City of Scottsdale

Green Home Rating Checklist

New Construction, Major Remodels & Additions

September 2006 Release

Plan Check # _____ Building Permit # _____ GB Total Points _____

Project or Owner's Name - _____

Project Address - _____

Designer Name - _____

Builder Name - _____

Use this rating worksheet to qualify projects under the Green Building Program for one- and two-family dwellings and multiple single-family dwellings (townhouses and condominiums) not more than three stories in height with a separate means of egress (International Residential Code - IRC Section R101.2).

All building system components, materials, and equipment must be installed per code and manufacturer's instructions.

Entry Level	Advanced Level
• Meet all mandatory measures and adjust rating for house size (p. 2 – 7). • Accumulate 50 - 99 points from the rating checklist (p. 8 –26).	• Meet all mandatory measures and adjust rating for house size (p. 2 – 7). • Accumulate 100 or more points from the rating checklist (p. 8 – 26).

Summary of Rating Categories		
1. Site	6. Electrical Power, Lighting, Appliances	11. Interior Doors, Cabinetry, Trim
2. Structural Elements	7. Plumbing System	12. Flooring
3. Energy Rating/Performance	8. Roofing	13. Solid Waste
4. Thermal Envelope	9. Exterior Finishes	14. Innovative Design
5. Heating, Ventilation, & Air Conditioning	10. Interior Finishes	

rev. 3/16/07

Category	✔	Mandatory Measures	Verification
Site		1. Protect all exterior entrances from direct summer sun exposures (east, west, south) with recessed or covered elements. *The use of shading strategies in these areas will reduce heat island effect and maintain a cooler transition between indoors and outside (i.e. overhangs, trellis, perforated materials, trees). For overhang dimensions, see Scottsdale shade sizing table.*	Plan Review
		2. At least 80% of improved landscape shall be Xeriscape or native planting (unless otherwise dictated by CC & R's). *Xeriscape landscaping conserves water and protects the environment. Important considerations in creating a xeriscape landscape include planning, soil types, appropriate plant selection, efficient irrigation, use of mulches, and timely maintenance. The City of Scottsdale offers various informative documents regarding Xeriscape.*	Plan Review & Self-Certify
Energy Rating/ Performance		3. Building designed to be at least 15% above IECC (International Energy Conservation Code) OR obtain Energy Star for Homes certification. *Conformance to this threshold shall be based on plan analysis using software such as REScheck for the IECC comparison or REM/Rate for a HERS (Home Energy Rating Score). For more information, visit www.energycodes.gov and/or www.natresnet.org/ratings* *An Energy Performance Analysis is a part of the design process that combines energy considerations with basic architectural issues, yielding buildings that are considerably more energy efficient from a design perspective. It is also possible to analyze more detailed plans before construction begins, therefore allowing any elements that will waste a great deal of energy to be redesigned.*	Plan Review
Thermal Envelope		4. Building has a continuous air/thermal barrier, which is clearly indicated on drawings/building sections to facilitate proper installation. Air and thermal barrier must align and be contiguous. *Controlling thermal migration reduces heating/cooling loads, therefore reducing utility costs.*	Plan Review
		5. Seal all penetrations and connections in building envelope (e.g. top and bottom plates, corners, and any potential points of air infiltration) - IRC (International Residential Code) requirement. *A tightly sealed building envelope can eliminate unwanted indoor/outdoor air migration and reduce utility costs.*	Insp.

Heating, Ventilation, and Air Conditioning		6. Size space heating and cooling system/equipment according to building heating and cooling loads calculated using ACCA Manual J or equivalent (IRC requirement). *Manual J is a design tool to ensure that HVAC systems are sized to take into account system components (such as glazing, orientation, insulation, room sizes, occupant habits, etc) for maximum efficiency and comfort. Software recognized by ACCA as being in compliance with Manual J, may be used. For more information, visit www.acca.org*	Plan Review
		7. Size, design, and install duct system using ACCA Manual D duct design calculations (IRC requirement). Ensure that every room has adequate return air flow through use of either multiple returns or transfer grills (every air supplied room having a door except baths, kitchens, closets, pantries, and laundry rooms). • Size transfer grills with a minimum .75 sq. inches per cfm of air per room. *Careful sizing and layout is essential to ensuring adequate air delivery and comfort. Use Manual D to size and layout supply and return ductwork to each area of the home. Manual D will determine duct size to fit the load in each room taking into account the length of the duct run and the type of duct being used. For more information, visit www.acca.org. Properly sized return air ducts and transfer grills provides for pressure balancing of the air supply system which prevents back drafting of combustion appliance fumes, improving indoor air quality and safety.* OR Ductless space conditioning system (e.g., ductless split systems with mini-air handling units, hydronic/radiant floor or ceiling systems)	Plan Review & Insp.
		8. All ductwork joints shall be sealed with water-based mastic. No use of building cavities shall be used as a duct unless sealed. *Duct mastic is a preferred flexible sealant that can move with the expansion, contraction, and vibration of the duct system components. A high quality duct system greatly minimizes energy loss from ductwork. Improperly sealed ductwork can contribute 20 to 60 % of the air leakage in a house. The system should be airtight and designed to deliver the correct airflow to each room.*	Insp.
		9. All air supply ducts shall be insulated as follows: • Where located within conditioned building spaces, ducts shall be min. R-4.2 • Where located in unconditioned spaces, ducts shall be min. R-8 (IRC). *Insulating ductwork in unconditioned spaces saves energy lost before the air reaches the conditioned space.*	Plan Review & Insp.
		10. Refrigerant piping shall be insulated to a minimum R-2 (IRC). *Insulating HVAC refrigeration lines increases the efficiency of the refrigeration cycle.*	Plan Review & Insp.

		11. Install an Energy Star labeled programmable thermostat. *Programmable thermostats regulate the heating/cooling system to provide optimum comfort when the house is occupied and to conserve energy when it is not.*	Insp.
		12. Install a minimum of three junction boxes (structurally mounted & wired) in the house for future reversible, multi-speed ceiling fans. *Ceiling fans can make a house feel up to 20% cooler with a minimal use of energy.*	Plan Review & Insp.
Indoor Environmental Quality		13. Install a carbon monoxide (CO) detector at house/garage entry door and in each area where combustion appliances are used (sealed combustion appliances are exempt). *Carbon monoxide detectors warn against high levels of toxic carbon monoxide.*	Plan Review & Insp.
		14. Design and install exhaust fan system for kitchen range hood with a minimum intermittent rate of 100 CFM vented to the outside and bathrooms with a minimum intermittent rate of 50 CFM or minimum continuous rate of 20 CFM vented to the outside (IRC). Use Energy Star labeled bathroom exhaust fans, except for exhaust fans serving multiple bathrooms. *Odors, pollutants, and moisture will accumulate in kitchens and baths that have poor exhaust.*	Plan Review & Insp.
		15. Install air filters with a min. MERV rating of 8. Ensure that air handlers can maintain adequate pressure and air flow <u>unless</u> a ductless space conditioning system is installed. *Minimum Efficiency Reporting Value [MERV] ratings pertain to the efficiency of HVAC filters. HVAC filters are designed to effectively remove most common particulate pollutants like dust or pollen.*	Self-Certify
		16. Install gas space heating and water heating equipment in isolated/air sealed mechanical room(s) with an outside source of combustion air (sealed combustion appliances are exempt). *Combustion appliances can release pollutants including gases or particles that come from burning materials. Air sealed or isolated mechanical rooms help to prevent leakage of these potential toxins into the home therefore maintaining a higher indoor air quality and occupant health.*	Plan Review & Insp.
		17. No air handling equipment or return air ducts in garage unless placed in isolated/air sealed mechanical room(s) with an outside source of combustion air (sealed combustion appliances are exempt). *Occupant health can be adversely affected by car emissions leaking from garage into dwelling through the mechanical ventilation system.*	Plan Review & Insp.
		18. Seal off ducts during construction <u>OR</u> clean HVAC ducts, coils and blower fan before occupancy. *This measure protect occupants from exposure to contaminants.*	Self-Certify

