

Commercial Green Building Checklist

Tenant Improvement

Based on 2001 Pilot Program

This checklist is designed to be a commercial counterpart to the Scottsdale Residential Green Building Program rating checklist. It is prescriptive-based and intended to address the local issues of Scottsdale in the regional context of the Sonoran Desert. Inspections, verification and certification will be administered by the city. There are four rating levels: <u>Level 1</u> - Meet all prerequisites of checklist items; <u>Level 2</u> - acquire 25 - 49 % of checklist items; <u>Level 3</u> - acquire 50 - 74% of checklist items; <u>Level 4</u> - acquire 75% or more of checklist items.		Documentation Required	Select Items	
1 - SUSTAINABLE SITES				
1.1 Building/Site Selection				
Prerequisites: * Stormwater management per Scottsdale ordinance. * Scottsdale Environmentally Sensitive Lands Ordinance. * General Plan conformance. * Dust control per Maricopa County regulations.				
Options:				
1.11	Brownfield Redevelopment * A building developed on a site documented as a brownfield by ASTM E1903-97 Phase II Environmental Assessment OR a building or site classified as brownfield by a local, state or federal government agency. Effective remediation must have been completed.			
1.12	Stormwater Management *A building that has mitigated stormwater runoff that is equal or less than pre-developed 1.5year/24-hour rate and quantity discharge.			
1.13	Heat Island Effect - Non-Roof A building that provides shade (or will have within 5 years of landscape installation) and/or uses light-colored/high-albedo materials with a Solar Reflectance Index (SRI) of at least 30, and/or open grid pavement, that individually or in total equals at least 30% of the site's non-roof impervious surfaces, which include parking areas, walkways, plazas, fire lanes, etc., OR Has placed a minimum of 50% of parking spaces underground or covered by structured parking, OR Used an open-grid pavement system (less than 50% impervious) for 50% of the parking lot area.			
1.14	Heat Island Effect - Roof A building with roofing having a Solar Reflectance Index (SRI) greater than or equal to the value of 78 if roof slope is less than or equal to 2:12 or SRI =29 otherwise for a minimum of 75% of the roof surface OR A building that has installed a "green" (vegetated) roof for at least 50% of the roof area. OR A building having in combination high SRI roofs and vegetated roofs that satisfy the following area requirement: Total Roof Area $\leq [(Area \text{ of SRI Roof} \times 1.33) + (Area \text{ of vegetated roof} \times 2)]$			
1.15	Light Pollution Reduction A building that meets or provides lower light levels and uniformity ratios than those recommended by the Illuminating Engineering Society of North America (IESNA) Recommended Practice Manual: Lighting for Exterior Environments (RP-33-99). The building must have designed the exterior lighting such that all exterior luminaires with more than 1,000 initial lamp lumens are shielded and all luminaires with more than 3,500 initial lamp lumens meet the Full Cutoff IESNA Classification. The maximum candela value of all interior lighting shall fall within the property. Any luminaire within a distance of 2.5 times its mounting height from the property boundary shall have shielding such that no light from that luminaire crosses the property boundary.			
1.15	Water Efficient Irrigation, Reduce potable water consumption by 50% A building that employs high-efficiency irrigation technology, OR uses captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means.			
1.16	Water Efficient Irrigation, No potable water use or NO Irrigation A building that uses only captured rain or recycled site water to eliminate all potable water use for site irrigation (except for initial watering to establish plants), OR does not have permanent landscaping irrigation systems.			
1.17	Alternative Wastewater technologies An ENTIRE building that reduces the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR treats 100% of wastewater on-site to tertiary standards.			
1.18a	Water Use Reduction, 20% reduction in water use requirement for ENTIRE building A building that meets the 20% reduction in water use requirement for the entire building and has an ongoing plan to require future occupants to comply.			
1.18b	Water Use Reduction, 30% reduction in water use requirement for ENTIRE building Additional point for a building that meets 30% reduction in water use requirement for the entire building			
1.19a	On-Site Renewable Energy 1 A building that supplies at least 5% of the building's total energy use (expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.			
1.19b	On-Site Renewable Energy 2 A building that supplies at least 10% of the building's total energy use (expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.			
Total Possible Items: 11		Total Items Selected	0	

