
Leed Rating System for Green Buildings

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Credit: 6 PDH

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LEED™ RATING SYSTEM FOR GREEN BUILDINGS

Building sector is witnessing a significant shift toward greening and sustainability. To reduce resource dependency and carbon footprint many organizations today are interested in designing their buildings to be LEED (Leadership in Energy and Environmental Design) certified; a designation developed by the U.S. Green Building Council (USGBC).

Why Design Green?

1. Buildings in the U.S. consume more than 30% of total energy and 60% of electricity annually.
2. Buildings consume 5 billion gallons of potable water per day to flush toilets.
3. A typical North American commercial construction project generates 2.5 pounds of solid waste per square foot of floor space.
4. Studies of workers in green buildings reported productivity gains of up to 16%.
5. About ¼ of the increase in carbon dioxide is due to the building sector, Energy efficiency may reduce this by 50%.
6. Buildings consume 40% of raw stone, gravel and sand, and 25% of virgin wood.
7. Building related sickness may cost between \$60 and 400 billion per year.
8. People spend as much as 90% of their time indoors.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED-based green design not only makes a positive impact on public health and the environment, it also reduces operating costs, enhances building and organizational marketability, potentially increases occupant productivity, and helps create a sustainable community. The LEED Rating System typically recognizes performance in six key areas of human and environmental health:

1. Sustainable Sites
2. Water Efficiency
3. Energy & Atmosphere
4. Materials and Resources
5. Indoor Environmental Quality
6. Innovation & Design Process

Factoids by LEED Category

Sustainable Sites

- Vehicles are responsible for approximately 20% of U.S. greenhouse gases annually.

Water Efficiency

- 340 billion gallons of fresh water are withdrawn per day from rivers, streams, and reservoirs to support residential, commercial, industrial, agricultural, and recreational activities.
- Almost 65% of water taken is discharged back to bodies of water after use.

- Annual water deficiency for the US is 3,700 billion gallons.
- US industries today use 36% less water than in 1950 due to reuse and Energy Policy Act of 1992 mandating water conserving plumbing.
- Water consumption rose 6 fold in the last century – double the rate of population.

Energy & Atmosphere

- Coal-fired electric utilities produce almost 1/3 the total emission of nitrogen oxide by US citizens.
- Fundamental commissioning can increase building energy efficiency from 5-10%.
- Buildings with measurement and verification programs save 10 to 20% the electricity of buildings without.
- “Lost Productivity” is equated with 20% of occupants complaining 30 minutes per month.
- Occupancy sensors may save up to 60% of light energy costs in a building.

Materials & Resources

- 4% of US old growth forest remains.
- 20% of the world’s large ancient forests remain intact.
- 90% of residential construction is wood.
- 40% of the waste stream is due to construction and demolition.
- Recycling an aluminum can uses 5% of the energy needed to create a new can out of virgin mined aluminum.

Indoor Environmental Quality

- A well-designed day-lit building is estimated to reduce energy use by 50% to 80%.

LEED certification

LEED certification is obtained after submitting an application documenting compliance with the requirements of the rating system as well as paying registration and certification fees. Certification is granted solely by the Green Building Council responsible for issuing the LEED system used on the project. Fortunately, LEED is a very user-friendly system. In fact, a major contributor to the success of LEED is the simplicity of its credit/point-based the rating system. For each credit, the LEED standard identifies the detailed intent, requirements, and technologies or strategies to achieve the credit. One or more points are available within each credit, and points are achieved by meeting specified requirements.

Different LEED versions have varied scoring systems based on a set of required "prerequisites" and a variety of "credits" in the six major categories listed above. In LEED version 2.2 (v2.2) for new construction and major renovations for commercial buildings there are 69 possible points and buildings can qualify for four levels of certification:

1. **Certified** – 26 to 32 points
2. **Silver** – 33 to 38 points
3. **Gold** – 39 to 51 points
4. **Platinum** – 52 to 69 points

Clearly, higher levels of distinction are achieved based on the points accrued.

Green building professionals can also become LEED accredited professional (LEED AP) through the LEED Accredited Professional Exam. LEED AP certification draws people from all walks of life and there is no prerequisite qualification required to challenge the exam. However don't make the mistake of assuming the LEED AP is a casual credential; it requires an in-depth of understanding of the prescribed material. Underestimating the level of knowledge required is the number one reason the test has such a high failure rate (20% - 35% first time pass rate).

This course provides knowledge of LEED Rating System in easy Q & A format. The course includes seven sections covering a basic overview and the description of six LEED categories. This document is a constant work in progress and if you see something that should be in this list, please let us know.

SECTION – 1
OVERVIEW

LEED is a national standard developed by the United States Green Building Council (USGBC) to certify sustainable buildings. Since its inception in 1998, LEED has grown to encompass over 14,000 projects in 50 US States and 30 countries covering 1.062 billion square feet (99 km²) of development area. The hallmark of LEED is that it is an open and transparent process where the technical criteria proposed by the LEED committees are publicly reviewed for approval by the more than 10,000 membership organizations that currently constitute the USGBC.

No.	Questions	Answers
1	What does LEED stand for?	Leadership in Energy and Environmental Design.
2	What is LEED certification?	LEED certification is a credit-based rating system, with different levels of certification awarded for various tiers of credits earned. Each credit is intended to address a specific environmental impact of a building. Certification is granted solely by the Green Building Council responsible for issuing the LEED system used on the project.
3	Why LEED certification?	<p>LEED rating demonstrates a commitment to sustainability by meeting the highest performance standards. LEED certified buildings have following benefits:</p> <ul style="list-style-type: none"> • Use key resources more efficiently. • Contribute to healthier work environment, higher productivity and comfort. • Enhances asset value over time. • Encourage innovation of new technologies, products, materials and equipment. • Establish national leadership in the building industry and marketplace. • Validate achievement through third party review process. • Qualify for growing array of state and local government incentives. • Contribute to growing green building knowledge base.
4	What are the various LEED programs?	<p><u>LEED Rating Programs</u></p> <p>The USGBC operates 10 LEED Green Building Rating Programs for specific project types:</p> <ul style="list-style-type: none"> • LEED for New Construction (LEED-NC) • LEED for Existing Buildings (LEED-EB) • LEED for Commercial Interiors (LEED-CI) • LEED for Core & Shell (LEED-CS) • LEED for Schools • LEED for Retail-New Construction

		<ul style="list-style-type: none"> • LEED for Retail and Commercial Interiors • LEED for Healthcare • LEED for Homes • LEED for Neighborhood Development <p>LEED-NC (for New Construction) v2.2 is the most widely used standard.</p>																																			
5	What are the various categories to which LEED credits are assigned?	<p>LEED rating system awards points in six (6) categories.</p> <table border="1"> <thead> <tr> <th><u>LEED Categories</u></th> <th><u>Points</u></th> <th><u>Contribution</u></th> </tr> </thead> <tbody> <tr> <td>1. SS – Sustainable Sites:</td> <td>14</td> <td>20%</td> </tr> <tr> <td>2. WE - Water Efficiency:</td> <td>5</td> <td>7%</td> </tr> <tr> <td>3. EA - Energy and Atmosphere:</td> <td>17</td> <td>25%</td> </tr> <tr> <td>4. MR - Materials and Resources:</td> <td>13</td> <td>19%</td> </tr> <tr> <td>5. EQ - Indoor Environmental Quality:</td> <td>15</td> <td>22</td> </tr> <tr> <td>6. ID – Innovation and Design Process:</td> <td>5</td> <td>7%</td> </tr> <tr> <td>Total</td> <td>69</td> <td>100%</td> </tr> </tbody> </table> <p>There are 69 total LEED points.</p> <p>Energy and Atmosphere category is the largest contribution of 25%. The project team can select which credits are most relevant to their project, since not all credits are always attainable for all projects.</p>	<u>LEED Categories</u>	<u>Points</u>	<u>Contribution</u>	1. SS – Sustainable Sites:	14	20%	2. WE - Water Efficiency:	5	7%	3. EA - Energy and Atmosphere:	17	25%	4. MR - Materials and Resources:	13	19%	5. EQ - Indoor Environmental Quality:	15	22	6. ID – Innovation and Design Process:	5	7%	Total	69	100%											
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6	What is defined in each category?	<p>Depending on the nature and use of the building, each rating category has prerequisites and credits. There are <u>NO</u> points awarded for prerequisites but these <u>must</u> be completed. To prerequisites there are numerous credits with points assigned to each. Arrange prerequisites and points in ascending order and learn word “WIMSEE” to remember LEED requirements:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Acronym</th> <th><u>Prerequisites</u></th> <th><u>Points</u></th> <th>Credits</th> </tr> </thead> <tbody> <tr> <td>Water Efficiency</td> <td>W</td> <td>0</td> <td>5</td> <td>3</td> </tr> <tr> <td>Innovation and Design Process</td> <td>I</td> <td>0</td> <td>5</td> <td>2</td> </tr> <tr> <td>Materials and Resources</td> <td>M</td> <td>1</td> <td>13</td> <td>7</td> </tr> <tr> <td>Sustainable Sites</td> <td>S</td> <td>1</td> <td>14</td> <td>8</td> </tr> <tr> <td>Indoor Environmental Quality</td> <td>EQ</td> <td>2</td> <td>15</td> <td>8</td> </tr> <tr> <td>Energy and Atmosphere</td> <td>EA</td> <td>3</td> <td>17</td> <td>6</td> </tr> </tbody> </table>	Categories	Acronym	<u>Prerequisites</u>	<u>Points</u>	Credits	Water Efficiency	W	0	5	3	Innovation and Design Process	I	0	5	2	Materials and Resources	M	1	13	7	Sustainable Sites	S	1	14	8	Indoor Environmental Quality	EQ	2	15	8	Energy and Atmosphere	EA	3	17	6
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7	What is the point structure for LEED-NC ratings?	<p>The level of LEED certification obtained is determined by the number of credits achieved.</p> <p>Four LEED certification levels are available:</p> <ol style="list-style-type: none"> 1) Certified : 26 – 32 points 2) Silver : 33 – 38 points 3) Gold 39 – 51 points 4) Platinum 52 – 69 points <p>Note that each rating program is unique in the number of points required to achieve the levels. For example, LEED for New Construction or LEED-NC requires 26 points for Certified, 33 points for Silver, 39 points for Gold, and 52 points for platinum. A brief overview of the categories and examples of how credits are achieved (LEED-NC) is provided in subsequent sections. Consult the LEED rating programs (www.usgbc.org) for specific details about each available credit including possible methods to achieve the points.</p>
8	What is the minimum credit rating required for LEED-NC certification?	The project is a viable candidate for LEED Certification if it can meet all prerequisites and achieve a minimum of 26 points.
9	What must first be satisfied to achieve points in most categories?	<p>Prerequisites.</p> <p>Prerequisites are applicable to most categories, but not all (for example “Water Efficiency” and “Innovation and Design Process”).</p>
10	Can a project be certified without satisfying all prerequisites?	<p>NO.</p> <p>All prerequisites must be satisfied for a project to be certified.</p>
11	What is included in the pre-requisites?	<p>Each prerequisite defines:</p> <ul style="list-style-type: none"> • Intent • Requirements • Documentation • Referenced Standards • Design or Construction Phase Submission
12	What should you know about Pre-requisites?	<ul style="list-style-type: none"> • There are 7 prerequisites which are not evenly distributed among the (6) categories. ALL prerequisites must be earned in order to earn any credits. Even if you score well over the number of credits required, just missing one prerequisite will mean that your project will not qualify for any certification level. • There are <u>NO</u> points awarded for prerequisites
13	What is included in the Credits?	<p>Each credit/point defines:</p> <ul style="list-style-type: none"> • Intent • Requirements

		<ul style="list-style-type: none"> • Documentation • Referenced Standards • Design or Construction Phase Exemplary Performance level if any
14	What should you know about Credits?	<p>Absolutely know all the percentages and levels of performance required for each LEED credit.</p> <p>Also note that while EA credit 1 (energy optimization) is not a pre-requisite, it is mandatory to earn at least two points.</p>
15	Whether LEED certification achieved through self evaluation?	<p>NO</p> <p>Third-party review for certification is required.</p>
16	How many user-defined innovative design credits are available?	4 points
17	LEED for New Construction (NC) was developed as a rating system targeted at what types of projects?	New commercial construction and major renovations.
18	LEED for Commercial Interiors (CI) was developed as a rating system targeted at what types of projects?	Tenant and designer implemented improvements.
19	LEED for Existing Buildings (EB) was developed as a rating system targeted at what types of projects?	The implementation of sustainable operations and maintenance practices for owners and operators of existing buildings.
20	Who grants the LEED certification?	Certification is granted solely by the Green Building Council responsible for issuing the LEED system used on the project.
21	What is LEED certification process?	<p>The typical certification is a three-step process for projects under USGBC:</p> <ul style="list-style-type: none"> • Project Registration LEED on-line, LEED templates/project check list, submittals etc. • Technical Review & Support Reference package, credit inquires and interpretation rulings. • Building Certification Award Upon documentation submittal and USGBC review.
22	What is the first step	The first step toward earning LEED Certification is online

	towards LEED certification?	<p>registration via USGBC website (prior to construction).</p> <p>Once registered, project teams receive information, tools, and communication that will help guide through the certification process. Registration provides access to 4 sections of Credit Templates:</p> <ul style="list-style-type: none"> • Template status • Manage template • Required documents • Documentation status
23	How much fee is applicable towards registration?	<p>LEED registration is a flat fee paid up front at the time of registration. The rates are:</p> <ul style="list-style-type: none"> • Members \$450.00 • Non-Members \$600.00
24	When should you register?	<ul style="list-style-type: none"> • Registration during early phases of project design ensures maximum potential for achieving certification. • Registration establishes point of contact with USGBC and provides access to essential information, software tools and communications. • Registration also provides access to a database of existing Credit Interpretation Requests and Rulings.
25	What feature of NC v2.2 allows for split submittal of credits for review?	Web-based LEED Online submittals.
26	What is the procedure for LEED certification?	<p>LEED certification is obtained after submitting an application documenting compliance with the requirements of the rating system as well as paying registration and certification fees. A project must satisfy all prerequisites and earn a minimum number of points outlined in the LEED Rating System under which it is registered.</p> <p>The certification review process includes the following:</p> <ul style="list-style-type: none"> • Application Submittal • Administrative Review • Technical Review • Award • Schedule
27	What are the requirements of application submittal?	<p>The project team submits two copies of the project application and the corresponding fee to the LEED Certification Manager. A complete application includes the following:</p> <ul style="list-style-type: none"> • The printed LEED Letter Template and requested submittals for each prerequisite and credit, separated by tabs (LEED Version 2.1 Letter Template Excel document is required on a CD for Version 2.1 submittals). • LEED registration information, including project