Lighting		19. At least 50% of interior wall surfaces are colored with a minimum Light Reflective Value (LRV) of 40%. At least 50% of interior ceiling and soffit surfaces are colored with a minimum LRV of 70%. ("off white" finish has a 70% LRV). *Highly reflective/light colored surfaces maximize benefits of both artificial and free, natural daylight.*	Self-Certify
		20. Install airtight and IC rated recessed lighting fixtures when penetrating the air/thermal barrier at insulated ceilings. *Air sealed and IC rated fixtures eliminate the negative effects of penetrating the thermal barrier and reduce the likelihood hot spots in the ceiling, which negatively affect cooling loads.*	Insp.
		21. Design and install individually switched task lighting in at least 3 separate task areas (e.g. - bathroom vanity, kitchen counter, laundry). *Built-in task lighting provides specific use lighting in lieu of general purpose lighting, lowering the amount of energy used in the home.*	Plan Review & Insp.
Plumbing		22. Fully insulate hot water lines to min. R-2 throughout entire house (including trunk lines, branch lines, joints, elbows and lines installed under slab) – IRC requirement. Exception: Branch lines of a central manifold (home-run) distribution systems (see checklist item # 7.6) *Insulating hot water lines conserves energy by reducing source to fixture heat loss through supply piping.*	Insp.
		23. Install a hot water demand controlled recirculation pump for water heaters located more than 20 feet from furthest fixture served. A manual control or occupant sensor switch shall operate the pump with an automatic temperature sensor shut-off. Exception: Homes designed with a central manifold (home-run) distribution system (see checklist item # 7.6) *Conventional residential building practice ignores the waste of water while waiting for hot water to get to the point of use. The problem is compounded by the tendency in new homes to spread the bathrooms and kitchen over a wide area, often locating them in different wings. Waiting times are 10 to 30 times longer than they were 30 years ago and hot water distribution systems are generally less efficient. Demand controlled hot water circulation systems can result in a 20-30% reduction in water use and enhance the energy performance of water heaters. The recirculation pump needs to be controlled by the user at the time of use rather than circulating hot water through the piping system continuously. A switch or occupant sensor located near the fixture activates a small pump that begins circulating hot water when there is a demand for it. A temperature sensor at the fixture automatically turns the pump off.*	Plan review & Insp.

		24. Install toilets that are high-efficiency (1.3 or less gal/flush) or dual-flush operated (average flush of 1.2 gal or less) in at least 50% of bathrooms. *Toilets are the highest users of water in the home, accounting for more than 30% of residential indoor water consumption. High-efficiency/dual flush toilets can conserve an average family of four up to 6,000 gallons a year. Unlike first generation "low-flow" toilets, high-efficiency toilets (HETs) and dual-flush toilets combine high efficiency with high performance. Design advances enable HETs to save water with no trade-off in flushing power. In fact, many perform better than standard toilets in consumer testing.*	Insp.
Interior Finishes		25. Interior paints, coatings and primers contain maximum 250 g/l (grams/liter) VOC (volatile organic compound) content. Clear wood finishes, floor coatings, stain, sealers, and shellacs shall not exceed the following VOC limits: Clear wood finishes: varnish 350 g/L (grams/liter); lacquer 550 g/L Floor coatings: 100 g/L Sealers: waterproofing sealers 250 g/L; sanding Sealers 275 g/L; all other sealers 200 g/L Stains: 250 g/L Shellacs: clear 730 g/L; pigmented 550 g/L *(For further info, see Maricopa County Air Quality Rule 335, Architectural Coatings and South Coast Air Quality Management District Rule 1113, Architectural Coatings)* *Volatile Organic Compounds [VOC] are a class of chemical compounds that can cause short or long-term health problems. The use of low VOC paints and finishes increases a building's indoor air quality and occupant health.*	Self-Certify
		26. Use adhesives and grout with a maximum 250 g/l (grams/liter) VOC content for installation of materials (i.e. drywall, paneling, carpet pad, tile, wood flooring, trim). *The use of low VOC adhesives and grout improves indoor air quality and occupant health.*	Self-Certify
Solid Waste		27. The dwelling includes a built-in recycling area in cabinets with two or more 5-gallon (minimum) bins in or near kitchen. *Providing a built-in recycling area in the kitchen makes sorting and storage of recycling easier.*	Plan Review & Insp.
Operation & Maintenance		28. Homeowner's manual that includes the following: 1) Green Certificate of Occupancy 2) Copy of signed Green Certificate of Compliance; 3) List of green building features (can include green building rating checklist); 4) Product literature of selected green building materials; 5) Manufacturer's manuals for all installed equipment, fixtures and appliances.	Self-Certify

✔	**House Size Rating Adjustment** Calculate the number of points to be added or deducted for final rating.	**Point Adjustment (+/-)**
	Dwelling under 3000 sq. ft. of total conditioned space, not including guesthouse and other ancillary structures. Plus 1 Point for every 100 sq. ft. under 3000 sq. ft. *The construction of a smaller efficiently planned home will conserve energy, water and material resources. Research indicates that as home size increase, so do both material consumption and energy consumption. And although it is possible (within limits) to increase the efficiency of usage of both materials and energy such that a larger home may consume no more than a smaller, less efficient home, the efficient larger home nevertheless consumes more than a similarly efficient smaller home. Thus for a given size family, a larger home uses more materials and energy to meet the same need. And those increases can be shown to be roughly proportional to the increases in the size of the home itself.*	**+** _____
	Dwelling over 3500 sq. ft. of total conditioned space, not including guesthouse and other ancillary structures. Minus 1 Points for every 250 sq. ft. over 3500 sq. ft. *Research indicates that as home size increase, so do both material consumption and energy consumption. And although it is possible (within limits) to increase the efficiency of usage of both materials and energy such that a larger home may consume no more than a smaller, less efficient home, the efficient larger home nevertheless consumes more than a similarly efficient smaller home. Thus for a given size family, a larger home uses more materials and energy to meet the same need. And those increases can be shown to be roughly proportional to the increases in the size of the home itself.* *This point adjustment reflects that greater consumption and in so doing requires a higher level of performance by way of compensation, in order for the larger home to achieve the same score as its smaller counterpart. Conversely, this adjustment recognizes and rewards the inherent efficiency of smaller homes.*	**-** _____