1.2	Transportation			
Prerequisites:				
* Provide no more parking than minimum required by Scottsdale Zoning Ordinance.				
Options:				
1.21	Bicycle Storage * Provide bicycle storage or parking for 5% or more of the regular building occupants (employee/staff).			
1.22	Changing Rooms * Provide on-site changing/shower facilities.			
1.23	Minimize Parking * Provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants (employee/ staff).			
1.24	Public Transportation Access * Locate project within 1/2 mile of one or more public transportation lines.			
Total Possible Items: 4		Total Items Selected		0

1.3	Development Density and Community Connectivity			
Prerequisites:				
* Greenfield developments and projects that do not use existing infrastructure are not eligible.				
Options:				
1.31	Select space in a building that is located in an established, walkable community with a minimum density of 60,000 square feet per acre net (two-story downtown development), OR Select space in a building that is located within ½ mile of a residential zone or neighborhood (with an average density of 6 units per acre net).			
1.32	The building has pedestrian access to at least 6 of the basic services below within ½ mile: 1) Bank; 2) Place of Worship; 3) Convenience Grocery; 4) Day Care; 5) Cleaners; 6) Fire Station; 7) Hair Care; 8) Hardware; 9) Laundry; 10) Library; 11) Medical/Dental; 12) Senior Care Facility; 13) Park; 14) Pharmacy; 15) Post Office; 16) Restaurant; 17) School; 18) Supermarket; 19) Commercial Office; 20) Community Center, and other recognized services evaluated on their merit.			
Total Possible Items: 2		Total Items Selected		0

2 - WATER EFFICIENCY			
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2.1	Indoor Water Use Reduction			
Prerequisite:				
* Use of at least one water conservation measure that throughout the building exceeds city requirements (see examples below).				
Options:				
2.11	Employ strategies that in aggregate use 20% less water than the baseline calculated for the tenant space (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Examples: Maximize plumbing fixture efficiency by using low-flow fixtures that exceed local code, dual flush toilets, waterless urinals, timed/infrared water fixtures, locate water heater within 20' pipe length of point-of-use, point-of-use tankless water heater, hot water recirculating system with timer, leak detection system.			
2.12	Employ strategies that in aggregate, use 30% less water than the baseline calculated for the tenant space (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.			
2.13	Employ strategies that in aggregate, use 40% less water than the baseline calculated for the tenant space (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.			
Total Possible Items: 3		Total Items Selected		0

2.2	Innovative Wastewater Use			
Options:				
2.21	Use of treated cooling tower blow down water and/or grey water for at least 10% of non-potable uses (i.e. - water features, toilets, etc.).			
2.22	Collection and reuse of rainwater for at least 10% of non-potable uses, not including irrigation (i.e. - water features, toilets, etc.).			
Total Possible Items: 2		Total Items Selected		0

