

- 3.3.5.2 Solar water heating**
- A. Install SRCC-rated solar water heating system
- | | | |
|-----|----|----------------------------|
| ___ | 8 | Solar fraction: 0.3 |
| ___ | 10 | Solar fraction: ≥ 0.5 |

- 3.3.5.3 Additional renewable energy options**
- A. Supply electricity needs by onsite renewable energy source whereby the system is estimated to produces the following kWh per year:
- | | | |
|-----|----|---------------|
| ___ | 8 | 2,000 – 3,999 |
| ___ | 10 | 4,000 – 5,999 |
| ___ | 12 | 6,000 + |

- B. Provide clear and unshaded roof area (+/- 30 degrees of south or flat, minimum 200 square feet) for future solar collector or photovoltaics. Provide rough-in piping from the roof to the utility area
- | | | |
|-----|---|------------------|
| ___ | 3 | Conduit |
| ___ | 5 | Insulated piping |
- C. ___ 2 Provide homeowner with information and enrollment materials about options to purchase green power from the local electric utility.

- 3.3.6 Verification**
- 3.3.6.1 ___ 8 Conduct onsite third-party inspection to verify installation of energy-related features
- 3.3.6.2 ___ 8/per Conduct third-party testing to verify performance: blower door, duct leakage, flow rates

- 3.3.7 Innovative Options**
- A. ___ 2 Install drainwater heat-recovery system
- B. ___ 6 Install de-superheater in conjunction with ground-source heat pump
- C. ___ 6 Install heat pump water heater rated to current DOE test standard and with EF > 1.7

Section Total _____

Section 4: Water Efficiency

- 4.1 Water Use**
- | | YOUR SCORE | AVAILABLE POINTS |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------|
| 4.1.1 | ___ | 6/per |
| Hot water delivery to remote locations aided by installation of:
A. On-demand water heater at point of use served by cold water only
B. Control-activated recirculation system | | |
| 4.1.2 | ___ | 9 |
| Water heater located within 30 feet pipe run of all bathrooms and kitchen | | |
| 4.1.3 | ___ | 7/per |
| ENERGY STAR water-conserving dishwasher, washing machine, etc. | | |
| 4.1.4 | ___ | 2/per |
| Water-efficient showerhead using aerator/venturi with flow rate < 2.5 gpm | | |
| 4.1.5 | ___ | 2/per |
| Water-efficient sink faucets/aerators < 2.2 gpm | | |
| 4.1.6 | ___ | 4-6 |
| Ultra low flow (< 1.6 gpm/flush) toilets: (power-assist: 4 pts; dual flush: 6 pts) | | |

- 4.1.7 ___ 7 Low-volume, non-spray irrigation system installed such as drip irrigation, bubblers, etc.
- 4.1.8 ___ 6 Irrigation system zoned separately for turf and bedding areas
- 4.1.9 ___ 7 Weather-based irrigation controllers such as computer-based weather record
- 4.1.10 ___ 9 Collect and use rainwater, as permitted by local code
- 4.1.11 ___ 7 Innovative wastewater technology as permitted by local code

- 4.2 Innovative Options**
- 4.2.1 ___ 6 Shut-off valve, motion sensor, or pedal-activated faucet for intermittent on/off operation
- 4.2.2 ___ 6 Separate and re-use greywater as permitted by local code
- 4.2.3 ___ 6 Composting or waterless toilet as permitted by local code

Section Total _____

Section 5: Indoor Environmental Quality

- 5.1 Minimize potential sources of pollutants**
- | | YOUR SCORE | AVAILABLE POINTS |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------|
| 5.1.1 | ___ | 8 |
| For vented space heating and water heating equipment:
A. Install direct vent equipment
B. Install induced/mechanical draft combustion equipment | | |
| 5.1.2 | ___ | 6 |
| Install space heating and water heating equipment in isolated mechanical room or closet with an outdoor source of combustion and ventilation air | | |
| 5.1.3 | ___ | 6 |
| Install direct-vent, sealed-combustion gas fireplace, sealed wood fireplace, or sealed woodstove or install no fireplace or woodstove | | |
| 5.1.4 | ___ | 9 |
| Ensure a tightly-sealed door between the garage and living area and provide continuous air barrier between garage and living areas including air sealing penetrations | | |
| 5.1.5 | ___ | 6 |
| Ensure particleboard, medium density fiberboard (MDF) and hardwood plywood substrates are certified to low formaldehyde emission standards | | |
| 5.1.6 | ___ | 6 |
| Install carpet, carpet pad, and floor covering adhesives that hold "Green Label" from Carpet and Rug Institute's indoor air quality testing program or equivalent | | |
| 5.1.7 | ___ | 5 |
| Mask HVAC outlets during construction and vacuum all ducts, boots, and grills | | |
| 5.1.8 | ___ | 3 |
| Use low-VOC emitting wallpaper | | |