Rating Options Note: All options require 90% threshold unless otherwise noted.	Circle Points	Verification
1. Site		
1.1 Project is an infill development and/or designed with minimum impact on site topography and natural drainage ways. Additional Point for a cut/fill analysis that indicates a balance of site cut & fill *A suitability analysis can determine the optimal placement of site improvements to minimize impact on natural features such as drainage, vegetation, and unique topographical elements. Balancing cuts & fills minimizes energy used to haul material into or out of the site.*	2 1	Plan Review
1.2 Minimum 80% of exposed paving (e.g., walkways, patios, playgrounds, recreation courts, driveways, parking) is light colored (light reflectance value of at least 30%) and constructed of permeable materials. *Light colored and permeable materials reduce local heat island effects (heat absorption and re-radiation) and minimize rain run-off (e.g. - course sand-set pavers/bricks, stabilized decomposed granite, pervious pavement).*	2	Plan Review
1.3 Topsoil and/or natural desert granite from the disturbed area is isolated and preserved in a separate location on-site for re-use to avoid or minimize import of material.	2	Self-Certify
1.4 Building is oriented with the longest building dimension facing south (+/- 15 degrees east or west of due south). *This orientation reduces energy use and utility costs by maximizing the ability to control solar heat gain.*	3	Plan Review
1.5 Dwelling has at least one shared common wall within a two-family (duplex) or multiple single-family (townhouse & condo) building as regulated under the International Residential Code (IRC). Additional Points for two shared common walls *Multi-family housing is more compact than single-family housing, thereby creating less land disturbance per unit. Common shared walls equate to* less exterior wall exposure per unit thereby reducing cooling and heating loads. *Smaller multi-family units use less electricity and water per unit as compared to single-family homes. Multi-family households tend to have fewer cars, drive fewer miles and use public transportation more frequently than residents of single-family housing. Multi-family housing creates efficiencies that make it easier and more affordable to provide basic services including collection of recyclables and trash pick up. Multi-family housing makes it feasible to integrate recreational, commercial and retail uses thereby reducing the need for auto trips for the residents.*	2 2	Plan Review

1.6 Dwelling is designed with shaded outdoor living area on north, south, and/or east side(s). *Shading these areas will reduce heat gain and lower the temperature around the house to promote outdoor living. Outdoor living areas reduce the need for air conditioned indoor space without compromising livability. Shade provided by outdoor structures and vegetation, combined with water features for evaporative cooling will lower the outside temperature and reduce the thermal heat gain of the house, thus making outdoor living more comfortable.*	2	Plan Review
1.7 Total area of shaded outdoor living elements is equal to at least 25% of the total livable floor area. *The use of outdoor living areas potentially reduces conditioned interior space without reducing livability. Shading devices can be designed to allow for desired winter solar heat gain to minimize heating costs.*	2	Plan Review
1.8 Outdoor structures made from salvaged, reclaimed or recycled content materials. *Substituting these materials outdoors avoids the use of virgin materials.*	1	Plan Review
1.9 All landscaping is native and/or Xeriscape (no lawn). *Xeriscape landscaping conserves water and protects the environment. Important considerations in creating a xeriscape landscape include planning, soil types, appropriate plant selection, efficient irrigation, use of mulches, and timely maintenance. The City of Scottsdale offers various informative documents regarding Xeriscape. Eliminating lawns can result in significant water savings and can also eliminate energy that would be used for maintenance.*	2	Plan Review
1.10 Non-sprinkler or drip, zoned irrigation system is designed with multiple valves to accommodate specific water needs of different types of plants (e.g., ground cover, shrubs and trees on separate valves). *Different types of plants have different watering and maintenance needs. A zoned irrigation system delivers the appropriate amount of water to the appropriate landscaping zone as needed.*	1	Self-Certify
1.11 The irrigation system is equipped with an automatic rain sensor shut off or weather-based management system. *A rain sensor shut off prevents unnecessary irrigation during rain, therefore conserving water.*	1	Self-Certify
1.12 Rainwater channeling methods using gutters, scuppers, downspouts and grading to direct runoff to landscaped areas. *Rainfall can be diverted naturally to plants via contoured slopes, berms and channels, as well as with gutters, downspouts and scuppers. Basins can be built around particular plants to collect water and allow it to percolate slowly through the soil.*	2	Insp.
1.13 A rainwater collection and storage system is used to supplement the irrigation system. *Rainwater collection systems use the roof to collect and divert rainwater through downspouts, into a filter and store it in a cistern for future use.*	2	Insp.
1.14 Non-toxic pest control (e.g., borate treatment, physical barriers, pest-resistant building materials). *Using alternatives to chemical treatments prevents groundwater or runoff contamination, and potential indoor air toxicity.*	1	Self-Certify

1.15 Utility supplied electric power is available upon the completion of the floor slab and is used throughout entire construction. Additional Points for use of solar power or other renewable energy source through the course of construction. *Fossil fueled generators typically used on construction sites use an excessive amount of energy, are often inefficient, and contribute to noise and air pollution at the construction site and its immediate vicinity*	1 4	Insp.
Sub-total of points selected:		
2. Structural Elements		
2.1 Non-asphalt based damp proofing is used for basement and/or retaining wall applications (e.g. zero VOC/water based liquid acrylic, 1 ply membrane, bentonite clay, and cement-based waterproof coating). *The use of asphalt-based (i.e. petroleum) damp proofing creates the potential for leaching contaminants into our ground water contamination from leaching petroleum and toxins.*	1	Self-Certify
2.2. Western coal fly ash is used in all concrete foundations and slabs with min. 20% substituted volume of cement. *Western coal fly ash concrete can use up to 30% less Portland cement. Fly ash is a waste product with no other practical use, so its use in concrete diverts it from the waste stream.*	1	Self-Certify
2.3 At least 75% of roof structure is non-solid sawn lumber (metal, engineered lumber, recycled content materials). This item does not include concrete slabs on grade or conventional wood trusses. Additional Points for at least 75% of floor structure Additional Points for at least 75% of beams, headers and columns Additional Points for at least 75% of interior framing *Steel, concrete and other non-wood structural members save wood resources and are more dimensionally stable and more recyclable than their solid sawn wood counterparts. Engineered lumber is composed of smaller pieces of wood and is therefore more resource efficient since it uses more material from a given tree and overall milling operations. Engineered lumber is also more dimensionally stable.*	2 2 2 2	Plan Review
2.4 At least 75% of roof structure lumber is certified by the Forest Stewardship Council (FSC) as a sustainable source. Additional Points for at least 75% of floor structure Additional Points for at least 75% of beams, headers and columns Additional Points for at least 75% of interior framing *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	2 2 2 2	Self-Certify

2.5 At least 75% of roof structure lumber is certified by the Sustainable Forest Initiative (SFI) as a sustainable source. Additional Points for at least 75% of floor structure Additional Points for at least 75% of beams, headers and columns Additional Points for at least 75% of interior framing *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	1 1 1 1	Self-Certify
2.6 No false wood beams, non-load bearing columns or double walls. *Conventional framing and design effects can use 15 to 30 percent more materials than is structurally needed.*	2	Plan Review & Insp.
2.7 Interior borate treated lumber used for at least 50% of wood structure, excluding trusses. *Borate treated lumber helps preserve lumber while protecting against insects and is harmless to humans.*	2	Plan Review & Self-Certify .
2.8 Low-toxic materials with no urea-formaldehyde resin are used for all sub-floor, roof and wall sheathing. *Low toxic sub-flooring and sheathing minimize the off gassing that occurs with the use of urea-formaldehyde, thus increasing indoor air quality and occupant health.*	2	Self-Certify
2.9 An integral wall system is used that combines structural and thermal properties, and/or finish. Options include integral insulated masonry, structural insulated panels (SIP), insulated concrete forms (ICF), autoclaved aerated concrete (AAC), insulated sandwich panel (ISP), and solid foam panels. Natural materials such as cob, straw bale, adobe, pumice, thatch, and rammed earth may also satisfy this requirement. Additional Points for regionally extracted or recovered, processed & manufactured within 500 miles Additional Points for regionally extracted or recovered, processed & manufactured within 250 miles *Integral wall systems provide many benefits such as resource efficiency, high insulation values and/or thermal mass, preserving wood resources. Utilizing local and natural building materials reduces the energy and emissions to transport materials from outside the regional. Additionally natural regional materials are suitable in the desert climate and when properly installed require minimal maintenance.*	4 2 4	Plan Review & Insp. Self-Certify
2.10 Structural products (other than those for walls) from regional manufacturers within 250 miles (e.g. beams lintels, headers, columns). This item does not include concrete slabs on grade or conventional wood trusses. 1 pt. per category (max. 2 pts.) *Purchasing regionally manufactured materials and products supports the local economy and reduces transportation costs and impacts.*		Self-Certify