3 - ENERGY AND ATMOSPHERE

3.1	Energy Performance			
Prerequisites:				
* Meet min. requirements of ASHRAE 90.1 or 2003 International Energy Conservation Code.				
* Zero use of CFC-based refrigerants in new base building HVAC&R systems.				
Options:				
3.11a	Reduce lighting power density to 15% below the standard			
3.11b	Reduce lighting power density to 25% below the standard			
3.12	Install daylight responsive controls in all regularly occupied spaces within 15 feet of windows and under skylights.			
3.13	Equipment Efficiency: Install HVAC systems which comply with the efficiency requirements outlined in the New Buildings Institute, Inc.'s publication "Advanced Buildings: Energy Benchmark for High Performance Buildings (E-Benchmark)"			
3.14	Appropriate Zoning and Controls: Zone tenant fit out of spaces to meet the following requirements: A) Every Solar Exposure must have a separate control zone B) Interior spaces must be separately zoned			
	C) Private offices and specialty occupancies (conference rooms, kitchens, etc.) must have active controls capable of sensing space use and modulating HVAC system in response to space			
3.15a	Demonstrate that HVAC system component performance criteria used for tenant space are 15% better than a system that is in minimum compliance with ASHRAE/IESNA Standard 90.1-2004.			
3.15b	Demonstrate that HVAC system component performance criteria used for tenant space are 30% better than a system that is in minimum compliance with ASHRAE/IESNA Standard 90.1-2004.			
3.16	Install sub-metering equipment to measure and record energy uses within the tenant space.			
3.17	Negotiate a lease where energy costs are paid by the tenant and not included in the base rent.			
3.18a	For all ENERGYSTAR® eligible equipment and appliances installed in the project, including appliances, office equipment, electronics, and commercial food service equipment (but excluding HVAC, lighting, and building envelope products):			
	70%, by rated-power, of ENERGYSTAR eligible equipment and appliances shall be ENERGYSTARrated			
3.18b	90%, by rated-power, of ENERGYSTAR eligible equipment and appliances shall be ENERGYSTARrated			
Total Possible Items: 11				
			Total Items Selected	0

3.2	Building Commissioning			
Prerequisite:				
* Fundamental Building Systems Commissioning at time of building occupancy and 10 to 12 months after occupancy (<u>validate</u> that the fundamental building elements and systems are designed, installed and calibrated to operate as intended). City special inspection documentation required. (<u>see exhibit A</u>)				
Options:				
3.21	Additional Commissioning. In addition to fundamental Building Commissioning, have a contract in place with an commissioning authority that is independent of the design team to conduct a review of the design prior to the construction documentation phase and review contractor submittals relative to systems being commissioned.			
3.22	Enhanced Commissioning: 1) Conduct a review of the tenant space's energy-related systems contractor submittals. 2) Develop a single manual that contains the information required for re-commissioning the tenant space's energy related systems. 3) Verify that the requirements for training operating personnel and tenant space occupants are completed.			
Total Possible Items: 2				
			Total Items Selected	0

3.3 Renewable Energy				
Prerequisite: * Supply at least 5% of the project's <u>peak power demand (kW)</u> through the use of on-site renewable energy or off-site (green tags). * Or provide at least 50% of the project's <u>electrical energy (kWh)</u> from renewable sources by engaging in at least a two-year renewable energy contract.				
Options:				
3.31a	Supply at least 10% of the project's <u>peak power demand (kW)</u> through the use of on-site renewable energy systems			
3.31b	Supply at least 20% of the project's <u>peak power demand (kW)</u> through the use of on-site renewable energy systems (cumulative - include item 3.31).			
3.31c	Supply at least 40% of the project's <u>peak power demand (kW)</u> through the use of on-site renewable energy systems (cumulative - include items 3.31 & 3.32).			
3.32a	Provide at least 75% of the project's <u>electrical energy (kWh)</u> from renewable sources by engaging in at least a two-year renewable energy contract.			
3.32b	Provide at least 100% of the project's <u>electrical energy (kWh)</u> from renewable sources by engaging in at least a two-year renewable energy contract (cumulative - include item 3.34).			
Total Possible Items: 5			Total Items Selected	0

4 - MATERIALS AND RESOURCES				
4.1 Building Reuse				
Prerequisite: * Maintain at least 5% of existing building (measured in cubic feet for structural elements) for major renovation projects (where valuation of improvements exceed 50% of existing building valuation)				
Options:				
4.11	Maintain at least 40% of interior non-structural components			
4.12	Maintain at least 60% of interior non-structural components			
4.13	Maintain at least 80% of interior non-structural components			
Total Possible Items: 3			Total Items Selected	0

