

GREE



Version 2.0

Including the Project Checklist

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Project Checklist



Sustainable Sites 14 Possible Points Erosion & Sedimentation Control Υ Prereq 1 Required Credit 1 **Site Selection** Y 1 N Credit 2 **Urban Redevelopment Brownfield Redevelopment** N Credit 3 N Credit 4.1 Alternative Transportation, Public Transportation Access 1 N Credit 4.2 Alternative Transportation, Bicycle Storage & Changing Rooms 1 Credit 4.3 Alternative Transportation, Alternative Fuel Refueling Stations 1 Credit 4.4 Alternative Transportation, Parking Capacity Credit 5.1 Reduced Site Disturbance, Protect or Restore Open Space 1 Credit 5.2 Reduced Site Disturbance, Development Footprint 1 N Credit 6.1 Stormwater Management, Rate or Quantity Ν Credit 6.2 Stormwater Management, Treatment 1 Credit 7.1 Landscape & Exterior Design to Reduce Heat Islands, NonRoof 1 Credit 7.2 Landscape & Exterior Design to Reduce Heat Islands, Roof 1 ? N Credit 8 **Light Pollution Reduction** 1

Water Efficiency

5 Possible Points

Water Efficient Landscaping, Reduce by 50%	1
Water Efficient Landscaping, No Potable Use or No Irrigation	1
Innovative Wastewater Technologies	1
Water Use Reduction, 20% Reduction	1
Water Use Reduction, 30% Reduction	1
	Water Efficient Landscaping, No Potable Use or No Irrigation Innovative Wastewater Technologies Water Use Reduction, 20% Reduction

Energy & Atmosphere

17 Possible Points

Y P	rereq 1	Fundamental Building Systems Commissioning	Required
Y P	rereq 2	Minimum Energy Performance	Required
Y P	Prereq 3	CFC Reduction in HVAC&R Equipment	Required
Y ? N C	Credit 1.1	Optimize Energy Performance, 20% New / 10% Existing	2
Y ? N C	Credit 1.2	Optimize Energy Performance, 30% New / 20% Existing	2
Y ? N C	Credit 1.3	Optimize Energy Performance, 40% New / 30% Existing	2
Y ? N C	Credit 1.4	Optimize Energy Performance, 50% New / 40% Existing	2
Y ? N C	Credit 1.5	Optimize Energy Performance, 60% New / 50% Existing	2
Y ? N C	Credit 2.1	Renewable Energy, 5%	1
Y ? N C	Credit 2.2	Renewable Energy, 10%	1
Y ? N C	Credit 2.3	Renewable Energy, 20%	1
Y ? N C	Credit 3	Additional Commissioning	1
Y ? N C	Credit 4	Ozone Depletion	1
Y ? N C	Credit 5	Measurement & Verification	1
Y ? N C	Credit 6	Green Power	1



Materials & Resources

13 Possible Points

Y		Prereq 1	Storage & Collection of Recyclables Req	uired
Y	? N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
Y	? N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
Y	? N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
Y	? N	Credit 2.1	Construction Waste Management, Divert 50%	1
Y	? N	Credit 2.2	Construction Waste Management, Divert 75%	1
Y	? N	Credit 3.1	Resource Reuse, Specify 5%	1
Y	? N	Credit 3.2	Resource Reuse, Specify 10%	1
Y	? N	Credit 4.1	Recycled Content, Specify 25%	1
Y	? N	Credit 4.2	Recycled Content, Specify 50%	1
Y	? N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
Y	? N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Local	ly 1
Y	? N	Credit 6	Rapidly Renewable Materials	1
Y	: N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y	Prereq 1	Minimum IAQ Performance	Required
Y	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Y ? N	Credit 1	Carbon Dioxide (CO_2) Monitoring	1
Y ? N	Credit 2	Increase Ventilation Effectiveness	1
Y ? N	Credit 3.1	Construction IAQ Management Plan, During Co	onstruction 1
Y ? N	Credit 3.2	Construction IAQ Management Plan, Before O	ccupancy 1
Y ? N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
Y ? N	Credit 4.2	Low-Emitting Materials, Paints	1
Y ? N	Credit 4.3	Low-Emitting Materials, Carpet	1
Y ? N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
Y ? N	Credit 5	Indoor Chemical & Pollutant Source Control	1
Y ? N	Credit 6.1	Controllability of Systems, Perimeter	1
Y ? N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
Y ? N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
Y ? N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
Y ? N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
Y ? N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1
Innova	ation &	& Design Process	5 Possible Points
Y ? N	Credit 1.1	Innovation in Design: Specific Title	1
Y ? N	Credit 1.2	Innovation in Design: Specific Title	1
Y ? N	Credit 1.3	Innovation in Design: Specific Title	1
Y ? N	Credit 1.4	Innovation in Design: Specific Title	1
Y ? N	Credit 2	LEED TM Accredited Professional	1
Projec	t Tota	ls e	59 Possible Points
	Certified 2	6-32 points Silver 33-38 points Gold 39-51 points Pl	atinum 52-69 points