		<p>contact, project type, project size, number of occupants, date of construction completion, etc.</p> <ul style="list-style-type: none"> • A complete LEED-Online submittal must include the following: <ul style="list-style-type: none"> ○ Overall project narrative including at least three project highlights. ○ The LEED Project Checklist/Scorecard indicating projected prerequisites and credits and the total score for the project (If mixed submittal, LEED v2.0 credits are to be noted as such in LEED v2.1 Letter Template Credit Summary or similar format.); and ○ Drawings and photos (8.5x11 or 11x17) illustrating the project, including: <ul style="list-style-type: none"> - Site plan - Typical floor plan - Typical building section - Typical or primary elevation - Photo or rendering of the project
28	Explain the Administrative Review Process.	An administrative compliance review is made by USGBC's LEED committee and takes almost a week after the receipt of the application. Each document is reviewed for compliance and completeness. If the documentation is insufficient, the project contact is notified of the deficiencies. The technical review begins when the issues raised by the administrative review are resolved.
29	Explain the Technical Review Process.	Within two weeks of administrative approval, the USGBC issues a Preliminary LEED Review document noting points earned, pending and rejected. The project team has 30 days from the receipt of the preliminary review to provide corrections and/or additions to the application. The USGBC conducts a Final LEED Review of the application within 30 days of receiving the resubmittal and recommends a final application score to the LEED Steering Committee. The LEED Steering Committee accepts or rejects the recommended final application score within two weeks of receipt and notifies the project contact of the LEED Certification.
30	Explain the LEED certification Award process.	Upon notification of the LEED Certification, the project team has 30 days to accept or appeal the awarded certification. Upon the project's acceptance, or if it has not appealed the rating within 30 days, the LEED Certification is final. The project may then be referred to as a LEED Certified Green Building. The USGBC presents the project team with a certificate and a metal LEED plaque indicating the certification level. The appeal fee is \$500 per credit

		appealed.																												
31	What is the submittal schedule for documentation?	<p>Once a project is registered, the project team begins to prepare documentation and calculations to satisfy the prerequisite and credit submittal requirements.</p> <p>LEED NC V2.2 defines the submittal schedule as follows:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Acronym</th> <th>Credits</th> <th>Submittals Stage</th> </tr> </thead> <tbody> <tr> <td>Water Efficiency</td> <td>W</td> <td>3</td> <td>All Design</td> </tr> <tr> <td>Innovation and Design Process</td> <td>I</td> <td>2</td> <td>Design – 1Cs Construction – 2C</td> </tr> <tr> <td>Materials and Resources</td> <td>M</td> <td>7</td> <td>All Construction</td> </tr> <tr> <td>Sustainable Sites</td> <td>S</td> <td>8</td> <td>All Design except Construction - P1, C5.1, C7.1</td> </tr> <tr> <td>Indoor Environmental Quality</td> <td>EQ</td> <td>8</td> <td>All Design except C3s and C4s</td> </tr> <tr> <td>Energy and Atmosphere</td> <td>EA</td> <td>6</td> <td>All Design except– P1, C3, C5, C6</td> </tr> </tbody> </table>	Categories	Acronym	Credits	Submittals Stage	Water Efficiency	W	3	All Design	Innovation and Design Process	I	2	Design – 1Cs Construction – 2C	Materials and Resources	M	7	All Construction	Sustainable Sites	S	8	All Design except Construction - P1, C5.1, C7.1	Indoor Environmental Quality	EQ	8	All Design except C3s and C4s	Energy and Atmosphere	EA	6	All Design except– P1, C3, C5, C6
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32	How much time does it take for certification process?	<p>The number of business days allocated to each phase in the Certification Process:</p> <ul style="list-style-type: none"> • Prelim Review by USGBC (25 business days) • Project Team Response (25 business days) • Final Review by USGBC (15 business days) • Appeal by Project Team (25 days) • Review of Appeal by USGBC (25 days) <p>The official certification date of the project is the date USGBC receives notice of a project team's acceptance of the Final LEED Review. USGBC will then contact the project team regarding fulfillment details, including their certificate and LEED plaque.</p>																												
33	Can the certification schedule be compressed?	<p>The USGBC offers a compressed review schedule to accommodate project dedications, media events or other celebrations. The project's specific time constraint must be noted at the time of application and accompanied by a check for double the certification fee.</p> <p>The RUSH schedule is two weeks for Preliminary LEED Review, two weeks for the project to resubmit for final review, and two weeks for Final LEED Review (for a minimum of 6 weeks from receipt of the complete project application).</p>																												
34	Do you have to pay additional fees for LEED	YES.																												

	certification?	<p>The certification fee is based on the rating system that the project is certifying (NC, EB, CS, etc.), and the size of the project. The table below outlines the rates.</p> <table border="1" data-bbox="630 310 1399 997"> <thead> <tr> <th>Category</th> <th>Less than 50,000 Square Feet</th> <th>50,000-500,000 Square Feet</th> <th>More than 500,000 Square Feet</th> </tr> </thead> <tbody> <tr> <td>LEED for: New Construction, Commercial Interiors, Schools, and Core & Shell full certification</td> <td>Fixed Rate</td> <td>Based on Square Footage</td> <td>Fixed Rate</td> </tr> <tr> <td colspan="4">Design Review</td> </tr> <tr> <td>Members</td> <td>\$1,250.00</td> <td>\$0.025 / sq-ft</td> <td>\$12,500.00</td> </tr> <tr> <td>Non-Members</td> <td>\$1,500.00</td> <td>\$0.030 / sq-ft</td> <td>\$15,000.00</td> </tr> <tr> <td colspan="4">Construction Review</td> </tr> <tr> <td>Members</td> <td>\$500.00</td> <td>\$0.010 / sq-ft</td> <td>\$5,000.00</td> </tr> <tr> <td>Non-Members</td> <td>\$750.00</td> <td>\$0.015 / sq-ft</td> <td>\$7,500.00</td> </tr> <tr> <td colspan="4">Combined Design & Construction Review</td> </tr> <tr> <td>Members</td> <td>\$1,750.00</td> <td>\$0.035 / sq-ft</td> <td>\$17,500.00</td> </tr> <tr> <td>Non-Members</td> <td>\$2,250.00</td> <td>\$0.045 / sq-ft</td> <td>\$22,500.00</td> </tr> </tbody> </table> <p>Certification fee is waived, if project receives Platinum LEED Certification.</p>	Category	Less than 50,000 Square Feet	50,000-500,000 Square Feet	More than 500,000 Square Feet	LEED for: New Construction, Commercial Interiors, Schools, and Core & Shell full certification	Fixed Rate	Based on Square Footage	Fixed Rate	Design Review				Members	\$1,250.00	\$0.025 / sq-ft	\$12,500.00	Non-Members	\$1,500.00	\$0.030 / sq-ft	\$15,000.00	Construction Review				Members	\$500.00	\$0.010 / sq-ft	\$5,000.00	Non-Members	\$750.00	\$0.015 / sq-ft	\$7,500.00	Combined Design & Construction Review				Members	\$1,750.00	\$0.035 / sq-ft	\$17,500.00	Non-Members	\$2,250.00	\$0.045 / sq-ft	\$22,500.00
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35	Do you get LEED credits after design phase?	<p>NO</p> <p>After design phase - USGBC marks each credit as credit anticipated or credit denied. They cannot actually reward credits after the design phase.</p>																																												
36	Do you get LEED credits after construction phase?	<p>YES</p> <p>After construction phase - USGBC makes a ruling on each credit as credit achieved or credit denied.</p>																																												
37	What is a CIR?	<p>Credit Interpretation Request</p> <p>In some cases, project teams may encounter questions about meeting the requirements of a LEED prerequisite or credit on a specific project. If it is unclear whether or not a strategy applies to a given credit, a credit interpretation request (CIR) can be submitted and the ruling will determine the suitability of the approach.</p>																																												
38	When should you submit a CIR?	<p>The recommended procedure for reviewing credit questions is outlined below:</p> <ul style="list-style-type: none"> • Consult the LEED Reference Guide for a detailed description of the credit intent and requirements. • Check online resource for previous logged CIR by 																																												

		<p>other projects on relevant credits first. All LEED project contacts have access to this page.</p> <ul style="list-style-type: none"> • Only if a similar credit interpretation has not been logged or does not answer your inquiry sufficiently, then a new CIR via <i>LEED-Online</i> should be submitted.
39	How much time it takes for CIR?	Normally, an official ruling by the USGBC Credit Ruling Committee will be posted to the Credit Interpretation Rulings page within three weeks.
40	Who is eligible to raise a CIR?	CIRs can only be requested by LEED Registered Project Team Members.
41	Is there a fee for CIR?	<p>2 interpretation rulings are provided for free through the USGBC.</p> <p>Each additional CIRs attracts fees of \$220.</p>
42	Who can view the CIRs?	CIRs can be viewed by all USGBC members, non-members with registered projects, and workshop attendees.
43	When submitting a CIR what should you focus on?	<p>CIRs should be succinct and based on information found in the Reference Guide, with emphasis on the intent of the prerequisite or credit. If possible the project team should offer potential solutions to the problem.</p> <ul style="list-style-type: none"> • Each CIR should refer to only one LEED credit and one primary related strategy. The inquiry should only include essential project strategy and background information and should be presented in the context of the credit intent (600 words maximum). When you submit a credit for consideration for which you have made a CIR ruling request, include both the request and the ruling with your submission. • Submissions of drawings, cut-sheets, or other attachments are NOT permitted.
44	Does project receive a credit point at the time the CIR request is approved?	<p>NO</p> <p>CIR rulings will never guarantee or award any credits - it just provides specific information regarding applicability.</p> <p>The CIR request and ruling must be submitted with the other relevant LEED Online documentation.</p>
45	If you are unclear about a credit, where do you look first?	Reference Guide
46	What are the different avenues of technical assistance for interpreting LEED?	<ul style="list-style-type: none"> • LEED Reference Guide • Access to Posted Credit Interpretation Rulings • LEED Training Workshop

47	Can project team appeal against the award ruling?	<p>YES</p> <p>If a project team feels that sufficient grounds exist to appeal a credit that has been denied in the Final LEED Review, it has the option to appeal.</p> <ul style="list-style-type: none"> • Appeals are \$500 per credit. • You have 25 days to appeal after Final LEED Review. • Appeal submittals are all done via LEED-Online. • Because review will be done by a different review team, appeals must include the LEED registration information, including project contact, project type, project size, number of occupants, date of construction completion, and other relevant documents submitted during the certification process.
48	What does LEED AP mean?	AP stands for accredited professional. This certification is for any building professional who has successfully passed the LEED accredited professional status examination.
49	Does the LEED-AP on the design team sign the Letter Templates?	Only when they are the responsible party for the credit.
50	How are the LEED AP exams administered?	The LEED AP exams are administered in the US and territories by the Green Building Certification Institute (GBCI). The computer based exam is given in a multiple-choice format and is administered at computer testing centers. Examinees may choose to take one of the three different exam tracks (New Construction, Existing Buildings, or Commercial Interiors).
51	How is LEED AP Exam Structured?	<p>There are 4 basic “sections” within the LEED AP Exam format that you’ll be tested on:</p> <ul style="list-style-type: none"> • Knowledge of LEED Credit Intents and Requirements • Coordinate Project and Team • Implement LEED Process • Verify, Participate in, and Perform Technical Analysis Required for LEED Credits <p>The exam will test your knowledge of LEED standards, synergies, strategies and intent.</p>
52	What are the different exam tracks for the current LEED exams?	<p>There are three different exam tracks for the LEED AP. You only need to pass one to earn your credential.</p> <ul style="list-style-type: none"> • LEED for New Construction, version 2.2 • LEED for Commercial Interiors, version 2.0 • LEED for Existing Buildings, version 2.0
53	What will the different specialty exam tracks be	There will be five different specialty exam tracks for the upcoming LEED AP+ credentialing program. You only need

	for the new upcoming LEED AP+ credentialing program?	<p>to pass one to earn your credential.</p> <ul style="list-style-type: none"> • LEED AP+ Building Design and Construction exam (formerly called the LEED for New Construction exam) • LEED AP+ Interior Design and Construction exam (formerly called the LEED for Commercial Interiors exam) • LEED AP+ Operations and Maintenance exam (formerly called the LEED for Existing Buildings exam) • LEED AP+ Homes exam (this is a new exam track) • LEED AP+ Neighborhood Development exam (this is a new exam track) <p>Please note that you will need to take and pass the LEED Green Associate exam prior to, or in conjunction with, a specialty exam in order to qualify for the LEED AP+ credential.</p>
54	Which exam track should I take?	It is best to take the exam track that covers topics you are familiar with. To learn more about each exam track visit the GBCI website.
55	Who can become LEED AP?	<p>Commonly engineers or architects who have studied LEED requirements, goals and strategies, but there are no experience requirements. Anybody can take the exam.</p> <p>Individuals recognized for their knowledge of the LEED rating system are permitted to use the LEED Accredited Professional (AP) acronym after their name, indicating they have passed the accreditation exam.</p>
56	How do I apply to take a LEED AP exam?	To register go to the GBCI website and download the Candidate Handbook to get information about scheduling, exam preparation, test-day procedures, and more. The Candidate Handbook will provide you with information on how to schedule an appointment at a testing center near you. The appointments are given on a first come first serve basis.
57	What is the format and time limit?	<p>The current LEED exams are computer-based and multiple choice. You are allowed to complete the exam in two hours.</p> <p>The exam is closed book.</p>
58	How is the exam scored?	<p>The exam is graded by computer.</p> <p>You must pass a 100 question exam and receive a score of 170/200 points.</p>
59	What does LEED AP do?	This accreditation enables an individual to facilitate the rating of buildings with the various LEED systems. LEED accredited professionals guide design and construction teams through the LEED process and offer ideas and strategies in achieving LEED ranking.

60	What reference books are available?	<p>The LEED-NC Reference Guide V 2.2 – This contains extensive background information and detailed guidance for meeting the requirements LEED for New Construction. The guide contains every LEED point in detail and includes not only information on fulfilling the requirements of the rating system, but also case studies, calculation methods, and other resources.</p> <p>There are going to be quite a few questions dealing with “who does what”, or how the certification process works, which isn’t directly mentioned in the reference guide. Many of these answers are found online at the USGBC website - you just have to fish for them.</p>
61	Is there an International LEED Rating System?	<p>The World Green Building Council has been developed to represent Green Building Councils throughout the world. There are currently nine member countries six of which have their own rating systems.</p> <ul style="list-style-type: none"> • United States – LEED • Canada – LEED Canada • United Kingdom – BREEAM • India – LEED India • Japan – CASBEE (Comprehensive Assessment System for Building Environmental Efficiency) • Mexico • New Zealand • Taiwan • United Arab Emirates
62	What is difference between certification and accrediting?	<p>People are accredited, buildings are certified.</p>

SECTION – 2
SUSTAINABLE SITES

Sustainability is a holistic approach to designing and building. The main goals of *sustainable design* are to reduce depletion of resources including energy, water, and raw materials; minimize environmental damage caused by buildings and facilities throughout their life; and create better building environments. In a rather simplistic explanation, sustainable practices tend to promote energy efficiency and the use of products that are safer, renewable/ recyclable and reduce harmful waste in their production. The local climate, geography and socio economic factors all have to be taken into account when designing a green sustainable building. For example, take a case of straw bale wall construction in a region devoid of straw. Sure, the wall will function well from an insulating stand point but if you trucked in the straw bales from hundreds/ thousands of miles or airlifted it in, how sustainable was that? Imagine all the fuel burned and the pollutants released. If there was an abundance of soil and concrete, rammed earth could have been better choice.

Achieving an effective sustainable design requires a collaborative process engaging the multiple design disciplines, as well as users, construction managers, contractors and facility managers. The merging of ideas, perspectives and areas of expertise facilitated by an open communications process reaps multiple benefits, as the project team moves from the optimization of single systems in isolation to the optimization of the entire building enterprise. Establishing vertical support throughout the organization helps ensure success.

This category of credits is intended to reduce environmental damage, pollution and other harmful effects due to building construction.