4.2 Waste Management				
Prerequisites: * Designate site area for construction waste separation and collection of recycled and/or salvaged materials. * Provide an easily accessible area that serves the tenant space and is dedicated for occupant separation, collection, and storage of recyclables (paper, cardboard, glass, plastics, metals). * Develop and implement a construction waste reduction/reuse plan with min. 10% diversion of construction, demolition and land clearing waste from landfill (calculate by weight or volume but must be consistent throughout). City special inspection documentation required. (see exhibit A)				
Options:				
4.21	Develop and implement a construction waste reduction/reuse plan with min. 25% diversion from landfill. Strategies: centralize operations to reduce waste & simplify sorting, design in modular dimensions to reduce waste, donate excess materials to non-profit building organization.			
4.22	Develop and implement a construction waste reduction/reuse plan with min. 50% diversion from landfill (cumulative - include item 4.21).			
4.23	Develop and implement a construction waste reduction/reuse plan with min. 75% diversion from landfill (cumulative - include items 4.21 & 4.22).			
Total Possible Items: 3			Total Items Selected	0

4.3 Resource Efficiency, Recycled Content and Reuse			
Prerequisites: * Use salvaged, refurbished or reused materials, products and furnishings for at least 5% of the total value of materials in the project. <u>Project materials includes building and site improvements (i.e.- walls, paving, vegetation) .</u> * Use recycled content materials for at least 3 building components Examples: gypsum board with recycled products, recycled content underlayment/sheathing, recycled steel studs, reconstituted or recycled-content siding, fascia, trim or soffit (minimum 50% pre- or post-consumer), paints or finishes with recycled content, reconstructed or recycled content doors, recycled content carpet pad if used, recycled content or natural fiber carpet (tacked, not glued), recycled content tile, windows with recycled content frames.			
Options:			
4.31	Use salvaged, refurbished or reused materials, products and furnishings for at least 10% of the total value of materials in the project. <u>Project materials includes building and site improvements (i.e.- walls, paving, vegetation) .</u>		
4.32	Use materials throughout 50% of building (floors & ceilings), which require no application of finish materials (does not include paints, sealers and stains).		
4.33	Use materials with recycled content for at least 5% of the total value of the materials in the project.		
4.34	Use materials with recycled content for at least 10% of the total value of the materials in the project (cumulative - include item 4.34).		
Total Possible Items: 4		Total Items Selected	0

4.4 Local/Regional Materials			
Prerequisites: * Use at least 5% of building materials and products that are manufactured and/or extracted regionally within a radius of 500 miles.			
Options:			
4.41	Use at least 20% of building materials and products that are manufactured regionally within a radius of 500 miles.		
4.42	Of the regionally manufactured materials in item 4.41, use a minimum of 50% of building materials and products that are extracted, harvested or recovered (as well as manufactured) within 500 miles of project site. Examples: locally produced block or brick, regionally quarried and processed stone		
Total Possible Items: 2		Total Items Selected	0

4.5 Rapidly Renewable Materials			
Options:			
4.51	Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year cycle) for at least 5% of total value of all building materials and products used in the project (does not include value of mechanical, plumbing & electrical systems).		
Total Possible Items: 1		Total Items Selected	0

4.6 Wood Products			
Options:			
4.61	Use at least 50% of wood-based materials and products, certified in accordance with the <u>Forest Stewardship Council</u> for wood building components including but not limited to, structural framing and general dimensional framing, flooring, finishes, furnishings, and nonrented temporary construction applications such as bracing, concrete form work and pedestrian barriers.		
Total Possible Items: 1		Total Items Selected	0