2.11 Building design is based on modular dimensions and utilizes modular building components. This item includes advanced framing techniques (e.g., 2-stud corners, single top plates, stud spacing greater than 16" o.c., alignment of multistory load bearing modules), panelized wall/roof systems, and modular housing. *Conventional framing techniques can use 15 to 20 percent more framing material than is structurally needed. Homes designed on a modular grid (e.g. 24" or 48" to match dimensions of standard materials) or constructed from pre-fabricated components result in fewer waste products and require less energy for their assembly. Utilizing materials that do not require on-site assembly optimizes plant manufacturing efficiencies and offers protection from the elements. Less time means reduced site impact and resources.*	3	Plan Review
Sub-total of points selected:		
3. Energy Rating/Performance		
3.1 Dwelling is designed to be at least 25% above IECC (International Energy Conservation Code). Additional Points for at least 35% above IECC Additional Points for at least 45% above IECC *Conformance to this threshold shall be based on plan analysis using software such as REScheck for the IECC comparison or REM/Rate. For more information, visit www.energycodes.gov.* *An Energy Performance Analysis is a part of the design process that combines energy considerations with basic architectural issues, yielding buildings that are considerably more energy efficient from a design perspective. It is also possible to analyze more detailed plans before construction begins, therefore allowing any elements that will waste a great deal of energy to be redesigned.*	2 2 2	Plan Review
3.2 Participation in a third-party Energy Certification Program such as EPA Energy Star Home, Environments for Living, Build America or Utility Company Programs. List name of program – *Participation in an Energy Certification Program ensures that your home will be more energy-efficient than a standard home as a result of following the guidelines outlined in these programs. Participation in these programs include third party inspections and diagnostic testing.*	3	Plan Review & Self-Certify
3.3 An Energy Usage Guarantee is provided by builder or third-party energy performance provider. *Builders who are confident about the construction quality and energy performance of their project can choose to guarantee that the home energy usage will not exceed a set limit over the course of two years.*	3	Self-Certify
Sub-total of points selected:		
4. Thermal Envelope Note: All insulation in thermal envelope (wall, ceiling and/or roof which separates the exterior from the indoor environment) shall be installed such that the full R-value is achieved in every location. No voids, partially filled gaps or compression shall be permitted in wall, floor, ceiling, or roof insulation.		

4.1 Insulation is applied at roof sheathing (non-vented attic is within thermal envelope). *Sealed and insulated attics create semi-conditioned air space that reduces the heat gradient on the HVAC ductwork.* OR Provide a radiant barrier at roof or ceiling assembly (most effective in vented attics). *Radiant barrier (i.e. - decking, foil or reflective coating) is applied to the underside of the roof sheathing or as a top layer in the ceiling, creating a barrier to reduce radiant heat flow.*	2	Plan Review & Insp.
4.2 Roof system qualifies as an Energy Star Roof or Cool Roof Rating Council certified roof. *A cool roof significantly reduces radiant heat transfer through the roof.*	2	Plan Review
4.3 The building wall system provides an integral air and water infiltration barrier or the house is wrapped with a breathable exterior air and water infiltration barrier that allows water vapor to escape. *Application of an air and water infiltration barrier prevents air and water from getting into the house, while allowing water vapor to escape, thereby improving the energy efficiency and durability of the home.*	1	Plan Review & Insp.
4.4 Perform a third-party building envelope air leakage (blower door) test with less than or equal to 0.35 air changes per hour (0.35 CFM at 50 Pascal's pressure per sq. ft. or less). Additional Points for less than or equal to 0.25 air changes per hour *Approximately one-third of heating and cooling loads are due to air leakage through the envelope. Substantial reductions in envelope leakage can be obtained using air sealing techniques. A blower door test confirms the energy efficiency of the building envelope, indicating a tight house and a minimal loss of conditioned air through leakage.*	4 2	Self-Certify/ Third Party Test
4.5 Wood windows or wood clad windows are certified by the Forest Stewardship Council (FSC) or windows made from non-wood materials. *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	2	Self-Certify
4.6 Wood windows or wood clad windows are certified by the Sustainable Forest Initiative (SFI). *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	1	Self-Certify
4.7 Exterior shading devices / screens with a shading coefficient of 0.45 or lower are installed on windows. *Shading serves to block solar radiation in order to reduce heat gain, glare, and localized overheating. A shaded window that allows air circulation between the shading device and the glass will greatly reduce solar heat gain. The lower the shading coefficient, the better the performance.*	2	Plan Review
4.8 South glazing has full exterior shading from May through August at noon. *The highest levels of solar radiation occur during the months of May, June, July, and August. Exterior shading devices help to reduce the level of radiation that migrates into the building, thus reducing thermal heat gain.*	2	Plan Review
4.9 No more than 20% of total glazing is located on east and west walls combined.	2	Plan Review

Windows located on east and west walls receive light and heat, but are difficult to shade from the summer sun because of the sun's low aperture in the morning and late afternoon. East windows are more acceptable than west windows, as they allow morning sun to chase off the nighttime chill. West windows receive radiation from the hot afternoon sun, thus increasing heat transfer into the home. Because they are difficult to shade the best solution is to limit east and west windows.		
4.10 Total glazed area (including skylights) does not exceed 20% of gross area of exterior walls. *These strategies are incorporated to minimize thermal conductivity through glazed areas, (heat loss/ heat gain) reducing heating and cooling loads and energy costs.*	3	Plan Review
4.11 The dwelling incorporates exterior sun control/shading strategies for protection from low summer sun angles (structure and/or landscaping) on min. 50% of east and west facing windows. Additional Point for min. 75% of east and west facing windows Additional Point for min. 100% of east and west facing windows *The use of shading strategies on exterior walls and windows will reduce the amount of heat absorbed into the house and keep it cooler.*	2 1 1	Plan Review
4.12 Blown-in insulation (e.g., cellulose, fiberglass) is used at: Walls – 2 pts. Ceilings – 2 pts. *Blown-in insulation increases thermal efficiency by eliminating non-insulated voids, in turn lowering utility costs.*		Plan Review & Insp.
4.13 CFC and HCFC free foam insulation is used at: Foundation/Slab – 1 pt. Basement – 1 pt. Walls – 2 pts. Ceiling/Roof – 2 pts. *Using CFC and HCFC free rigid foam and spray foam insulation avoids the use of ozone harming chemicals. Spray foam expands into voids to increase thermal efficiency.*		Plan Review & Insp.
4.14 Cementitious foam insulation is used at: Walls – 1 pt. Ceiling/Roof – 1 pt. *Cementitious foam insulation provides a higher R-value than fiberglass or cellulose, is fire proof, and does not shrink after installation.*		Plan Review & Insp.
4.15 Insulation has a minimum of 25% recycled content (e.g., cellulose, denim). *Recycled content insulation conserves new material and reduces waste in landfills.*	2	Plan Review & Self-Certify
4.16 Dwelling is insulated with formaldehyde-free insulation. *Formaldehyde-free insulation does not contain Volatile Organic Compounds [VOC] that outgas into the building enclosure during the course of construction, thus increasing indoor air quality and decreasing adverse effects to workman and occupant health.*	2	Self-Certify