- 5.2 Manage potential pollutants generated in the home**
- | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| 5.2.1 | ___ | 7 |
| Vent kitchen range exhaust to the outside | | |
| 5.2.2 | ___ | 7 |
| Provide mechanical ventilation at a rate of 7.5 cfm per bedroom + 7.5 cfm and controlled automatically or continuous with manual override. Choose: | | |
| ___ | ___ | 7 |
| Exhaust or supply fan(s) | | |
| ___ | ___ | 9 |
| Balanced exhaust and supply fans | | |
| ___ | ___ | 10 |
| Heat-recovery ventilator | | |
| ___ | ___ | 10 |
| Energy-recovery ventilator | | |
| 5.2.3 | ___ | 3 |
| Install MERV 9 filters on central air or ventilation systems | | |

- 5.2.4 ___ 4 Install humidistat to control whole-house humidification system
- 5.2.5 ___ 6 Install sub-slab depressurization system to facilitate future radon mitigation system
- 5.2.6 ___ 9 Verify all exhaust flows meet design specifications

- 5.3 Manage moisture (vapor, rainwater, plumbing, HVAC)**
- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| 5.3.1 | ___ | 6 |
| Control bathroom exhaust fan with a timer or humidistat | | |
| 5.3.2 | ___ | 6 |
| Install moisture-resistant backerboard under tiled surfaces in wet areas | | |
| 5.3.3 | ___ | 9 |
| Install vapor retarder directly under slab (6-mil) or on crawl space floor (8-mil) | | |
| 5.3.4 | ___ | 6 |
| Protect unused moisture-sensitive materials by just-in-time delivery, storing in dry area, or tenting and storing on raised platform | | |
| 5.3.5 | ___ | 5 |
| Keep plumbing supply lines out of exterior walls | | |
| 5.3.6 | ___ | 4 |
| Insulate cold water pipes in unconditioned spaces | | |
| 5.3.7 | ___ | 4 |
| Insulate HVAC ducts, plenums, and trunks in unconditioned basements and crawl spaces | | |
| 5.3.8 | ___ | 4 |
| Check moisture content of wood before it is enclosed on both sides | | |

Section Total _____

Section 6: Operation, Maintenance, and Homeowner Education

- 6.1** ___ 9 Provide Home Manual to owners/occupants on the use and care of the home. *(See Guidelines for details.)*
- 6.2** ___ 2 Include optional information in the Home Manual. *(See Guidelines for details.)*
- 6.3** ___ 7 Provide education to owners/occupants in the use and care of their dwellings: Instruct homeowner/occupants about the building's goals and strategies and occupant's impact on costs of operating the building. Provide training to owners/occupants for all control systems in the house.
- 6.4** ___ 1 Solid waste: Encourage homeowners/occupants to recycle by providing built-in space in the home's design (kitchen, garage, covered outdoor space) for recycling containers

Section Total _____

Section 7: Global Impact

- 7.1 Products**
- | | YOUR SCORE | AVAILABLE POINTS |
|----------------------------------------------------------------------------------------|------------|------------------|
| 7.1.1 | ___ | 3 |
| Note product manufacturer's operations and practices (environmental management system) | | |
| 7.1.2 | ___ | 6 |
| Choose low- or no-VOC indoor paints | | |
| 7.1.3 | ___ | 5 |
| Use low-VOC sealants | | |

- 7.2 Innovative options**
- | | | |
|---------------------------------------------------------------------------------------------------------------|-----|---|
| 7.2.1 | ___ | 4 |
| Demonstrate that builder's operations and business practices include environmental management system concepts | | |

There's More to NAHB Green.