5 - INDOOR ENVIRONMENTAL QUALITY				
5.1 Air Quality				
Prerequisites: * Meet the minimum requirements of ASHRAE 62 or 2003 International Mechanical Code. * Zero exposure of smoking to non-smoking areas.				
Options:				
5.11	Ventilation Effectiveness - For mechanical ventilated buildings, design ventilation systems that result in an air change effectiveness (E_{ac}) greater than or equal to 0.9 as determined by ASHRAE 129-1997.			
5.12	Develop and implement an Indoor Air Quality (IAQ) Management Plan for the <u>construction phase</u> of the building. - During construction meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3. - Protect on-site or installed absorptive materials from moisture damage.			
5.13	Develop and implement an Indoor Air Quality (IAQ) Management Plan for the <u>pre-occupancy phase</u> of the building. - after construction ends and prior to occupancy conduct a <u>minimum two-week</u> building flush-out with new Minimum Efficiency Reporting Value (MERV) 13 filtration media at 100% outside air. After flush-out, replace the filtration media with new MERV 13 filtration media, except the filters solely processing outside air. - Or conduct a baseline indoor air quality testing procedure consistent with the US Environmental Protection Agency's current Protocol for Environmental Requirements, Baseline IAQ and Materials for Research Triangle Park Campus, Section 01445.			
5.14	Indoor Chemical & Pollutant Source Control - Design to minimize pollutant cross-contamination of regularly occupied areas. - Provide entryway systems such as grills, grates, etc. to capture dirt, particulates, etc. from entering the building. - where chemical use occurs (including housekeeping areas and copying/printing rooms), provide segregated areas with deck to deck partitions with separate outside exhaust at a rate of at least 0.50 cubic feet per minute per square foot, no air re-circulation and maintaining a negative pressure of at least 7 PA (0.03 inches of water gauge) - Provide drains plumbed for appropriate disposal of liquid waste in spaces where water and chemical concentrate mixing occurs.			
5.15	No human exposure to harmful fiber insulation.			
5.16	Install a permanent carbon dioxide (CO2) monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments (ASHRAE 62-2001, App. C). Specify initial operational set point parameters that automatically maintain indoor carbon dioxide levels no higher than outdoor levels by more than 540 parts per million at any time			
Total Possible Items: 6		Total Items Selected		0
5.2 Low-Emitting Materials				
Prerequisites: * Adhesives (max. VOC - 150 grams/liter). * Sealants & Sealant Primers (max. VOC - 250 grams/liter). * Meet Green Seal Std. GS-11 (max. 150 grams/liter for non-flat paints & 50 grams/liter for flat paints).				
Options:				
5.21	Carpet systems meet or exceed the requirements of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program.			
5.22	Stage finish application to prevent absorption of VOC into surrounding materials			
5.23	Use 'no-added' urea formaldehyde products.			
5.24	Electrical panels located at least ten feet away from areas of frequent occupancy.			
Total Possible Items: 4		Total Items Selected		0
5.3 Systems Control				
Prerequisites: * Thermal Comfort: Comply with ASHRAE Standard 55-1992, Addenda 1995, for thermal comfort standards including humidity control within established ranges per climate zone.				
Options:				
5.31	Perimeter Control - Provide at least an average of one operable window and one lighting control zone per 200 square feet for all regularly occupied areas within 15 feet of the perimeter wall.			
5.32	Non-Perimeter Control - Provide controls for each individual for airflow, temperature and lighting for at least 50% of the occupants in non-perimeter, regularly occupied areas.			
5.33	Thermal Comfort - Install a permanent temperature and humidity monitoring system configured to provide operators control over thermal comfort performance and the effectiveness of humidification and/or dehumidification systems in the building.			
Total Possible Items: 3		Total Items Selected		0

5.4 Daylight and Views			
Prerequisites:			
* Achieve a minimum daylight factor of 2% (excluding all direct sunlight penetration) in 25% of all space occupied for critical visual tasks.			
Options:			
5.41	Achieve a minimum daylight factor of 2% (excluding all direct sunlight penetration) in 75% of all space occupied for critical visual tasks.		
5.42	Achieve direct line of sight to vision glazing for building occupants in 90% of all regularly occupied spaces.		
5.43	All work stations occupied for critical visual tasks are located within 25 feet of windows.		
Total Possible Items: 3		Total Items Selected	0
5.5 Noise Reduction			
Options:			
5.51	Use of noise reduction systems to achieve noise levels below 40 db.		
Total Possible Items: 1		Total Items Selected	0
6 - SPECIAL OPTIONS			
1			
2			
3			
4			
5			
6			
		Total Items Selected	0
		TOTAL ITEMS SELECTED	0
Total Possible Items: 71 (+6)		PERCENTAGE OF ITEMS SELECTED	0%