4.17 Dwelling is insulated with bio-based or natural insulation such as straw, cork, or cotton products. *Natural insulation products eliminate the off gassing of toxic chemicals and also provide a higher R-value than many of the traditional insulation products.*	2	Plan Review & Insp.
Sub-total of points selected:		
5. Heating, Ventilation, and Air Conditioning (HVAC)		
5.1 Dwelling is cooled by an electric heat pump or air conditioning system with multi-speed compressor and variable speed air handling units. *Technological innovations have permitted significant energy advancements in conventional cooling equipment.*	3	Plan Review & Insp.
5.2 Dwelling is cooled by water-source heat pumps, ground-source heat pumps, pre-coolers, indirect evaporative cooling and/or or thermal storage (ice or water) system. *Ground-source heat pumps use the relatively constant temperature of soil as a heat sink and source, via a buried loop or coil of tubing. Water-source heat pumps use water as a heat sink Pre-coolers are evaporative cooling modules that are used specifically to pre-cool air that is used to cool the condenser coil of an air conditioner. Indirect evaporative cooling works on the same principle as a conventional evaporative cooler but without adding any moisture to the indoor air. Ice storage systems use inexpensive off-peak power to produce ice, at night, which then provides building cooling during the day and avoids taxing utilities during peak usage hours.* OR Dwelling is cooled by a hydronic/radiant system in ceiling, wall and/or floor. *Unlike conventional cooling systems, which circulate cold air to maintain comfort, radiant cooling systems circulate cool water through ceiling, wall, or floor panels. With radiant systems, people are cooled by radiant heat transfer from their bodies to adjacent surfaces - ceilings, walls, or floors - whose temperatures are held a few degrees cooler than ambient. A hydronic/radiant system can transport a given amount of cooling with less than 5 percent of the energy required to deliver cool air with fans.*	4 4	Plan Review & Insp.
5.3 The HVAC system is zoned such that no more than two enclosed rooms are controlled by one thermostat (does not include bathrooms, kitchens, closets, pantries, and laundry rooms). *Efficiency is significantly improved when different rooms in the home are heated and cooled according to the time and intensity of their use. A zoned system allows independent temperatures to be set in each room or space, and an individual zone can be turned off when not occupied. A zoned system results in a dramatic reduction of energy consumption and operating costs.*	4	Plan Review & Insp.
5.4 Perform a duct leakage test measured in CFM at 25 Pascal's pressure with equal to or less than 3% of the floor area served by each unit, or equal to or less than 5% of the fan flow at high speed for each system installed. *Leaking ductwork equals energy lost; therefore, designing the system for minimal leakage conserves energy.*	4	Self-Certify/ Third Party Test

5.5 Design and install a whole building ventilation system as specified in Table 4.1a of ASHRAE Standard 62.2 or at a rate of 15 CFM for the master bedroom, 7.5 CFM for additional bedrooms and 0.01 CFM for each square foot of total conditioned floor area. The system shall operate automatically or continuously with manual override as part of an energy recovery ventilator or balanced exhaust/supply fan system. *Occupant health and comfort may be adversely affected by ventilation in a home. Without adequate outdoor air ventilation, humidity, odors, and pollutants may accumulate within the home. Energy recovery ventilators exchange the inside air with outside air to remove indoor air pollutants, and exchange energy from outgoing cool air to incoming hot air which reduces utility costs.*	4	Plan Review & Self-Certify.
5.6 Install a "whole house" fan to ventilate house with outside air during seasonal transition months (spring, early summer, autumn). *Whole house fans are typically installed in an attic, flush with the ceiling of the house. When outside temperatures are cooler than inside temperatures; such as in early morning or late evening, the air conditioner is turned off, and the windows are opened, the whole house fan pulls cool, fresh air into the house through the open windows and pushes the hot inside air out through attic vents.*	1	Plan Review & Insp.
5.7 The HVAC system incorporates a whole house filtration system with an MERV rating of at least 12. *Whole house filtration systems effectively improve indoor air quality by filtering particles that are hazardous to occupant health. These particles can include toxic gases, molds, and particulate matter.*	2	Insp.
5.8 Install a minimum of three reversible, multi-speed, Energy Star rated ceiling fans. *Ceiling fans can make a house feel up to 20% cooler with a minimal use of energy. To be effective during summer months, HVAC thermostat must be set at a higher temperature in conjunction with fan use.*	2	Plan Review & Insp.
5.9 Windows are configured to allow for stack and/or cross ventilation to take advantage of seasonal cooling. Cross ventilation paths shall not exceed 40 ft. *Using natural breezes to cool the house lessens the need for mechanical cooling and saves energy.*	2	Plan Review
5.10 The dwelling has an evaporative cooling system with independent air distribution system OR a dual moisture sensor controlled system on a shared air distribution system. *Evaporative cooling systems can effectively cool a home for a large portion of the year and use less energy and cost less than air conditioning units to operate.*	4	Plan Review & Insp.
5.11 Indoor and/or outdoor living area utilizes a passive cooling method such as a cool tower or misting system (in a shaded outdoor area). *Using passive cooling strategies in and around the house lessens the need for mechanical systems and saves energy.*	3	Plan Review & Insp.
5.12 Furnace is a sealed-combustion unit. *A sealed combustion furnace will draw air directly from the outside. A power vented furnace uses an integral motorized vent exhauster to meter the airflow through the system, reducing energy loss. These furnace types do not negatively affect indoor air quality because of efficient ventilation outside of occupied spaces.*	1	Plan Review & Insp.

5.13 Water heater is a sealed-combustion unit. *Sealed-combustion water heaters draw combustion air from the outdoors, which eliminates any chance of back drafting. This feature is especially helpful in tight homes, where appliances compete for less combustion air. In addition, sealed combustion heaters can save energy because they don't steal heated or cooled indoor air from the house. A power vented water heater pushes excess heat outside through vents, therefore conserving energy in the conditioned space. These water heater types do not negatively affect indoor air quality because of efficient ventilation outside of occupied spaces.*	1	Plan Review & Insp.
5.14 Fireplace(s) are sealed-combustion. *Sealed combustion fireplaces use a specially designed double-walled vent that typically vents through a sidewall in a horizontal position. The inner surface removes the flue gases and the outer container provides for passage of combustion air. This type of fireplace does not negatively affect indoor air quality and does not result in energy loss in conditioned spaces.*	1	Plan Review & Insp.
5.15 Central vacuum system with outside exhaust. *Venting the vacuum to outside prevents the release of small particles back into the home, thereby improving indoor air quality.*	2	Insp.
5.16 Garage is provided with a minimum 100 cfm exhaust fan with automatic timer control linked to occupant sensor, light switch, garage door opening/closing device and/or a temperature sensor. Balance exhaust air with outside make-up air through a screened inlet. *This type of exhaust fan removes toxic automobile emissions from the garage, preventing them from leaking into the home.*	1	Insp.
5.17 All garages are detached from the house. *A detached garage keeps toxic fumes segregated from the livable portions of the home, thus maintaining a higher quality of indoor air.*	2	Plan Review
5.18 Bathroom exhaust fans are operated by an occupant sensor, automatic humidistat controller, or timer for either a timed interval or until humidity level is reduced. *Energy Star labeled fans provide more ventilation capacity at a lower wattage and are also quieter than standard bath fans. Installing controllers on fans, especially timers or humidistats that remove residual humidity after a person leaves the bathroom is an effective method for removing interior generated moisture at its source. Timers can also prevent unnecessary fan energy use that occurs when a fan is inadvertently left on.*	2	Plan Review & Self-Certify
5.19 Test for radon and if radon level is 2 pCi/L (pico Curies per Liter) or more, install a radon ventilation system per Environmental Protection Agency (EPA) guidelines. *Passive radon-resistant features installed in most houses do not cost anything to run. In fact, sealing the home to prevent radon entry can provide the added benefit of energy conservation.*	3	Plan Review & Self-Certify
Sub-total of points selected:		
6. Electrical Power, Lighting, and Appliances		
6.1 Interior floor covering is light in color, with a minimum light reflectance value (LRV) of 25%. *Lighter colored surfaces maximize effects of both artificial and free, natural daylight.*	1	Self-Certify