No.	Questions	Answers
1	What do SS stand for?	Sustainable Sites
2	What are the goals of Sustainable Development?	<ul style="list-style-type: none"> • Maintain and restore site biodiversity. • Minimize site development footprint. • Reduce storm water run-off. • Eliminate toxic chemical application for pest and vegetative control. • Optimize design for the local micro-climate and reduce dependence on mechanical systems for building operations. • Reduce reliance on single-occupancy vehicles. • Integrate design and orient building to take advantage of local micro-climate for heating, cooling, shading, ventilation and daylighting. • Eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments.
3	How many prerequisites, credits and points are there in the Sustainable Sites?	Prerequisite – 1 Credits - 8 Points - 14

No.	Questions	Answers
4	Name the Prerequisites in the SS Section	SS P1 – Construction Activity Pollution Prevention
5	Name the Credits in the SS Section	SS Credit 1 – Site Selection (1 point) SS Credit 2 – Development Density and Community Connectivity (1 point) SS Credit 3 – Brownfield Development (1 point) SS Credit 4 – Alternative Transportation (4 points) SS Credit 5 – Site Development (2 points) SS Credit 6 – Stormwater Design (2 points) SS Credit 7 – Heat Island Effect (2 points) SS Credit 8 – Light Pollution Reduction (1 point)
6	What percentage SS contributes to overall LEED credit points?	20% [14 / 69 x 100]
	SS PREREQ	
7	How many prerequisites, are there in the Sustainable Sites?	One
8	SS PREREQ 1 What is the SS prerequisite 1?	Construction Activity Pollution Prevention
9	SS PREREQ 1 What is the intent of the SS prerequisite?	Reduce pollution from construction activities by controlling <ul style="list-style-type: none"> • Soil erosion • Waterway sedimentation and • Airborne dust generation
10	SS PREREQ 1 What are the requirements and the documents that define best management practices for the SS prerequisite?	<u>Option 1</u> Create and implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project that conforms to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit [refer EPA Document No. EPA 832R92005, Storm Water Management for Construction Activities, Chapter 3] <u>Option 2</u> Local erosion and sedimentation control standards and codes, whichever is more stringent. Prepare a Site Access and Utilization Plan to minimize site disruption associated with the project's construction phase.

No.	Questions	Answers
11	SS PREREQ 1 An erosion and sedimentation control plan must meet what objectives?	<ul style="list-style-type: none"> • Prevent loss of soil during construction. • Preventing run-off from entering aquatic bodies with potential for sedimentation • Prevent human exposure to waterborne pollutants and toxic chemicals • Prevent dispersion of dust and particulate matter that can exacerbate respiratory illnesses.
12	SS PREREQ 1 What are strategies that might be incorporated into a site erosion and sedimentation control plan?	Ways to control erosion and sedimentation: <ul style="list-style-type: none"> • Stabilization: i.e. seeding and mulching • Structural: i.e. silt fences, earth dikes, sediment traps
13	SS PREREQ 1 What codes and standards apply to SS prerequisite 1?	<ul style="list-style-type: none"> • EPA 2003 • NPDES
SS CREDITS		
14	How many credits are there in the Sustainable Sites?	8 credits SS Credit 1 – Site Selection (1 point) SS Credit 2 – Development Density and Community Connectivity (1 point) SS Credit 3 – Brownfield Development (1 point) SS Credit 4 – Alternative Transportation (4 points) SS Credit 5 – Site Development (2 points) SS Credit 6 – Stormwater Design (2 points) SS Credit 7 – Heat Island Effect (2 points) SS Credit 8 – Light Pollution Reduction (1 point)
15	What do SS Credits emphasize?	SS credits emphasize the environmental impact of the structure that is impacted by site selection and management. These are earned by minimizing pollution sources, building into an existing urban area, conserving undeveloped land, promoting natural habitats, encouraging methods of alternative transportation, managing stormwater, and diminishing the temperature differences between developed and undeveloped areas.
16	SS CREDIT 1 What is SS Credit 1 called?	Site Selection
17	SS CREDIT 1 What is the intent of the Site	<ul style="list-style-type: none"> • To avoid development of inappropriate sites • To reduce the environmental impact from the location of a building on a site.

No.	Questions	Answers
	Selection Credit?	
18	SS CREDIT 1 What are some strategies to consider minimizing site disruption?	Give preference to sites that are not environmentally sensitive or restrictive land types. Set aside large contiguous areas for natural space on the project site to minimize disruption of environmentally sensitive areas. Stacking the building program, tuck-under parking, and share facilities with neighbors in order to limit the development footprint and site disturbance to the smallest area possible
19	SS CREDIT 1 How many points are available for Site Selection?	One
20	SS CREDIT 1 What are some characteristics of sites inappropriate for sustainable development?	DO NOT develop on sites: <ul style="list-style-type: none"> • Below 5 ft above the 100 year flood elevation as defined by FEMA (Federal Emergency Management Agency). • Within 100 ft of Wetlands as defined by CFR (Code of Federal Regulations). • Prime farmland as defined by USDA (U.S. Department of Agriculture). • Within 50 ft of a water body (lakes, seas, rivers, etc.) Comply with Clean Water Act. • Habitat for any endangered or critical species. • Public parkland (Park Authority projects are exempt).
21	SS CREDIT 2 What is SS Credit 2 called?	Density Development and Community Connectivity
22	SS CREDIT 2 What is the intent of the Development Density and Community Connectivity Credit?	<ul style="list-style-type: none"> • To channel development to urban areas with existing infrastructures • Protect green fields and preserve habitat and natural resources.
23	SS CREDIT 2 How many points are available for the Density Development and Community Connectivity Credit?	One

No.	Questions	Answers
24	SS CREDIT 2 What minimum site density determines that a site will qualify as Density Development?	60,000 sq-ft per acre (roughly equivalent to 2- story downtown development)
25	SS CREDIT 2 What are the requirements for Community Connectivity?	Construct or renovate building: <ul style="list-style-type: none"> • On a previously developed site and <ul style="list-style-type: none"> • Within ½ mile of a residential zone with an average density of 10 units per acre net and <ul style="list-style-type: none"> • Within 1/2 mile of at least 10 Basic Services <ul style="list-style-type: none"> ○ Banks, churches, restaurants (2 allowed), stores, etc. ○ do not include undeveloped areas (parks, water bodies) and <ul style="list-style-type: none"> • With pedestrian access between building and services.
26	SS CREDIT 2 What are some examples of basic services?	Banks, Places of Worship, Convenience Grocery, Day Care, Cleaners, Fire Station, Beauty, Hardware, Laundry, Library, Medical/Dental, Senior Care Facility, Park, Pharmacy, Post Office, Restaurant, School, Supermarket, Theater, Community Center, Fitness Center, Museum.
27	SS CREDIT 3 What is SS Credit 3 called?	Brownfield Redevelopment [This credit happens to be one of the most expensive to implement. Thusly there are many government incentives / tax breaks to help].
28	SS CREDIT 3 What is the intent of the Brownfield Redevelopment Credit?	<ul style="list-style-type: none"> • Rehabilitate damaged sites where environmental development is complicated by environmental contamination. • Reduce pressure on undeveloped land.
29	SS CREDIT 3 How many points are available for Brownfield Redevelopment?	One
30	SS CREDIT 3 What is required for Brownfield	Develop on a site documented as contaminated (by means of an ASTM E1903- 97 phase II

No.	Questions	Answers
	Redevelopment Credit?	Environmental Site Assessment or a local Voluntary Cleanup Program) Or On a site classified as a Brownfield and effectively provide remediation.
31	SS CREDIT 3 What standards classify a site as a Brownfield?	<ul style="list-style-type: none"> • A local, state or federal government agency • ASTM E1903-97 • EPA Brownfield definition • CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act, aka. SUPERFUND)
32	SS CREDIT 3 What determines Brownfield redevelopment procedures?	EPA Sustainable Redevelopment of Brownfields Program. In providing requirements for classification of the Brownfield Redevelopment Credit, Federal EPA headquarters prepares the letter for confirmation.
33	SS CREDIT 3 What submittals are needed to attain credit for Brownfield Redevelopment?	Confirmation that the project site was determined contaminated by means of an ASTM E1903-97 Phase II Environmental Site Assessment OR That the site was defined as a brownfield by a local, state or federal government agency And A detailed narrative describing the site contamination and remediation efforts undertaken by the project.
34	SS CREDIT 4 What is SS Credit 4 called?	Alternative Transportation
35	SS CREDIT 4 What is the intent of the Alternative Transportation Credit?	<ul style="list-style-type: none"> • Reduce Pollution from auto use • Reduce land development from auto use
36	SS CREDIT 4 How many points are available for Alternative Transportation?	Four SS credit 4.1: Alternative Transportation - Public Transportation Access SS credit 4.2: Alternative Transportation – Bicycle Storage and Changing Rooms SS credit 4.3: Alternative Transportation – Low Emission and Fuel Efficient Vehicles

No.	Questions	Answers
		SS credit 4.4: Alternative Transportation – Parking Capacity
37	SS CREDIT 4.1 What is Credit 4.1?	Promotes the use of mass transit and reduce reliance on automobiles.
38	SS CREDIT 4.1 What is required for Credit 4.1?	Locate project: <ul style="list-style-type: none"> • within 1/2 mile from commuter rail, light rail, or subway station • within 1/4 mile from two or more public or campus bus lines usable by building occupants.
39	SS CREDIT 4.2 What is Credit 4.2?	Promotes the use of bicycles.
40	SS CREDIT 4.2 What is required for Credit 4.2?	<p><u>For commercial/institutional buildings</u></p> <p>Provide secure bicycle racks and storage (within 200 yards of the Building) for 5% or more of regular building users (measured at peak periods)</p> <p>And</p> <p>Provide changing/shower facilities within 200 yards of a building entrance for 0.5% of Full-Time Equivalent (FTE) occupants</p> <p><u>For residential buildings</u></p> <p>Provide covered storage facilities for securing bicycles for 15% or more of building occupants in lieu of changing/shower facilities.</p> <p>And</p> <p>Ensure that that the bicycle storage location is within 200 yards of the building entrance.</p>
41	SS CREDIT 4.2 What is specific requirement for Credit 4.2?	<p>This is the first credit that deals with FTE (Full-Time Equivalent) occupants. The definition of FTE is a sort of calculation explained here:</p> <p><i>Calculate the full-time equivalent (FTE) building occupants based on a standard 8-hour occupancy period. An 8-hour occupant has an FTE value of 1.0, while a part-time occupant has an FTE value based on their hours per day divided by 8.</i></p> <p><i>FTE Occupants = Occupant Hours / 8</i></p> <p><i>This calculation must be consistent for all LEED for New Construction credits.</i></p>

No.	Questions	Answers
42	SS CREDIT 4.3 What is Credit 4.3?	Low Emitting & Fuel Efficient Vehicles
43	SS CREDIT 4.3 What is required for Credit 4.3?	<u>Option 1:</u> Provide low emission cars (yes, provide cars to people), with preferred parking (0.03 FTE) <u>Option 2:</u> Provide preferred parking for low emission cars (0.05 total parking spaces) <u>Option 3:</u> Provide charging station and refuel stations for low emission cars (0.03 total parking spaces) <ul style="list-style-type: none"> ○ Low emission car = ZEV (zero emission vehicle) = minimum energy star of 40. ○ Preferred parking EXCLUDES handicap spaces.
44	SS CREDIT 4.4 What is Credit 4.4?	No increase in parking capacity.
45	SS CREDIT 4.4 What is a minimum requirement for Credit 4.4?	<u>Option 1 (non-residential):</u> <ul style="list-style-type: none"> • <u>Do not</u> exceed local parking requirements in proposed parking scheme • Provide carpool parking (for 0.05 total parking spaces) <u>Option 2 (non-residential):</u> <ul style="list-style-type: none"> • For projects that provide parking for less than 5% of FTE building occupants: provide carpool parking (for 0.05 total parking spaces) <u>Option 3 (residential):</u> <ul style="list-style-type: none"> • <u>Do not</u> exceed local codes • Shared vehicle program <u>Option 4 (all):</u> <ul style="list-style-type: none"> • Provide <u>no new parking</u>
46	SS CREDIT 4.4 What determines the maximum number of parking spaces allowed and what are the parking distribution requirements under Credit 4.4?	No more than the MINIMUM local zoning requirements, AND Provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants.

No.	Questions	Answers
47	SS CREDIT 4.4 For Residential Buildings (option 3), what are the requirements to receive Alternative Transportation: Parking Capacity Credit 4.4?	Do not exceed the local zoning minimum parking requirement AND Provide infrastructure and support programs to facilitate shared vehicle usage.
48	SS CREDIT 4.4 Inclusive of ALL building types (option 4), what is the requirement to receive Alternative Transportation: Parking Capacity Credit 4.4?	Provide no new parking
49	SS CREDIT 5 What is SS Credit 5 called?	Site Development
50	SS CREDIT 5 How many points are available for Site Development?	Two SS credit 5.1: Site Development – Protect or Restore Habitat SS credit 5.2: Site Development – Maximize Open Space
51	SS CREDIT 5.1 What is Credit 5.1?	Encourages restoration of open areas or reduce impact on green fields.
52	SS CREDIT 5.1 What is the intent of the Site Development Credit 5.1?	<ul style="list-style-type: none"> • Conserve existing natural areas • Restore damaged areas • Provide habitat • Promote biodiversity
53	SS CREDIT 5.1 What is required on greenfield sites for Credit 5.1?	Limit site disturbance to: <ul style="list-style-type: none"> • 40 ft. beyond the building perimeter • 25 ft. beyond constructed areas with permeable surfaces • 15 ft. beyond the roadways • 10 ft. beyond surface walkways, patios, surface parking • 15 ft. of main utility trenches & 10 ft. for utilities less than 12inches diameter
54	SS CREDIT 5.1 What is required on previously developed sites for Credit 5.1?	Restore or protect a minimum of 50% of the site area (excluding the building footprint) with native or adapted vegetation.

No.	Questions	Answers
55	SS CREDIT 5.1 What is required on zero-lot-line for Credit 5.1?	<ul style="list-style-type: none"> • Projects earning SS2 (60,000 sq-ft. min/acre) and using vegetated roofs may apply vegetated roof surface for this calculation • 20% of site area to be green. • <u>include building footprint</u> in calculation
56	SS CREDIT 5.2 What is Credit 5.2?	Maximize Open Space
57	SS CREDIT 5.2 What is the intent of the Credit 5.2?	<ul style="list-style-type: none"> • A high open space to footprint ratio • Promote biodiversity
58	SS CREDIT 5.2 What is required for Credit 5.2?	<p>Case 1</p> <p>Where there is a local code for open space restriction, reduce the development footprint and/or provide open space which exceeds the zoning requirements by 25%</p> <p>Case 2</p> <p>Where there is NO zoning requirements (for e.g. campuses or military bases), provide vegetated open space adjacent to the building equal to the building footprint.</p> <p>Case 3</p> <p>Where a zoning ordinance exists, with no open space requirement, provide a vegetated open space equal to 20% of the project site area.</p> <p><u>For all options:</u></p> <p>Urban area projects that earn SS2</p> <ul style="list-style-type: none"> • vegetated roof areas can count toward credit compliance • pedestrian oriented hardscape areas can count toward credit compliance (min. 25% open space must be vegetated) • Wetlands or naturally design ponds count if side slope gradients average 1:4 (vertical:horizontal) or less and are vegetated
59	SS CREDIT 6 What is SS Credit 6 called?	Stormwater Design
60	SS CREDIT 6 How many points are available	Two Credit 6.1: Stormwater Design – Quantity Control

