

APPENDIX “A”
LEED-NC (High Performance Plan)
City of New York Department of Homeless Services
Emergency Assistance Unit, Bronx, NY

The following Appendix appears courtesy of the New York City Department of Design and Construction (“DDC”). Special thanks are given to David J. Varoli, Esq., General Counsel of the DDC, for coordinating permission and authority to include the contents of Appendix A in these materials. By including these materials, it is not the intention of the DDC to provide legal advice or to endorse the accuracy of the appendix materials.

LEED-NC v2.2 (High Performance) Plan
City of New York Department of Homeless Services
Emergency Assistance Unit, Bronx, NY
Phase: Schematic
11-May-06

Architect: Polshek Partnership (PPA)
MEP Engineer: Flack + Kurtz (F+K)
Energy Analyst: Steven Winter Associates (SWA)

Sustainable Sites Water Efficiency Energy & Atmosphere Materials & Resources Indoor Environmental Quality Innovation & Design Process

Secure	Likely	Possible	Less Likely	Not Viable				
5	4	1	3	1	Sustainable Sites	14 Points	Action By	Date Assigned
Required					Prereq 1 Construction Activity Pollution Prevention			
					<p>Create and implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project. The ESC Plan shall conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit OR local erosion and sedimentation control standards and codes, whichever is more stringent. The Plan shall describe the measures implemented to accomplish the following objectives:</p> <ul style="list-style-type: none"> • Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse. • Prevent sedimentation of storm sewer or receiving streams. • Prevent polluting the air with dust and particulate matter. 			
1					Credit 1 Site Selection			
					<p>Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any one of the following criteria:</p> <ul style="list-style-type: none"> • Prime farmland as defined by the United States Department of Agriculture in the United States Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5) • Previously undeveloped land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA (Federal Emergency Management Agency) • Land that is specifically identified as habitat for any species on Federal or State threatened or endangered lists • Within 100 feet of any wetlands as defined by United States Code of Federal Regulations 40 CFR, Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rule or law, whichever is more stringent • Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries which support or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act • Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (Park Authority projects are exempt) 			
1					Credit 2 Development Density & Community Connectivity			
					<p>OPTION 1 — DEVELOPMENT DENSITY Construct or renovate building on a previously developed site AND in a community with a minimum density of 60,000 square feet per acre net (Note: density calculation must include the area of the project being built and is based on a typical two-story downtown development). OR</p>			

	<p>Credit 3 Brownfield Redevelopment</p> <p>Develop on a site documented as contaminated (by means of an ASTM E 1903-97 Phase II Environmental Site Assessment) OR on a site classified as a Brownfield by a local, state or federal government agency.</p> <p><i>4-24-06 DDC has performed Phase I and II Environmental Site Assessment provided Reports for review by the Design Team. SWA to confirm that the assessments were performed as required and that the documentation is sufficient.</i></p> <p><i>5-03-06 DDC to confirm that the asbestos abatement can be performed as per 40 CFR Part 763.</i></p>	<p>PPA</p>	<p>11/13/2005</p>
	<p>Credit 4.1 Alternative Transportation, Public Transportation Access</p> <p>Locate project within 1/2 mile of an existing, or planned and funded, commuter rail, light rail or subway station. OR Locate project within 1/4 mile of one or more stops for two or more public or campus bus lines usable by building occupants.</p>	<p>SWA</p> <p>DDC</p>	<p>11/07/2005</p> <p>11/07/2005</p>
	<p>Credit 4.2 Alternative Transportation, Bicycle Storage & Changing Rooms</p> <p>For commercial or institutional buildings, provide secure bicycle racks and/or storage (within 200 yards of a building entrance) for 5% or more of all building users (measured at peak periods), AND, provide shower and changing facilities in the building, or within 200 yards of a building entrance, for 0.5% of Full-Time Equivalent (FTE) occupants.</p> <p><i>5-03-06 DHS is interested in pursuing this credit.</i></p>		
	<p>Credit 4.3 Alternative Transportation- Low Emitting & Fuel Efficient Vehicles</p> <p>OPTION 1 Provide low-emitting and fuel-efficient vehicles for 3% of Full-Time Equivalent (FTE) occupants AND provide preferred parking for these vehicles. OR OPTION 2 Provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site. OR OPTION 3 Install alternative-fuel refueling stations for 3% of the total vehicle parking capacity of the site (liquid or gaseous fueling facilities must be separately ventilated or located outdoors).</p>		

For the purposes of this credit, low-emitting and fuel-efficient vehicles are defined as vehicles that are either classified as Zero Emission Vehicles (ZEV) by the California Air Resources Board or have achieved a minimum green score of 40 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide. "Preferred parking" refers to the parking spots that are closest to the main entrance of the project (exclusive of spaces designated for handicapped) or parking passes provided at a discounted price.

9-9-05 *DHS owns and operates several hybrid vehicles. DHS to clarify quantity and type for DHS as a organization, as well as for individuals that will occupy the new facility. SWA will investigate alternatives and feasibility for obtaining this credit.*

DHS / SWA 10/27/2005

4-24-06 *Submit CIR on having hybrid fuel shuttles in lieu of Option 1. Info required for the CIR: number of shuttles, expected trip frequency, and vehicle type (to asses if the vehicles qualify as "low-emitting, fuel-efficient vehicles."*

DHS / SWA 11/13/2005

Credit 4.4 Alternative Transportation, Parking Capacity

OPTION 1 — NON-RESIDENTIAL

• Size parking capacity to meet, but not exceed, minimum local zoning requirements, AND, provide preferred parking for carpools or vanpools for 5% of the total provided parking spaces.

OR

OPTION 2 — NON-RESIDENTIAL

For projects that provide parking for less than 5% of FTE building occupants:

• Provide preferred parking for carpools or vanpools, marked as such, for 5% of total provided parking spaces.

"Preferred parking" refers to the parking spots that are closest to the main entrance of the project (exclusive of spaces designated for handicapped) or parking passes provided at a discounted price.