6.2 Daylighting allows natural light to enter the house from two sides of rooms in at least 50% of total livable floor area (excluding skylights). *Letting natural light into the house saves energy by avoiding the use of artificial lighting during the daylight hours.*	2	Plan review
6.3 Recessed lights do not penetrate the thermal barrier. *Recessed lights can affect a building's cooling load by penetrating the thermal barrier. However, air sealed and I.C. rated fixtures minimize penetration impact and reduce the chance of creating hot spots in the ceiling.*	2	Insp.
6.4 At least 50% of lighting fixtures have an efficacy of 40 lumens per watt (l/w) or more. High-efficacy lighting includes compact or tubular fluorescent and light-emitting diodes (LEDs). *Compact fluorescent lighting uses 75% to 85% less energy than standard incandescent fixtures. LEDs are available with an efficacy of 40 l/w and can be controlled by a dimmer switch. They are suitable for kitchens, bathrooms, and utility rooms at a density of one per 25 square feet.*	2	Plan Review & Self-Certify
6.5 Maximum interior lighting wattage does not exceed 0.5 watts per sq. ft, as determined by aggregate wattage not including plug loads. *Lower overall lighting wattage reduces energy consumption and costs.*	3	Plan Review
6.6 Smart wiring system is installed for controlling lighting and telecommunications. *The installation of a smart wiring system allows new technology to be added to a home without having to rewire, which saves energy and natural resources. Lighting controls can be set for on/off, dimming and staging.*	2	Insp.
6.7 Dwelling has Energy Star rated appliances, including refrigerator, freezer, dishwasher and clothes washer (www.energystar.gov/products). 1 pt. for each appliance (max. 3 pts.) *Energy star products reduce energy and water consumption, as well as utility bills. Oftentimes, Energy Star rated appliances do not cost more than their less efficient counterparts.*		Insp.
6.8 Laundry room has a gas dryer stub-out. *Gas dryers are more efficient than electric dryers, thus conserving energy. The provision of a gas dryer stub-out allows for the occupant to easily take advantage of this technology.*	1	Insp.
6.9 Laundry room is provided with a permanent drying rack for passive clothes drying. *An indoor drying rack in the laundry area can be added as an effective alternative to energy consuming appliance. Natural evaporation and solar exposure is the most efficient and cost-effective method to dry clothes because it uses free and abundant energy.*	1	Insp.
6.10 Solar electric (photovoltaic) lighting is provided for at least 50% of the exterior site lighting. *Photovoltaic powered exterior lighting systems provide simple, effective outdoor lighting with no utility costs.*	1	Insp.
6.11 Dwelling has a roof area configured to accommodate future solar electric (photovoltaic) panels with electrical rough-in (conduit run from electrical service to roof). The area must be a minimum of 400 sq. ft. and have a south sloping exposure (unless flat roof with or without a parapet). *A pre-planned south roof area provides for the easy installation of future solar electric (photovoltaic) panels.*	2	Insp.
6.12 Design and install a solar electric (photovoltaic) power system. 2 pts for each 10 percent of annual electrical load (KWh) met by system (max. 10 pts.)		Plan Review

Solar powered generating plants and residential photovoltaic power systems provide electricity with no harmful effects on the environment; and encourage development of technology for reduced costs.		& Insp.
6.13 Design and install a fuel cell using hydrogen generated by solar energy. 2 pts for each 10 percent of annual electrical load (KWh) met by system (max. 10 pts) *Solar energy is used to separate hydrogen and oxygen out of water. The hydrogen gas is fed into the fuel cell to produce electricity and heat. This process is extremely efficient and pollution free.*		Plan Review & Insp.
6.14 Design and install a fuel cell using hydrogen generated by natural gas. 2 pts for each 10 percent of annual electrical load (KWh) met by system (max. 8 pts) *Natural gas is used to separate hydrogen and oxygen out of water. The hydrogen gas is fed into the fuel cell to produce electricity and heat. This process is extremely efficient and virtually pollution free.*		Plan Review & Insp.
6.15 Dwelling generates enough on-site power to be zero-net energy (carbon neutral). *A zero-net energy home supplies to the utility grid an annual output of electricity that is equal to or more than the amount of power purchased from the grid. In many cases the entire energy consumption (heating, cooling, and electrical) of a zero-net energy home can be provided by renewable energy sources. A zero-net energy building can offset emissions equivalent to the amount of kilowatt-hours (kWh) produced by the renewable energy on the building. This calculation is often limited to greenhouse gas emissions, which contribute to climate change. In this case a zero-net energy or zero-net emissions building can be called carbon or climate neutral.*	4	Plan Review
Sub-total of points selected:		
7. Plumbing System		
7.1 Hot water lines are fully insulated to min. R-4 throughout entire house (including trunk lines, branch lines, joints, elbows and lines installed under slab). *Insulating hot water lines conserves energy by reducing source to fixture heat loss through supply piping.*	1	Insp.
7.2 A gas fueled tankless water heater is provided for plumbing fixtures within 20-pipe feet length. 1 pt. each for each tankless unit (max. 2 pts) *Tankless water heaters conserve water and energy.*		Plan Review & Insp.
7.3 Install energy-efficient water heating equipment meeting one of the following energy factor (EF) ratings: Gas Water Heaters EF >/= 0.62 Conventional High Efficiency Unit - 1 pt. EF >/= 0.8 Instantaneous/Tankless - 2 pts. Electric Water Heaters EF >/= 0.92 Conventional High Efficiency Unit - 1 pt. EF >/= 0.99 Instantaneous/Tankless - 2 pts. EF >/=2.0 Heat Pump Water Heater - 3 pts. Solar Water Heaters >/= 60% of Annual Load With back-up heater - 4 pts.		Insp.

Electric heat pump water heaters use surplus heat from A/C condenser coil to heat water at little to no extra cost. Solar water heating is the most economical way to heat water using the sun's free energy.		
7.4 Dwelling has a roof area configured to accommodate future solar hot water panels with plumbing rough-in (hot water line stub-out at roof). The area must be a minimum of 200 sq. ft. and have a south sloping exposure (unless flat roof with or without parapet). *A pre-planned south roof area provides for the easy installation of future solar panels (photovoltaic). If installed, a solar heating system will significantly reduce the energy consumption and thus, the costs of heating water.*	2	Insp.
7.5 Hot water recirculation loop is provided that doesn't exceed 200 feet for pipe size diameter less than 1 inch or 400 feet for pipe size diameter 1 inch or greater. All branch lines from recirculation loop to fixtures shall not exceed 10 foot. A manual control or occupant sensor switch shall operate the recirculation pump with an automatic temperature sensor shut-off. *Conventional residential building practice ignores the waste of water while waiting for hot water to get to the point of use. The problem is compounded by the tendency in new homes to spread the bathrooms and kitchen over a wide area, often locating them in different wings. Waiting times are 10 to 30 times longer than they were 30 years ago and hot water distribution systems are generally less efficient. Demand controlled hot water circulation systems can result in a 20-30% reduction in water use and enhance the energy performance of water heaters.*	2	Insp.
7.6 Central manifold (home-run) water distribution system is provided. The trunk line from the water heater to the central manifold shall be a maximum of 10 feet. Branch lines from the manifold to each fixture shall be a maximum of ½" in diameter. Manifold distribution systems use hot and cold distribution lines to supply each side of each fixture with its own dedicated line. This minimizes water temperature and pressure changes during simultaneous operation of numerous fixtures. Additional benefits of a properly designed and installed system include: faster hot water delivery, water and energy savings, and few fittings located behind the wall.	2	Insp.
7.7 All toilets are high efficiency (1.3 or less gal/flush) and/or dual flush operated (average flush of 1.2 gal or less). *Toilets are the highest users of water in the home, accounting for more than 30% of residential indoor water consumption. High efficiency/dual flush toilets can conserve an average family of four up to 6,000 gallons a year without sacrificing flushing performance.*	3	Insp.
7.8 All bathroom faucets and showerheads are high efficiency (2.0 or less GPM). *Water savings can be achieved with high efficiency bathroom faucets. Water savings from high efficiency kitchen faucets is less likely because these faucets are often used for filling. High efficiency showerheads will reduce hot water demand and energy use for water heating by up to 20 percent.*	3	Self-Certify
7.9 A <u>Point of Use</u> water treatment system is installed that meets applicable NSF/ANSI Standards (#42, #53, #55) with a treated water recovery rate equal to at least 70% of water intake. <u>OR</u> A <u>Point of Entry</u> water treatment system is installed that meets applicable NSF/ANSI Standards (#42, #53, #55) with a treated water recovery rate equal to at least 70% of water intake. *Point of use water treatment system will provide healthier drinking water by removing organic chemicals, treating*	2 3	Self-Certify