No.	Questions	Answers
	for Stormwater Design?	Credit 6.2: Stormwater Design – Quality Control
61	SS CREDIT 6.1 What is the intent of Credit 6.1?	<ul style="list-style-type: none"> • Limit the disruption of natural hydrology • Increase on-site filtration • Manage storm water runoff • Eliminate sources of contaminants • Reduce impervious cover • Reduce/eliminate pollution • Remove pollutants from storm water runoff
62	SS CREDIT 6.1 What is required for Stormwater Design: Credit 6.1 - if existing impervious surface is less than or equal to 50% of total site area?	<p>Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity <u>equal to or less than</u> pre-development (for 1 and 2 year, 24-hour design storms)</p> <p>OR</p> <p>Implement a stormwater management plan that protects receiving stream channels from excessive erosion by implementing a <i>stream channel protection</i> strategy and quantity control strategies.</p>
63	SS CREDIT 6.1 What is required for Stormwater Design: Credit 6.1 - if existing impervious surface is greater than 50% of total site area?	<p>Implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff than pre-development (from the 2 year, 24 hour design storm).</p> <p><u>Notes</u></p> <ul style="list-style-type: none"> • Humid watershed: 1" rainfall / 40" per year • Semi-arid watershed: 0.75" rainfall / 20-40" per year • Arid watershed: 0.50" rainfall / less than 20" per year
64	SS CREDIT 6.1 What are potential strategies for managing stormwater flows?	<ul style="list-style-type: none"> • Design the project site to maintain natural stormwater flows by promoting infiltration. • Specify vegetated 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.
65	SS CREDIT 6.2 What is the intent of Credit 6.2?	<p>Reduce or eliminate water pollution by reducing impervious cover, increasing onsite infiltration, eliminating source of contaminants, and removing pollutants from stormwater runoff.</p>
66	SS CREDIT 6.2 What is required for Stormwater Design: Credit 6.2?	<p>Implement a stormwater management plan that reduces impervious cover, promotes infiltration, and captures and treats stormwater from 90% of the average annual rainfall using acceptable best</p>

No.	Questions	Answers
		<p>management practices (BMP's).</p> <p>BMP's used to treat runoff must be capable of removing 80% of the average annual post development total suspended solids load based on existing monitoring reports.</p>
67	<p>SS CREDIT 6</p> <p>What type of roof system is most effective to capture rainwater?</p>	Red standing seam metal roof.
68	<p>SS CREDIT 6</p> <p>What document describes the practices to be used to reduce stormwater total suspended solids (TSS) and total phosphorous (TP)?</p>	EPA's Guidance Specifying Management Measures for Sources of Non-Point Pollution in Coastal Waters, January 1993 (Document #EPA 840-B-92-002).
69	<p>SS CREDIT 7</p> <p>What is SS Credit 7 called?</p>	Heat Island Effect
70	<p>SS CREDIT 7</p> <p>What Is a Heat Island?</p>	Heat islands are the characteristics of urban air/surface temperatures that result in higher air temperatures up to 10° F (5.6° C) warmer than surrounding natural land cover.
71	<p>SS CREDIT 7</p> <p>What Causes a Heat Island?</p>	<p>Causes of the "heat island effect" include dark surfaces--that absorb more heat from the sun--and less vegetation that would provide shade and cool the air.</p> <p>As cities replace natural land cover with pavement, buildings, and other structures, these built up areas absorb more of the sun's heat, causing surface and air temperatures to rise. The loss of trees and shrubs also eliminates the natural cooling effects of shading and evapo-transpiration, a process that draws heat from the air to convert water contained in vegetation to water vapor.</p>
72	<p>SS CREDIT 7</p> <p>When do heat islands form?</p>	Heat islands can occur at any time, regardless of season or time of day. They are often largest in the evening when urban areas release stored heat energy into the air from roads and other structures. This urban-rural cooling difference produces maximum heat island intensities three to five hours after sunset.

No.	Questions	Answers
73	SS CREDIT 7 What Are Problems with the Heat islands?	Heat islands can increase air conditioning demand, the incidence of heat-related illness and mortality, and power plant emissions of air pollution and greenhouse gases. In addition to this direct increase in power plant emissions, elevated ambient temperatures can speed up the heat-dependent reaction that forms ground-level ozone.
74	SS CREDIT 7 How Can We Reduce the Heat Island Effect?	Cities can mitigate heat islands by installing cool roofs or green roofs; using cool pavements; and planting shade trees and vegetation throughout an urban area.
75	SS CREDIT 7 What is the intent of the Heat Island Effect Credit?	Reduce heat islands to minimize impact on microclimate and human and wildlife habitat
76	SS CREDIT 7 How many points are available for Heat Island Effect?	Two Credit 7.1: Heat Island Effect – Non Roof Credit 7.2: Heat Island Effect - Roof
77	SS CREDIT 7.1 What is intent of SS Credit 7.1?	<ul style="list-style-type: none"> • Reduce heat islands • Minimize impact on microclimate and habitats
78	SS CREDIT 7.1 What are the requirements to achieve Credit 7.1?	Option 1: <ul style="list-style-type: none"> • Provide shade to 50% of site area (<i>within 5 years of occupancy</i>) • Provide open grid area (parking, roads, sidewalks) with paving material of SRI 29 or higher. Option 2: <ul style="list-style-type: none"> • Provide 50% parking underground or under roof • Provide paving material with solar reflectance index - SRI 29 or higher.
79	SS CREDIT 7.2 What is SS Credit 7.2?	Heat Island Effect - Roof
80	SS CREDIT 7.2 What is intent of SS Credit 7.2?	<ul style="list-style-type: none"> • Reduce heat islands • Minimize impact on microclimate and habitats
81	SS CREDIT 7.2 What are the requirements to reduce roof heat island effects?	<i>Option 1:</i> 75% roof material should be: <ul style="list-style-type: none"> • SRI 78 for a slope less than 2:12 (low-sloped roof)

No.	Questions	Answers
		<ul style="list-style-type: none"> • SRI 29 for a slope more than 2:12 (steep-sloped roof) <p><i>Option 2:</i></p> <ul style="list-style-type: none"> • Install a vegetated roof for at least 50% of the roof area <p><i>Option3:</i></p> <ul style="list-style-type: none"> • Combination of options 1 & 2: Install combinations of high albedo (SRI) and vegetated roof can be used providing they collectively cover greater than 100% (calculated) of the roof area. <p>Calculation of (Area of SRI roof /0.75) + (Area of vegetated roof / 0.5) is <i>greater than total roof area.</i></p>
82	<p>SS CREDIT 7.2</p> <p>What reflectance and emissivity standards and characteristics are required for roofing under Credit 7.2?</p>	<p>Use Energy Star® compliant and high emissivity roofing of at least 0.9 when tested in accordance with ASTM 408 and/or ASTM C 1371. Roofing materials should have SRI values greater than 78 for low-sloped roofs and 29 for steep-sloped roofs (where SRI is measured according to ASTM E903, ASTM E1918, and ASTM E1980).</p>
83	<p>SS CREDIT 7</p> <p>What is albedo and SRI?</p>	<p>Albedo or solar reflectance is the ability of a surface material to reflect incident solar (short wave) radiation. It is expressed on a scale of 0 (black) to 1 (white) where value of 0 indicates that the surface absorbs all solar radiation, and a value of 1 represents total reflectivity. [Alternatively albedo can be expressed in percentage scale of 0 % to 100%].</p> <p>A newer method of evaluating coolness is the solar reflectance index (SRI), which incorporates both solar reflectance and emittance in a single value. SRI quantifies how hot a surface would get relative to standard black and standard white surfaces. It is defined such that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100.</p>
84	<p>SS CREDIT 7</p> <p>What is Emittance?</p>	<p>Emittance is the amount of thermal radiation – also known as infrared or long wave radiation – that a material releases or radiates away from its surface. Emittance is expressed as a number between 0.0 and 1.0, or 0% and 100%. With the exception of metals, most building materials have emittances above 85%.</p>
85	<p>SS CREDIT 7</p>	<p>Cool roofs have a high solar reflectance, or albedo, and may also have a high emittance. EPA’s Energy</p>

No.	Questions	Answers
	What is a Cool Roof?	<p>Start Roof Product Program has cool roofing specifications for both low-slope (primarily commercial) and sloped (primarily residential) roofs.</p> <p>EPA ENERGY STAR specifies an albedo of 0.65 or higher for low-slope roofs and at least 0.25 for steeped sloped roofs. Although emittance is not a qualifying criterion for ENERGY STAR®, a value of at least 0.85 further reduces roof temperatures and can decrease the amount of heat transferred to building interiors.</p>
86	SS CREDIT 7 What are the benefits of cool roofs?	<p>On a hot, sunny summer day, traditional roofing materials can reach peak temperatures of 190°F (88°C). By comparison, cool roofs reach maximum temperatures of 120°F (49°C). In buildings with air conditioning (AC), cool roofs can save money on energy bills, lower peak energy demand, and reduce power plant emissions of air pollution and greenhouse gases. In buildings without AC, cool roofs can increase indoor occupant comfort by lowering top-floor temperatures. In both cases, cool roofs can contribute to urban heat island mitigation.</p>
87	SS CREDIT 7 What are some examples of cool roofing applications?	<p>Low-slope cool roofing applications, which are typically used in the commercial building sector, include single-ply and cool coatings. Single-ply roofing is often constructed of white rubber or plastic material that is glued or fastened over the entire roof surface. Cool coatings have the consistency of thick paint, and contain cement particles or elastomeric polymers. They can be applied to a wide range of existing and new roof surfaces.</p> <p>Sloped cool roofing applications include concrete or clay tile with a white pigment added to the surface or mixed in during manufacturing. These products are typically used in the residential sector.</p>
88	SS CREDIT 7 What is a green roof?	<p>Green roofs, or rooftop gardens, are planted over existing roof structures, including industrial facilities, residences, offices, and other commercial property. These "living" roofs consist of a waterproof, root-safe membrane that is covered by a drainage system, lightweight growing medium, and plants.</p>
89	SS CREDIT 7 What are the benefits of green roofs?	<p>Green roof benefits include:</p> <ul style="list-style-type: none"> • Reducing rooftop temperatures and heat transfer to the surrounding air; • Decreasing summertime indoor

No.	Questions	Answers
		<p>temperatures, which reduces air conditioning demand and peak energy consumption for cooling;</p> <ul style="list-style-type: none"> • Lessening pressure on sewer systems through the absorption of rainwater; • Filtering pollution – including heavy metals and excess nutrients – through the processes of bio- and phytoremediation; and • Protecting underlying roof material, reducing noise, providing a habitat for birds and other small animals, and improving the quality of life for building inhabitants. Reducing the urban heat island effect by decreasing rooftop temperatures through evapo-transpiration that cools the surrounding air.
90	<p>SS CREDIT 7</p> <p>What are some examples of green roof applications?</p>	<p>Green roofs are generally classified either as intensive or extensive.</p> <ul style="list-style-type: none"> • Intensive green roofs require a minimum of one foot of soil. Trees and shrubs are usually planted, adding 80 to 150 pounds per square foot of load to the building. These roofs require complex irrigation and drainage systems, and significant maintenance. Intensive roofs are often accessible to the public. • Extensive green roofs require only 1 to 5 inches of soil. Low lying plants and grasses are usually planted, and 12 to 50 pounds per square foot of load may be added. These roofs use simple irrigation and drainage systems, and require little maintenance. Extensive green roofs usually are not accessible to the public.
91	<p>SS CREDIT 7</p> <p>What is ozone?</p>	<p>Ozone is an odorless, colorless gas that can be "good" or "bad" depending on where it is in the atmosphere. "Good" ozone occurs in the stratosphere, approximately 10 to 50 kilometers above the Earth's surface, where it forms a protective layer that shields earth habitants from harmful ultraviolet radiation. Stratospheric ozone forms what is known as the ozone layer. Ozone layer depletion can be controlled by eliminating use of CFC refrigerants and other chlorine based products.</p> <p>"Bad" ozone, or ground-level ozone, exists closer to the Earth's surface. Ground-level ozone is formed by</p>

No.	Questions	Answers
		a chemical reaction between nitrogen oxides and volatile organic compounds in the presence of heat and sunlight. Ground-level ozone is a harmful pollutant and the main constituent of smog.
92	SS CREDIT 8 What is SS Credit 8 called?	Light Pollution Reduction
93	SS CREDIT 8 What is the intent of the Light Pollution Reduction Credit?	<ul style="list-style-type: none"> • Minimize light trespass from the building and site • Reduce sky-glow to increase night sky access • Improve nighttime visibility through glare reduction • Reduce development impact on nocturnal environments.
94	SS CREDIT 8 What is Light Pollution?	Light pollution is the unwanted illumination of the night sky created by human activity. Light pollution is sometimes said to be an undesirable byproduct of our industrialized civilization. Light pollution is a broad term that refers to multiple problems, all of which are caused by inefficient, annoying, or arguably unnecessary use of artificial light. Specific types of light pollution include light trespass, over-illumination and sky glow.
95	SS CREDIT 8 What is Light Trespass?	<p>As its name implies, light trespass occurs when unwanted light spills over beyond the boundary of the property on which a light is located to adjacent properties. Light trespass is often caused by high or poorly positioned lights. The result is bright night lighting on an area that would otherwise be dark.</p> <p>Certainly it is important to have adequate light for safety and security, however, when misapplied, additional problems are created.</p>
96	SS CREDIT 8 What is Over Illumination?	Over illumination is the use of light well beyond that required for a specific activity. Many places, both indoors and out, have lights on when no people are present. In many cases, this goes beyond the need for security lighting. Think of office buildings that have lights on all night even though the buildings are virtually empty.
97	SS CREDIT 8	Sky glow is the bright 'glow' seen over many cities and towns in the evening. It is the result of the many

No.	Questions	Answers
	What is Sky glow?	electric lighting fixtures that shed light above urban areas. It is caused by light traveling through the atmosphere being refracted or scattered by water droplets or particles (aerosols) such as dust, pollen, bacteria, spores, salt from sea spray, mineral particles lifted from deserts and waste products from industry. It is therefore worse in heavily polluted areas, and will always exist to some extent when the air quality is poor.
98	SS CREDIT 8 Why do we care about light pollution?	<p>Light pollution is a strong indicator of wasted energy. Astronomers (both professional and amateur) have been concerned about the deteriorating quality of the night sky to conduct their observations and research.</p> <p>Medical research on the effects of excessive indoor light on the human body suggests a variety of adverse health effects including increased headaches, fatigue, and stress.</p> <p>Lights at night can impact both the biology and ecology of species in the wild. Some examples include the disorientation of sea turtle hatchlings by beachfront lighting; nesting choices and breeding success of birds; behavioral and physiological changes in salamanders; disturbances of nocturnal animals; and altered natural light regimes in terrestrial and aquatic ecosystems.</p>
99	SS CREDIT 8 How many points are available for Light Pollution Reduction?	One
100	SS CREDIT 8 What is required for Light Pollution Reduction Credit 8.0?	<p><u>Requirements for Interior Lighting:</u></p> <ul style="list-style-type: none"> • Stays inside • Non-emergency lights shut down automatically at non-business hours <p>For interior lighting, the angle of maximum candela from each interior luminaire located in the building shall intersect opaque bldg interior surfaces</p> <p><u>Requirements for Exterior Lighting:</u></p> <ul style="list-style-type: none"> • Provide for comfort and safety only • DO NOT exceed 80% of lighting power densities for <u>exterior area</u> and 50% for <u>building facades and landscape features</u> as defined in ASHRAE/IESNA Standard 90.1-2004. • DO NOT install lighting more than 2.5 times

No.	Questions	Answers
		<p>building height from property line</p> <ul style="list-style-type: none"> • Credit does not apply to 3 story buildings, warehouses, and manufactured homes. <p><u>4 Light Zones:</u></p> <p>Projects shall follow the requirements for 4 light zones as follows:</p> <ul style="list-style-type: none"> • LZ1: dark, density less than 200 people per square mile • LZ2: low (residential) • LZ3: medium (commercial, industrial and high-density residential) • LZ4: high (major city centers, entertainment districts)

Summarizing....