This checklist is only a summary and omits pertinent information related to compliance and verification. Further information about the intent of the prescriptions herein and how they are verified for certification purposes can be found at nahbgreen.org. Any questions related to compliance should be directed to your chosen certification verifier or the NAHB Research Center.

Using the online version of this scoring tool at nahbgreen.org as a guide, a builder can request the home receive National Green Building Certification from the NAHB Research Center. The home must be inspected at close-in and when it is finished to verify that the green features chosen are in place.

The Research Center provides local verifier training and accreditation to ensure that certification is consistent, accurate, neutral, and technically rigorous throughout the country.

NAHB Green also includes marketing and advocacy guidance for members and local home building associations to communicate the benefits of green building and the importance of keeping these innovative practices voluntary. HBAs can affiliate with NAHB Green in addition to maintaining current local or regional certifications.

Learn more at
www.nahbgreen.org

It's green building, priced right.



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NAHB Model Green Home Building Guidelines Checklist

The NAHB National Green Building Program helps any builder, anywhere build a green home. When you attend the NAHB National Green Building Conference, work toward your Certified Green Professional™ educational designation or plan the green features in your next project using the online scoring tool at nahbgreen.org, you're part of the program.

You can score your home using the NAHB Model Green Home Building Guidelines, the first national rating system for green, single-family homes. The online scoring tool, an explanation of the point system, information on how to score your project to the Bronze, Silver or Gold level and a list of accredited verifiers are all available at nahbgreen.org.

This score sheet will introduce you to the rating system.

Open it up and get started!



Section	Bronze	Silver	Gold
1 Lot Design, Preparation, and Development	8	10	12
2 Resource Efficiency	44	60	77
3 Energy Efficiency	37	62	100
4 Water Efficiency	6	13	19
5 Indoor Environmental Quality	32	54	72
6 Operation, Maintenance, and Homeowner Education	7	7	9
7 Global Impact	3	5	6
Additional points from sections of your choice	100	100	100
TOTALS	237	311	395

Section 1: Lot Design, Preparation, and Development

1.1 Select the site to minimize environmental impact

	YOUR SCORE	AVAILABLE POINTS	
1.1.1	___	7	Avoid environmentally sensitive areas identified through site footprinting process
1.1.2	___	9	Choose an infill site
1.1.3	___	7	Choose a greyfield site
1.1.4	___	7	Choose an EPA-recognized brownfield site

1.2 Identify goals with your team

1.2.1	___	6	Establish a knowledgeable team by identifying team member roles and writing a mission statement that includes project goals and objectives
-------	-----	---	--------------------------------------------------------------------------------------------------------------------------------------------

1.3 Design the site to minimize environmental impact and protect, restore, and enhance the natural features and environmental qualities of the site

1.3.1	___	6	Conserve natural resources
1.3.2	___	6	Site the home and other built features to optimize solar resource
1.3.3	___	5	Minimize slope disturbance
1.3.4	___	6	Minimize soil disturbance and erosion
1.3.5	___	8	Manage storm water using low impact development
1.3.6	___	8	Devise landscape plans to limit water and energy demand
1.3.7	___	5	Maintain wildlife habitat

1.4 Develop the site to minimize environmental intrusion during onsite construction

1.4.1	___	5	Provide onsite supervision and coordination during clearing, grading, trenching, paving, to ensure targeted green development practices are implemented
1.4.2	___	5	Conserve existing onsite vegetation
1.4.3	___	6	Minimize onsite soil disturbance and erosion

1.5 Innovative Options

1.5.1	___	6	Share driveways or parking.
-------	-----	---	-----------------------------

Section Total _____

Section 2: Resource Efficiency

2.1 Reduce the quantity of materials used and waste generated

	YOUR SCORE	AVAILABLE POINTS	
2.1.1	___	3	Create an efficient floor plan that maintain home's functionality
2.1.2	___	8	Employ advanced framing techniques
2.1.3	___	6	Use building layouts that maximize resources and minimize material cuts
2.1.4	___	7	Create a detailed framing plan and material takeoffs
2.1.5	___	4	Use materials requiring no additional finish resources to complete application onsite
2.1.6	___	4	Use pre-cut or pre-assembled building systems or methods as outlined below:
	___	3/per	Provide pre-cut joist or pre-manufactured floor truss
	___	6	Provide panelized wall framing system
	___	6	Provide panelized roof framing system
	___	7	Provide modular construction for entire house
2.1.7	___	4	Use a frost-protected shallow foundation