Credit 5.1 Site Development- Protect or Restore Habitat

OPTION 2

On previously developed or graded sites, restore or protect a minimum of 50% of the site area (excluding the building footprint) with native or adapted vegetation. Native/adapted plants are plants indigenous to a locality or cultivars of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds. Projects earning SS Credit 2 and using vegetated roof surfaces may apply the vegetated roof surface to this calculation if the plants meet the definition of native/adapted.

9-9-06 *If green roof is provided, the credit may be possible.*

4-24-06 *CIR pending on another project on whether the green roof area must also be used in the denominator of the fraction.*

SWA 11/13/2005

Credit 5.2 Site Development- Maximize Open Space

OPTION 1

Reduce the development footprint (defined as the total area of the building footprint, hardscape, access roads and parking) and/or provide vegetated open space within the project boundary to exceed the local zoning's open space requirement for the site by 25%.

OR

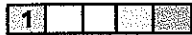
OPTION 2

For areas with no local zoning requirements (e.g., some university campuses, military bases), provide vegetated open space area adjacent to the building that is equal to the building footprint.

OR

<p>1</p>	<p>Credit 6.1 Stormwater Design- Quantity Control</p> <p>OPTION 3 Where a zoning ordinance exists, but there is no requirement for open space (zero), provide vegetated open space equal to 20% of the project's site area. ALL OPTIONS: • For projects located in urban areas that earn SS Credit 2, vegetated roof areas can contribute to credit compliance. • For projects located in urban areas that earn SS Credit 2, pedestrian oriented hardscape areas can contribute to credit compliance. For such projects, a minimum of 25% of the open space counted must be vegetated. • Wetlands or naturally designed ponds may count as open space if the side slope gradients average 1:4 (vertical: horizontal) or less and are vegetated. <i>4-24-06 This credit is possible if the entire roof is vegetated.</i></p>	<p>PPA</p>	<p>04/04/2006</p>
<p>1</p>	<p>Credit 6.2 Stormwater Management, Treatment (80% TSS, 40% TP)</p> <p>CASE 2 — EXISTING IMPERVIOUSNESS IS GREATER THAN 50% Implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the two-year 24-hour design storm. <i>4-24-06 Storage tank volume = site area * 0.5 inches.</i> <i>5-03-06 The project includes a stormwater tank</i></p>	<p>F+K F+K</p>	<p>11/13/2005 04/04/2006</p>
<p>1</p>	<p>Credit 7.1 Heat Island Effect- Non-Roof</p> <p>The 85% reduction in TSS can be achieved with a sand filter or other type of filtration. The 40% reduction in TP can be achieved by prohibiting the use of phosphates in exterior building cleaning products and by reducing phosphate use for fertilization. A CIR may be possible to eliminate the roof area from the calculation, reducing filter size. <i>9-9-05 DHS expressed concern about employing any systems that might place an undue burden on maintenance and operating costs. The Design Team will provide further info for DHS evaluation as the design evolves.</i> <i>5-03-06 The project includes stormwater treatment at the tank. Stormwater not collected (if any) will be filtered before release into the sewer inlet.</i> <i>5-03-06 The TP requirement will be met by utilizing cleaning agents for exterior surfaces that do not contain phosphates.</i></p>	<p>PPA F+K DHS / SWA</p>	<p>11/13/2005 10/27/2005 11/07/2005</p>
<p>1</p>	<p>Credit 7.2 Heat Island Effect- Roof</p> <p>OPTION 1 Provide any combination of the following strategies for 50% of the site hardscape (including roads, sidewalks, courtyards and parking lots): • Shade (within 5 years of occupancy) • Paving materials with a Solar Reflectance Index (SRI) of at least 29 • Open grid pavement system</p>		
<p>1</p>	<p>Credit 7.2 Heat Island Effect- Roof</p> <p>OPTION 1 Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than the following values for a minimum of 75% of the roof surface: < 2:12 slope = 78; >2:12 slope = 29. OR OPTION 2 Install a vegetated roof for at least 50% of the roof area. OR OPTION 3 Install high albedo and vegetated roof surfaces that, in combination, meet the following criteria: (Area of SRI Roof / 0.75) + (Area of vegetated roof / 0.5) >= Total Roof Area <i>9-9-05 It was agreed that a green roof, if possible, would be beneficial to the project. DHS felt that an outdoor green space would be of great value to the staff by providing relief from the stress of the workplace.</i></p>	<p>PPA</p>	<p>11/07/2005</p>

DHS indicated that any landscaped spaces, including a roof terrace, would be maintained through a landscape maintenance contract. Accordingly, the landscape design should be as low-maintenance as possible.



Credit 8 Light Pollution Reduction

FOR INTERIOR LIGHTING

The angle of maximum candela from each interior luminaire as located in the building shall intersect opaque building interior surfaces and not exit out through the windows.

OR

All non-emergency interior lighting shall be automatically controlled to turn off during non-business hours. Provide manual override capability for after hours use. AND

FOR EXTERIOR LIGHTING

Only light areas as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without amendments.

All projects shall be classified under one of the following zones, as defined in IESNA RP-33, and shall follow all of the requirements for that specific zone:

LZ3 — Medium (Commercial/Industrial, High-Density Residential)

Design exterior lighting so that all site and building mounted luminaires produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 15

feet beyond the site. Document that no more than 5% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down).

For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

Secure
Likely
Possible
Less Likely
Not Viable



Water Efficiency

5 Points

Action By

Date Assigned



Credit 1.1 Water Efficient Landscaping, Reduce by 50%

Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case.

Reductions shall be attributed to any combination of the following items:

- Plant species factor
- Irrigation efficiency
- Use of captured rainwater
- Use of recycled wastewater
- Use of water treated and conveyed by a public agency specifically for non-potable uses

9-9-05 See SS 7.2.

4-24-06 If green roof is irrigated, it must be irrigated with storm water or using drip irrigation.

F+K 11/07/2005

5-03-06 All irrigation will be done with storm water.