U S Green Building Council

Sustainable Sites

Prerequisite 1 Erosion & Sedimentation Control

Intent

Control erosion to reduce negative impacts on water and air quality.

Requirement

Prerequisite 1.0Design to a site sediment and erosion control plan that conforms to best management practices in the EPA's Storm Water Management for Construction Activities, EPA Document No. EPA-832-R-92-005, Chapter 3, OR local Erosion and Sedimentation Control standards and codes, whichever is more stringent. The plan shall meet the following objectives:

- Prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.

- Prevent sedimentation of storm sewer or receiving streams and/or air pollution with dust and particulate matter.

Technologies & Strategies

Adopt an erosion and sedimentation control plan for the project site during construction. Consider employing strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps, and sediment basins. SS WE EA MR EQ ID Prerequisite 1 1 Point

Credit 1 Site Selection

Intent

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Requirement

Credit 1.0 (1 point)	Do not develop buildings on portions of sites that meet any one of the following criteria:
	-Prime farmland as defined by the American Farmland Trust
	-Land whose elevation is lower than 5 feet above the eleva- tion of the 100-year flood as defined by FEMA
	-Land which provides habitat for any species on the Federal or State threatened or endangered list
	-Within 100 feet of any wetland as defined by 40 CFR, Parts 230-233 and Part 22, OR as defined by local or state rule or law, whichever is more stringent
	-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)

Technologies & Strategies

During the site selection process, give preference to those sites that do not include sensitive site elements and restricted land types. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck under parking, and sharing facilities with neighbors.

Credit 2 Urban Redevelopment

Intent

Channel development to urban areas with existing infrastructures, protecting greenfields and preserving habitat and natural resources.

Requirement

Credit 2.0 (1 point) Increase localized density to conform to existing or desired density goals by utilizing sites that are located within an existing minimum development density of **60,000 square feet per acre** (2 story downtown development)

Technologies & Strategies

During the site selection process, give preference to urban sites with high development densities. Quantify the development density of the project as well as the surrounding area.

SS WE EA MR EQ ID Credit 2

1 Point

1 Point Credit 3 Brownfield Redevelopment

Intent

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

Requirement

Credit 3.0 (1 Point) Develop on a site classified as a Brownfield and provide remediation as required by EPA's Sustainable Redevelopment of Brownfields Program requirements

Technologies & Strategies

During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings by selecting a brownfield site. Adopt a site remediation plan and cleanup the site using remediation strategies such as pump-and-treat, bioreactors, land farming, and in-situ remediation.

Credit 4 Alternative Transportation

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

Credit 4.1 (1 point)	Locate building within ¹ / ₂ mile of a commuter rail, light rail or subway station or ¹ / ₄ mile of 2 or more bus lines
Credit 4.2 (1 point)	Provide suitable means for securing bicycles, with convenient changing/shower facilities for use by cyclists, for 5% or more of building occupants
Credit 4.3 (1 point)	Install alternative-fuel refueling station(s) for 3% of the total vehicle parking capacity of the site. Liquid or gaseous fueling facilities must be separately ventilated or located outdoors
Credit 4.4 (1 point)	Size parking capacity not to exceed minimum local zoning requirements AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants, OR, add no new parking for rehabilitation projects AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants.