2.2 Enhance durability and reduce maintenance

2.2.1	___	6	Provide covered entry (awning, covered porch) at exterior doors
2.2.2	___	7	Use recommended-sized roof overhangs for the climate
2.2.3	___	7	Install perimeter drain for all basement footings sloped to discharge to daylight, sump pit
2.2.4	___	6	Install drip edge at eave and gable roof edges
2.2.5	___	6	Install gutter and downspout system to divert water 5 feet away from foundation
2.2.6	___	7	Divert surface water from all sides of building
2.2.7	___	7	Install continuous and physical foundation termite barrier where necessary
2.2.8	___	7	Use termite-resistant materials for walls, floor joists, trusses, exterior decks, etc.
2.2.9	___	8	Provide a water-resistant barrier behind the exterior veneer or siding
2.2.10	___	5	Install ice flashing at roof edge
2.2.11	___	7	Install enhanced foundation waterproofing
2.2.12	___	9	Employ and show on plans all flashing details

2.3 Reuse materials

2.3.1	___	6	Disassemble existing buildings instead of demolishing
2.3.2	___	5	Reuse salvaged materials
2.3.3	___	6	Provide onsite bins or space to sort, store scrap materials

2.4 Recycled content materials

2.4.1	___	3	Use recycled-content building materials. List components used
-------	-----	---	---------------------------------------------------------------

2.5 Recycle waste materials during construction

2.5.1	___	7	Develop and implement a construction and demolition waste management plan
2.5.2	___	5	Conduct onsite recycling efforts
2.5.3	___	6	Recycle construction waste offsite

2.6 Use renewable materials

2.6.1	___	3-5	Use materials manufactured from renewable resources
2.6.2	___	4/per	Use certified wood and use wood-based materials from certified sources

2.7 Use resource-efficient materials

2.7.1	___	3	Use products that are composed of fewer resources
-------	-----	---	---------------------------------------------------

2.8 Innovative Options

2.8.1	___	5	Use locally available, indigenous materials
2.8.2	___	8	Employ a life-cycle assessment tool to choose environmentally preferable products

Section Total _____

Section 3: Energy Efficiency

3.1 Minimum Energy Efficiency Requirements

	YOUR SCORE	AVAILABLE POINTS	
3.1.1	___	Mandatory	Home is equivalent to the IECC 2003 or local energy code, whichever is more stringent
3.1.2	___	Mandatory	Size space heating and cooling system and equipment according to building heating and cooling loads calculated using ANSI/ACCA Manual J 8th edition or equivalent
3.1.3	___	Mandatory	Conduct third party plan review to verify design/compliance with Energy Efficiency section

3.2 Performance Path

3.2.1	Home is X% above IECC 2003		
___	37	15% (Bronze)	
___	62	30% (Silver)	
___	100	40% (Gold)	

3.3 Prescriptive Path

An energy-efficiency practice identified with a “(PP)” in Section 3.3 is a Performance Path practice likely to be used to calculate X% above ICC IECC in Section 3.2. If Section 3.3 is used to obtain points in addition to points from 3.2, those practices from Section 3.3 used to comply with Section 3.2 shall not be awarded any additional points.

3.3.1 Building Envelope

Increase effective R-value of building envelope using advanced framing techniques, continuous insulation, and/or integrated structural insulating system. Measures may include but are not limited to:

A. (PP)	___	8	SIP, or
	___	8	ICF, or
	___	6	Advanced framing or insulated corners, intersections and headers
	___	2	Raised heel trusses
	___	4	Continuous insulation on exterior wall
	___	4	Continuous insulation on cathedral ceiling
B. (PP)	___	10	Air sealing package is implemented to reduce infiltration
C. (PP)	___	8	ENERGY STAR®-rated windows appropriate for local climate

