City of Scottsdale

# Green Building Program

"Sustainable Building in the Sonoran Desert"

Builders and prospective homebuyers in Scottsdale interested in environmentally compatible buildings now have access to a comprehensive building initiative called the Green Building Program. The program encourages environmentally responsible building in our Sonoran desert region by incorporating healthy, resource- and energy-efficient materials and methods into the design and construction process. It offers options to homebuyers for sustainable living and the long-term advantages of owning an environmentally sound home. We believe that homebuyers will make an environmentally friendly choice when given the opportunity.

Scottsdale's Green Building Program rates buildings in the following environmental impact areas:

- Site Use
- Building Materials
- Water
- Energy
- Indoor Air Quality
- Solid Waste

A green building rating system is used to qualify projects into the program. Design flexibility is achieved by offering over 150 green building options. A designer, builder, or developer may enter any number of projects into the program. The Green Building Program is voluntary and open to builders in the Scottsdale area. There is a move to expand the program into other communities around the valley and state.

As a consumer-driven program, the City of Scottsdale is engaged in an on-going marketing effort to bring the program to the attention of the home buying public and construction industry utilizing the following tools and strategies:

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| Builders and Developers | Promotional Packages including green building job site signs<br>Priority plan review<br>Directory of Builders and Designer distributed to general public<br>Recognition on City Web Site with links to and from other sites |
| Media Coverage | Press releases of program activities<br>Articles for various print media |
| Home Buyers | Certification (green building inspections)<br>Homeowner's Manual (explanation of green building features) |
| Resources/Education | Seminars and Lectures<br>Annual Green Building Expo |

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Every designer and builder who enters a project into the Green Building Program must participate in a pre-application meeting and attend a city sponsored green building lecture or seminar. Lecture and seminars provide information on energy/resource efficient and environmentally responsible buildings involving site use, energy, materials, indoor air quality, water, and solid waste.

Since 1998, the following builders have entered projects into Scottsdale's Green Building Program:

Advanced Concepts
American Eagle
Arroyo Verde Development
Aztec Estates
Boulder Rock Builders
Calvis Wyant Luxury Homes
Carlson Homes LLC
Centurian Development
Circle H Construction
Classic Stellar Homes
Cliftwood Homes
Construction Zone
Cordo Co. Inc.
Dallas Schmidt Development
Dick Lloyd Custom Homes
Dotty & Sons Construction
Dreamquest Homes Inc.
Drexler Companies
Dwyer Custom Home
Edwards Design Group
GBL Enterprises
Gemini Development Corp
Golden Heritage
Golden Vista
Goodfella Custom Homes
Heller Contracting
Homes & Sons
Hustead Development,
JC & Sons Construction
Joe R. Stotts Constr.
Jordan Development
Kelly Custom Homes
Kitchell Custom Homes
Kitt Construction Inc.
Koshari Development
Landmark Bldg Consultants
Linthicum Construction
LPC Design & Build
Mark V Construction
Monument Homes
Neidhart Enterprises
Nicholson Investments
Odyssey Builders
Optima Development
P & C Development Inc.
P. Stark Builders
Piccione Construction
Platinum Homes
Quinn Homes
RainMaker Constr.
Redden Construction
Rhino Enterprises
S & S Homebuilders
Salcito Custom Homes
Schmidt Development
Select Valley Scapes
Sloan Homes
Solid Rock Construction
Spitfire Builders Inc.
SRC Homes
Stenjum Builders
Stotts Construction
Stripling Warriors
Sun Valley Masonry
Terra Firma
The Construction Zone
The Sever Group
Three Rivers Eco-Builders
Tierra Building
Toll Construction
Tom Archer Custom Homes
Tom Norris Homes
Tuscan Estate Homes
Tyson Development
Valenza Development
Ventana Custom Homes
Veston Builders
Wolf Environmental
Zachary Custom Homes.

For further information, please call 480-312-7990 or visit our website -
www.scottsdaleaz.gov/greenbuilding

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City of Scottsdale

# Residential
# Green Building Rating Worksheet and Explanation Guide

August 2001

Use this rating worksheet for tabulating points to qualify single-family residential projects for Scottsdale's Green Building Program. You can qualify at either the Entry or Advanced level after meeting the mandatory requirements.

| **Entry Level** | **Advanced Level** |
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| By qualifying at the entry level you will be meeting minimum environmental building criteria established by the city. | The advanced level is designed to exceed minimum standards and achieve a higher level of environmental building performance. |
| • Meet all mandatory requirements.<br>• Accumulate a total of 26 points from the rating worksheet. | • Meet all mandatory requirements.<br>• Accumulate a total of 56 points from the rating worksheet. |

| **Summary of Rating Categories** | | |
|---|---|---|
| 1. Site Use | 6. Plumbing System | 11. Finish Floor |
| 2. Structural Elements | 7. Roofing | 12. Pools & Spas |
| 3. Building Envelope | 8. Exterior Finishes | 13. Solid Waste |
| 4. Heating, Cooling, & Ventilation | 9. Interior Finishes | 14. Special Options |
| 5. Electrical Power, Lighting, & Appliances | 10. Interior Doors, Cabinetry, Trim | |

| Category | ✔ | Mandatory Requirements for Residential Green Building Rating<br><br>Note: All items require min. 50% threshold unless otherwise noted. | Submittal Required |
|---|---|---|---|
| Site Use | | 1. Protected building entrances (e.g. – recessed or covered; protected from direct summer sun exposure).<br>*The use of shading strategies in these areas will lower the amount of heat absorbed into the house and keep it cooler.* | |
| Structural Elements | | 2. All interior pressure treated lumber to be least toxic (e.g. - borate).<br>*Arsenic is a toxic chemical that is often found to be leaching or out gassing out of pressure-treated or green-treated wood at significantly greater than established safe levels. Borate treated lumber serves the same purpose but is considered harmless to humans.* | |
| Building Envelope | | 3. Exterior walls insulated to min. R-19 (U- factor of 0.051).<br>*Increased insulation of exterior walls reduces thermal migration and keeps cooling/heating costs lower than a "normal" wall.* | |
| | | 4. Ceilings insulated to min. R-30.<br>*Walls/ceilings with higher insulation values will reduce thermal migration and keep cooling/heating costs lower than a "normal wall".* | |
| | | 5. Continuous air/thermal barrier indicated on drawings (bldg. sections).<br>*Controlling thermal migration reduces heating/cooling loads, therefore reducing utility costs.* | |
| | | 6. Windows have National Fenestration Rating Council (NFRC) total unit U-factor of 0.65 or less.<br>*U-value measures the rate of heat flow through a window. A lower U-value means lower heat loss in winter or heat gain in summer.* | S |
| | | 7. Windows have NFRC Solar Heat Gain Coefficient (SHGC) of 0.55 or less.<br>*SHGC measures the amount of solar heat that a window allows to pass. A lower SHGC is desirable in order to reduce heat gain.* | S |