Technologies & Strategies

Perform a transportation survey of future building occupants to identify transportation needs. Site the building near mass transit and design the building with transportation amenities such as bicycle racks and showering/changing facilities, alternative fuel refueling stations, and carpool/ van pool programs. Also consider sharing transportation facilities such as parking lots and refueling stations with neighbors.

ss we ea mr eq id Credit 4

1-4 Points

1-2 Points Credit 5 Reduced Site Disturbance

Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirements

Credit 5.1 (1 point)	On greenfield sites, limit site disturbance including earthwork
	and clearing of vegetation to 40 feet beyond the building pe-
	rimeter, 5 feet beyond primary roadway curbs, walkways, and
	main utility branch trenches, and 25 feet beyond pervious pav-
	ing areas that require additional staging areas in order to limit
	compaction in the paved area; OR, on previously developed
	sites, restore a minimum of 50% of the remaining open area
	by planting native or adapted vegetation.
Credit 5.2 (1 point)	Reduce the development footprint (including building, access
	roads and parking) to exceed the local zoning's open space
	requirement for the site by 25% .

Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck under parking, and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of existing site and restore previously degraded areas to their natural state.

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Credit 6 Stormwater Management

Intent

Limit disruption of natural water flows by minimizing stormwater runoff, increasing on-site infiltration and reducing contaminants.

Requirements

Implement a stormwater management plan that results in:

- **Credit 6.1** (1 point) **No net increase** in the rate and quantity of stormwater runoff from existing to developed conditions; OR, if existing imperviousness is greater than **50%**, implement a stormwater management plan that results in a **25%** decrease in the rate and quantity of stormwater runoff.
- Credit 6.2 (1 point) Treatment systems designed to remove 80% of the average annual post development total suspended solids (TSS), and 40% of the average annual post development total phosphorous (TP), by implementing Best Management Practices (BMPs) outlined in EPA's Guidance Specifying Management Measures for Sources of Non-point Pollution in Coastal Waters (EPA 840-B-92-002 1/93).

Technologies & Strategies

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify garden roofs and pervious paving to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing, and custodial uses. Install mechanical or natural treatment systems such as constructed wetlands, vegetated filter strips, and bioswales to treat stormwater volumes leaving the site. SS WE EA MR EQ ID Credit 6

1-2 Points

1-2 Points

Credit 7 Landscape and Exterior Design to Reduce Heat Islands

Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements

Credit 7.1 (1 point)	Provide shade (within 5 years) on at least 30% of non-roof impervious surface on the site, including parking lots, walk-ways, plazas, etc., OR, use light-colored/high-albedo materials (reflectance of at least 0.3) for 30% of the site's non-roof impervious surfaces, OR place a minimum of 50% of parking space underground OR use open-grid pavement system (net impervious area of LESS than 50%) for a minimum of 50% of the parking lot area.
Credit 7.2 (1 point)	Use ENERGY STAR Roof-compliant, high-reflectance AND high emissivity roofing (initial reflectance of at least 0.65 and three-year-aged reflectance of at least 0.5 when tested in ac- cordance with ASTM E903 and emissivity of at least 0.9 when tested in accordance with ASTM 408) for a minimum of 75% of the roof surface; OR, install a "green" (vegetated) roof for at least 50% of the roof area.

Technologies & Strategies

Shade constructed surfaces on the site with landscape features and minimize the overall building footprint. Consider replacing constructed surfaces (i.e., roof, roads, sidewalks, etc.) with vegetated surfaces such as garden roofs and open grid paving or specify light-colored, high-albedo materials to reduce the heat absorption.

Credit 8 Light Pollution Reduction

Intent

Eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments.

Requirement

Credit 8.0 (1 point) Do not exceed Illuminating Engineering Society of North America (IESNA) footcandle level requirements as stated in the Recommended Practice Manual: Lighting for Exterior Environments, AND design interior and exterior lighting such that zero direct-beam illumination leaves the building site.

Technologies & Strategies

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaries, low-reflectance surfaces, and low-angle spotlights.

SS WE EA MR EQ ID Credit 8

1 Point

Water Efficiency

1-2 Points	Credit 1	Water Efficient Landscaping
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Intent

ss we ea mr eq id Credit 1

Limit or eliminate the use of potable water for landscape irrigation.

Requirements

Credit 1.1 (1 point)	Use high efficiency irrigation technology, OR, use captured rain or recycled site water, to reduce potable water consumption for irrigation by 50% over conventional means.
Credit 1.2 (1 point)	Use only captured rain or recycled site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems.

Technologies & Strategies

Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Use high efficiency irrigation systems and consider reuse of stormwater or graywater volumes for irrigation.