The introduction of a building to a site inevitably causes disruptions that affect the health of the local ecosystem. The suggested strategies for Sustainable Development include:

- Evaluate brownfield sites to determine appropriate reuse for health care facilities.
- Reuse and renovate existing buildings.
- Site buildings in urban areas with existing infrastructure.
- Avoid agricultural land, 100 year flood plains, threatened or endangered species habitat, wildlife corridors, wetlands.
- Orient buildings to make best use of solar energy for heating or daylighting.
- Orient buildings to encourage natural ventilation and passive cooling.
- Design to reduce erosion and run off into sewer systems and/or air pollution.
- Reduce building footprint, optimize layouts and reduce size of roads, parking and other site improvements to concentrate and limit total paving and other site disturbance.
- Minimize impervious cover by using open-grid and pervious paving materials.
- Maximize preservation and restoration of bio-diverse open space/habitat.
- Use native trees, shrubs and plants.
- Develop and implement an integrated pest management plan.
- Use vegetative and other shading techniques to assist passive cooling and ventilation of buildings and public and paved areas.
- Site in proximity to transit options.
- Establish a transportation plan. Support alternatives to fossil fueled single occupancy vehicles (preferred van/carpool parking, bike parking and changing facilities, electric car

charging and other alternate vehicle fueling, nearby transit access). Reduce paved parking area appropriately.

- Design in accordance with Illuminating Engineering Society of North America (IESNA) foot-candle 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.

SECTION - 3
WATER EFFICIENCY

Water efficient design strategies balance water quality and quantity demands within a building and are responsive to the watershed's capacity as source and sink. Public works projects, such as treatment plants and sewage systems, are unable to adequately remove or process the toxic materials that infiltrate these systems, potentially threatening public health.

This category encourage owners/designers to take a systematic look to identify potential water sources, how water is used in the building and how it flows around the building site to reduce water usage and wastewater discharges. The credits are earned by reducing or eliminating the use of potable water for landscape irrigation, reducing wastewater, and reducing overall water consumption. The goals are to:

1. Minimize the use of potable water while conserving water quality and availability.
2. Minimize off site treatment of wastewater.
3. Minimize storm water release from the site.
4. Maximize use of on-site water resources, (e.g., rainwater, graywater).
5. Match water quality with end use requirements.
6. Maximize aquifer recharge.

No.	Questions	Answers
1	What do WE stand for?	Water Efficiency
2	What are the goals of Water Efficiency LEED category?	<ul style="list-style-type: none"> • Minimize the use of potable water while conserving water quality and availability. • Minimize off site treatment of wastewater. • Minimize storm water release from the site. • Maximize use of on-site water resources, (e.g., rainwater, greywater). • Match water quality with end use requirements. • Maximize aquifer recharge.
3	How many prerequisites and credits are there in the Water Efficiency section?	Prerequisites – 0 Credits – 3 Points - 5
4	Name the Credits in the WE Section	WE Credit 1 – Water Efficient Landscaping (2 points) WE Credit 2 – Innovative Waste Water Technologies (1 point) WE Credit 3 – Water Use Reduction (1 point)
5	What percentage WE contribute to overall LEED credit points?	7% [5 / 69 x 100]

No.	Questions	Answers
6	Is there any prerequisite for Water Efficiency Category?	NO
7	What is Graywater?	<p>Graywater is defined by the UPC (uniform plumbing code) as untreated wastewater that has not come in contact with toilet waste. Examples are shower water, water from sinks, bathtubs, bathroom wash basins and cloth washers.</p> <p>Architect, plumbing engineer, civil engineer, local agency all need to be involved in the design of a graywater system.</p>
8	What is Blackwater?	Blackwater doesn't have a single definition that is accepted nationwide. It is basically toilet and urinal water, as well as kitchen sinks in most areas.
9	WE CREDIT 1 What is WE Credit 1 called?	Water Efficient Landscaping
10	WE CREDIT 1 What is the intent of Water Efficient Landscape Credit?	<ul style="list-style-type: none"> • Limit or eliminate potable water (drinking water) use for landscape irrigation. • Limit or eliminate use of natural surfaces for landscape irrigation.
11	WE CREDIT 1 How many points are available for Water Efficient Landscaping?	<p>Two</p> <p>Credit 1.1: Water Efficient Landscaping – Reduce by 50%</p> <p>Credit 1.2: Water Efficient Landscaping – No Potable Use or No Irrigation</p>
12	WE CREDIT 1.1 What is required for Credit 1.1?	Reduce potable water consumption for irrigation by 50% by a combination of plant species factor, irrigation efficiency, use of captured rainwater, use of recycled wastewater, and use of water treated and conveyed by a public agency specifically for non-potable uses.
13	WE CREDIT 1.1 What percent of potable water needs to be reduced to get Water Efficient Landscape Credit 1.1?	50% reduction from a calculated mid-summer baseline case.
14	WE CREDIT 1.1 List few methods to achieve WE Credit 1.1.	<ul style="list-style-type: none"> • Use high efficiency micro-irrigation system <ul style="list-style-type: none"> ○ drip, micro misters, subsurface irrigation

No.	Questions	Answers
		<ul style="list-style-type: none"> • Instead of using potable water use: <ul style="list-style-type: none"> ○ captured rainwater ○ recycled wastewater ○ treated water • Use treated water conveyed by public agency as specifically for non-potable uses • Use species factor <ul style="list-style-type: none"> ○ consider size, growth rate, adaptability, texture, color, diversification of plant life on site
15	<p>WE CREDIT 1.2</p> <p>What is required for Credit 1.2?</p>	<p><u>Option 1:</u> Do not use any potable water for Irrigation</p> <p><u>Option 2:</u> Do not use any irrigation system</p> <p>Achieve WE Credit 1.1 and use only captured rainwater, recycled waste water, recycled graywater, or water treated and conveyed by a public agency specifically for non-potable uses for irrigation systems.</p> <p>OR</p> <p>Do not install permanent irrigation systems (temp system okay if removed w/in 1 year).</p>
16	<p>WE CREDIT 1.2</p> <p>What percent of potable water needs to be reduced to get Water Efficient Landscape Credit 1.2?</p>	<p>Potable Free System: 100% total reduction.</p>
17	<p>WE CREDIT 1.2</p> <p>What are the basic strategies for Water Efficient Landscape Credits?</p>	<ul style="list-style-type: none"> • Group plants according to their water needs. • Specify native plants that are tolerant of local climate, soils and water. • Limit turf areas to those needed for practical uses: Grass should be grown only in areas where it provides functional benefit. • For landscaping, use following methods: <ul style="list-style-type: none"> ○ Captured Rainwater ○ Recycled wastewater ○ Recycled graywater ○ Treated water • Use efficient irrigation systems: Install drip irrigation and high efficiency irrigation control

No.	Questions	Answers
		<p>(moisture sensors, weather based controllers such as timer on the sprinkler system to compensate for changing weather conditions.</p> <ul style="list-style-type: none"> • Using landscaping that doesn't require permanent irrigation systems - temporary irrigation ok (for plant establishment) if removed after 1 year of installation Make sure soil is healthy: Soils improved with organic matter allow for better water absorption and water-holding capacity. Properly enrich your soils with compost or peat moss. • Mulching & mowing: Mulches cover and cool soil, minimize weed growth, slow erosion and evaporation and provide landscape interest. • Provide regular maintenance: A water-efficient landscape is healthier and uses minimal amounts of water, fertilizer and pesticides.
18	<p>WE CREDIT 2 What is WE Credit 2 called?</p>	Innovative Wastewater Technologies
19	<p>WE CREDIT 2 What is intent of Innovative Wastewater Technologies Credit?</p>	Reduce generation of wastewater and potable water demand while increasing local aquifer recharge.
20	<p>WE CREDIT 2 How many points are available for Innovative Wastewater Technologies?</p>	<p>One [One extra credit possible if the design reduces potable water use by 100% or treats and reuses 100% of wastewater on site].</p>
21	<p>WE CREDIT 2 What is required for Credit 2?</p>	<p><u>Option 1:</u></p> <ul style="list-style-type: none"> • Reduce potable water use by 50% <ul style="list-style-type: none"> ○ use water conserving fixtures ○ reuse non-potable water for flushing ○ reuse <i>on-site</i> treated water <p><u>Option 2:</u></p> <ul style="list-style-type: none"> • Treat and reuse 50% of wastewater on-site (to tertiary standards). Water must be treated by: <ul style="list-style-type: none"> ○ biological systems ○ constructed wetlands ○ high efficiency filtration system

No.	Questions	Answers
22	WE CREDIT 2 What are 2 examples of Innovative Wastewater Technologies?	Change 50% of urinals and toilets to composting toilets and waterless urinals. Reuse stormwater or greywater for sewage conveyance.
23	WE CREDIT 3 What is WE Credit 3 called?	Water Use Reduction
24	WE CREDIT 3 What is intent of the Water Use Reduction Credit?	<ul style="list-style-type: none"> • Maximize water efficiency • Reduce burden on municipal water supply • Reduce burden on wastewater system
25	WE CREDIT 3 How many points are available for Water Use Reduction?	Two Credit 3.1: Water Use Reduction – 20% Reduction Credit 3.2: Water Use Reduction – 30% Reduction
26	WE CREDIT 3.1 What is required for Water Use Reduction Credit 3.1?	Employ strategies that in aggregate use 20% less water than baseline calculated for building.
27	WE CREDIT 3.1 What are the methods for Water Use Reduction?	Use special fixtures and sensor/metering controls. <u>Fixture / Flowrate in Gallons Per Minute (GPM)</u> <ul style="list-style-type: none"> • Shower/2.5 (lowflow/1.8) • Lavatory/2.5 (lowflow/1.8) (ultra lowflow/0.5) • Kitchen Sink/2.5 (lowflow/1.8) • Faucets/2.5 • Aerator/2.5 • Water Closet/1.6 (lowflow/1.1) • Dual Flush Water Closet/1.6 (lowflow/0.8) • Composting Toilet/0.0 • Urinal/1 (lowflow/0.5) • Non-Water Urinal/0.0 Use high-efficiency fixtures above, dry fixtures, occupant sensors. Consider reusing stormwater and graywater for non-potable uses.
28	WE CREDIT 3.1 What fixture performance requirements need to be met in Credit 3.1 and 3.2?	Energy Policy Act of 1992
29	WE CREDIT 3.2 What is required for Credit 3.2?	Employ strategies that in aggregate use 30% less water than baseline calculated for building.

No.	Questions	Answers
30	<p>WE CREDIT 3.2 What total efficiency percent increase is needed to earn Credit 3.2?</p>	30%
31	<p>WE CREDIT 3 What must be calculated before employing any water efficiency strategy?</p>	<p>Estimate water use based on occupant usage and fixture flow rates. Fixtures included in the calculations are: water closets, urinals, lavatory faucets, showers, and kitchen sinks.</p> <p>Calculations</p> <ul style="list-style-type: none"> • Consider: all occupants: students, customers, visitors, FTE • Male to Female water usage ratio: 1 to 1 <p><u>Male:</u></p> <ul style="list-style-type: none"> ○ water closet = 1 ○ urinal = 2 <p><u>Female:</u></p> <ul style="list-style-type: none"> ○ water closet = 3 <p><u>Use per day</u></p> <ul style="list-style-type: none"> ○ usage rate ○ occupancy ○ number of workdays
32	<p>WE CREDIT 3 What are some technologies that maximize water efficiency?</p>	<ul style="list-style-type: none"> • Specify EPA Energy Star high performance fixtures and equipment e.g. low flow and pressure assist toilets and urinals; waterless urinals; low-flow showerheads and faucets; automatic use activation on sinks, toilets and urinals; • Energy Star dishwashers and laundry equipment; ozone-injected laundry equipment. • Use faucet aerators, which break water flow into fine droplets to maintain "wetting effectiveness" while using less water. As a bonus, they reduce splashing while washing hands and dishes. • Wastewater reuse or recycling systems, allowing: <ul style="list-style-type: none"> ○ Reuse of graywater for flushing toilets or for the garden, and ○ Recycling of wastewater through purification at a water treatment plant. • Waterless car wash. • Using non-potable site recycled water for cooling tower makeup, or use non-

No.	Questions	Answers
		<p>evaporative condenser heat rejection equipment (air cooled, or ground source).</p> <ul style="list-style-type: none"> • Collecting storm water runoff from roofs and site and use for irrigation, sewage conveyance, toilet flushing and/or HVAC/process makeup water or recharge in to aquifer. • Minimizing hardscapes and install permeable paving and other pervious surface materials. • Creating wetlands or other systems to locally recharge underground water flows.

Summarizing.....

Suggested Strategies for Water Efficiency include but not limited to:

- Specify EPA Energy Star and high performance fixtures and equipment: e.g., low flow and pressure assist toilets and urinals; waterless urinals; low-flow showerheads and faucets; automatic use activation on sinks, toilets and urinals; Energy Star dishwashers and laundry equipment; ozone-injected laundry equipment.
- Maximize water conservation in cooling towers by using non-potable site recycled water for cooling tower makeup, or use non-evaporative condenser heat rejection equipment (air cooled, or ground source).
- Specify native plants that are tolerant of local climate, soils and water.
- Install drip irrigation and high efficiency irrigation control (moisture sensors, weather based controllers).
- Implement appropriate, safe strategies to recycle site waste water (e.g. gray water or condensate) and/or municipal secondary treated water for irrigation, sewage conveyance, and toilet flushing.
- Collect storm water runoff from roofs and site and use for irrigation, sewage conveyance, toilet flushing and/or HVAC/process makeup water or recharge in to aquifer.
- Minimize hardscapes and install permeable paving and other pervious surface materials.
- Create wetlands or other systems to locally recharge underground water flows.

SECTION- 4

ENERGY AND ATMOSPHERE

The burning of fossil fuels is the single largest contributor to global climate change, as well as a contributor to a host of toxic emissions that impair the environmental health of directly affected communities and the world. Rising energy prices impose a significant economic imperative that requires a careful examination of understanding how to best assure a comfortable healthy indoor environment supportive of patient recovery with a significantly reduced energy demand.

This category encourage owners/designers to take a comprehensive, systematic look at the building and site's energy flows to reduce energy bills, evaluate opportunities for reliance on renewable energy sources, and improve environmental health outcomes. By increasing energy efficiency, the demand for electrical power is lessened, and the use of raw materials required to generate the power is reduced. Green power generation methods such as solar or wind reduce carbon emissions and associated global warming. The credit for minimizing atmospheric impact is achieved by using no refrigerant, or by using a refrigerant that has low ozone depletion and global warming potential.

No.	Questions	Answers
1	What does EA stand for?	Energy and Atmosphere
2	What are the goals of Energy and Atmosphere LEED category?	<ul style="list-style-type: none"> • Reduce building energy demand • Reduce emissions from energy use • Reduce reliance on energy generated by fossil fuels • Maximize use of energy generated by renewable sources
3	How many prerequisites and credits are there in the energy and atmosphere section?	<ul style="list-style-type: none"> • Prerequisite – 3 • Credits- 6 • Points - 17
4	Name the Prerequisites in the EA Section	EA P1 - Fundamental Commissioning of the Building Energy Systems. EA P2 - Minimum Energy Performance EA P3 - Fundamental Refrigerant Management
5	Name the Credits in the EA Section	EA Credit 1 – Optimize Energy Performance (10 points) EA Credit 2 – On Site Renewable Energy (3 points) EA Credit 3 – Enhanced Commissioning (1 point) EA Credit 4 – Enhanced Refrigerant Management (1 point) EA Credit 5 – Measurement and Verification (1 point) EA Credit 6 – Green Power (1 point)
6	What percentage EA category contributes to overall LEED credit points?	25% [17 / 69 x 100] This is the highest among all categories.