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| Heating, Cooling, & Ventilation | | 8. A/C unit cooling efficiency:<br>Electric – min. 12.0 SEER (maintain at least a SEER 10 rating at 120° F).<br>*Having an HVAC unit with a Seasonal Energy Efficiency Rating [SEER] of 12.0 surpasses the federal requirements by 2.0 points, and makes more efficient use of energy when cooling the house.*<br>Gas – min. 0.6 COP (coefficient of performance)<br>*COP is a measure of the energy efficiency of a chiller. This minimum rating allows for maximum performance with a proportionally lower amount of energy consumption.* | |
| | | 9. All ductwork joints shall be sealed with water-based mastic. No use of building cavities as a duct unless sealed.<br>*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. Leaks in ductwork can contribute 20 to 60 % of the air leakage in a house. The system should be airtight, sized and designed to deliver the correct airflow to each room.* | |
| | | 10. All air supply and return ducts shall be insulated as follows:<br>• Where located within conditioned building spaces, ducts shall be min. R-4.<br>• Where located in unconditioned spaces, ducts shall be min. R-6 and have a sealed vapor retarder to avoid condensation on the duct.<br>*Insulating ductwork in unconditioned spaces saves energy lost before the air reaches the conditioned space. Sealing the ductwork in a house can reduce air leaks in the distribution system by 20% to 60%.* | |
| | | 11. Pressure balancing and return air paths:<br>• Return air ducts or transfer grills (minimum .75 sq. inches per cfm of air supplied to room) in every enclosed livable room.<br>• Or, test for no pressures with a magnitude greater than 3.0 Pascal's, with reference to outside, existing in a zone of the house.<br>*Pressure balancing prevents back drafting of combustion appliance fumes into the home, improving indoor air quality and safety.* | S |
| | | 12. Programmable/set-back thermostat installed.<br>*A set back thermostat regulates the heating/cooling system to provide optimum comfort when the house is occupied and to conserve energy when it is not.* | |
| | | 13. Minimum of three outlet boxes installed (structurally mounted & wired) for reversible, multi-speed ceiling fans.<br>*Ceiling fans can make a house feel up to 20% cooler with a minimal use of energy.* | |

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| Indoor Air Quality | | 14. Carbon monoxide (CO) detector installed at house/garage entry door and within each room where combustion appliances are used (sealed combustion appliances are exempt).<br>*Carbon monoxide detectors warn against high levels of toxic carbon monoxide.* | |
| | | 15. HVAC system has continuous fresh (make-up) air ventilation (figure at least 10 cfm's times the number of bedrooms plus 1).<br>*Ventilation can reduce or eliminate mold, especially in bathrooms. Ventilation also controls odors, stuffiness, and excess moisture if good fans and controls are selected and installed correctly. In an ideal situation, mechanical ventilation is paired with operable windows in order to provide fresh air without climatic discomfort or a substantial energy penalty.* | S |
| | | 16. HVAC system has replaceable, pleated (non-fiberglass) filter or equivalent with min. MERV rating of 8.<br>*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.* | |
| | | 17. Mechanical room(s) with combustion appliances need to be air sealed or isolated from conditioned space (rooms with sealed combustion appliances are exempt).<br>*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 that would adversely affect indoor air quality and occupant health.* | |
| Lighting and Appliances | | 18. Light colored interior walls with Light Reflectance Value (LRV) of min. 40% and light colored interior ceilings and soffits with LRV of min. 70%. (e.g. - off white finish has a 70% LRV).<br>*Highly reflective surfaces maximize effects of both artificial and free, natural daylight,* | |
| | | 19. All recessed lights penetrating air/thermal barrier are airtight and I.C. rated.<br>*Air sealed and I.C. rated fixtures maximize penetration impact and reduce the chance of creating hot spots in the ceiling, which can affect cooling loads.* | |
| | | 20. Built-in and individually switched task lighting in at least 3 separate areas (e.g. - bathroom vanity, kitchen counter, desk).<br>*Built-in task lighting provides specific use lighting in lieu of general purpose lighting, lowering the amount of energy used in the home.* | |
| Plumbing System | | 21.Hot water lines insulated to min R-3 throughout entire house.<br>*Insulating hot water lines conserves energy by reducing source to fixture heat loss through supply piping.* | |

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| | | 22. Water heater timer installed on electric water heaters.<br>*Water heater timers save money by producing hot water in the utility companies' off peak energy hours.* | |
| | | 23. Water heater(s) with energy factor (EF) as follows:<br>Gas: min. 0.80 energy factor<br>Electric: min. 0.95 energy factor<br>*A water heater's EF is based on recovery efficiency (i.e., how efficiently the heat from the energy source is transferred to the water), standby losses (i.e., the percentage of heat lost per hour from the stored water compared to the heat content of the water), and cycling losses. The higher the EF, the more efficient the water heater.* | S |
| Interior Finishes | | 24. Paints/finishes with maximum 250 grams/liter VOC (volatile organic compound) content.<br>*Volatile Organic Compounds [VOC] are a class of chemical compounds that can cause short or long-term health problems. A high level of VOCs in paints/finishes off gas and can have detrimental effects to a building's indoor air quality and occupant health.* | |
| Finish Floor | | 25. Ceramic tile installed with low toxic mastic and grout.<br>*Ceramic tile is created from abundant materials and is extremely durable and requires minimal maintenance. Low toxic mastic and grout reduces off gassing of irritating chemicals or toxins.* | S |
| Solid Waste | | 26. Built-in recycling center with two or more 5 gal. bins in or near kitchen.<br>*Providing a built-in recycling center in the kitchen makes sorting and storage of recycling easier.* | |

| Green Building Options for Residential Rating<br>Note: All options require minimum 50% threshold unless otherwise noted. | Circle Points | Submittal Required |
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| **1. Site Use** | | |
| 1.1 Building designed with minimum impact on site topography and natural drainage ways.<br>*A suitability analysis can determine the best placement of the building envelope on the site so as of offer the least amount of impact on natural features such as drainage, vegetation, and unique topographical elements.* | 2 | |
| 1.2 Desert Plants and natural features beyond 10' of building footprint and paved areas protected during construction (in addition to any ESLO or NAOS requirements).<br>*Desert ecosystems are the result of many years of evolution and adaptation to particular climatic conditions. Building orientation can be considerate of these native species in their natural habitat as underground root systems can be critically damaged during construction by trenching, soil compaction, flooding, and vehicles.* | 1 | |
| 1.3 Non-permeable walkways, uncovered patios, aprons and driveways cover no more than 40% of the net buildable site area.<br>*Non-permeable materials used as ground covering absorb and trap the sun's heat, contributing to the increase in the average daily temperature.* | 2 | |
| 1.4 All driveways constructed of permeable materials.<br>*The use of permeable materials cuts down on the amount of heat absorbed and re-radiated from the surface.* | 1 | |
| 1.5 Home is oriented on lot so the longest axial dimension faces within 20 degrees of south.<br>*This orientation maximizes the potential for controlling solar heat gain; which reduces energy use and utility costs.* | 3 | |
| 1.6 Home is designed with protected outdoor living area on east and/or south side (i.e. - shade structures, vegetation, water features, etc.).<br>*Shading these areas will reduce heat gain and lower the temperature around the house to promote outdoor living.* | 1 | |
| 1.7 Home is designed with protected outdoor living area on north side.<br>*Use of outdoor living areas reduces built space without reducing livability. Shade providing outdoor structures and vegetation, and water features for evaporative cooling will lower the outside temperature, make outdoor living more enjoyable, and reduce the thermal heat gain of the house.* | 1 | |

