200	0			100	
	1615	1900	2185	2470	2755	3040	3			97	
	1530	1800	2070	2340	2610	2880	7			93	
	1445	1700	1955	2210	2465	2720	12			88	
	1360	1600	1840	2080	2320	2560	18			82	
	1275	1500	1725	1950	2175	2400	25			75	
	1190	1400	1610	1820	2030	2240	34			66	
	1105	1300	1495	1690	1885	2080	45			55	
	1020	1200	1380	1560	1740	1920	60			40	
	935	1100	1265	1430	1595	1760	78			22	
	850	1000	1150	1300	1450	1600	100			0	
	765	900	1035	1170	1305	1440	127			0	
	680	800	920	1040	1160		160		0		
595	700	805				199		0			
510	600					245		0			
425						300		0			
Average or Larger Home								Min. Need	Additional Points Needed for VBG Eligibility		
Gross Square Footage of Home*	Bedrooms						Size Points				
	1	2	3	4	5	6					
	1700	2000	2300	2600	2900	3200	0				100
	1870	2200	2530	2860	3190	3520	-6				106
	2040	2400	2760	3120	3480	3840	-13				113
	2210	2600	2990	3380	3770	4160	-20				120
	2380	2800	3220	3640	4060	4480	-28				128
	2550	3000	3450	3900	4350	4800	-38				138
	2720	3200	3680	4160	4640	5120	-48				148
	2890	3400	3910	4420	4930	5440	-59				159
	3060	3600	4140	4680	5220	5760	-70				170
	3230	3800	4370	4940	5510	6080	-84				184
	3400	4000	4600	5200	5800	6400	-100				200
	Houses above this size must develop a VBG "Big Green" Strategy with the VBG Review Committee										
	VBG House Size Score Directions:										
After verifying compliance with VBG requirements, round your home's FT2 UP to the next FT2 on the chart, under your # of bedrooms. Read across to find your points											
> Average Size Homes: Homes twice average size score zero.											
< Average Size Homes: homes half the average size score the VBG threshold.											
The size points change progressively as the home size differs from average.											
* Gross FT2 does not include <i>home business</i> or <i>unconditioned</i> space. (see definitions)											