F+K 11/07/2005

1	1	1	1	1	1	Credit 1.2 Water Efficient Landscaping, No Potable Use or No Irrigation			
						Achieve WE Credit 1.1. and: Use only captured rainwater, recycled wastewater, recycled greywater, or water treated and conveyed by a public agency specifically for non-potable uses for irrigation. OR Install landscaping that does not require permanent irrigation systems. Temporary irrigation systems used for plant establishment are allowed only if removed within one year of installation.			
						4-24-06 <i>If green roof is irrigated, it must be irrigated with storm water.</i>	F+K	10/27/2005	
						5-03-06 <i>All irrigation will be done with storm water.</i>	F+K	03/03/2005	
1	1	1	1	1	1	Credit 2 Innovative Wastewater Technologies			
						OPTION 1 Reduce potable water use for building sewage conveyance by 50% through the use of water conserving fixtures (water closets, urinals) or non-potable water (captured rainwater, recycled greywater, and on-site or municipally treated wastewater).			
1	1	1	1	1	1	Credit 3.1 Water Use Reduction, 20% Reduction			
						Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.			
1	1	1	1	1	1	Credit 3.2 Water Use Reduction, 30% Reduction			
						Employ strategies that in aggregate use 30% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.			
						9-9-05 <i>The Design Team will evaluate alternatives--low-flow fixtures, waterless urinals, etc.. However, the user profile and DHS's past experience with regard to high-traffic use (abuse) of the public toilets will need to be carefully considered.</i>			
						4-24-06 <i>Evaluate the use of dual-flush toilets in staff areas, and possibly of low-flow urinals in staff areas as well.</i>	SWA/ F+K	04/04/2005	
2	1	4	1	9	Energy & Atmosphere		17 Points	Action By	Date Assigned
2	1	4	1	9	Required Prereq 1 Fundamental Commissioning of the Building Energy Systems				
						The following commissioning process activities shall be completed by the commissioning team, in accordance with the LEED-NC 2.2 Reference Guide. 1) Designate an individual as the Commissioning Authority (CxA) to lead, review and oversee the completion of the commissioning process activities. a) The CxA shall have documented commissioning authority experience in at least two building projects. b) The individual serving as the CxA shall be independent of the project's design and construction management, though they may be employees of the firms providing those services. The CxA may be a qualified employee or consultant of the Owner. c) The CxA shall report results, findings and recommendations directly to the Owner. d) For projects smaller than 50,000 gross square feet, the CxA may include qualified persons on the design or construction teams who have the required experience.			

Workshop W7

2) The Owner shall document the Owner's Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CxA shall review these documents for clarity and completeness. The Owner and design team shall be responsible for updates to their respective documents.

3) Develop and incorporate commissioning requirements into the construction documents.

4) Develop and implement a commissioning plan.

5) Verify the installation and performance of the systems to be commissioned.

6) Complete a summary commissioning report.

Commissioned Systems:

Commissioning process activities shall be completed for the following energy-related systems, at a minimum:

- Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls
- Lighting and daylighting controls
- Domestic hot water systems
- Renewable energy systems (wind, solar etc.)

9-9-05 DDC indicated that the services of a Commissioning Agent would be secured through a requirements contract. Services will commence in the DD phase. DDC will clarify the budget from which these services will be funded.

Required Prereq 2 **Minimum Energy Performance**

Design the building project to comply with both —

- the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) of ASHRAE/IESNA Standard 90.1-2004 (without amendments); and
- the prescriptive requirements (Sections 5.5, 6.5, 7.5 and 9.5) or performance requirements (Section 11) of ASHRAE/IESNA Standard 90.1-2004 (without amendments).

Required Prereq 3 **Fundamental Refrigerant Management**

Zero use of CFC-based refrigerants in new base building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phase-out conversion prior to project completion.

Phase-out plans extending beyond the project completion date will be considered on their merits.

1 1 1 1 6 Credit 1 **Optimize Energy Performance**

Select one of the three compliance path options described below. Project teams documenting achievement using any of the three options are assumed to be in compliance with EA Prerequisite 2.

OPTION 1 — WHOLE BUILDING ENERGY SIMULATION (1–10 Points)

Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments) by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard. The minimum energy cost savings percentage for each point threshold is as follows:

New Buildings	Existing Building Renovations	Points
10.5%	3.5%	1
14%	7%	2
17.5%	10.5%	3
21%	14%	4
24.5%	17.5%	5
28%	21%	6
31.5%	24.5%	7
35%	28%	8
38.5%	31.5%	9
42%	35%	10

Appendix G of Standard 90.1-2004 requires that the energy analysis done for the Building Performance Rating Method include ALL of the energy costs within and associated with the building project. To achieve points using this credit, the proposed design—

- must comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) in Standard 90.1-2004 (without amendments);
- must include all the energy costs within and associated with the building project; and
- must be compared against a baseline building that complies with Appendix G to Standard 90.1-2004 (without amendments). The default process energy cost is 25% of the total energy cost for the baseline building.

For buildings where the process energy cost is less than 25% of the baseline building energy cost, the LEED submittal must include supporting documentation substantiating that process energy inputs are appropriate.

For the purpose of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g. lighting integral to medical equipment) and other (e.g. waterfall pumps). Regulated (nonprocess) energy includes lighting (such as for the interior, parking garage, surface parking, façade, or building grounds, except as noted above), HVAC (such as for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), and service water heating for domestic or space heating purposes.

9-9-05 *DHS expressed concern about employing any systems that might place an undue burden on maintenance and operating costs. The need for additional full-time maintenance staff, in particular, a licensed engineer, will need to be considered. (The existing EAU is maintained by part-time staff, who have responsibilities for maintaining multiple buildings.) This will have a direct impact on the selection of building mechanical systems. The Design Team will provide further info for DHS evaluation as the design evolves.*

PPA 04/04/2005

4-24-06 *Energy efficiency measures (EEM) necessary for lighting: Lighting density per ASHRAE 90.1-2004.
EEMs being considered for lighting:
Daylight dimming in perimeter spaces
Automated interior shading devices*

Branston/
SWA 04/04/2005

3 Credit 2 **On-Site Renewable Energy**

Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building annual energy cost and using the table below to determine the number of points achieved.