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| 1.8 Protected outdoor living area(s) is equal in area to at least 25% of total conditioned space.<br>*Use of outdoor living areas reduces built space without reducing livability.* | 2 | |
| 1.9 Outdoor structures, decking, and landscaping materials made from recycled content materials (i.e. plastic lumber) or non-toxic lumber.<br>*Substituting recycled material outdoors avoids the use of pressure treated and high mildew-resistant wood that may be harvested from disappearing old growth or rain forests.* | 1 | |
| 1.10 Xeriscape is at least 90% of landscaped areas (does not include native desert).<br>*Xeriscape is landscaping that 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.* | 2 | |
| 1.11 Non-sprinkler, zoned irrigation system with separate valving (i.e. ground cover, shrubs and trees on separate valves).<br>*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 | |
| 1.12 Irrigation controller with a rain sensor shut off.<br>*An irrigation controller with a rain sensor shut off prevents unnecessary irrigation during rain, therefore conserving additional water.* | 1 | |
| 1.13 No Lawn.<br>*Lawns are composed of non-native plant species and require more water and maintenance than any other type of landscaping plant. The elimination of this type of landscaping can conserve a great deal of water, as well as conserving energy that would be used for maintenance.* | 2 | |
| 1.14 Rainwater collection system with on-site distribution to vegetation (gutters, scuppers, downspouts, retention areas).<br>*Rainfall that lands on the landscape can be diverted naturally to plants via contoured slopes and berms. Plants needing relatively more water are placed to collect more runoff. Basins can be built around particular plants to collect water and allow it to percolate slowly through the soil.* | 2 | |
| 1.15 Rainwater collection and storage system for future use on site.<br>*Rainwater collection systems use the roof to collect and divert rainwater through downspouts, into a filter and store it in a cistern. When necessary, the stored rainwater is pumped to the surface for landscape irrigation or other potential uses.* | 1 | |
| 1.16 No chemical herbicides used on site.<br>*Avoiding the use of chemical herbicides prevents ground water or runoff contamination, and potential indoor air toxicity.* | 1 | |

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| 1.17 No chemical pesticides (includes termite pretreatment) used on site.<br>*Avoiding the use of chemical pesticides prevents groundwater or runoff contamination, and potential indoor air toxicity.* | 1 | |
| 1.18 Utility supplied electric power on site at start of construction.<br>*Power generators typically used on construction sites use an excessive amount of energy and are often inefficient, leading to overheating and potential converter failure. These generators also contribute to the noise pollution of the area surrounding the construction site. Finally, utility supplied electricity supplied on site at the start of construction offers the option of using alternative power sources, such as solar.* | 1 | |
| Total points selected: | | |
| **2. Structural Elements** | | |
| 2.1 Non-asphalt based damp proofing installed at basement and/or retaining walls (e.g. - zero VOC/water based, 1 ply membrane, liquid acrylic, bentonite clay).<br>*Long-term durability of asphalt below grade is questionable and non-use avoids the possibility of ground water contamination from leaching petroleum and toxins. The use of these alternative materials, also commonly used in landfills, prevents leaks and leaching by swelling to create an impermeable membrane.* | 1 | |
| 2.2. Western coal fly ash concrete w/min. 18% substituted volume.<br>*Western coal fly ash concrete saves as much as 30% of the Portland cement used in concrete and is 10% to 15% stronger than standard concrete.* | 1 | S |
| 2.3 Floor structure: at least 75% is non-solid sawn lumber unless from certified sustainable source (e.g. - engineered lumber, recycled content materials).<br>*The use of these alternative materials saves larger old growth forests by using trees from second-generation forests/tree farms and provides a source for recycling wood waste.* | 2 | S |
| 2.4 Roof structure: at least 75% is non-solid sawn lumber unless from certified sustainable source (e.g. - engineered lumber, recycled content materials).<br>*The use of these alternative materials saves larger old growth forests by using trees from second-generation forests/tree farms and provides a source for recycling wood waste.* | 2 | S |
| 2.5 Beams and headers (excluding headers 4 feet or less in length): at least 75% is non-solid sawn lumber unless from certified sustainable source (e.g. - engineered lumber, recycled content materials).<br>*The use of these alternative materials saves larger old growth forests by using trees from second-generation forests/tree farms and provides a source for recycling wood waste.* | 2 | S |

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| 2.6 Interior framing: at least 75% is non-solid sawn lumber unless from certified sustainable source (e.g. - engineered lumber, recycled content materials).<br>*Steel studs save wood resources and are more dimensionally stable and readily recyclable than their wood counterparts. The use of these alternative materials saves larger old growth forests by using trees from second-generation forests/tree farms and provides a source for recycling wood waste.* | 2 | S |
| 2.7 Interior borate treated lumber: min. 50% of wood structure, excluding trusses.<br>*Arsenic is a toxic chemical that is often found to be leaching or out gassing out of pressure-treated or green-treated wood at significantly greater than established safe levels. Borate treated lumber serves the same purpose but is considered harmless to humans.* | 2 | |
| 2.8 Low-toxic (no urea-formaldehyde resin) sub-floor and/or sheathing.<br>*Low toxic sub-floor and sheathing prevent the off gassing that occurs with the use of urea formaldehyde, thus increasing indoor air quality and decreasing adverse effects to occupant health.* | 2 | |
| 2.9 Integral wall system (multi-functional system which combines structural, thermal properties, and/or finish) e.g. – integral insulated masonry, structural insulated panels (SIP), insulated concrete forms (ICF), autoclaved aerated concrete (AAC), insulated sandwich panel (ISP), solid foam wall panels.<br>*SIPs have a high insulation value; saves wood resources because panels are factory pre-fabricated with high quality standards and the lowest amount of waste. AAC is produced by adding aluminum powder to standard cement, resulting in block with more than two times the insulative value of standard block; its lighter weight makes it easier to work with.* | 4 | |
| 2.10 Materials from regionally extracted resources (e.g. – masonry, adobe, rammed earth, cast earth, straw bale).<br>*Living in the Sonoran desert means we have significant sources of natural building materials. Utilizing these local materials reduces the energy needed to ship products to construction sites. Additionally natural regional materials are suitable in the desert climate and require minimal maintenance.* | 4 | |
| 2.11 Products from regional manufacturers.<br>*Purchasing regionally manufactured materials and products supports the local economy and reduces transportation costs and impacts.* | 1 | |
| Total points selected: | | |
| **3. Building Envelope**<br>Note: All insulation 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. Air and thermal barrier must align and be contiguous. | | |