Credit 2 **Innovative Wastewater Technologies**

Intent

Reduce the generation of wastewater and potable water demand, while increasing the local aquifer recharge.

Requirement

Credit 2.0 (1 point) Reduce the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR, treat 100% of wastewater on site to tertiary standards.

Technologies & Strategies

Estimate the wastewater volumes generated in the building and specify high efficiency fixtures and dry fixtures such as composting toilets and waterless urinals to reduce these volumes. Consider reusing stormwater or graywater for sewage conveyance or on-site wastewater treatment systems (mechanical or natural).

1-2 Points Credit 3 Water Use Reduction

Intent

Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirement & Submittals

Credit 3.1 (1 point)	Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including
	irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.
Credit 3.2 (1 point)	Exceed the potable water use reduction by an additional 10% (30% total efficiency increase).

Technologies & Strategies

Estimate the potable and non-potable water needs for the building. Use high efficiency fixtures, dry fixtures such as composting toilets and waterless urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and graywater for non-potable applications such as toilet and urinal flushing, mechanical systems, and custodial uses.

Energy & Atmosphere



Prerequisite 1 Fundamental Building Systems Commissioning

Required

Intent

Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended.

Requirement

Prerequisite 1.0Implement the following fundamental best practice commissioning procedures:

 -Engage a commissioning authority

 -Review design intent and basis of design documentation

 -Include commissioning requirements in the construction documents

 -Develop and utilize a commissioning plan

 -Verify installation, functional performance, training and documentation

 -Complete a commissioning report

Technologies & Strategies

Engage a commissioning authority and adopt a commissioning plan. Include commissioning requirements in bid documents and task the commissioning agent to produce a commissioning report once commissioning activities are completed.

SSWEEAMREQIDPrerequisite2

Required Prerequisite 2 Minimum Energy Performance

Intent

Establish the minimum level of energy efficiency for the base building and systems.

Requirement

Prerequisite 2.0 Design to meet building energy efficiency and performance as required by ASHRAE/IESNA 90.1-1999 or the local energy code, whichever is the more stringent.

Technologies & Strategies

Design the building envelope and building systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

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Prerequisite 3 CFC Reduction in HVAC&R Equipment

Intent

Reduce ozone depletion.

Requirement

Prerequisite 3.0Zero use of CFC-based refrigerants in new building HVAC&R
base building systems. When reusing existing base building
HVAC equipment, complete a comprehensive CFC phaseout
conversion.

Technologies & Strategies

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and adopt a replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment that uses no CFC refrigerants.

ss we EA MR EQ ID Prerequisite 3

Required

2-10 Points Credit 1 **Optimize Energy Performance**

Intent

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirements

Reduce design energy cost compared to the energy cost budget for regulated energy components described in the requirements of ASHRAE/IESNA Standard 90.1-1999, as demonstrated by a whole building simulation using the Energy Cost Budget Method described in Section 11:

New Buildings	Existing Buildings	Points
20%	10%	2
30%	20%	4
40%	30%	6
50%	40%	8
60%	50%	10

Regulated energy components include HVAC systems, building envelope, service hot water systems, lighting and other regulated systems as defined by ASHRAE.

Credit 1.1 (2 points)	Reduce design energy cost by 20% / 10%.
Credit 1.2 (4 points)	Reduce design energy cost by 30% / $20\%.$
Credit 1.3 (6 points)	Reduce design energy cost by 40% / $30\%.$
Credit 1.4 (8 points)	Reduce design energy cost by 50% / $40\%.$
Credit 1.5 (10 points)	Reduce design energy cost by 60% / 50%.

Technologies & Strategies

Design the building envelope and building systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

Credit 2 Renewable Energy

Intent

Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use.

Requirements

Supply a net fraction of the building's total energy use (as expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.

% Total Ener	gy Load Cost in Renewables	Points
5%		1
10%		2
20%		3
Credit 2.1 (1 points)	Renewable energy, 5% contributio	n
Credit 2.2 (2 points)	Renewable energy, 10% contribution	on
Credit 2.3 (3 points)	Renewable energy, 20% contributi	on

Technologies & Strategies

Assess the project for renewable energy potential including solar, wind, geothermal, biomass, hydro, and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.



1-3 Points

1 Point Credit 3 Additional Commissioning

Intent

Verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended.