Use the building annual energy cost calculated in EA Credit 1 or use the Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database to determine the estimated electricity use. (Table of use for different building types is provided in the Reference Guide.)

% Renewable Energy	Points
2.5%	1
7.5%	2
12.5%	3

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Credit 3 **Enhanced Commissioning**

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1 and in accordance with the LEED-NC 2.2 Reference Guide:

1. Prior to the start of the construction documents phase, designate an independent Commissioning Authority (CxA) to lead, review, and oversee the completion of all commissioning process activities. The CxA shall, at a minimum, perform Tasks 2, 3 and 6. Other team members may perform Tasks 4 and 5.

- a. The CxA shall have documented commissioning authority experience in at least two building projects.
- b. The individual serving as the CxA shall be—
 - i. independent of the work of design and construction;
 - ii. not an employee of the design firm, though they may be contracted through them;
 - iii. not an employee of, or contracted through, a contractor or construction manager holding construction contracts; and
 - iv. (can be) a qualified employee or consultant of the Owner.
- c. The CxA shall report results, findings and recommendations directly to the Owner.
- d. This requirement has no deviation for project size.

2. The CxA shall conduct, at a minimum, one commissioning design review of the Owner's Project Requirements (OPR), Basis of Design (BOD), and design documents prior to mid-construction documents phase and back-check the review comments in the subsequent design submission.

3. The CxA shall review contractor submittals applicable to systems being commissioned for compliance with the OPR and BOD. This review shall be concurrent with A/E reviews and submitted to the design team and the Owner.

4. Develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.

5. Verify that requirements for training operating personnel and building occupants are completed.

6. Assure the involvement by the Cx in reviewing building operation within 10 months after substantial completion with O&M staff and occupants. Include a plan for resolution of outstanding Cx-related issues.



Credit 4 **Enhanced Refrigerant Management**

OPTION 1

Do not use refrigerants.

OR

OPTION 2

Select refrigerants and HVAC&R that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The base building HVAC&R equipment shall comply with the following formula, which sets a maximum threshold for the combined contributions to ozone depletion and global warming potential:

$$LCGWP + LCODP \times 105 \leq 100$$

Where:

$$LCODP = [ODPr \times (Lr \times Life + Mr) \times Rc] / Life$$

$$LCGWP = [GWPr \times (Lr \times Life + Mr) \times Rc] / Life$$

LCODP: Lifecycle Ozone Depletion Potential (lbCFC11/Ton-Year)

LCGWP: Lifecycle Direct Global Warming Potential (lbCO2/Ton-Year)

GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lbCO2/lbr)

ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 lbCFC11/lbr)

Lr: Refrigerant Leakage Rate (0.5% to 2.0%; default of 2% unless otherwise demonstrated)

Mr: End-of-life Refrigerant Loss (2% to 10%; default of 10% unless otherwise demonstrated)

Rc: Refrigerant Charge (0.5 to 5.0 lbs of refrigerant per ton of cooling capacity)

Life: Equipment Life (10 years; default based on equipment type, unless otherwise demonstrated)

For multiple types of equipment, a weighted average of all base building level HVAC&R equipment shall be applied using the following formula:

$$[\sum (LCGWP + LCODP \times 105) \times Q_{unit}] / Q_{total} \leq 100$$

Where:
 Qunit = Cooling capacity of an individual HVAC or refrigeration unit (Tons)
 Qtotal = Total cooling capacity of all HVAC or refrigeration
 Small HVAC units (defined as containing less than 0.5 lbs of refrigerant), and other equipment such as standard refrigerators, small water coolers, and any other cooling equipment that contains less than 0.5 lbs of refrigerant, are not considered part of the "base building" system and are not subject to the requirements of this credit.
 AND
 Do not install fire suppression systems that contain ozone-depleting substances (CFCs, HCFCs or Halons).

9-9-05 *Other functional requirements may dictate the selection of equipment, which in turn may prevent obtaining this credit.*



Credit 5 Measurement & Verification

- Develop and implement a Measurement & Verification (M&V) Plan consistent with Option D: Calibrated Simulation (Savings Estimation Method 2), or Option B: Energy Conservation Measure Isolation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003.
- The M&V period shall cover a period of no less than one year of post-construction occupancy.

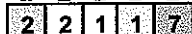
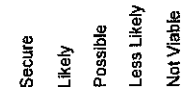
4-24-06 *LEED 2.2 requires that only the MEP systems that are important for energy cost be monitored. This requirement is less rigid and less demanding than the equivalent one in LEED 2.1, making it possible to consider this point.*

F+K 11/13/2005



Credit 6 Green Power

Provide at least 35% of the building's electricity from renewable sources by engaging in at least a two-year renewable energy contract. Renewable sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements.
 DETERMINE THE BASELINE ELECTRICITY USE
 Use the annual electricity consumption from the results of EA Credit 1.

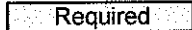


Materials & Resources

13 Points

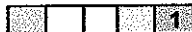
Action By

Date Assigned



Prereq 1 Storage & Collection of Recyclables

Provide an easily accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.



Credit 1.1 Building Reuse: Maintain 75% of Existing Walls, Floors & Roof

Building Reuse: Maintain 75% of Existing Walls, Floors & Roof
 Maintain at least 75% (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material). Hazardous materials that are remediated as a part of the project scope shall be excluded from the calculation of the percentage maintained. If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.