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| 3.1 Stem or foundation insulated with min. R-7 from grade down to top of footing.<br>*Insulation in these locations will reduce the absorption of solar ground heat by the slab/foundation keeping cooling costs lower than an uninsulated slab, and prevent loss of heat in areas where heat gain and re-radiation is desired.* | 1 | |
| 3.2 Wall assembly rated with a min. U- factor of 0.040 (R-25).<br>*A wall assembly's U-factor is a measure of the solar heat gain through a material or assembly. The U-value typically reflects all the components such as studs, concrete blocks, insulation, and wallboard. The lower the U-factor, the greater the material's resistance to heat flow and the better its insulating value. U-value is the inverse of R-value.* | 2 | |
| 3.3 Wall assembly rated with a min. U- factor of 0.033 (R-30).<br>*Increasingly lower U-factors more efficiently resist thermal migration and increase the insulating value of a wall.* | 3 | |
| 3.4 Ceilings insulated to min. R-38.<br>*Walls/ceilings with higher insulation values will reduce thermal migration and keep cooling/heating costs lower than a "normal" wall.* | 3 | |
| 3.5 Radiant barrier installed at roof or ceiling assembly.<br>*Radiant barrier is applied to the underside of the roof sheathing creating a barrier to reduce heat flow.* | 1 | |
| 3.6 House is wrapped with an exterior air infiltration barrier or building system provides an integral air infiltration barrier.<br>*Application of an air infiltration barrier prevents water vapor and increased heat load in summer by eliminated the passage of air and moisture through openings such as electrical boxes.* | 1 | |
| 3.7 Advanced air sealing package in framed construction (i.e. adds sealing at top and bottom plates, corners, and penetrations).<br>*This creation of a tightly sealed building envelope can eliminate unwanted indoor/outdoor air migration and consequent higher utility costs.* | 2 | |
| 3.8 Diagnostic Blower door test with 0.35 ACH or less (0.35 CFM at 50 Pascal's pressure per sq. ft. or less).<br>*A blower door test confirms the energy efficiency of the building envelope showing a tight house and a minimal loss of conditioned air through leakage.* | 4 | S |
| 3.9 All exterior doors insulated with min. R-2 (must include patio/sliding doors).<br>*Doors with higher insulation values reduce thermal migration, therefore saving energy.* | 2 | S |
| 3.10 Garage door insulated to min. R-2<br>*Doors with higher insulation values reduce thermal migration, therefore saving energy.* | 1 | S |

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| 3.11 Windows have National Fenestration Rating Council (NFRC) <u>total unit</u> U-factor of: | | |
| .50-.39: 3 pts. | 3 | S |
| .38 or less: 4 pts. | 4 | S |
| *Providing a more efficient insulated window system can prevent 20% to 30% of a home's energy loss through the windows.* | | |
| 3.12 Windows have NFRC Solar Heat Gain Coefficient (SHGC) of .40 or less: 3 pts. | 3 | S |
| *SHGC measures the amount of solar heat that a window allows to pass. In warm climates, the National Fenestration Rating Council [NFRC] recommends a lower SHGC in order to reduce heat gain.* | | |
| 3.13 Wood windows with exterior finish meeting ASTM 2604 (metal clad). | 1 | S |
| This finish option is beneficial for several reasons: it maintains its shape, it is thicker, it resists denting and bending, and it last longer. The finish is also designed to withstand extreme temperature variation. The durability of these windows means that they will last for a greater amount of time, therefore placing less strain on additional resources as well as landfills. | | |
| 3.14 Exterior shading devices / screens with a shading coefficient of 0.45 or lower installed on windows. | 2 | S |
| *Exterior 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.* | | |
| 3.15 Interior window treatments with light color and reflective properties, insulation value, or shading coefficient. | 1 | |
| *Reduces thermal migration through windows, decreasing heating/cooling loads, energy use, and utility costs.* | | |
| 3.16 Skylights with a NFRC rating of U-0.5 (R-2) or lower and Solar Heat Gain Coefficient of 0.40 or lower. Skylight size limited to 10% of floor area of space unless protected from direct sunlight with exterior shading devices. | 1 | S |
| *Skylights are an easy way for solar radiation to pass through a building. In order to minimize the solar heat gain, it is important to choose skylights with low U-factors and SHGCs. The general reduction of the number of skylights used also helps to combat thermal heat gain.* | | |
| 3.17 Light tubes with a NRFC rating of U-0.5 (R-2) or lower and Solar Heat Gain Coefficient of 0.40 or lower. | 1 | S |
| *Light tubes are similar in function to skylights and must also have low U-factors and SHGCs in order to prevent thermal heat migration.* | | |
| 3.18 South glass has full exterior shading in May, June, and July at noon. | 2 | |
| *May, June, and July are the months in which the highest levels of solar radiation occur. Exterior shading devices help to reduce the level of radiation that migrates into the building, thus reducing thermal heat gain.* | | |

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| 3.19 No more than 25% of total glass area is located on east and west walls combined.<br>*Windows on the east and west receive light and heat, but they're hard to shade from the summer sun. East windows are most often acceptable, as they allow morning sun and chase off the nighttime chill. However, west windows receive radiation from the hotter, afternoon sun, thus increasing the heat transferred into the building. As a result of the shading complications regarding east and west windows, the best solution is often to limit their existence.* | 2 | |
| 3.20 Total glazed area is less than 20% of the total conditioned space.<br>*These strategies are incorporated to minimize thermal conductivity through glazed areas, (heat loss/ heat gain) reducing heating and cooling loads and energy costs.* | 3 | |
| 3.21 Structures and/or landscaping provide summer sun control/shading on min. 50% of east and west wall surfaces.<br>*The use of shading strategies on exterior walls and windows will lower the amount of heat absorbed into the house and keep it cooler.* | 2 | |
| **Insulation Content** | | |
| 3.22 Insulation has minimum 25% recycled content.<br>*Recycled content insulation conserves new material and reduces waste in landfills.* | 1 | S |
| 3.23 Cellulose Insulation with non-toxic insect treatment (e.g. - borate).<br>*Cellulose insulation comes from recycled newspaper, reducing waste in landfills, and conserving wood resources.* | 2 | |
| 3.24 Blown-in insulation (i.e. cellulose, fiberglass) used at:<br>Walls – 2 pts.<br>Ceilings – 2 pts.<br>*Blown insulation increases thermal efficiency by eliminating voids or uninsulated spaces, in turn lowering utility costs.* | <br>2<br>2 | |
| 3.25 CFC and HCFC free foam insulation used at:<br>Fdn./Slab – 1 pt.<br>Basement – 1 pt.<br>Walls – 2 pts.<br>Ceiling/Roof – 2 pts.<br>*Using CFC and HCFC free rigid foam and spray plastic foam insulation avoids the use of ozone harming chemicals.* | <br>1<br>1<br>2<br>2 | |
| 3.26 Cementitious foam insulation used at: | | |