No.	Questions	Answers
	EA PREREQUISITES	
7	EA PREREQ 1 What is the name of the first prerequisite?	Fundamental Commissioning of the Building Energy Systems.
8	EA PREREQ 1 What is the intent of the 1st prerequisite?	Verify that the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, basis of design and construction documents.
9	EA PREREQ 1 What are the fundamental commissioning requirements for EA Prerequisite 1?	Designate a Commissioning Authority (CxA) to lead, review, and oversee completion of commissioning process <ul style="list-style-type: none"> • Must be experienced for two similar projects • Independent person who provide reports, findings, and recommendations directly to the Owner. • For projects less that 50,000 sq-ft, commissioning can be done by design or construction team.
10	EA PREREQ 1 What are the 6 requirements of the Commissioning Authority (CxA)?	<ul style="list-style-type: none"> • Review the BOD & OPR [The owner writes up the Owner's Project Requirements (OPR), and the design team creates the Basis of Design (BOD). CxA reviews these documents]. • Develop a Commissioning plan. • Verify the Installation & Performance of the systems to be commissioned. • Report the results and findings to the owner. • Completes a summary commissioning report. • Develop & incorporate commissioning requirements into the construction documents.
11	EA PREREQ 1 What are the Submittals requirements to achieve EA Prerequisite 1?	Provide the LEED-NC Letter Template, signed by the owner and commissioning authority, confirming that the commissioning requirements for the building's energy related systems have been successfully executed or will be provided under existing contract(s).
12	EA PREREQ 1 What does the owner cover in Owner's Project Requirements (OPR)?	The owner in their OPR specifies energy efficiency goals (local energy codes, ASHRAE, or LEED), Indoor Environmental Quality Requirements (temp, humidity, air quality, ventilation, filtration, adjustability of controls), equipment and Systems Expectations

No.	Questions	Answers
		(maintenance, quality, automation).
13	EA PREREQ 1 What does the design team cover in Basis of Design (BOD)?	The BOD provides a narrative on the design of systems including codes, regulations, and performance criteria.
14	EA PREREQ 1 What is a strategy to achieve EA Prerequisite 1?	Engage a commissioning authority and adopt a commissioning plan.
15	EA PREREQ 1 What systems are covered in commissioning?	<ul style="list-style-type: none"> • HVAC and refrigeration • Lighting and daylight controls • Renewable Energy (PV, wind, solar etc) • Domestic Hot Water
16	EA PREREQ 1 Why commissioning is required?	<p>To Verify:</p> <p>Installation inspection: verify proper installation and complete quality control to catch issues before start-up</p> <p>System Performance Testing: check as systems are energized, programmed, balanced and run under part and full load conditions.</p>
17	EA PREREQ 1 What is the approximate cost to the commissioning?	Commissioning usually adds \$1/ sq ft.
18	EA PREREQ 2 What is the name of the 2nd EA prerequisite?	Minimum Energy Performance
19	EA PREREQ 2 What is the intent of the 2nd prerequisite?	Establish minimum level of energy efficiency for building system.
20	EA PREREQ 2 What are the submittal requirements of the 2nd prerequisite?	<p>Option 1:</p> <p>Provide a LEED-NC Letter Template, signed by a licensed professional engineer or architect, stating that the building project complies with both:</p> <ul style="list-style-type: none"> • The mandatory provisions in Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4 of ASHRAE/IESNA Standard 90.1-2004 (without amendments); <li style="padding-left: 20px;">and • The prescriptive requirements in Sections

No.	Questions	Answers
		<p>5.5, 6.5, 7.5, and 9.5 or the performance requirements in Section 11 of ASHRAE/IESNA 90.1-2004 or the local energy code, whichever is more stringent.</p> <p>Option 2:</p> <ul style="list-style-type: none"> • comply with local codes or DOE (Department of Energy), instead of ASHRAE • Mandatory: provide occupancy controls for: <ul style="list-style-type: none"> ○ class rooms ○ meeting rooms ○ break rooms
21	<p>EA PREREQ 2</p> <p>What is a strategy to achieve EA Prerequisite 2?</p>	<p>Design the building envelope, HVAC, lighting, and other systems to maximize energy performance.</p> <p>The ASHRAE 90.1-2004 User's Manual contains worksheets that can be used to document compliance with this prerequisite. For projects pursuing points under EA credit 1, the computer simulation model may be used to confirm satisfaction of this prerequisite. The establishment of local energy codes as equivalent to or more stringent than ASHRAE 90.1- 2004 is a considerable task.</p> <p>Details on the DOE process for commercial energy code determination are available through URL: http://www.energycodes.gov/.</p>
22	<p>EA PREREQ 3</p> <p>What is the name of the 3rd prerequisite?</p>	Fundamental Refrigerant Management
23	<p>EA PREREQ 3</p> <p>What is the intent of the 3rd prerequisite?</p>	Reduce ozone depletion.
24	<p>What are the requirements of the 3rd prerequisite?</p>	<p><u>New Building</u></p> <ul style="list-style-type: none"> • Zero use of CFC-based refrigerants in HVAC systems. Specify new HVAC equipment uses NO CFC Refrigerants. <p><u>Existing Building</u></p> <ul style="list-style-type: none"> • Consider replacement or "phase-out" program for HVAC units and fire systems with CFCs. CFC production stopped in 1995 and was phased out 5 years after that. <p>Notes:</p> <ul style="list-style-type: none"> • <i>ODP</i>: ozone depletion potential

No.	Questions	Answers
		<ul style="list-style-type: none"> • <i>GWP</i>: global warming potential
25	EA PREREQ 3 Does EA Prerequisite 3 allow any use of CFC based refrigerants in new HVAC&R systems?	No
26	EA PREREQ 3 Does EA Prerequisite 3 allow any use of CFC based refrigerants in existing base building HVAC&R systems?	Yes, but conduct an inventory to identify equipment that uses CFC refrigerants and provide a phase-out schedule for these refrigerants.
27	EA PREREQ 3 What standards/ruling applies to EA Prerequisite 3?	EPA Montreal Protocol - 1987
28	EA PREREQ 3 What are the requirements to achieve EA Prerequisite 3?	Provide a LEED-NC Letter Template, signed by a licensed professional engineer or architect, declaring that the building's HVAC&R systems do not use CFC-based refrigerants.
EA CREDITS		
29	EA CREDIT 1 What is EA Credit 1 called?	Optimize Energy Performance
30	EA CREDIT 1 How many points are available for Optimize Energy Performance- Option1?	Ten
31	EA CREDIT 1 What is the intent of the Optimize Energy Performance Credit?	<ul style="list-style-type: none"> • To achieve increasing levels of energy performance above the baseline in the prerequisite standard • To reduce environmental and economic impacts associated with excessive energy use.
32	List few methods of optimizing energy performance.	<ul style="list-style-type: none"> • Reduce building footprint • Reduce demand • Provide sensors in: <ul style="list-style-type: none"> ○ Break rooms ○ Class rooms ○ Meeting/conference rooms • Harvest Energy

No.	Questions	Answers
		<ul style="list-style-type: none"> ○ Building Orientation ○ Window Location ○ Natural Ventilation ● Improve Efficiency <ul style="list-style-type: none"> ○ Through design of HVAC, lighting, and building envelope ● Recover Waste Energy <ul style="list-style-type: none"> ○ Exhaust Air Energy ○ Graywater Heat ○ Cogeneration
33	EA CREDIT 1 How many implementation options are available?	Three (Earlier there were 4 options. The Benchmark version is deleted in the updated reference guide edition Oct, 2007).
34	EA CREDIT 1 (Option 1) What is option 1?	<u>Option 1: Whole Building Energy Simulation</u> <u>1 to 10 points possible</u> <u>New Buildings:</u> Demonstrate percentage of improvement in proposed building performance rating compared to baseline performance rating per Building Performance Rating method in Appendix G in ASHRAE / IESNA 90.1 - 2004. The minimum energy cost savings percentage for each point threshold is than calculated as follows: One point at 10.5% improvement, then 1 additional point for each 3.5% after that (10 points max for 42.5% improvement). <u>Existing Buildings:</u> Same as new buildings, except 1 point at 3.5%, then 1 additional point for each 3.5% after that. (10 points max for 35% improvement). <ul style="list-style-type: none"> ● For Calculations: <i>Include all energy costs</i> ● Compare to a <i>baseline</i> (model simulation) ● Provide <i>4 orientation simulations</i> for baseline modeling.
35	EA CREDIT 1 (Option 1) How many points are available for Optimize Energy Performance, Option 1?	1 to 10
36	EA CREDIT 1 (Option 1) What metric is used when	Annual energy cost savings

No.	Questions	Answers
	evaluating Optimize Energy Performance Credit, Option 1?	
37	EA CREDIT 1 (Option 1) What method is used to determine cost savings in Optimize Energy Performance Credit, Option 1?	The Building Performance Rating method
38	EA CREDIT 1 (Option 1) What are the regulated energy components for Optimize Energy Performance Credit, Option 1?	HVAC systems, service water heating, and lighting
39	EA CREDIT 1 (Option 1) What percentage of energy cost savings must the energy design achieve to get two points for the Optimize Energy Performance Credit, Option 1, for both new and existing buildings?	14% for new, 7% for existing
40	EA CREDIT 1 (Option 1) What percentage of energy cost savings must the energy design achieve to get all ten points for the Optimize Energy Performance, Option 1, for both new and existing buildings?	New Buildings - 42% Existing Buildings - 35%
41	EA CREDIT 1 (Option 2) What is Option 2?	Option 2: Prescriptive Compliance Path: “Design Guide for Small Office Buildings” (4 points possible) <ul style="list-style-type: none"> • Comply with ASHRAE "Guide for Small Office Buildings" - 2004. • Building must be less than 20,000 sq-ft • Building must be office occupancy. • For Calculations: NOT energy costs, but use Climate Zone factor • Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located

No.	Questions	Answers
42	EA CREDIT 1 (Option 2) How many points are available for Optimize Energy Performance, Option 2- Prescriptive Compliance Path?	Four
43	EA CREDIT 1 (Option 2) What are the requirements for Optimize Energy Performance, Option 2?	Comply with the prescriptive measure of the ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004.
44	EA CREDIT 1 (Option 2) What restrictions apply to Optimize Energy Performance- Option 2?	<ul style="list-style-type: none"> • Buildings must be under 20,000 sq. feet • Buildings must be office occupancy • Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.
45	EA CREDIT 1 (Option 3) What is Option 3?	Option 3: Prescriptive Compliance Path: "Core Performance Guide" (2- 5 points possible) <ul style="list-style-type: none"> • Comply with Advanced Buildings Core Performance Guide sections 1 & 2 <ul style="list-style-type: none"> ○ Buildings must be LESS than 100,000 sq - ft. ○ Buildings may NOT be healthcare, warehouse or laboratories. ○ Minimum points achievable (2 to 3 points) • Three points for office, school, public assembly and retail • Two points for all other project types • Up to 2 points for projects that implement section 3: enhanced performance • 1 point for every 3 strategies implemented • Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located
46	EA CREDIT 1 (Option 3) How many points are available for Optimize Energy Performance- Option 3?	2 to 5

No.	Questions	Answers
47	EA CREDIT 1 (Option 3) What are the requirements for Optimize Energy Performance- Option 3?	Comply with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Benchmark™ Version 1.1 with the exceptions of sections 1.7 Monitoring and Trend Logging, 1.11 Indoor Air Quality, and 1.14 Networked Computer Monitor Control.
48	EA CREDIT 1 (Option 3) What restrictions apply to Optimize Energy Performance- Option 3?	Project teams must fully comply with all applicable criteria as established in Advanced Building Benchmarks™ for the climate zone in which the building is located.
49	EA CREDIT 2 What is the EA Credit 2 called?	On-Site Renewable Energy
50	EA CREDIT 2 What is the intent of On-Site Renewable Energy Credit?	<ul style="list-style-type: none"> • Increase on-site renewable energy self supply • Reduce environmental and economic impacts associated with fossil fuel use • Offset building energy costs
51	EA CREDIT 2 How many points are available for On-Site Renewable Energy?	Three
52	EA CREDIT 2 What is the requirement for Renewable Energy Credit 2?	Use on-site renewable energy systems to offset building energy cost.
53	EA CREDIT 2 What are the performance levels for the renewable energy points?	On-site use of: <ul style="list-style-type: none"> • 2.5% renewable energy = 1 point • 7.5% renewable energy = 2 points • 12.5% renewable energy = 3 points (max) Gain 1 additional point for 17.5% through exemplary performance. (4 total)
54	EA CREDIT 2 What are some eligible renewable technologies to achieve EA Credit 2?	<ul style="list-style-type: none"> • Solar • Photo-voltaic • Wind • Geothermal heating and electric • Biomass • Bio-gas • Low-Impact Hydro Electric

No.	Questions	Answers
55	EA CREDIT 2 What are the Non- eligible renewable technologies?	<ul style="list-style-type: none"> • Architectural features • Passive solar • Day lighting • Geo-exchange (ground source heat pumps) • Green-power from off site
56	EA CREDIT 2 How is energy cost calculated for EA Credit 2?	Using the same software energy simulation used in EA Credit 1- Optimize Energy Performance, or by using the Department of Energy Commercial Buildings Energy Consumption Survey (CBECS) database to determine estimated electricity use.
57	EA CREDIT 3 What is EA Credit 3 called?	Enhanced Commissioning
58	EA CREDIT 3 What is the intent of the Enhanced Commissioning Credit?	Begin the commissioning process early during the design process and execute additional activities after systems performance verification is completed.
59	EA CREDIT 3 What is the difference between Prerequisite 1 and Credit 3?	Credit 3 fulfills requirements of EA prerequisite 1 and in addition: <ul style="list-style-type: none"> • Prior to the start of the construction documents phase, designate an independent CxA to lead, review, and oversee the completion of all commissioning process activities. • CxA must review OPR (Owner's Project's Requirements), BOD (Basis of Design), and Design Documents prior to 50% CD (Construction Documents). • Reviews contractor submittals for compliance with OPR and BOD • Develops a systems manual for the commissioned systems • Verifies that the requirements for training for staff and occupants are completed and • Reviews building operation within 10 months after substantial completion.
60	EA CREDIT 3 How many points are available for Enhanced Commissioning?	One

No.	Questions	Answers
61	EA CREDIT 3 What is the 1st requirement of Enhanced Commissioning Credit?	Prior to the start of the construction documents phase, designate an independent CxA to lead, review, and oversee the completion of all commissioning process activities.
62	EA CREDIT 3 What is the 2nd requirement of Enhanced Commissioning Credit?	CxA shall conduct, at a minimum, one commissioning design review of the Owner's Project Requirements (OPR), the Basis of Design (BOD) and the design documents (DD) prior to mid-construction documents phase, and then check the review comments.
63	EA CREDIT 3 What is the 3rd requirement of Enhanced Commissioning Credit?	CxA shall review contractor submittals applicable to systems being commissioned, and submitted to design team and owner.
64	EA CREDIT 3 What is the 4th requirement of Enhanced Commissioning Credit?	Develop a systems manual for operation of the commissioned systems.
64	EA CREDIT 3 What is the 5th requirement of Enhanced Commissioning Credit?	Verify that the requirements for training personnel and building occupants are completed.
66	EA CREDIT 3 What is the 6th requirement of Enhanced Commissioning Credit?	Assure CxA involvement in reviewing building operation within 10 months after substantial completion.
67	EA CREDIT 3 The CxA is required to perform which requirements for Enhanced Commissioning?	<ul style="list-style-type: none"> • Review of Design • Review of Systems Manual • Verification of training requirements
68	EA CREDIT 3 What are the requirements of the Commissioning Authority (CxA) for Enhanced Commissioning?	The CxA must have documented commissioning authority experience in at least two building projects, must be independent of the work of design and construction, must not be an employee of the design firm, must not be an employee or contracted through a contractor or construction manager, and can be a qualified employee or consultant of the Owner.