9-9-05 *DDC would like for the Design Team to evaluate the feasibility of materials salvage and re-use opportunities for the project. The possibility for re-use of the existing building steel was discussed.*

Workshop W7

	Credit 1.2 Building Reuse: Maintain 95% of Existing Walls, Floors & Roof		
<p>Building Reuse: Maintain 95% of Existing Walls, Floors & Roof Maintain an additional 20% (95% total, based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material). Hazardous materials that are remediated as a part of the project scope shall be excluded from the calculation of the percentage maintained. If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.</p>			
	Credit 1.3 Building Reuse: Maintain 50% of Interior Non-Structural Elements		
<p>Building Reuse: Maintain 50% of Interior Non-Structural Elements Use existing interior non-structural elements (interior walls, doors, floor coverings and ceiling systems) in at least 50% (by area) of the completed building (including additions). If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.</p>			
	Credit 2.1 Construction Waste Management, Divert 50% From Disposal		
<p>Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or commingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.</p>			
	Credit 2.2 Construction Waste Management, Divert 75% From Disposal		
<p>Recycle and/or salvage an additional 25% beyond MR Credit 2.1 (75% total) of non-hazardous construction and demolition debris. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.</p>			
	Credit 3.1 Materials Reuse: 5%		
<p>Use salvaged, refurbished or reused materials such that the sum of these materials constitutes at least 5%, based on cost, of the total value of materials on the project. Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3 – 7.</p>			
	Credit 3.2 Materials Reuse: 10%		
<p>Use salvaged, refurbished or reused materials for an additional 5% beyond MR Credit 3.1 (10% total, based on cost). Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3 – 7.</p>			
	Credit 4.1 Recycled Content: 10% (post-consumer + 1/2 pre-consumer)		
<p>Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project. The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value. Mechanical, electrical and plumbing components and specialty items such as elevators shall not be included in this calculation. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3–7. Recycled content shall be defined in accordance with the International Organization of Standards document, ISO 14021—Environmental labels and declarations—Self-declared environmental claims (Type II environmental labeling).</p>			

Post-consumer material is defined as waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. Pre-consumer material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

- 4-24-06 *Important to secure synthetic gypsum from within 500 miles. Document recycled content for:*
steel
aluminum in curtain wall
glass
fixed cabinetry
Require recycled content for:
concrete (fly ash 15% min OR slag 25% min)
insulation
ceiling tiles
carpeting
pavement

Credit 4.2 Recycled Content: 20% (post-consumer + 1/2 pre-consumer)

Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 20% (based on cost) of the total value of the materials in the project. The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value. Mechanical, electrical and plumbing components and specialty items such as elevators shall not be included in this calculation. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3–7. Recycled content shall be defined in accordance with the International Organization of Standards document, ISO 14021—Environmental labels and declarations—Self-declared environmental claims (Type II environmental labeling). Post-consumer material is defined as waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. Pre-consumer material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Credit 5.1 Regional Materials: 10% Extracted, Processed & Manufactured Regionally

Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost) of the total materials value. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value. Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3 – 7.

- 4-24-06 *Track concrete, masonry (CMU and brick), asphalt, synthetic gypsum, landscaping materials. It may also be possible that the wood for fixed cabinetry originates from within 500 miles. It is unlikely that the steel is formed from iron extracted within 500 miles.*

1	1	Credit 5.2 Regional Materials: 20% Extracted, Processed & Manufactured Regionally		
<p>Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 20% (based on cost) of the total materials value. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.</p> <p>Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3 – 7.</p>				
1	1	Credit 6 Rapidly Renewable Materials		
<p>Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year cycle or shorter) for 2.5% of the total value of all building materials and products used in the project, based on cost.</p> <p><i>9-9-05 DHS was receptive to the idea of selecting such materials. However, all materials must be appropriate for the anticipated level of use in the new building.</i></p>				
1	1	Credit 7 Certified Wood		
<p>Use a minimum of 50% of wood-based materials and products, which are certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for wood building components. These components include, but are not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3-7.</p> <p><i>4-24-06 Formwork may be excluded from the calculations if (1) it was used before or will be reused in the future OR (2) if it is used in the future for other purposes (e.g., as substrate for furniture). This credit is usually NOT obtained if the Composite Wood credit is obtained, because it is more difficult and more costly to obtain composite wood products that do not have added urea formaldehyde and that also have certified wood. This is specifically important for wood doors. To obtain both credits in a cost-effective manner, the project would need to attempt to satisfy the certified wood requirements without including wood doors, and with as little overlap with the composite wood credit as possible.</i></p> <p><i>5-03-06 This credit will be pursued. Specs will reflect this decision.</i></p>			PPA	11/26/2005
Secure Likely Possible Less Likely Not Viable	7 3 2 3 0	Indoor Environmental Quality	15 Points	Action By
		Required Prereq 1 Minimum IAQ Performance		Date Assigned
<p>Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004, Ventilation for Acceptable Indoor Air Quality. Mechanical ventilation systems shall be designed using the Ventilation Rate Procedure or the applicable local code, whichever is more stringent. Naturally ventilated buildings shall comply with ASHRAE 62.1-2004, paragraph 5.1.</p>				
		Required Prereq 2 Environmental Tobacco Smoke (ETS) Control		
<p>OPTION 1</p> <ul style="list-style-type: none"> • Prohibit smoking in the building. • Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows. 				

1	Credit 1 Outdoor Air Delivery Monitoring		
<p>Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements. Configure all monitoring equipment to generate an alarm when the conditions vary by 10% or more from setpoint, via either a building automation system alarm to the building operator or via a visual or audible alert to the building occupants.</p> <p>FOR MECHANICALLY VENTILATED SPACES</p> <ul style="list-style-type: none"> • Monitor carbon dioxide concentrations within all densely occupied spaces (those with a design occupant density greater than or equal to 25 people per 1000 sq.ft.). CO2 monitoring locations shall be between 3 feet and 6 feet above the floor. • For each mechanical ventilation system serving non-densely occupied spaces, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor airflow rate with an accuracy of plus or minus 15% of the design minimum outdoor air rate, as defined by ASHRAE 62.1-2004. 			
1	Credit 2 Increased Ventilation		
<p>FOR MECHANICALLY VENTILATED SPACES</p> <ul style="list-style-type: none"> • Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1-2004 as determined by EQ Prerequisite 1. <p><i>4-24-06 HVAC systems would need to be sized to accommodate 30% more outside air even if they are not eventually operated that way.</i></p>			
1	Credit 3.1 Construction IAQ Management Plan, During Construction		
<p>Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:</p> <ul style="list-style-type: none"> • During construction meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3. • Protect stored on-site or installed absorptive materials from moisture damage. • If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 shall be used at each return air grille, as determined by ASHRAE 52.2-1999. Replace all filtration media immediately prior to occupancy. 			
1	Credit 3.2 Construction IAQ Management Plan, Before Occupancy		
<p>Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:</p> <p>OPTION 1 — Flush-Out</p> <p>(a) After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.</p> <p>OR</p> <p>(b) If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq.ft. of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.</p>			

4-24-06 Option 1 Alt (b) should be feasible under most circumstances, since the flushout period before occupancy is only approx 60 hrs (assuming 1 cfm/sqft 100% OA ventilation).