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| | 1 | |
| 3.27 Natural insulation (straw, cork, cotton) used.<br>*Natural insulation eliminates off gassing as a result of toxic chemicals while also having a higher R-value than many, more traditional, forms of insulation.* | 2 | |
| Total points selected: | | |
| **4. Heating, Cooling, and Ventilation** | | |
| 4.1 Natural gas cooling unit with min. 0.6 COP (coefficient of performance) rating.<br>*Natural gas cooling is preferable to electric cooling since it decreases energy consumption and increases the use of off-peak, low cost natural gas. Also, natural gas cooling units do not use CFCs or HCFCs therefore having less of a negative environmental impact.* | 1 | |
| 4.2 Zoned HVAC system with individual room temperature control.<br>*Efficiency can be significantly improved by only heating or cooling when occupants are present and by only heating/cooling to the exact desired temperature. Different desired temperatures can be set in each room and by using motion detectors the HVAC system can automatically turn ON/OFF the heating/cooling to each zone as people enter and leave. This type of system results in a dramatic reduction of energy consumption and operating costs.* | 4 | |
| 4.3 Ductwork insulation greater than R-4.2 in conditioned space and R-6 in unconditioned space.<br>*Insulating ductwork in unconditioned spaces saves energy lost before the air reaches the conditioned space. Additional ductwork insulation in conditioned spaces further prevents leakage and energy loss.* | 4 | |
| 4.4 Total duct leakage measured in CFM at 25 Pascal's pressure shall be 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.<br>*Leaking ductwork equals energy lost. Therefore, designing the system for minimal leakage conserves energy.* | 3 | |
| 4.5 Evaporative cooling system with independent air distribution system.<br>*Evaporative cooling systems can cool the house for a large portion of the year with lower energy consumption and operating costs than air conditioning units.* | 4 | |
| 4.6 Cool tower or other passive cooling devices.<br>*Using natural breezes to cool the house lessens the need for mechanical cooling and saves energy.* | 3 | |
| 4.7 Minimum of three reversible, multi-speed ceiling fans installed. (to be effective during summer months, thermostat must be set higher).<br>*Ceiling fans can make a house feel up to 20% cooler with a minimal use of energy.* | 2 | |

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| 4.8 Vented roof cavity with continuous ridge and eaves venting, or insulation on underside of roof deck/or integral roof vents equal in area to 100% above building code requirements.<br>*Controlling thermal migration in roof cavities and attic spaces reduces heating/cooling loads, therefore reducing utility costs.* | 3 | |
| 4.9 Whole house fan.<br>*Whole house fans are usually 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 | |
| 4.10 Stack and/or cross ventilation for seasonal cooling (paths no greater than 40 ft.).<br>*Using natural breezes to cool the house lessens the need for mechanical cooling and saves energy.* | 2 | |
| 4.11 Home is designed for passive solar winter heating (requires solar heat gain analysis):<br>Greater than 50% of total heating demand: 2 pt.<br>Greater than 75% of total heating demand: 3 pts.<br>Design meets 100% of total heating demand: 4 pts.<br>*Passive solar heating strategies take advantage of solar heat gain to reduce the use of mechanical heating systems, which lowers utility costs.* | <br>2<br>3<br>4 | S |
| **Indoor Air Quality (IAQ)** | | |
| 4.12 Ventilation system installed per ASHRAE standards (std. #62.2): kitchen - 100 CFM; bathroom - 20 CFM (continuous) or 50 CFM (spot); master bedroom - 20 CFM; other bedrooms - 10 CFM.<br>*A properly installed ventilation system will rid the house of pollutants and VOCs, providing a healthier living space.* | 3 | |
| 4.13 Sealed-combustion or power vented furnace.<br>*A sealed combustion furnace will draw air directly through a duct that leads from the furnace to the outside. If the ducts are not sealed, there can be leakage into the conditioned space. In a power vented furnace, an integral motorized vent exhauster meters the airflow through the system, reducing energy loss. Both of these furnace types do not negatively affect indoor air quality because of efficient ventilation outside of occupied spaces.* | 1 | |

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| 4.14 Sealed-combustion or power vented water heater.<br>*Sealed-combustion water heaters draw all their 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. In a power vented water heater, excess heat is pushed outside through vents, therefore conserving energy in the conditioned space. Both of these water heater types do not negatively affect indoor air quality because of efficient ventilation outside of occupied spaces.* | 1 | |
| 4.15 Sealed-combustion fireplace.<br>*Sealed combustion fireplaces involve a type of double-walled special vent supplied by the manufacturer that normally 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, nor energy loss in conditioned spaces.* | 1 | |
| 4.16 Heat recovery ventilator or air-to-air heat exchanger.<br>*These units 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.* | 3 | |
| 4.17 Whole house filtration system<br>Electronic<br>Pleated media (min. 2 inch filter)<br>Ultraviolet<br>*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.* | <br>2<br>2<br>2 | |
| 4.18 Central vacuum system with outside exhaust.<br>*Venting the vacuum to outside prevents the release of small particles back into the home improving indoor air quality.* | 2 | |
| 4.19 Exhaust fan in garage on timer or wired to door opener (balance exhaust / intake air with transfer grill to outside).<br>*Having the garage door wired to an exhaust fan will remove toxic automobile emissions from the garage, preventing them from leaking into the home.* | 1 | S |
| 4.20 Detached garage to separate noxious fumes from house.<br>*A detached garage will separate and prevent toxic fumes from entering the home.* | 1 | |
| 4.21 All fans rated for 1.5 sone (noise rating) or less.<br>*Fans rated for less than 1.5 sone will keep noise pollution to a minimum and encourage their use.* | 1 | |