Requirement

Credit 3.0 (1 point)	In addition to the Fundamental Building Commissioning pre- requisite, implement the following additional commissioning tasks:
	1. Conduct a focused review of the design prior to the con- struction documents phase.
	2. Conduct a focused review of the Construction Documents when close to completion.
	3. Conduct a selective review of contractor submittals of commissioned equipment. (The above three reviews must be performed by a firm other than the designer.)
	4. Develop a recommissioning management manual.

5. Have a contract in place for a near-warranty end or post occupancy review.

Technologies & Strategies

Engage the Commissioning Authority early in project design phases. Task the commissioning agent to conduct project reviews before and after construction documents are complete. The Commissioning Agent must also create a recommissioning manual for the building and review the project at near-warranty end.

Credit 4 **Ozone Depletion**

Intent

Reduce ozone depletion and support early compliance with the Montreal Protocol.

Requirement

Credit 4.0 (1 point) Install base building level HVAC and refrigeration equipment and fire suppression systems that do not contain HCFC's or Halon.

Technologies & Strategies

When reusing buildings, inventory existing building systems using refrigerants and fire suppression chemicals and replace those that contain HCFCs or halons. For new buildings, specify refrigeration and fire suppression systems that use no HCFCs or halons.

1 Point

1 Point Credit 5 Measurement & Verification

Intent

Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.

Requirement

Credit 5.0 (1 point)	Comply with the long term continuous measurement of per- formance as stated in Option B: Methods by Technology of the US DOE's International Performance Measurement and Verification Protocol (IPMVP) for the following:
	-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 specific process energy efficiency systems and equip- ment
	-Indoor water risers and outdoor irrigation systems

Technologies & Strategies

Model the energy and water systems to predict savings. Design the building with equipment to measure energy and water performance. Draft a Measurement & Verification Plan to apply during building operation that compares predicted savings to those actually achieved in the field.

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Credit 6 Green Power

Intent

Encourage the development and use of grid-source energy technologies on a net zero pollution basis.

Requirement

Credit 6.0 (1 point) Engage in a two year contract to purchase power generated from renewable sources that meet the Center for Resource Solutions (CRS) Green-e products certification requirements.

Technologies & Strategies

Estimate the energy needs of the building and investigate opportunities to engage in a green power contract with the local utility. Green power is derived from solar, wind, geothermal, biomass, or low-impact hydro sources.

SS WE EA MR EQ ID Credit 6

1 Point

Materials & Resources

Prerequisite 1

Required

SS WE EA MR EQ ID

Prerequisite 1 Storage & Collection of Recyclables

Intent

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirement

Prerequisite 1.0 Provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, and metals.

Technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area. Identify local waste handlers and buyers for glass, plastic, office paper, newspaper, cardboard, and organic wastes. Instruct occupants on building recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes, and other waste management technologies to further enhance the recycling program.

1-3 Points

Credit 1 Building Reuse

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Reuse large portions of existing structures during renovation or redevelopment projects:

Credit 1.1 (1 point)	Maintain at least 75% of existing building structure and shell (exterior skin and framing excluding window assemblies)
Credit 1.2 (1 point)	Maintain an additional 25% (100% total) of existing building structure and shell (exterior skin and framing excluding window assemblies)
Credit 1.3 (1 point)	Maintain 100% of existing building structure and shell AND 50% non-shell (walls, floor coverings, and ceiling systems)

Technologies & Strategies

Consider reuse of existing buildings, including structure, shell, and non-shell elements. Remove elements that pose contamination risk to building occupants and upgrade outdated components such as windows, mechanical systems, and plumbing fixtures. Quantify the extent of building reuse.

1-2 Points Credit 2 Construction Waste Management

Intent

Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process.

Requirements

Develop and implement a waste management plan, quantifying material diversion by weight. (Remember that salvage may include the donation of materials to charitable organizations such as Habitat for Humanity.)

Credit 2.1 (1 point)	Recycle and/or salvage at least 50% (by weight) of construc- tion, demolition, and land clearing waste
Credit 2.2 (1 point)	Recycle and/or salvage an additional 25% (75% total by weight) of the construction, demolition, and land clearing debris

Technologies & Strategies

Establish goals for landfill diversion and adopt a construction waste management plan to achieve these goals. Consider recycling land clearing debris, cardboard, metals, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet, and insulation. Designate a specific area on the construction site for recycling and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials.