for esthetics (smell, taste, scaling) and removing lead, radon or nitrates if needed, while adding nothing (e.g., salt) to their discharge.		
7.10 A two-pipe drain system is installed for future graywater recovery system. Additional Points for installing a complete graywater system with or without filtration/storage tank for landscape irrigation and/or toilet flushing in accordance with local codes and regulations. *Graywater systems use wastewater from washing machine, showers, tubs, and sinks (excluding kitchen sink and dishwasher) to irrigate landscaping. A graywater irrigation system can produce 1,650 gallons of water per week in the average 4-person family. This is enough water to support 900 square feet of lawn, several mature shade trees and 15 large shrubs; making it a high water conservation device.*	2 3	Insp.
Sub-total of points selected:		
8. Roofing		
8.1 A minimum of 25% of roof area uses recycled or recycled content roof material (e.g. metal, rubber, or salvaged roof tiles). Additional Point for min. 50% of roof area. *Recycled content roof material reduces the use of new resources, and waste in landfills.*	2 1	Plan Review & Self-Certify
8.2 Roof has a high durability/low maintenance material such as concrete, slate, clay, metal, or fiber-cement. Additional Points if roofing material is recyclable or reuseable. *A high durability/low maintenance roof system saves homeowners money in replacement costs, and reduces waste in landfills as a result of replacing the roof less often. Recyclable roofing material saves energy resources and reduces waste in landfills when replacement is necessary.*	1 2	Plan Review & Insp.
8.3 If permitted, home is roofed with reflective material with a minimum 75% LRV or meet Energy Star or Cool Roof rating. *Reflective/light colored roof surfaces lower roof surface temperature by up to 100° F, thereby decreasing the amount of heat transferred into a building's interior. This type of roof surface saves money and energy by reducing the amount of air conditioning needed to keep a building comfortable.*	2	Plan Review
8.4 Roof material weighs less than 350 lbs/100 sq. ft. *Reducing roof mass decreases material, costs, and heat gain which keeps the house cooler.*	1	Plan Review
8.5 Dwelling is designed with a vegetated roof system. 1 pt. for each 25% of roof area *Often called green- or eco-roof, a vegetated roof consists of earth, soil mix and vegetation. In our desert climate, the earth material provides for insulation and the drought-resistant vegetation provides for a shade and an evaporative cooling effect. Rain is absorbed by the soil and vegetation, reducing and detaining storm water runoff.*	1-4	Plan Review & Insp.
8.6 Roof covering has min. 35-year manufacturer's warranty or otherwise uses bitumen underlayment or equivalent material (e.g., 90 lb. underlayment) under concrete, clay, or slate roofing materials. *A 35- year roof system saves homeowners money in replacement costs, and reduces waste in landfills as a result of replacing the roof less often.*	2	Self-Certify

8.7 For vented attic design, the roof cavity is vented with continuous ridge vent and vented eaves. *Continuous ridge vents allow for maximum convective heat air flow to removed heat from the attic.*	2	Plan Review & Insp.
Sub-total of points selected:		
9. Exterior Finishes		
9.1 Exterior finishes are derived from regional sources within 500 miles of jobsite. This includes stone or cultured stone veneers that are regionally quarried or processed. *Locally produced materials reduce costs and pollution associated with transportation from production facilities to jobsites, and may use locally recycled materials in processing. Stone is a strong, durable material, and when quarried locally, saves on the transportation cost to the jobsite.*	1	Self-Certify
9.2 Dwelling uses reconstituted or recycled-content siding (minimum 50% pre-or post-consumer). *Reconstituted and recycled-content siding materials offer superior longevity over wood siding and don't crack like stucco. The increased density of the materials resists curling, cracking and other deterioration. The minimal maintenance and replacement decreases costs and conserves natural resources and space in landfills. Often these materials offer long warranties and have zero flame spread. Fiber cement siding is often made with recycled content from sawmill waste and cement. It is strong, durable and fireproof.*	1	Self-Certify
9.3 Stucco is applied directly to masonry or similar wall systems, without using lath. *The elimination of the metal lath reduces the use of unnecessary resources. This is only appropriate for masonry or other cementitious block wall systems.*	1	Insp.
9.4 Stucco or siding material is integrally colored. *Because the color is integral to the product, this system provides low maintenance, fade resistant, and durable finish.*	1	Plan Review & Self-Certify
9.5 Exterior structural materials (e.g. CMU, stabilized adobe, rammed earth, steel) are left exposed and in their natural state without a veneer or finish. *The use of structurally sound, weather-resistant materials in their natural state reduces materials cost and maintenance.*	2	Insp.
9.6 Fascia, soffit and trim elements are made of recycled-content materials (including metal) or engineered wood products such as finger jointed trim, fiberboard, laminated strand lumber or OSB. *Recycled-content materials reduce the amount of new material used in production by gluing up mill scraps into large pieces, which conserves natural resources and reduces landfill waste. Engineered wood products use a laminating process to make large pieces from smaller strands of lumber. The process saves old growth forests by using trees from farms and second generation forests where the whole tree is used, reducing waste.*	1	Self-Certify
Sub-total of points selected:		
10. Interior Finishes		