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| 4.22 Passive radon ventilation system installed per EPA guidelines.<br>*Passive radon-resistant features installed in most houses do not cost anything to run. In fact, sealing the home to prevent radon entry can result in energy conservation.* | 3 | |
| Total points selected: | | |
| **5. Electrical Power, Lighting, and Appliances** | | |
| 5.1 Light colored interior floor covering with LRV of min. 25%.<br>*Highly reflective surfaces maximize effects of both artificial and free, natural daylighting.* | 1 | |
| 5.2 Daylighting allows natural light to enter the house from two sides of rooms in at least 50% of total livable floor area (excluding skylights).<br>*Letting natural light into the house will save energy by avoiding the use of artificial lighting during the daylight hours* | 2 | |
| 5.3 No recessed lights in insulated ceilings (see I.C. rating requirement in mandatory section)<br>*Recessed lighting can affect a building's cooling load, however, air sealed and I.C. rated fixtures minimize penetration impact and reduce the chance of creating hot spots in the ceiling.* | 2 | |
| 5.4 At least 50% of total numbers of fixtures are non-incandescent. (compact or tubular fluorescent, low voltage halogen, neon).<br>*Compact fluorescents use 75% to 85% less energy than standard incandescent fixtures; neon tubes can be shaped, colored, and last for decades; both reduce heat gain.* | 2 | |
| 5.5 Maximum interior lighting wattage not to exceed 0.5 watts per sq. ft.<br>*Lower overall lighting wattage reduces energy consumption and costs.* | 3 | S |
| 5.6 Smart wiring system.<br>*With the installation of a smart wiring system, new technology can be added to a home without having to rewire. This saves natural resources as well as space in landfills.* | 2 | |
| 5.7 Energy Star rated appliances (**www.energystar.gov/products**).<br>*Energy star products reduce energy and water consumption, as well as occupant utility bills. Oftentimes, Energy Star rated appliances do not cost more than their less efficient counterparts.* | 1 ea. | S |
| 5.8 Gas dryer stub-out.<br>*Gas dryers are more efficient than electric, thus conserving energy. The provision of a gas dryer stub-out allows for the occupant to explore this technology.* | 1 | |
| 5.9 Laundry area has both gas and electric dryer stub-outs.<br>*Intended future use of gas appliances will lead to more efficient energy use, thus conserving resources.* | 2 | |

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| 5.10 Permanent passive/solar clothes drying system installed.<br>*The use of solar energy is an efficient way to dry clothes. This technology is cost-effective because of its use of free and abundant energy. One common example of a permanent passive/solar clothes-drying system is a clothesline.* | 2 | |
| 5.11 Subscriber of utility company solar power generation program.<br>*Purchasing green power from you local utility promotes the development of non-polluting renewable energy sources.* | 1 | S |
| 5.12 Solar electric (photovoltaic) lighting for at least 50% of site lighting.<br>*Photovoltaic powered exterior lighting systems provide simple outdoor lighting with no utility costs.* | 2 | |
| 5.13 Provide south roof area for future solar panels (min. 400 sq. ft. within 20° of south) and electrical rough in for solar electric (photovoltaic) power system (separate elec. meter and disconnect located next to elec. service entrance).<br>*Pre-planned south roof area provides easy installation of future solar panels (photovoltaic).* | 4 | S |
| 5.14 Solar electric (photovoltaic) power system installed (8 pts. per 1 kW capacity).<br>*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.* | | |
| 5.15 Fuel cells powered by solar power (8 pts. per 1 kW capacity).<br>*In this type of fuel cell, solar power is used to regenerate the fuel cell in order to separate water into hydrogen and oxygen. The hydrogen and oxygen are fed into the regenerated fuel cells, thus producing electricity, heat, and water. This reaction produces virtually no pollution and is efficient because the by-products of the reaction are recycled to start the reactive process.* | | S |
| 5.16 Fuel cells powered by gas (6 pts. per 1 kW capacity).<br>*Gas powered fuel cells use hydrogen gas and air to produce electricity and water. This process is virtually pollution free.* | | S |
| Total points: | | |
| **6. Plumbing System** | | |
| 6.1 Water heater within 20-pipe feet length of bathroom fixtures.<br>*Minimizing source to fixture distance decreases initial water wasted by delivering hot water faster.* | 2 | |
| 6.2 Insulated hot water recirculation system as follows: | | |

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| 6.3 Electric heat pump water heater.<br>*Electric heat pump water heaters save energy because they use surplus heat-to-heat water at little to no extra cost.* | 3 | S |
| 6.4 Provide south roof area for future solar panels (min. 400 sq. ft. within 20° of south) and plumbing rough in for solar water heating system.<br>*Installing rough-in plumbing for a future solar hot water system that will reduce energy costs by providing almost free hot water.* | 4 | S |
| 6.5 Solar water heating system (min. 80% of annual hot water needs and certified by the Solar Rating Certification Council - SRCC).<br>*Solar water heating is the most economical way to heat water using the sun's free energy.* | 8 | |
| 6.6 Low-flow toilet at less than 1.6 gal. /flush, dual control flush, combined sink unit, or composting type toilet (1 pt. per fixture).<br>*Low flow toilets conserve water, which, in Arizona, is an especially valuable resource.* | | |
| 6.7 Manifold water distribution system.<br>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 | |
| 6.8 Two pipe drain system for future graywater recovery system.<br>*Graywater systems use dishwasher, washing machine, and bathroom waste water to irrigate the yard; resulting in large savings in outdoor water consumption.* | 2 | |
| 6.9 Approved graywater irrigation system.<br>*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 or fruit trees, and 15 large shrubs; making it a high water conservation device.* | 3 | |
| 6.10 Point of use water purification system that meets ANSI/NSF standards (does not include reverse osmosis systems).<br>*Point of use water purification systems using filters will provide healthier drinking water for the home.* | 2 | S |

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| 6.11 Point of entry water purification system that meets ANSI/NSF standards.<br>*Whole home water purification systems provide healthier water by removing lead, radon, nitrate, and organic chemicals.* | 4 | S |
| Total points: | | |
| **7. Roofing** | | |
| 7.1 Min. 25% recycled content roof material (e.g. metal, rubber).<br>*Recycled content roof material reduces the use of new resources, and waste in landfills.* | 1 | S |
| 7.2 High durability/low maintenance roof material (i.e., concrete, slate, clay, metal, fiber-cement).<br>*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.* | 1 | |
| 7.3 Where permitted, reflective roof surface with min. 75% LRV to reduce heat gain.<br>*Reflective 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.* | 1 | |
| 7.4 Roof material weighs less than 350 lbs/100 sq. ft. to reduce roof mass.<br>*Reducing roof mass decreases material, costs, and heat gain which keeps the house cooler.* | 1 | |
| 7.5 Reusable/recyclable roofing materials (e.g.- metal, concrete).<br>*Recyclable roofing material saves energy resources and reduces waste in landfills upon roof replacement.* | 2 | |
| 7.6 Roof system incorporates organic materials (earth/vegetation).<br>1 pt. for each 25% of roof area<br>*An ecoroof is covered with soil mix and vegetation. Storm water is absorbed by the soil and vegetation, reducing and detaining storm water runoff. In the desert climate organic materials have a cooling effect limiting heat transfer through the roof.* | 1-4 | |
| 7.7 Roof system has min. 30-year manufacturer warranty.<br>*A thirty-year roof system saves homeowners money in replacement costs, and reduces waste in landfills as a result of replacing the roof less often.* | 2 | |
| Total points selected: | | |
| **8. Exterior Finishes** | | |