25

Credit 3 Resource Reuse

Intent

Extend the life cycle of targeted building materials by reducing environmental impacts related to materials manufacturing and transport.

Requirements

Credit 3.1 (1 point)	Specify salvaged or refurbished materials for 5% of building materials
Credit 3.2 (1 point)	Specify salvaged or refurbished materials for 10% of building materials

Technologies & Strategies

Identify opportunities to incorporate salvage materials into the building design and research potential material suppliers. Consider salvage materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick, and decorative items.

SS WE EA MR EQ ID Credit 3

1-2 Points

1-2 Points Credit 4 Recycled Content

Intent

Increase demand for building products that have incorporated recycled content materials, therefore reducing the impacts resulting from the extraction of new materials.

Requirements

Credit 4.1 (1 point)	Specify a minimum of 25% of building materials that contain in aggregate, a minimum weighted average of 20% post-con- sumer recycled content material, OR, a minimum weighted average 40% post-industrial recycled content material.
Credit 4.2 (1 point)	Specify an additional 25% (50% total) of building materials that contain in aggregate, a minimum weighted average of 20% post-consumer recycled content material, OR, a minimum weighted average of 40% post-industrial recycled content material.

Technologies & Strategies

Establish a project goal for recycled content materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

Credit 5 Local/Regional Materials

Intent

Increase demand for building products that are manufactured locally, thereby reducing the environmental impacts resulting from their transportation and supporting the local economy.

Requirements

Credit 5.1 (1 point) Specify a minimum of 20% of building materials that are manufactured* regionally within a radius of 500 miles.
Credit 5.2 (1 point) Of these regionally manufactured materials, specify a minimum of 50% that are extracted, harvested, or recovered within 500 miles.
* Manufacturing refers to the *final assembly* of components into the building product that is furnished and installed by the tradesmen. For example, if the hardware comes from Dallas, Texas, the lumber from Vancouver, British Columbia and the joist is assembled in Kent, Washington; then the location of the *final assembly* is Kent, Washington.

Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

SS WE EA MR EQ ID Credit 5

1-2 Points

1 Point Credit 6 Rapidly Renewable Materials

Intent

Reduce the use and depletion of finite raw, and long-cycle renewable materials by replacing them with rapidly renewable materials.

Requirement

Credit 6.0 (1 point) Specify rapidly renewable building materials for **5%** of total building materials.

Technologies & Strategies

Establish a project goal for rapidly renewable materials and identify materials and suppliers that can achieve this goal. Consider materials such as bamboo flooring, wool carpet, strawboard, cotton batt insulation, linoleum flooring, poplar OSB, sunflower seed board, and wheatgrass cabinetry. During construction, ensure that the specified rapidly renewable materials are installed and quantify the total percentage of rapidly renewable materials installed.

29

Credit 7 Certified Wood

Intent

Encourage environmentally responsible forest management.

Requirement

Credit 7.0 (1 point) Use a minimum of **50%** of wood-based materials certified in accordance with the Forest Stewardship Council Guidelines for wood building components including but not limited to structural framing and general dimensional framing, flooring, finishes, furnishings, and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers.

Technologies & Strategies

Establish a project goal for FSC-certified wood products and identify products and suppliers that can achieve this goal. During construction, ensure that the FSC-certified wood products are installed and quantify the total percentage of FSC-certified wood products installed.



1 Point

Indoor Environmental Quality

Required

SS WE EA MR EQ ID

Prerequisite 1

Prerequisite 1 Minimum IAQ Performance

Intent

Establish minimum indoor air quality (IAQ) performance to prevent the development of indoor air quality problems in buildings, maintaining the health and well being of the occupants.

Requirement

Prerequisite 1.0 Meet the minimum requirements of voluntary consensus standard ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality and approved Addenda.

Technologies & Strategies

Design the HVAC system to meet the ventilation requirements of the reference standard. Identify potential IAQ problems on the site and locate air intakes away from contaminant sources.

Prerequisite 2 Environmental Tobacco Smoke (ETS) Control

Intent

Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).

Requirement

Prerequisite 2.0 Zero exposure of nonsmokers to ETS by prohibition of smoking in the building, OR, provide a designated smoking room designed to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room shall be directly exhausted to the outdoors with no recirculation of ETS-containing air to the nonsmoking area of the building, enclosed with impermeable structural deck-to-deck partitions and operated at a negative pressure compared with the surrounding spaces of **at least 7 Pa** (0.03 inches of water gauge).