10.1 Wallboard and/or plasters used in the home are made with min. 25% recycled content, such as wheat board with agricultural by-products or gypsum board with industrial by-product gypsum or flue-gas waste product. *Recycled content drywall contains recycled gypsum or "synthetic" gypsum, a waste byproduct of flue gas scrubbers, and reduces the demand of virgin gypsum mined from the ocean floor. Other products, such as wheat board, are constructed from agricultural waste.*	2	Self-Certify
10.2 All adhesives used for installation of materials (e.g. drywall, paneling, carpet, wood flooring, ceramic or VCT tile, cove base) contain a maximum VOC (volatile organic compound) content of 100 grams/liter. *Low toxic interior finish products such as solvent-free adhesives, mastics, and sealants reduce out-gassing of VOCs and other toxic substances, which, in turn, improves indoor air quality.*	2	Self-Certify
10.3 Interior paints, coatings and primers contain zero VOC's or meet Green Seal Standard GS-11 limits of 150 grams/liter for non-flat paints and 50 grams/liter for flat paints past pigment addition. *Interior paints and finishes with no VOCs will reduce their negative effect on indoor air quality.*	2	Self-Certify
10.4 Interior paints contain no acetone, formaldehyde or ethylene glycol. *Ethylene Glycol (EG) is a solvent used in many latex paints and has been listed as a hazardous substance and toxic air contaminant under many federal and state regulations.*	2	Self-Certify
10.5 Interior paints and finishes contain a minimum of 20% recycled content. *Paints or finishes made from recycled content reduce the hazardous waste in landfills.*	2	Self-Certify
Sub-total of points selected:		
11. Interior Doors, Cabinetry, and Trim		
11.1 All solid wood doors are domestic hardwoods or certified by the Forest Stewardship Council (FSC). *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	2	Self-Certify
11.2 All solid wood doors are certified by the Sustainable Forest Initiative (SFI). *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	1	Self-Certify
11.3 Doors are non-composite or made with low-toxic binders containing no added urea-formaldehyde resin. *Toxic binders, such as urea-formaldehyde off-gas chemicals such as volatile organic compounds (VOC) that negatively impact indoor air quality. Alternative binders serve the same function without creating health risks.*	2	Self-Certify
11.4 Casework for cabinets, counters and other built-in furniture is made from low-toxic binders containing no added urea-formaldehyde resins. *Toxic binders, such as urea-formaldehyde off-gas chemicals such as volatile organic compounds (VOC) that negatively impact indoor air quality. Alternative binders serve the same function without creating health risks.*	2	Self-Certify

11.5 All exposed substrate materials containing formaldehyde, such as the inside of cabinets and the underside and edge of counters, are sealed with a water-based formaldehyde blocking finish. *Water based formaldehyde blocking finishes ameliorate indoor air quality by blocking the out-gassing of VOCs and other toxic chemicals.*	2	Self-Certify
11.6 Casework is domestic hardwood from a FSC (Forest Stewardship Council) certified sustainable source and/or is a rapidly renewable material (a material that re-generates itself within a ten year period). *A certifiable sustainable-managed forest does not use clear cutting practices, and plants new trees for every one used in production.*	2	Self-Certify
11.7 Casework is from a SFI (Sustainable Forest Initiative) certified sustainable source. *A certifiable sustainable-managed forest does not use clear cutting practices, and plants new trees for every one used in production.*	1	Self-Certify
11.8 All interior trim is finger-jointed/engineered wood, domestic hardwood, from an FSC- or SFI- certified sustainable source, is a rapidly renewable material or contains min. 20% recycled content. *Finger jointed or engineered wood trim comes from small pieces glued together from second generation forests and tree farms, saving old growth forests.*	1	Self-Certify
11.9 Cabinets are pre-finished off-site OR finished on-site with a product that contains a maximum VOC content of 350 grams/liter. *Pre-finished cabinets or on-site application of least toxic finish will lower the amount of VOCs released into the home, keeping down the amount of indoor air pollutants.*	1	Self-Certify
11.10 Countertops are manufactured from min. 20% recycled content material. *Recycled content counter tops conserve new resources and reduce waste in landfills.*	1	Self-Certify
11.11 Countertops are made from concrete or regionally quarried or processed stone or tile from within 500 miles of job site. *Use of local/regional materials reduces costs and pollution related to transportation from other areas.*	1	Self-Certify
11.12 No tropical woods are used in the entire home. *Tropical hardwoods are harvested from endangered rainforests.*	1	Self-Certify
11.13 No wood base, cove, crown molding, door or window trim is used in the entire home, unless it is recycled or salvaged material. 1 pt. per category (max. 3 pts.) *Wood is a valuable natural resource and is often exploited in the construction industry by inefficient practices. The elimination of wood trim reduces the excessive and unnecessary use of wood.*		Self-Certify
Sub-total of points selected:		
12. Flooring Note: In order to receive points in this category, the total area of the selected finish floor material must be at least 25% of total conditioned floor area unless otherwise noted.		

12.1 Carpeting and padding certified under the Carpet and Rug Institute's Green Label Plus program. And/or resilient flooring certified under the Resilient Floor Covering Institute's FloorScore program or the Greenguard Environmental Institute's certification program. *Low-emitting materials improve the quality of indoor air by reducing contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.*	2	Self-Certify
12.2 Minimum 20% recycled content (e.g., carpet, pad, tile, sound deadening substrate) or salvaged (e.g., reclaimed wood) flooring. *Recycled content and salvaged flooring saves material and conserves natural resources.*	1	Self-Certify
12.3 Flooring is made from a rapidly renewable material (bamboo, linoleum, cork, wool or other materials that are regenerated within a 10-year cycle). *Bamboo flooring is a good use of natural resources because it is fast growing, durable and flexible. Natural linoleum is made from natural and abundant materials and is extremely durable. Cork flooring comes from stripping the bark off of cork oak, which then regenerates itself. Cork tiles are moisture, rot and mold resistant, providing a floor that can last over 30 years.*	1	Self-Certify
12.4 Flooring is from a FSC (Forest Stewardship Council) certified sustainable source. *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	2	Self-Certify
12.5 Flooring is from a SFI (Sustainable Forest Initiative) certified sustainable source. *The use of wood from sustainable managed forests protects regional biodiversity, soil erosion and water quality, and also saves old growth forests by using trees from second-generation forests and tree farms. A sustainable-managed forest prohibits clear cutting practices and plants a new tree for every one used in production.*	1	Self-Certify
12.6 Stone or tile flooring is quarried, processed and/or made within 500 miles of site. *Stone is a strong, durable material, and when quarried locally, saves on the transportation cost to the jobsite. Flagstone is an example of a local stone material.*	1	Self-Certify
12.7 Sealed concrete used as finish floor surface. *Concrete used as a finished floor surface is durable and eliminates the use of additional flooring materials, such as carpet, which can have negative impacts on indoor air quality.*	1	Insp.
12.8 Carpeting is used on less than 25% of conditioned floor area. Additional Point for no carpeting used at all. *Hard flooring can drastically improve indoor air quality by eliminating the out-gassing that occurs from many synthetic carpets and reducing the growth of molds, dust mites and the entrapment of other contaminants. Hard flooring is easier to maintain and is a cost-effective alternative to carpeted surfaces.*	2 1	Self-Certify
Sub-total of points selected:		
13. Solid Waste		

13.1 Provide separate recycling bins during construction for recycling materials including cardboard, wood, drywall, foam, metal, concrete, masonry, tile, and/or asphalt. 1 pt. for each item recycled by builder or waste hauler *Establishing a construction waste reduction/reuse plan reduces the amount of waste ending up in landfills. Construction debris is 50% of the total volume of landfill waste. See Scottsdale's Construction Waste Recycling Resource List.*		Insp. & Self-Certify
13.2 Excess construction materials are donated to a non-profit building organization. *Donating excess materials to non-profit building organizations keeps materials out of landfill and provides a tax deduction incentive.*	1	Self-Certify
13.3 Home is designed with an area allocated for City recycling and trash pick-up containers. *Allocating a convenient location for city recycling container encourages recycling habits.*	1	Plan Review
Sub-total of points selected:		
14. Innovative Design This section recognizes projects using innovative and emerging technologies, practices, and products that fulfill the intentions of the program, but are not addressed in the checklist. Projects can earn up to 8 additional points by submitting a written justification to green building plan review staff for review and determination of awarded points.		
14.1		Plan Review
14.2		Plan Review
14.3		Plan Review
14.4		Plan Review
Sub-total of points selected:		
TOTAL POINTS FOR ALL CATEGORIES		
HOUSE SIZE POINT ADJUSTMENT **(+/- Points from Mandatory Section)**		
TOTAL POINTS (AS SUBMITTED):		
TOTAL POINTS (AS APPROVED):		