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| 8.1 Locally derived materials.<br>*Locally produced materials reduce costs and pollution associated with transportation from production facilities to jobsites, and may use locally recycled materials in processing.* | 1 | |
| 8.2 Regionally quarried and processed or cultured stone.<br>*Stone is a strong, durable material, and when quarried locally, saves on the transportation cost to the jobsite.* | 1 | |
| 8.3 Reconstituted or recycled-content siding (minimum 50% pre-or post-consumer).<br>*Reconstituted and recycled-content siding materials offer superior longevity over wood siding. The increased density of the materials resists cracking and other deterioration. Fiber-cement materials, for example, offer very long warranties and have zero flame spread. The minimal maintenance and replacement decreases costs and conserves natural resources and space in landfills.* | 1 | |
| 8.4 Reconstituted or recycled-content fascia, soffit or trim, (minimum 50% pre- or post-consumer), OSB, or w.p. gypsum board.<br>*Reconstituted or 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.* | 1 | |
| 8.5 Engineered wood sub-fascia, soffit or trim (i.e.-fiberboard or laminated strand lumber) or OSB.<br>*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 | S |
| 8.6 Integrally colored stucco.<br>*Because the color is integral to the product, this system provides low maintenance, fade resistant, and durable finish.* | 1 | |
| 8.7 Stucco applied directly to wall system without lath (e.g. - masonry, ICF) | 2 | |
| 8.8 Fiber cement siding material.<br>*Fiber cement siding, made with recycled content from sawmill waste and Portland cement, is a strong, long lasting, and fireproof material.* | 1 | S |
| 8.9 Materials left in natural state. (i.e.- exposed CMU).<br>*The use of structurally sound, weather-resistant materials in their natural state for finished walls reduces costs of materials and maintenance.* | 2 | |
| 8.10 Wall colors have a Light Reflectance Value (LRV) of 40% or less for reduced desert glare.<br>*Darker colored walls help reduce desert glare by reflecting less light.* | 1 | |
| Total points selected: | | |

| 9. Interior Finishes | | |
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| 9.1 Wallboard made with min. 25% recycled material (e.g. - wheat board, drywall with flue-gas or industrial by-product gypsum).<br>*Recycled content drywall contains "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.* | 1 | S |
| 9.2 Zero VOC paint product.<br>*Interior paints and finishes with no VOCs will reduce their negative effect on indoor air quality.* | 2 | |
| 9.3 Paints/finishes with minimum 20% recycled content.<br>*Paints or finishes made from recycled content are environmentally friendly because recycling paint reduces the hazardous waste in landfills.* | 1 | S |
| 9.4 Only low toxic (max. 250 grams/liter VOC), solvent-free adhesives, mastics, and sealants used for at least 75% of the home.<br>*Low toxic interior finish products such as solvent-free adhesives, mastics, and sealants reduce toxic out gassing of VOCs and other toxic substances, which, in turn, improves indoor air quality.* | 4 | S |
| 9.5 Water based finishes on floors.<br>*Non-toxic and water based interior finish products reduce toxic out gassing of VOCs which improves indoor air quality.* | 1 | S |
| 9.6 Water based finishes on all woodwork other than cabinetry.<br>*Non-toxic and water based interior finish products reduce toxic out gassing of VOCs which improves indoor air quality.* | 1 | |
| Total points selected: | | |

| 10. Interior Doors, Cabinetry, and Trim | | |
|---|---|---|
| 10.1 All solid wood doors are domestic hardwoods or wood from certified sustainable source.<br>*A certifiable sustainable-managed forest does not use clear cutting practices, and plants new trees for every one used in production.* | 2 | S |
| 10.2 All composite doors made from non-toxic binders (no urea-formaldehyde).<br>*Toxic binders, such as urea-formaldehyde, off gas chemicals such as VOCs and dramatically reduce indoor air quality. Other composite materials serve the same function without creating toxic health risks.* | 2 | S |

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| 10.3 All exposed substrate materials containing formaldehyde are sealed with water-based formaldehyde blocking finish (inside cabinets, underside of countertops, edges).<br>*Water based formaldehyde blocking finish ameliorates indoor air quality by blocking VOCs and other toxics from out gassing and creating a harmful living environment.* | 2 | |
| 10.4 Formaldehyde free casework (base/upper cabinets; counters; built-ins).<br>*Cabinets made from formaldehyde free particleboard or MDF eliminate the Volatile Organic Compounds [VOC] that outgas into the home, resulting in healthier indoor air quality.* | 2 | S |
| 10.5 Recycled content countertops.<br>*Recycled content counter tops conserve new resources and reduce waste in landfills.* | 1 | S |
| 10.6 Concrete or regionally quarried and processed stone countertops.<br>*Use of local/regional materials reduces costs and pollution related to transportation from other areas.* | 1 | |
| 10.7 Casework is domestic hardwood or from certified sustainable source.<br>*A certifiable sustainable-managed forest does not use clear cutting practices, and plants new trees for every one used in production.* | 2 | S |
| 10.8 Interior trim (100%) is finger-jointed/engineered wood, domestic hardwood or from certified sustainable source.<br>*Finger jointed or engineered wood trim comes from small pieces glued together from second generation forests and tree farms, saving old growth forests.* | 1 | |
| 10.9 No tropical woods used.<br>*Tropical hardwoods are harvested from endangered rainforests.* | 1 | |
| 10.10 Cabinets pre-finished or on-site application of cabinet finishes done with least toxic finishes (50 grams or less of VOCs per liter).<br>*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 pollutant.* | 1 | |
| 10.11 No wood base, cove, door/window trim used (1 pt. per category).<br>*Wood is a valuable natural resource and is often exploited in the construction industry by unsustainable harvesting practices. The elimination of wood for the purpose of trim prevents the further destruction of valuable forests.* | | |
| Total points selected: | | |
| **11. Finish Floor**<br>Note: In order to receive points in this category, the total area of the selected finish floor material must be at least 35% of total conditioned floor area. | | |