Performance of smoking rooms shall be verified using tracer gas testing methods as described in the ASHRAE Standard 129-1997. Acceptable exposure in nonsmoking areas is defined as **less than 1%** of the tracer gas concentration in the smoking room detectable in the adjoining nonsmoking areas. Smoking room testing as described in the ASHRAE Standard 129-1997 is required in the contract documents and critical smoking facility systems testing results must be included in the building commissioning plan and report or as a separate document.

Technologies & Strategies

Prohibit smoking in the building or provide separate smoking rooms with isolated ventilation systems.

ss we ea mr eq id Prerequisite 2

Required

1 Point Credit 1 Carbon Dioxide (CO₂) Monitoring

Intent

Provide capacity for indoor air quality (IAQ) monitoring to sustain long-term occupant health and comfort.

Requirement

Credit 1.0 (1 point) Install a permanent carbon dioxide (CO_2) monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments, AND specify initial operational set point parameters that maintain indoor carbon dioxide levels no higher than outdoor levels by more than 530 parts per million at any time.

Technologies & Strategies

Design the HVAC system with carbon dioxide monitoring sensors and integrate these sensors with the building automation system (BAS).

Credit 2 Increase Ventilation Effectiveness

Intent

Provide for the effective delivery and mixing of fresh air to support the health, safety, and comfort of building occupants.

Requirement

Credit 2.0 (1 point) For mechanically ventilated buildings, design ventilation systems that result in an air change effectiveness (E) greater than or equal to **0.9** as determined by ASHRAE 129-1997. For naturally ventilated spaces demonstrate a distribution and laminar flow pattern that involves not less than **90%** of the room or zone area in the direction of air flow for at least **95%** of hours of occupancy.

Technologies & Strategies

Design the HVAC system and building envelope to optimize air change effectiveness. Air change effectiveness can be optimized using a variety of ventilation strategies including displacement ventilation, low-velocity ventilation, plug flow ventilation such as underfloor or near-floor delivery, and operable windows. Test the air change effectiveness of the building after construction.

SS WE EA MR EQ ID Credit 2

1 Point

1-2 Points Credit 3 Construction IAQ Management Plan

Intent

Prevent indoor air quality problems resulting from the construction/renovation process, to sustain long-term installer and occupant health and comfort.

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and preoccupancy phases of the building as follows:

- Credit 3.1 (1 point) During construction meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, AND protect stored on-site or installed absorptive materials from moisture damage, AND replace all filtration media immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999.
 Credit 3.2 (1 point) Conduct a minimum two weak building flush out with power.
- **Credit 3.2** (1 point) Conduct a minimum two-week building flush-out with new filtration media at **100%** outside air after construction ends and prior to occupancy, OR conduct a baseline indoor air quality testing procedure consistent with current EPA Protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445.

Technologies & Strategies

Adopt an IAQ management plan to protect the HVAC system during construction, control pollutant sources, and interrupt pathways for contamination. Sequence installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile, and gypsum wallboard. Prior to occupancy, perform a two-week building flushout or test the contaminant levels in the building.

Credit 4 Low-Emitting Materials

Intent

Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort.

Requirements

Meet or exceed VOC limits for adhesives, sealants, paints, composite wood products, and carpet systems as follows:

Credit 4.1 (1 point)	Adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District Rule #1168 by, AND all sealants used as a filler must meet or exceed Bay Area Air Quality Management District Reg. 8, Rule 51.
Credit 4.2 (1 point)	Paints and coatings must meet or exceed the VOC and chemi- cal component limits of Green Seal requirements.
Credit 4.3 (1 point)	Carpet systems must meet or exceed the Carpet and Rug In- stitute Green Label Indoor Air Quality Test Program.
Credit 4.4 (1 point)	Composite wood and agrifiber products must contain no added urea-formaldehyde resins.

Technologies & Strategies

Specify low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section where adhesives, sealants, paints, coatings, carpet systems, and composite woods are addressed.