3.3.2 HVAC design, equipment, and installation

A.	___	8	Size, design, and install duct system using ANSI/ACCA Manual D® or equivalent
B.	___	8	Design radiant/hydronic space heating systems using industry-approved guidelines
C.	___	8	Use ANSI/ACCA Manual S® or equivalent to select heating and cooling equipment
D.	___	8	Verify performance of the heating and cooling system
E.	___	6	Use HVAC installer or technician certified by national or regionally recognized program

F. (PP) Fuel-fired space heating equipment efficiency (AFUE)

___	4	Gas furnace ≥ 81%
___	6	Gas furnace ≥ 88% (ENERGY STAR)
___	8	Gas furnace ≥ 94%
___	2	Oil furnace ≥ 83%
___	2	Gas or oil boiler ≥ 85% (ENERGY STAR)
___	6	Gas or oil boiler ≥ 90%

G. (PP) Heat pump efficiency (cooling mode)

___	6	SEER 13-14
___	6	SEER 15-18
___	7	SEER 19+
___	9	Staged air conditioning equipment

H. (PP) Heat pump efficiency (heating mode)

___	6	7.2 - 7.9 HSPF
___	7	8.0 - 8.9 HSPF
___	9	9.0 - 10.5 HSPF
___	10	> 10.5 HSPF

Note: *Split systems must be ARI-tested as a matched set.*

I. (PP) Ground source heat pump installed by a certified geothermal service contractor (cooling mode)

___	5	EER = 13-14
___	6	EER = 15-18
___	8	EER = 19-24
___	10	EER = >25

Note: *For Sections A-F and I, add 3 points if Manuals S and D and start-up procedures are followed when units are installed.*

J. (PP) Ground source heat pump installed by a certified geothermal service contractor (heating mode)

___	6	COP 2.4 - 2.6
___	8	COP 2.7 - 2.9
___	10	COP ≥ 3.0

K. ___ 6 Seal ducts, plenums, equipment to reduce leakage. Use UL 181 foil tapes and/or mastic.

L.	___	8	When installing ductwork:
			1. Do not use building cavities used as ductwork, e.g., panning joist or stud cavities
			2. Install all heating and cooling ducts and mechanical equipment within conditioned envelope
			3. Do not install ductwork in exterior walls

M.	___	6	Install return ducts/transfer grilles in rooms with doors (except baths, kitchen, closets, laundry)
N.	___	1/per	Install ENERGY STAR-rated ceiling fans
O.	___	4	Install whole-house fan with insulated louvers
P.	___	8	Install ENERGY STAR-labeled mechanical exhaust for every bathroom ducted to outside

3.3.3 Water heating design, equipment, and installation

A.	___	4	Water heater Energy Factor equal to or greater than those listed	
			Natural Gas:	
			Size (gallons)	
			Energy Factor	
			30	0.64
			40	0.62
			50	0.60
			65	0.58
			75	0.56
			Electric:	
			Size (gallons)	
			Energy Factor	
			30	0.95
			40	0.94
			50	0.92
			65	0.90
			80	0.88
			100	0.86
			Oil:	
			Size (gallons)	
			Energy Factor	
			30	.59
			50	0.55

B.	___	4	Install whole house instantaneous (tankless) water heater
C.	___	4	Insulate all hot water lines with a minimum of 1” insulation
D.	___	3	Install heat trap on cold and hot water lines to and from the water heater
E.	___	5	Install manifold plumbing system (parallel piping configuration, stacking plumbing)

3.3.4 Lighting and appliances

A.	___	7	Use an ENERGY STAR Advanced Lighting Package
B.	___	7	Install all recessed fixtures within the conditioned envelope
C.	___	7	Install motion sensors on outdoor lighting
D.	___	2	Install tubular skylights in rooms without windows.
E.	___	3	Refrigerator
	___	3	Dishwasher
	___	5	Washing machine

3.3.5 Renewable energy/solar heating and cooling

3.3.5.1 Solar space heating and cooling (See Guidelines for details)

A.	___	10	Use sun-tempered design: building orientation, sizing of glazing, design of overhangs to provide shading
B.	___	10	Use passive solar design: sun-tempered design as above plus additional southfacing glazing, appropriately designed thermal mass to prevent overheating
C.	___	8	Use passive cooling, including. shading, overhangs, window cross ventilation