No.	Questions	Answers
69	EA CREDIT 4 What is EA Credit 4 called?	Enhanced Refrigerant Management
70	EA CREDIT 4 What are the intents of the Enhanced Refrigerant Management Credit?	Reduce ozone depletion and support compliance with the Montreal Protocol while minimizing direct contributions to global warming.
71	EA CREDIT 4 What is the impact of different refrigerants on ozone depletion?	<ul style="list-style-type: none"> • CFC (high) • HCFC (medium) • HFC (low) Efficiency of HFC is less than HCFC
72	EA CREDIT 4 How many points are available for Enhanced Refrigerant Management?	One
73	EA CREDIT 4 What is required for the Enhanced Refrigerant Management Credit?	<u>Option 1:</u> Do not use refrigerants <u>Option 2:</u> Select refrigerants & HVAC equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion & global warming.
74	EA CREDIT 4 What are some strategies to achieve the Enhanced Refrigerant Management Credit?	<ul style="list-style-type: none"> • Do not install fire suppression systems with ozone depleting substances • Use natural refrigerants: water, carbon dioxide, ammonia • Use vapor absorption machines for refrigeration, where heat recovery is possible. • Use refrigerants with low ODP & GWP • Minimize leakage rate • Use equipment with reduced Rc (refrigerant charge) • Use equipment with "long service life" • Eliminate use of mechanical cooling where possible.
75	EA CREDIT 4 What standards are applicable to EA Credit 4?	<ul style="list-style-type: none"> • Clean Air Act 1990 • EPA Montreal Protocol 1987

No.	Questions	Answers
76	EA CREDIT 5 What is EA Credit 5 called?	Measurement & Verification
77	EA CREDIT 5 What is the intent of Measurement & Verification Credit?	Provide for the ongoing accountability of building energy consumption over time.
78	EA CREDIT 5 How many points are available for Measurement & Verification?	One
79	EA CREDIT 5 How many options are there for EA Credit 5?	Four (There are 4 options, A to D, but for LEED we only look at <i>B and D</i>).
80	EA CREDIT 5 What is the framework used for Measurement & Verification?	<u>Option B:</u> Energy Conservation Measure (ECM) Isolation. or <u>Option D:</u> Calibrated Simulation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003.
81	EA CREDIT 5 How is energy uses monitored in the Measurement & Verification Credit?	<u>Option B:</u> ECM Isolation measures energy savings & operating parameters of the system(s) to which an ECM is applied. <u>Option D:</u> Calibrated Simulation measures energy savings at whole building main meters or sub-meters.
82	EA CREDIT 5 What are some strategies to achieve the Measurement & Verification (M &V) Credit?	<ul style="list-style-type: none"> • Develop an M&V plan to evaluate building and/or energy system performance. • Characterize the building and/or energy systems through energy simulation or engineering analysis. • Install the necessary metering equipment to measure energy use. • Track and compare actual performance to baseline predicted performance.

No.	Questions	Answers
83	EA CREDIT 6 What is EA Credit 6 called?	The Green Power Credit
84	EA CREDIT 6 What is the intent of the Green Power Credit?	Encourage the development and use of grid source renewable energy technologies on a net zero pollution basis.
85	EA CREDIT 6 How many points are available for the Green power?	One
86	EA CREDIT 6 What is the requirement for the Green Power Credit, where green power is available?	Engage in a two-year contract to purchase power generated from renewable sources for at least 35% of power.
87	EA CREDIT 6 What is the requirement for the Green Power Credit, where green power is NOT available?	Purchase RECs (tradeable Renewable Certificates) equivalent to 35% of predicted annual electrical consumption for 2 year period (this equals 70% of projected annual electrical consumption if all RECs are purchased at one time).
88	EA CREDIT 6 What defines renewable sources for Green Power?	Center for Resource Solutions (CRS) Green-e products certification requirements.

Summarizing.....

Suggested Strategies for Energy and Environment conservation include but not limited to:

- Use ASHRAE 90.1-1999 as basis of design to optimize thermal envelope performance.
- Use energy simulation tools, such as DOE2, Energy 10, Radiance, to optimize interactions between building elements and optimize design.
- Optimize layout and orientation of building to optimize energy performance.
- Design for appropriate daylighting strategies that reduce heat gain and control glare and contrast.
- Specify efficient lighting fixtures.
- Specify user controls and ambient condition lighting controls integrated with daylighting.
- Specify efficient HVAC equipment (high efficiency, appropriately sized, low NOX).
- Specify EPA Energy Star electrical equipment and appliances.
- Specify solar water heating and low-flow hot water fixtures and appliances.

- Specify zoning and controls for mechanical equipment to optimize use.
- Specify EPA Energy Star™ roofing materials and/or green roofs to reduce cooling loads and heat island effect.
- Develop a commissioning plan and hire an independent Commissioning Agent.
- Specify HVAC, refrigeration & fire suppression equipment that do not utilize CFCs and halons.
- When reusing existing base building HVAC equipment, develop a comprehensive CFC phaseout conversion. Balance ozone depletion potential (ODP) of HCFC alternatives with global warming potential (GWP).
- Evaluate feasibility for and specify cogeneration, fuel cells, renewable energy systems (such as photovoltaics, wind, biomass and low impact hydroelectric) and other alternative energy sources Design for continued monitoring and verification of system performance.
- Purchase green energy where available that meets the Center for Resource Solutions Green-e products certification requirements.

SECTION - 5

MATERIAL RESOURCES

Use of sustainable materials can significantly enhance a building's environmental health performance. The sustainable harvest of materials enhances the health of habitats and increases biodiversity.

This category encourages owners/designers to take a comprehensive, systematic look at material specifications so as to eliminate harmful health effects. The majority of credits in this category are gained through reuse and recycling of building materials. Credits are available for: reusing existing building structures, reusing or recycling building materials, and diverting building materials from disposal for recycling or reuse.

Credits are also available for using local materials, rapidly renewable materials, and utilizing certified wood products. The local material credits emphasize a reduction in environmental impact from transportation. The use of rapidly renewable materials eases the depletion of non-renewable resources.

No.	Questions	Answers
1	What does MR stand for?	Material Resources
2	What are the goals of Material Resources LEED category?	<ul style="list-style-type: none"> • Reduce resource depletion. • Reduce embodied energy. • Reduce toxics generated throughout the life cycle of materials. • Reduce waste. • Reduce impact of reuse or disposal of building.
3	How many prerequisites, credits and points are there in the Sustainable Sites?	Prerequisite – 1 Credits- 7 Points - 13
4	Name the Prerequisite in MR Section.	MR P1- Storage and Collection of Recyclables
5	Name the Credits in the MR Section	MR Credit 1- Building Reuse (3 points) MR Credit 2 – Construction Waste Management (2 points) MR Credit 3- Materials Reuse (2 points) MR Credit 4 – Recycled Materials (2 points) MR Credit 5- Regional Materials (2 points) MR Credit 6 – Rapidly Renewable Materials (1 point) MR Credit 7- Certified Wood (1 point)
6	What percentage MR contributes to overall LEED credit points?	19% [13 / 69 x 100]

No.	Questions	Answers
	MR PREREQUISITES	
7	MR PREREQ 1 What is the MR prerequisite?	Storage and collection of recyclables.
8	MR PREREQ 1 What is the intent of the MR prerequisite?	<ul style="list-style-type: none"> • Reduction in landfill disposal from wasted generated by building occupants. • Provide accessible storage and collection locations on site.
9	What are the various collection sources?	<u>Collection Sources:</u> <ul style="list-style-type: none"> • Recycle chutes • Collection bins • Can crushers • Cardboard balers
10	MR PREREQ 1 What items must be recycled at minimum?	<ul style="list-style-type: none"> • Glass • Paper • Metal • Plastic • Cardboards
11	MR PREREQ 1 What are the guidelines that govern the minimum recycling area?	Rough guidelines based on best practices: <ul style="list-style-type: none"> • 0-5000 sq-ft commercial building: 82 sq-ft minimum accessible recycling area • 5001-15,000 : 125 sq-ft • 15,001-50,000 : 175 sq-ft • 50,001-100,000: 225 sq-ft • 100,001-200,000: 275 sq-ft • 200,000: 500 sq-ft
	MR CREDITS	
12	MR CREDIT 1 What is MR Credit 1 called?	Building Reuse
13	MR CREDIT 1 How many points are available for Building Reuse?	Three Credit 1.1: Building Reuse – Maintain 75% of Existing Walls, Floors & Roof Credit 1.2: Building Reuse – Maintain 95% of Existing Walls, Floors & Roof Credit 1.3: Building Reuse – Maintain 50% of Interior Non – Structured Elements
14	MR CREDIT 1.1 What is required for Building	Maintain 75% of existing building structure and envelope.

No.	Questions	Answers
	Reuse Credit 1.1?	
15	MR CREDIT 1.2 What is required for Building Reuse Credit 1.2?	Maintain 95% of existing walls, floors and roof.
16	MR CREDIT 1.1 & 1.2 What is the intent of Building Reuse Credit 1.1 and 1.2?	<ul style="list-style-type: none"> • Extend the life cycle of existing building stock • Conserve and retain cultural resources • Reduce waste • Reduce environmental impact with regards to manufacturing materials and their transport
17	MR CREDIT 1.1 & 1.2 Define the extent of coverage for implementing MR Credit 1.1 and 1.2?	<u>Implementation:</u> <ul style="list-style-type: none"> • <u>Excludes:</u> <ul style="list-style-type: none"> ○ windows ○ doors ○ non-structural material ○ MEP (mechanical, electrical, plumbing) ○ Elevator equipment ○ hazardous material (which should be removed) • <u>Includes:</u> <ul style="list-style-type: none"> ○ Flooring ○ Framing ○ Roof ○ Exterior Structure (envelope) • Calculation: <ul style="list-style-type: none"> ○ USE SQUARE FOOTAGE (sq-ft)
18	MR CREDIT 1.1 & 1.2 When is a Credit 1.1 and Credit 1.2 NOT applicable?	If the project includes an addition to an existing building and the square footage of the addition is more than 2 times the square footage of the existing building.
19	MR CREDIT 1.1 & 1.2 What is the difference between MR Credit 1.1 and MR Credit 1.2?	MR Credit 1.1 and MR Credit 1.2 are EXACTLY the same, except you can earn two points by achieving the 95% requirement in MR Credit 1.2. Note that credit MR 1.3 should be treated as a SEPARATE credit with different means of implementation.
20	MR CREDIT 1.3 What is required for Building Reuse Credit 1.3?	Maintain 50% of interior non-structural elements.
21	MR CREDIT 1.3	Interior walls, doors, windows, floor coverings,

No.	Questions	Answers
	How is interior non-structural defined for Building Reuse Credit 1.3?	casework and ceiling systems.
22	MR CREDIT 1.3 Define the extent of coverage for implementing MR Credit 1.3?	<p><u>Implementation:</u></p> <ul style="list-style-type: none"> • <u>Excludes:</u> <ul style="list-style-type: none"> ○ MEP (mechanical, electrical, plumbing) ○ Elevator equipment • <u>Includes:</u> <ul style="list-style-type: none"> ○ walls, partitions, doors, ceilings, and floor covering • Calculation: <ul style="list-style-type: none"> ○ USE SQUARE FOOTAGE (sq.ft.) <p>Note:</p> <ul style="list-style-type: none"> ○ Fixed items are things like walls and doors found on-site count toward this credit IF they are used for the same purpose they were intentionally built for, i.e. a door is reused as a door. ○ if these items are reused for something else, i.e. a door becomes a table, they are NOT a part of this calculation <p>(They can contribute to credits MR 3.1 and MR 3.2)</p>
23	MR CREDIT 1 What does LEED prefer upgraded in Building Reuse Credit?	Upgrade components that would improve energy and water efficiency, such as mechanical systems and plumbing fixtures.
24	MR CREDIT 2 What is MR Credit 2 called?	Construction Waste Management
25	MR CREDIT 2 What is the intent of Construction Waste Management credits?	<ul style="list-style-type: none"> • Divert construction and demolition debris from landfills and incinerators. • Redirect salvage and recyclables back to manufacturing process. • Redirect reusable materials to appropriate sites.
26	MR CREDIT 2 How many points are available for Construction Waste Management?	<p>Two</p> <p>Credit 2.1: Construction Waste Management – Divert 50% from Disposal</p> <p>Credit 2.2: Construction Waste Management – Divert 75% from Disposal</p>

No.	Questions	Answers
27	MR CREDIT 2 What is required for Construction Waste Management credits?	Develop and implement a construction waste management plan that identifies materials to be diverted from disposal.
28	MR CREDIT 2 How do you calculate the percentage of Construction Waste Management Credits?	Calculations can be done by weight or volume, but must be consistent throughout.
29	MR CREDIT 2 Can you donate salvaged materials to nonprofits?	Yes, LEED even uses habitat for humanity as an example.
30	MR CREDIT 2 What should be included in the specifications to inform the contractors and sub-contractors of the requirements for Construction Waste Management?	<ul style="list-style-type: none"> • Quantity of waste leaving site • Description of waste material • Requirement to identify haulers and recyclers
31	MR CREDIT 2 What is a strategy for Waste Management credits?	Designate a specific area on the construction site for recycling and tracking efforts throughout the construction process.
32	MR CREDIT 2.1 What is required for Construction Waste Management Credit 2.1?	Divert 50% from disposal.
33	MR CREDIT 2.2 What is required for Construction Waste Management Credit 2.2?	Divert 75% from disposal.
34	MR CREDIT 2.1 & 2.2 Define the extent of coverage for implementing MR Credit 2.1 and MR Credit 2.2?	<u>Implementation:</u> <ul style="list-style-type: none"> • Develop a construction waste management plan to at a minimum, identify materials to be diverted: <ul style="list-style-type: none"> • salvage, refurbish, recycle, reuse • <u>Include:</u> <ul style="list-style-type: none"> ○ doors and windows ○ salvaged flooring, paneling, cabinetry, beams ○ recycled cardboard, metal, brick,

No.	Questions	Answers
		<p>acoustical tile, concrete, plastics, clean wood, glass, gypsum board, carpet and insulation.</p> <ul style="list-style-type: none"> ○ MEP (mechanical, electrical, plumbing) updated ● Exclude: <ul style="list-style-type: none"> ○ soil, rocks, vegetation ○ hazardous material ● Designate site in construction area for separation process ● Track recycling through construction process (<i>general contractor</i> to keep records i.e. receipts, of recyclable and waste diversion pickups) ● Diversion can include donation to charitable organizations as well. ● Calculation: <ul style="list-style-type: none"> ○ Based on WEIGHT (lbs.) or VOLUME (cubic ft.)
35	MR CREDIT 3 What is MR Credit 3 called?	Materials Reuse
36	MR CREDIT 3 What is the intent of Materials Reuse credits?	<ul style="list-style-type: none"> ● Reuse building materials and products to reduce demand for virgin materials. ● Reduce waste, thus reducing impacts associated with extracting and processing virgin resources.
37	MR CREDIT 3 How many points are available for Materials Reuse?	Two Credit 3.1: Materials Reuse – 5% Credit 3.2: Materials Reuse – 10%
38	MR CREDIT 3.1 What is required for Materials Reuse Credit 3.1?	Specify 5% salvaged, refurbished or reused materials.
39	MR CREDIT 3.2 What is required for Materials Reuse Credit 3.2?	Specify 10% salvaged, refurbished or reused materials.
40	MR CREDIT 3.1 & 3.2 Name some materials (salvaged items) recommended for Materials	<u>Inclusions</u> <ul style="list-style-type: none"> ● Salvaged items - Beams, floors, posts, paneling, doors and frames, cabinetry, brick and decorative items