SS WE EA MR EQ ID Credit 4

1-4 Points

1 Point Credit 5 Indoor Chemical & Pollutant Source Control

Intent

Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

Requirement

Credit 5.0 (1 point)	Design to minimize cross-contamination of regularly occu-
	pied occupancy areas by chemical pollutants: Employ perma-
	nent entry way systems (grills, grates, etc.) to capture dirt, par-
	ticulates, etc. from entering the building at all high volume en-
	try ways, AND provide areas with structural deck to deck
	partitions with separate outside exhausting, no air recirculation
	and negative pressure where chemical use occurs (including
	housekeeping areas and copying/print rooms), AND provide
	drains plumbed for appropriate disposal of liquid waste in
	spaces where water and chemical concentrate mixing occurs.

Technologies & Strategies

Design separate exhaust and plumbing systems for rooms with contaminants to achieve physical isolation from the rest of the building. Install permanent architectural entryway systems such as grills or grates to prevent occupant-borne contaminants from entering the building.

Credit 6 Controllability of Systems

Intent

Provide a high level of individual occupant control of thermal, ventilation, and lighting systems to support optimum health, productivity, and comfort conditions.

Requirements

Credit 6.1 (1 point)	Provide a minimum of one operable window and one light- ing control zone per 200 SF for all occupied areas within 15 feet of the perimeter wall.
Credit 6.2 (1 point)	Provide controls for each individual for airflow, temperature, and lighting for 50% of the non-perimeter, regularly occupied areas.

Technologies & Strategies

Design the building with occupant controls for airflow, temperature, and lighting. Strategies to consider include task lighting, operable windows, and underfloor HVAC systems with individual diffusers.

SS WE EA MR EQ ID Credit 6

1-2 Points

1-2 Points Credit 7 Thermal Comfort

Intent

Provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants.

Requirements

Credit 7.1 (1 point)	Comply with ASHRAE Standard 55-1992, Addenda 1995 for thermal comfort standards including humidity control within established ranges per climate zone.
Credit 7.2 (1 point)	Install a permanent temperature and humidity monitoring sys- tem configured to provide operators control over thermal comfort performance and effectiveness of humidification and/ or dehumidification systems in the building.

Technologies & Strategies

Establish temperature and humidity comfort ranges and design the building envelope and HVAC system to maintain these comfort ranges. Install and maintain a temperature and humidity monitoring system in the building to automatically adjust building conditions as appropriate.

Credit 8 Daylight & Views

Intent

Provide a connection between indoor spaces and outdoor environments through the introduction of sunlight and views into the occupied areas of the building.

Requirement & Submittals

- **Credit 8.1** (1 point) Achieve a minimum Daylight Factor of **2%** (excluding all direct sunlight penetration) in **75%** of all space occupied for critical visual tasks, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas. Exceptions include those spaces where tasks would be hindered by the use of daylight or where accomplishing the specific tasks within a space would be enhanced by the direct penetration of sunlight.
- **Credit 8.2** (1 point) Direct line of sight to vision glazing from **90%** of all regularly occupied spaces, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas.

Technologies & Strategies

Design the building to maximize daylighting and view opportunities. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior shading devices, high performance glazing, and photo-integrated light sensors. Model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved.

1-2 Points

Innovation & Design Process

1-4 Points

Credit 1 Innovation in Design

Intent

To provide design teams and projects the opportunity to be awarded points for exceptional performance above requirements set by the LEED Green Building Rating SystemTM and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating SystemTM.

Requirements

Credit 1.1 (1 point)	In writing, using the LEED TM Credit Equivalence process, identify the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submit-tals to demonstrate compliance, and the design approach used to meet the required elements.
Credit 1.2 (1 point)	Same as Credit 1.1.
Credit 1.3 (1 point)	Same as Credit 1.1.
Credit 1.4 (1 point)	Same as Credit 1.1.

Technologies & Strategies

Substantially exceed a LEEDTM performance credit such as energy performance or water efficiency. Apply strategies or measures that are not covered by LEEDTM such as acoustic performance, education of occupants, community development, or life-cycle analysis of material choices.

Credit 2 LEEDTM Accredited Professional

Intent

To support and encourage the design integration required by a LEEDTM Green Building project and to streamline the application and certification process.

Requirement

Credit 2.0 (1 point) At least one principal participant of the project team that has successfully completed the LEEDTM Accredited Professional exam.

Technologies & Strategies

Attend a LEEDTM Accredited Professional Training Workshop and successfully pass the LEEDTM accreditation exam.