1 Credit 4.1 **Low-Emitting Materials, Adhesives & Sealants**

All adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of the following reference standards:

- Adhesives, Sealants and Sealant Primers: South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits are listed in the table below and correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.
- Aerosol Adhesives: Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

1 Credit 4.2 **Low-Emitting Materials, Paints and Coatings**

Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:

- Architectural paints, coatings and primers applied to interior walls and ceilings: Do not exceed the VOC content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.
 - o Flats: 50 g/L
 - o Non-Flats: 150 g/L
- Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Do not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
- Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: Do not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.
 - o Clear wood finishes: varnish 350 g/L; lacquer 550 g/L
 - o Floor coatings: 100 g/L
 - o Sealers: waterproofing sealers 250 g/L; sanding sealers 275 g/L; all other sealers 200 g/L
 - o Shellacs: Clear 730 g/L; pigmented 550 g/L
 - o Stains: 250 g/L

1 Credit 4.3 **Low-Emitting Materials: Carpet Systems**

All carpet installed in the building interior shall meet the testing and product requirements of the Carpet and Rug Institute's Green Label Plus program.
 All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. All carpet adhesive shall meet the requirements of EQ Credit 4.1: VOC limit of 50 g/L.

1 Credit 4.4 **Low-Emitting Materials: Composite Wood & Agrifiber Products**

Composite wood and agrifiber products used on the interior of the building (defined as inside of the weatherproofing system) shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins. Composite wood and agrifiber products are defined as: particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fit-out, furniture, and equipment (FF&E) are not considered base building elements and are not included.

9-9-05 Design Team to evaluate the increased cost for no added urea formaldehyde in furniture.

4-24-06 Most projects select either the Certified Wood credit OR the Composite Wood credit. The Composite Wood credit is more expensive, but offers greater latitude because it does not affect the selection of wood finishes. Also, the urea formaldehyde being eliminated is a class A carcinogen.

	Credit 5 Indoor Chemical & Pollutant Source Control		
<p>Design to minimize and control pollutant entry into buildings and later cross-contamination of regularly occupied areas:</p> <ul style="list-style-type: none"> • Employ permanent entryway systems at least six feet long in the primary direction of travel to capture dirt and particulates from entering the building at all entryways that are directly connected to the outdoors. Acceptable entryway systems include permanently installed grates, grilles, or slotted systems that allow for cleaning underneath. Roll-out mats are only acceptable when maintained on a weekly basis by a contracted service organization. Qualifying entryways are those that serve as regular entry points for building users. • Where hazardous gases or chemicals may be present or used (including garages, housekeeping/laundry areas and copying/printing rooms), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed. For each of these spaces, provide self-closing doors and deck to deck partitions or a hard lid ceiling. The exhaust rate shall be at least 0.50 cfm/sq.ft., with no air recirculation. The pressure differential with the surrounding spaces shall be at least 5 Pa (0.02 inches of water gauge) on average and 1 Pa (0.004 inches of water) at a minimum when the doors to the rooms are closed. • In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media prior to occupancy that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better. Filtration should be applied to process both return and outside air that is to be delivered as supply air. 			
	Credit 6.1 Controllability of Systems: Lighting		
<p>Provide individual lighting controls for 90% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences.</p> <p>AND</p> <p>Provide lighting system controllability for all shared multi-occupant spaces to enable lighting adjustment that meets group needs and preferences.</p> <p>4-24-06 This credit can be obtained with task lighting for open office spaces.</p> <p>5-03-06 The credit will be obtained with task lighting in open office spaces.</p>		<p>DHS 11/26/2005</p> <p>F+K / DHS 11/26/2005</p>	
	Credit 6.2 Controllability of Systems: Thermal Comfort		
<p>Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences. Operable windows can be used in lieu of comfort controls for occupants of areas that are 20 feet inside of and 10 feet to either side of the operable part of the window. The areas of operable window must meet the requirements of ASHRAE 62.1-2004 paragraph 5.1 Natural Ventilation.</p> <p>AND</p> <p>Provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences.</p> <p>Conditions for thermal comfort are described in ASHRAE Standard 55-2004 to include the primary factors of air temperature, radiant temperature, air speed and humidity. Comfort system control for the purposes of this credit is defined as the provision of control over at least one of these primary factors in the occupant's local environment.</p>			