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| 11.1 All wall-to-wall carpeting and pad tacked/taped (not glued) throughout home.<br>*Tacking carpet/taping pad down instead of gluing will avoid the use of toxic glues and eliminate VOC out gassing, thus improving indoor air quality.* | 1 | S |
| 11.2 Natural linoleum with low toxic adhesive or backing.<br>*Natural linoleum is made from natural and abundant materials and is extremely durable. Low toxic adhesive or backing minimizes the amount of toxic out gassing, therefore improving indoor air quality.* | 1 | S |
| 11.3 Recycled content flooring (carpet, tile, reclaimed wood, etc.).<br>*Recycled content flooring saves material that would have gone into a landfill, saving natural resources.* | 1 | S |
| 11.4 Natural fiber carpet or rugs (domestic cotton, wool, jute, sisal).<br>*Natural fiber carpet is good use of renewable resources. It does not off gas like synthetic carpet, and tacking the carpet down will eliminate the use of carpet glue, which can have a negative effect on indoor air quality.* | 1 | |
| 11.5 Regionally quarried and processed stone (i. e. - flagstone).<br>*Stone is a strong, durable material, and when quarried locally, saves on the transportation cost to the jobsite.* | 1 | |
| 11.6 Finished concrete (polished, colored/stained, textured/scored).<br>*Concrete used as a finished floor surface is most durable, provides least impact, and eliminates the cost of additional flooring materials, such as carpet, which can have negative impacts on indoor air quality.* | 1 | |
| 11.7 Renewable resource (cork/bamboo) flooring.<br>*Cork flooring comes from stripping the bark off cork oak, which regenerates itself. The cork tiles are moisture, rot, and mold resistant, providing a floor that can last over 30 years. Bamboo flooring is a good use of natural resources because it is fast growing, durable, and flexible.* | 1 | S |
| 11.8 Low-fire temperature tile (i.e. - saltillo).<br>*Low fired temperature tile uses the sun's energy to harden the tile, conserving energy in the manufacturing process.* | 1 | |
| 11.9 Hard flooring is 75% of conditioned floor area.<br>*Hard flooring can drastically improve indoor air quality by 1) eliminating the out gassing that occurs from many synthetic carpets, and 2) eliminating the growth of molds and the entrapment of other germs in carpets. Hard flooring is also easier to maintain, therefore, conserving energy, and is a cost-effective alternative to carpeted surfaces.* | 2 | |
| 11.10 Combined hard flooring is 100% of conditioned floor area.<br>*The elimination of carpeted surfaces in home helps to maintain desirable indoor air quality by preventing potential toxic out gassing from carpets and by preventing the development of molds and other germs inside the building.* | 3 | |
| Total points selected: | | |

| 12. Pools and Spas | | |
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| 12.1 No swimming pool or spa<br>*Swimming pools can be high-energy users for heating and filtering. In our desert climate, the typical pool can evaporate its equivalent water volume in one year (13,000-25,000 gallons).* | 2 | |
| 12.2 Spa only (capacity less than 300 gal.).<br>*Though water features such as swimming pools and spas can be high-energy users, the installation of only a spa reduces the amount of energy used and the consumption of water.* | 1 | |
| 12.3 Pool and spa are physically separate.<br>*The physical separation of pool and spa saves conserves energy because of the amount of energy used to heat the spa is separate.* | 1 | |
| 12.4 Solar assisted heating/cooling system:<br>Pool: 8 pts.<br>Spa: 4 pts.<br>*Free solar energy reduces utility costs and can extend seasonal use economically.* | <br>8<br>4 | |
| 12.5 Gas spa heater with min. 0.8 energy factor (EF).<br>*Energy-efficient natural gas spa heaters use less energy than electric heaters and cost less to operate. In a natural gas spa heater, air and fuel are pulled into a burner and produce an open flame that heats copper tubes or another heat transfer system. These heaters are designed to raise the water temperature quickly, thus conserving energy and cost.* | 1 | |
| 12.6 Retractable cover:<br>Pool: 4 pts.<br>Spa: 2 pts.<br>*Retractable covers reduce heat loss/evaporation, provide safety, and keep pools cleaner.* | <br>4<br>2 | |
| 12.7 Non-chlorine pool filtration system.<br>*Chlorine filtration can be toxic to human health. A non-chlorine filtration system eliminates the harmful exposure of chlorine, in order to ameliorate sensitive eye, skin, and respiratory conditions.* | 2 | |
| 12.8 Pool has zero water loss backwash system.<br>*A zero water loss backwash system allows the pool filtration system to operate, however, conserves water by recycling filtered water back into the pool.* | 1 | |
| Total points selected: | | |
| **13. Solid Waste** | | |

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| 13.1 Construction waste reduction / reuse plan written and followed (e.g.-recycle bins for wood, cardboard, drywall, foam, metal, concrete, masonry, asphalt).<br>1 pt. for each item recycling by builder or waste hauler<br><br>*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.* | 1 ea. | S |
| 13.2 Donate excess materials to a non-profit building organization.<br><br>*Donating excess materials to non-profit building organizations saves excess material from the landfill and provides a tax deduction incentive.* | 1 | |
| 13.3 Allocated area for City recycling containers directly accessible to pick-up point.<br><br>*Allocating a space for city recycling material promotes good recycling habits and saves waste from landfills.* | 1 | |
| 13.4 Composting system installed in yard (manufactured or made at site).<br><br>*A composting system will take the place of a garbage disposal and provide free plant mulch.* | 4 | |
| Total points selected: | | |
| **14. Special Options** | | |
| 14.1 Participant in Energy Certification Program (i.e. - EPA Energy Star Home, Engineered for Life, Certified Plus, Build America, Utility Company Programs).<br>• List name of program –<br><br>*Participation in an Energy Certification Program means that your home is guaranteed to be more energy-efficient than a standard home as a result of following the guidelines outlined in these programs, which includes third party inspections and diagnostic testing.* | 6 | |
| 14.2 Energy Performance Analysis (i.e. - Energy 10, Energy Scheming, Energy Plus, HERS)<br><br>*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.* | 6 | |
| 14.3 House under 3000 sq .ft. of total livable/conditioned space (does not include guesthouse and other ancillary structures).<br><br>*Homes are becoming increasingly large for no apparent design reason. According to architect Sarah Susanka, "The problem is that comfort has almost nothing to do with how big a space is. It is attained, rather, by tailoring our houses to fit the way we really live, and to the scale and proportions of our human form". The construction of a home under 3,000 square feet will continue to add merit to this important concept, as well as conserving energy, water, and other resources.* | 6 | |

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| 14.4 Life Cycle Analysis of building component(s).<br>*A life cycle analysis of building components determines total life cycle energy consumption required to grow, harvest, extract, manufacture, transport, and dispose of a material over a specified time period. This is helpful in order to choose durable, low maintenance materials that do are not associated with a great deal of embodied energy.* | | |
| 14.5 Life Cycle Analysis of whole building.<br>*Life cycle analysis of a whole building involves understanding the energy use during the operational period, as will as the embodied energy of the construction materials. To understand overall environmental impacts of the building, all stages, such as material production, manufacturing, use, and retirement, should be understood. Assessing the environmental impact of a home requires a full understanding of the environmental impacts of each of its parts and their combined impact.* | | |
| 14.6 Lighting Design Modeling.<br>*Lighting design modeling is a procedure that models the effect of lighting elements in a building. It is useful in a green building application because designers are able to maximize daylighting effects, as well as eliminating unnecessary lighting fixtures. This process conserves energy and resources.* | | |
| 14.7 | | |
| 14.8 | | |
| 14.9 | | |
| 14.10 | | |
| Total points: | | |
| **TOTAL POINTS FOR ALL CATEGORIES** (AS SUBMITTED): | | |
| **TOTAL POINTS FOR ALL CATEGORIES** (AS APPROVED): | | |