	<p>9-9-05 <i>It was discussed that operable windows are not recommended due to the adverse impact on a zoned HVAC system, as well as the increased cost of operable window units..</i></p> <p><i>DHS commented that operable windows might allow cooling of the facility in an emergency event involving a loss of power. It was discussed that there might be other ways to address this concern, such as back-up power. DHS will provide the Design Team with requirements for the desired functionality of the facility in different emergency events.</i></p>	DHS	11/26/2005
<p>1 1 1 1 1</p>	<p>Credit 7.1 Thermal Comfort: Design</p> <p>Design HVAC systems and the building envelope to meet the requirements of ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy. Demonstrate design compliance in accordance with the Section 6.1.1 Documentation.</p>		
<p>1 1 1 1 1</p>	<p>Credit 7.2 Thermal Comfort: Verification</p> <p>Agree to implement a thermal comfort survey of building occupants within a period of six to 18 months after occupancy. This survey should collect anonymous responses about thermal comfort in the building including an assessment of overall satisfaction with thermal performance and identification of thermal comfort-related problems. Agree to develop a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with thermal comfort in the building. This plan should include measurement of relevant environmental variables in problem areas in accordance with ASHRAE Standard 55-2004.</p>		
<p>1 1 1 1 1</p>	<p>Credit 8.1 Daylight & Views: Daylight for 75% of Spaces</p> <p>OPTION 1 — CALCULATION Achieve a minimum glazing factor of 2% in a minimum of 75% of all regularly occupied areas. The glazing factor is calculated as follows: Glazing Factor = [Window area (SF) / Floor area (SF)] x Window Geometry Factor x [(Actual Tvis / Minimum Tvis)] x Window Height Factor</p> <p>OR</p> <p>OPTION 2 — SIMULATION Demonstrate, through computer simulation, that a minimum daylight illumination level of 25 footcandles has been achieved in a minimum of 75% of all regularly occupied areas. Modeling must demonstrate 25 horizontal footcandles under clear sky conditions, at noon, on the equinox, at 30 inches above the floor.</p> <p>OR</p> <p>OPTION 3 — MEASUREMENT Demonstrate, through records of indoor light measurements, that a minimum daylight illumination level of 25 footcandles has been achieved in at least 75% of all regularly occupied areas. Measurements must be taken on a 10-foot grid for all occupied spaces and must be recorded on building floor plans.</p> <p>In all cases, only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be applied towards the 75% of total area calculation required to qualify for this credit. In all cases, provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks. Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.</p> <p>9-9-05 <i>The Design Team considers daylighting an important element of the design and will seek to maximize daylighting in the building.</i></p> <p>4-24-06 <i>LEED-required levels for daylight cannot be made in many core spaces. Calculations need to be performed to confirm, but the credit appears at this time to be unlikely.</i></p>		

APPENDIX “B”
COMMERCIAL GREEN BUILDING CHECKLIST
City of Scottsdale, Arizona

City of Scottsdale

Commercial Green Building Checklist

New Construction and Major Renovation

Project Name - _____

Address - _____

<p>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.</p>		Documentation Required	Select Items	
1 - SUSTAINABLE SITES				
1.1 Site Selection & Disturbance				
<p>Prerequisites:</p> <ul style="list-style-type: none"> * Stormwater management per Scottsdale ordinance. * Scottsdale Environmentally Sensitive Lands Ordinance. * General Plan conformance. * Dust control per Maricopa County regulations. 				
<p>Options:</p>				
1.11	<p>Site Selection</p> <ul style="list-style-type: none"> * Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on site (avoid land identified for habitat loss and land identified as desert preserve). 			
1.12	<p>Revitalization</p> <ul style="list-style-type: none"> * Infill development within existing infrastructure. 			
1.13	<p>Reduced Site Disturbance</p> <ul style="list-style-type: none"> * Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land. * Limit disturbance including earthwork and clearing of vegetation to within 20 feet of building footprint, 5 feet beyond primary roadway curbs, walkways and utility trenches, and 20 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields); OR, on previously developed sites, restore a minimum of 50% of the site area (excluding the building footprint) by replacing impervious surfaces with native or adapted vegetation. * Reduce the development footprint (including building footprint, access roads and parking) to exceed the zoning open space requirement for the site by 25%. * Protect/preserve in place natural desert features within development footprint (i.e. - washes, boulders, vegetation). 			

Scottsdale Pilot Program

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 Items Selected			

1.3 Heat Island Effect - Orientation, Exterior Design & Landscaping			
Prerequisites:			
* Locate building to encourage pedestrian access and pedestrian-oriented uses.			
* Create tempered microclimate around building entrances by use of building configuration, shade structures, vegetation and/or water features in shaded areas.			
* Minimize heat absorption, use systems that retard heat & glare.			
* Use Energy Star compliant or other high emissivity roofing (emissivity of at least 0.9 per ASTM 408) for at least 75% of the roof surface.			
* Wall colors have a light reflectance value (LRV) of 35% or less for reduced desert glare.			
Options:			
1.31	Parking areas isolated from building in order to reduce heat load of building.		
1.32	Building oriented so longest axial dimension faces within 20 degrees of south.		
1.33	Minimize hard surfaces by providing shade (within 3 years) and/or permeable surfaces for at least 30% of the area outside of the building footprint, including parking lots, walkways, plazas, etc.		
1.34	Provide shading for at least 50% of parking spaces or use low heat absorbing and low reflective (LRV) surface for at least 50% of the parking lot area.		
1.35	Optimize use and effectiveness of rooftop spaces AND/OR install a desert adapted "green" (drought tolerated vegetation) roof for at least 50% of the roof area.		
Total Items Selected			

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1.4 Light Pollution Reduction			
Prerequisite: * Meet Scottsdale ordinance requirements for on-site shielding of site lighting.			
Options:			
1.41	Meet the light pollution reduction levels and ratios established by the Illuminating Engineering Society of North America (IESNA) <i>Recommended Practice Manual: Lighting for Exterior Environments</i> (RP-33-99).		
1.42	Provide solar powered lighting for at least 60% of site lighting.		
Total Items Selected			

2 - WATER EFFICIENCY			
2.1 Water Efficient Landscaping			
Prerequisite: * Drought resistant plants used for 100% of landscape (exception: public recreational areas). * Use high-efficiency irrigation technology (i.e. - zoned drip irrigation, rain water sensor).			
Options:			
2.11	Leak detection system for determining location for repair.		
2.12	Use captured rain, grey water, cooling tower blow down water or recycled site water to reduce potable water for irrigation by 50% over conventional means.		
2.13	Use only captured rain and/or recycled site water to eliminate all potable water use for site irrigation OR do not install landscape irrigation system.		
Total Items Selected			

2.2 Indoor Water Use Reduction			
Prerequisite: * Use of at least one water conservation measure that throughout the building exceeds city requirements (see examples below).			
Options:			
2.21	Employ strategies that in aggregate use 20% less water than the baseline calculated for the building (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.		
2.22	Employ strategies that in aggregate, use 30% less water than the baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.		
2.23	Employ strategies that in aggregate, use 40% less water than the baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.		
Total Items Selected			

2.3 Innovative Wastewater Use			
Options:			
2.31	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.).		
2.32	Collection and reuse of rainwater for at least 10% of non-potable uses, not including irrigation (i.e. - water features, toilets, etc.).		
		Total Items Selected	

3 - ENERGY AND ATMOSPHERE			
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3.1 Energy Performance			
Prerequisites:			
* Meet min. requirements of ASHRAE 90.1 or 2003 International Energy Conservation Code.			
* Reduce design energy cost 20% (compared to the energy cost budget for energy systems regulated by ASHRAE Standard 90.1, as demonstrated by a whole building simulation using the Energy Cost Budget Method described in Section 11 of the Standard).			
* Zero use of CFC-based refrigerants in new base building HVAC&R systems.			
Options:			
3.11	Reduce design energy cost 30% (compared to the energy cost budget for energy systems regulated by ASHRAE Standard 90.1, as demonstrated by a whole building simulation using the Energy Cost Budget Method described in Section 11 of the Standard).		
3.12	Reduce design energy cost by 40% (cumulative - include item 3.11).		
3.13	Reduce design energy cost by 60% (cumulative - include items 3.11 & 3.12).		
		Total Items Selected	

3.2 Building Commissioning			
Prerequisite:			
* Fundamental Building Systems Commissioning at time of building occupancy and 10 to 12 months after occupancy (validate that the fundamental building elements and systems are designed, installed and calibrated to operate as intended). City special inspection documentation required. (see exhibit A)			
Options:			
3.31	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.		
3.32	Measurement and Verification. Install continuous metering equipment for lighting systems and controls; constant and variable motor loads; variable frequency drive (VFD) operation; chiller efficiency at variable loads (kW/ton); cooling load; air and water economizer and heat recovery cycles; air distribution static pressures and ventilation air volumes; boiler efficiencies; building-related process energy systems and equipment; indoor water risers and outdoor irrigation systems.		
		Total Items Selected	

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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:			
3.31	Supply at least 10% of the project's <u>peak power demand (kW)</u> through the use of on-site renewable energy systems		
3.32	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).		
3.33	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).		
3.34	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.		
3.35	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 Items Selected			

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 25% of existing building (excluding window assemblies and non-structural roofing and ceiling material).		
4.12	Maintain at least 50% of existing building (excluding window assemblies and non-structural roofing and ceiling material). (cumulative - include item 4.11)		
4.13	Maintain at least 75% of existing building (excluding window assemblies and non-structural roofing and ceiling material). (cumulative - include items 4.11 & 4.12)		
Total Items Selected			

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4.2 Waste Management			
Prerequisites:			
<ul style="list-style-type: none"> * Designate site area for construction waste separation and collection of recycled and/or salvaged materials. * Provide an easily accessible area that serves the entire building 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 Items Selected			

4.3 Resource Efficiency, Recycled Content and Reuse			
Prerequisites:			
<ul style="list-style-type: none"> * 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 <p>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.</p>			
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).		

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4.33	Integrated wall system used for 50% of walls that serves as structure, thermal envelope and/or finish material (i.e. - integral insulated masonry, SIPS, ICF, ACC, adobe, rammed earth, strawbale).			
4.34	Use materials with recycled content for at least 5% of the total value of the materials in the project.			
4.35	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 Items Selected				

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 Items Selected				

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 Items Selected				

4.6 Wood Products				
Options:				
4.61	Use solid sawn lumber substitutes for at least 75% of structural elements (calculate by value). Examples: steel, engineered beams, joists, headers, alternative trusses for floors/roofs (TJI's, laminated/fingered jointed web members, etc.), finger-jointed wood products, no tropical hardwood or luan doors.			
4.62	Use at least 50% of wood-based materials and products, certified in accordance with the <u>Forest Stewardship Council</u> or the <u>Sustainable Forest Initiative</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 Items Selected				

5 - INDOOR ENVIRONMENTAL QUALITY			
5.1 Air Quality			
<p>Prerequisites:</p> <ul style="list-style-type: none"> * Meet the minimum requirements of ASHRAE 62 or 2003 International Mechanical Code. * Zero exposure of smoking to non-smoking areas. - 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 * Develop and implement an Indoor Air Quality (IAQ) Management Plan for the <u>pre-occupancy phase</u> of the building. <ul style="list-style-type: none"> - after construction ends and prior to occupancy conduct a <u>minimum one-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. 			
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. <ul style="list-style-type: none"> - 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. <ul style="list-style-type: none"> - 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. <ul style="list-style-type: none"> - 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	Active or passive radon mitigation installed to EPA guidelines.		
5.16	No human exposure to harmful fiber insulation.		
Total Items Selected			

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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		
5.33	Use urea formaldehyde-free products.		
5.34	Use environmentally sensitive termite protection (no chemical pesticides - i.e. termite block/shield systems).		
5.35	Use non-toxic, biodegradable form separators (no diesel fuel or other petroleum based products).		
5.36	Electrical panels located at least ten feet away from areas of frequent occupancy.		
		Total Items Selected	
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 Items Selected	
5.4 Daylight and Views			
Prerequisites:			
* Achieve a minimum daylight factor of 2% (excluding all direct sunlight penetration) in <u>25%</u> of all space occupied for critical visual tasks.			
Options:			
5.41	Achieve a minimum daylight factor of 2% (excluding all direct sunlight penetration) in <u>75%</u> 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 Items Selected	

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5.5	Noise Reduction		
	Options:		
5.51	Use of noise reduction systems to achieve noise levels below 40 db.		
		Total Items Selected	

6 - SPECIAL OPTIONS			
1			
2			
3			
4			
5			
6			
		Total Items Selected	

		PERCENTAGE OF ITEMS SELECTED	
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