No.	Questions	Answers
	Reuse?	<p>- Furniture may also be included only if it is included consistently through credits MR 3.1 through MR 7</p> <ul style="list-style-type: none"> • Reused items • Refurbished items
41	<p>MR CREDIT 3.1 & 3.2</p> <p>What measures are used to calculate Materials Reuse Credit?</p>	<p>Percentage of total cost of building materials (not including labor and equipment).</p> <p>Total Materials Cost - > 2 options</p> <p>45% construction cost (total construction cost of entire project multiplied by 0.45)</p> <p>OR</p> <p>Actual materials cost</p> <p>Benefit of using actual material cost rather than default 45% is that projects with < 45% actual materials cost would find it easier to achieve to 5% and 10% (MR3-2) thresholds since equation of percent reuse = cost or reuse divided by total material cost.</p>
42	<p>MR CREDIT 3.1 & 3.2</p> <p>What materials are excluded from the calculations for Materials Reuse Credit?</p>	<p><u>Exclusions:</u></p> <ul style="list-style-type: none"> • Recycled items • MEP (mechanical, electrical, plumbing) • Specialty items such as elevators and equipment
43	<p>MR CREDIT 4</p> <p>What is MR Credit 4 called?</p>	Recycled Content
44	<p>MR CREDIT 4</p> <p>What are 2 intents of Recycled Content points?</p>	<p><u>Intents</u></p> <ul style="list-style-type: none"> • Reduce impact from extraction and processing of virgin materials • Increase use of recycled content in building
45	<p>MR CREDIT 4</p> <p>How many points are available for Recycled Content?</p>	<p>Two</p> <p>Credit 4.1: 10% (Post Consumer + ½ Pre Consumer)</p> <p>Credit 4.2: 20% (Post Consumer + ½ Pre Consumer)</p>
46	<p>MR CREDIT 4.1</p> <p>What is required for Recycled Content Credit 4.1?</p>	<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.</p>
47	<p>MR CREDIT 4.2</p> <p>What is required for Recycled</p>	<p>Use materials with recycled content such that the sum of post-consumer recycled content plus one-half</p>

No.	Questions	Answers
	Content Credit 4.2?	of the pre-consumer content constitutes at least 20% of the total value of the materials in the project.
48	MR CREDIT 4.1 & 4.2 What are post-consumer materials?	Waste materials generated by households or commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. <i>Examples:</i> plastic, paper, glass, and metal
49	MR CREDIT 4.1 & 4.2 What are pre-consumer materials?	Materials that are diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework/regrind/scrap that is generated in a process and capable of being reclaimed within the same process that generated it. <i>Examples:</i> wheat straw, sawdust, fly ash.
50	MR CREDIT 4.1 & 4.2 What materials are excluded from the calculations for Recycled Content Credit?	<u>Exclusions:</u> <ul style="list-style-type: none"> • Recycled items • MEP (mechanical, electrical, plumbing) • Specialty items such as elevators and equipment
51	MR CREDIT 4.1 & 4.2 Name some materials included for recycled content credit.	<u>Inclusions</u> <ul style="list-style-type: none"> • Anything but MEP and elevator equipment that is recycled. • Furniture may also be included only if used consistently in credits MR 3.1 through MR 7 • Steel products with no information available, assume recycled content to be 25% post consumer.
52	Give some examples of accumulating LEED points in MR Credit 4.	Low Emitting Material: LEED V2.2 awards 1 point (Credits 4.1 and 4.2 of “Indoor Environmental Quality” area) if the VOC content is less than the current limits specified in SCAQMD Rule #1168 (adhesives) and Green Seal Standard GS-11 (paint), and 1 point if the composite wood and agrifiber products contain no added urea-formaldehyde resins.
53	MR CREDIT 4.1 & 4.2 What document is used to define recycled content?	The International Organization for Standardization document, ISO 14021- Environmental labels and declarations-Self declared environmental claims (Type II environmental labeling)
54	MR CREDIT 4.1 & 4.2	Establish a project goal and identify material

No.	Questions	Answers
	What is a strategy for Recycled Content credits?	suppliers that can achieve this goal.
55	MR CREDIT 5 What is MR Credit 5 called?	Regional Materials
56	MR CREDIT 5 What is the intent of Regional Materials credit?	Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.
57	MR CREDIT 5 How does buying locally help the environment?	Reduces transportation impacts (fossil fuels, etc.) and the accompanying pollution associated with transportation.
58	MR CREDIT 5 How does buying locally help the economy?	The money paid for regional materials stays in the region.
59	MR CREDIT 5 How many points are available for Regional Materials?	Two Credit 5.1: Regional Materials – 10% Extracted, Processed and Manufactured Regionally Credit 5.2: Regional Materials – 20% Extracted, Processed and Manufactured Regionally
60	MR CREDIT 5.1 What is required for Regional Materials Credit 5.1?	Use building materials/products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% of the total materials value.
61	MR CREDIT 5.2 What is required for Regional Materials Credit 5.2?	Use building materials/products that have been extracted, harvested or recovered, and manufactured, within 500 miles of the project site for a total of 20% of the total materials value.
62	MR CREDIT 5.1 & 5.2 How is regionally manufactured materials defined?	Regionally manufactured materials refer to the final assembly of a finished product within a 500-mile radius of the project site.
63	MR CREDIT 6 What is MR Credit 6 called?	Rapidly Renewable Materials

No.	Questions	Answers
64	MR CREDIT 6 What is intent of Rapidly Renewable Materials Credit?	Reduce use of “long cycle” and finite raw materials.
65	MR CREDIT 6 What are examples of long-cycle renewables?	Bamboo, wool, cotton insulation, agrifiber, linoleum, wheat-board, strawboard and cork.
66	MR CREDIT 6 How many points are available for Rapidly Renewable Materials?	One
67	MR CREDIT 6 What is required for Rapidly Renewable Materials Credit?	Specify a value of 2.5% rapidly renewable materials for the total value of all building materials/products in the project.
68	MR CREDIT 6 How does LEED define Rapidly Renewable?	Made from plants that are harvested within a ten year, or shorter cycle.
69	MR CREDIT 7 What is MR Credit 7 called?	Certified Wood
70	MR CREDIT 7 What is the intent of the Certified Wood credit?	Encourage environmentally responsible forest management program.
71	MR CREDIT 7 How many points are available for Certified Wood?	One
72	MR CREDIT 7 What is required for the Certified Wood Credit?	Use a minimum of 50% of wood-based materials certified in accordance with the Forest Stewardship Council (FSC) Principles and Criteria for wood building components.
73	MR CREDIT 7 What is FSC?	Forest Stewardship Council
74	MR CREDIT 7 What does LEED recommend using Certified Wood for?	Structural framing, flooring, finishes, doors and furniture.
75	MR CREDIT 7	Yes

No.	Questions	Answers
	Is a project eligible for MR Credit 7 if only 2 of 4 pieces of wood in a building are Certified Wood?	
76	MR CREDIT 7 What does LEED require for chain of custody for Certified Wood?	LEED specifically states that to achieve MR Credit 7, the Forest Stewardship Council (FSC) chain-of-custody certificate number must be provided.
77	MR CREDIT 7 Can Furniture be included in MR Credits 3-7?	Yes, as long as it is used consistently through MR Credits 3-7.
78	What are the Submittal Requirements for MR category?	All Materials and Resources credits are submitted in the construction phase except for prerequisite which shall be submitted during design phase.

Summarizing.....

Suggested Strategies for efficient use of Material Resources include but not limited to:

- Reuse existing structures.
- Specify materials free from ozone depleting substances and/or equipment using CFCs, HCFCs, and halons, balancing ozone depletion potential (ODP) with global warming potential (GWP).
- Specify materials free from toxic chemicals and that do not release toxic byproducts throughout their life cycle, particularly those toxins that are carcinogenic, persistent or bioaccumulative. Key materials to avoid include mercury (switching equipment), arsenic (pressure treated wood), urea formaldehyde (engineered wood), and asbestos.
- Specify materials and products that are:
 - Recycled (preferably with high post consumer content), reused/salvaged, remanufactured or from rapidly renewing sustainable sources.
 - Sustainably harvested (e.g., specify FSC certified wood products).
 - Obtained from local sources.
 - Low in embodied energy.
 - Durable.
 - Low in VOC and/or other chemical emissions in use (see IEQ section).
 - Low maintenance and not requiring toxic materials to maintain and/or operate.
 - Easily reusable, recyclable, compostable, or otherwise biodegradable on disposal.

- Design for efficient material use i.e., less material use and standard sizes to reduce waste
- Design for adaptability of building design as user needs change (e.g., reusable movable office divider walls and raised floor systems to enhance future flexibility)
- Design for disassembly and recycle or reuse at end of building life

SECTION- 6

INDOOR ENVIRONMENT QUALITY

Growing awareness about the relationship between indoor environmental quality -- materials, lighting, thermal comfort -- and human health and productivity has catalyzed substantial research to support healthier buildings. Eliminating materials identified as allergens, mutagens, carcinogens and endocrine disruptors, while providing access to daylight and comfortable indoor climate, are fundamental green building elements.

This LEED category encourages owners and designers to engage in a design process that balances the objectives of a well day lit, comfortable, energy efficient and non-toxic indoor environment and results in improved productivity and patient outcomes. This LEED category focuses on the creation and maintenance of a comfortable, occupant-friendly indoor environment with credits for air quality, thermal comfort, day lighting and providing outdoor views. Indoor air quality credits are obtained by effectively ventilating the indoor space, utilizing low-emitting construction materials (paints, carpets, adhesives), and minimizing the potential for pollutants to infiltrate the occupied space. Thermal comfort credits are obtained by providing temperature controlled working environment and giving a majority of occupants the capability to make adjustments for personal comfort. Day lighting credits are obtained for providing a majority of occupants with natural lighting.

No.	Questions	Answers
1	What does the "E" stand for in EQ?	Environmental
2	What are the goals of "Indoor Environmental Quality" LEED Category?	<ul style="list-style-type: none"> • Provide an environment for occupants that is healthy and encourage rapid patient recovery and staff productivity. • Minimize production and distribution of pollutants. • Provide occupants with access to daylight and views. • Provide energy efficient thermal comfort. • Provide occupant environmental controls (light, view, thermal, ventilation). • Provide appropriate air changes with sufficient percentage of fresh air.
3	How many prerequisites, credits and points are there in the Environment Category?	<ul style="list-style-type: none"> • Prerequisite – 2 • Credits- 8 • Points - 15
4	Name the prerequisites in the EQ Section	<ul style="list-style-type: none"> • Prerequisite 1- Minimum Indoor Air Quality (IAQ) Performance • Prerequisite 2- Environmental Tobacco Smoke (ETS) Control.
5	Name the prerequisites in the EQ Section	<ul style="list-style-type: none"> • EQ Credit 1- Outdoor Air Delivery Monitoring (1 point)

No.	Questions	Answers
		<ul style="list-style-type: none"> • EQ Credit 2 - Increased Ventilation (1 point) • EQ Credit 3 - Construction IAQ Management Plan (2 points) • EQ Credit 4 - Low VOC Emitting Materials (4 points) • EQ Credit 5 - Indoor Chemical and Pollutant Source Control (1 point) • EQ Credit 6 - Controllability of Systems (2 points) • EQ Credit 7 - Thermal Comfort (2 points) • EQ Credit 8 - Day Lighting and Views (2 points)
6	What percentage EQ contribute to overall LEED credit points?	22% [15 / 69 x 100]
	EQ PREREQUISITES	
7	EQ PREREQ -1 What is the intent of Indoor Air Quality Performance Prerequisite 1?	Establish indoor air quality performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.
8	EQ PREREQ - 1 What standard sets the minimum for minimum IAQ performance?	<ul style="list-style-type: none"> • Code: Sections 4 through 7 of ASHRAE Standard 62.1-2004 (some low-rise residential projects may use ASHRAE 62.2-2004). • Mechanical ventilation systems: must be designed using the Ventilation Rate Procedure or the applicable local code, whichever is more stringent. • Naturally Ventilated buildings: comply with ASHRAE 62.1-2004.
9	EQ PREREQ - 1 What are the design strategies to address minimum IAQ performance?	<ul style="list-style-type: none"> • Design ventilation systems to meet or exceed minimum outdoor air ventilation rates as described in the ASHRAE 62.2-2004 standard. • Balance impacts of ventilation rates on energy use and IAQ to optimize for energy efficiency and occupant health.
10	EQ PREREQ - 2 What does ETS mean?	Environmental Tobacco Smoke

No.	Questions	Answers
11	EQ PREREQ - 2 What are requirements for ETS Option1?	Prohibit smoking in the building and locate exterior smoking areas at least 25 feet from <ul style="list-style-type: none"> • Entries • Outside air intakes and • Operable windows.
12	EQ PREREQ - 2 What are requirements for ETS Option 2?	<ul style="list-style-type: none"> • Prohibit smoking in the building except in designated smoking areas and outdoor (same rules as option 1 for outdoor). • Locate designated smoking rooms to <ul style="list-style-type: none"> ○ Effectively contain, capture, and remove ETS from the building, ○ Be directly exhausted to outdoors ○ Enclosed with deck to deck partitions ○ Operate at negative pressure to adjacent spaces. (Performance of smoking room air differential must be verified).
13	EQ PREREQ - 2 What are requirements for ETS Option3?	(Residential Only) <ul style="list-style-type: none"> • Prohibit smoking in all common areas • Locate exterior smoking areas at least 25 feet from entries, air intake, and operable windows opening to common areas • Minimize ETS transfer between residential units by sealing penetrations in walls, ceilings, floors, and vertical chasses • Weatherstrip all doors leading to hallways in residential units unless common hallways are pressurized. • Test performance per ASTM E779-03.
14	EQ PREREQ - 2 What documentation is required to obtain the IEQ Prerequisite 2 “Environmental Tobacco Smoke (ETS) Control” credit?	<ul style="list-style-type: none"> • Provide zero exposure to nonsmokers of ETS. • Provide drawings and a narrative demonstrating smoking areas have independent smoking areas • Provide a letter from the testing engineer stating compliance with ASHRAE 129-1997.
EQ CREDITS		
15	EQ CREDIT 1 What is EQ Credit 1 called?	Outdoor Air Delivery Monitoring
16	EQ CREDIT 1 What is the intent of the	Provide capacity for ventilation system monitoring to sustain occupant comfort and well being.

No.	Questions	Answers
	Outdoor Air Delivery Monitoring Credit?	
17	EQ CREDIT 1 How many points are available for Outdoor Air Delivery Monitoring?	One
18	EQ CREDIT 1 What is required for EQ Credit 1?	Install permanent monitoring systems to provide feedback on ventilation systems, and configure all monitoring equipment to generate an alarm when the conditions vary by 10% or more from a set point.
19	EQ CREDIT 1 What is required for mechanically ventilated spaces for EQ Credit 1?	<u>Densely Monitored Space: > 25 people/1000 sq-ft</u> <ul style="list-style-type: none"> • Monitor CO₂ levels. Monitor location to be 3' to 6' above floor finish <u>For Non-densely occupied spaces</u> <ul style="list-style-type: none"> • Provide direct outdoor airflow measure device with an accuracy of ±15% of the design minimum outdoor airflow rates, as defined by ASHRAE 62.1-2004.
20	EQ CREDIT 1 What is required for naturally ventilated spaces for EQ Credit 1?	Monitor CO ₂ concentrations within all naturally ventilated spaces. Locate monitors within the room between 3 and 6 feet above the floor finish.
21	EQ CREDIT 1 What ASHRAE standard discusses CO ₂ ?	ASHRAE Standard 62.1-2004
22	EQ CREDIT 2 What is EQ Credit 2 called?	Increased Ventilation
23	EQ CREDIT 2 What is the intent of the Increased Ventilation Credit?	Provide additional outdoor air ventilation to improve indoor air quality.
24	EQ CREDIT 2 How many points are available for Increased Ventilation?	One
25	EQ CREDIT 2 What is required for mechanically ventilated	Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE 62.1-2004

No.	Questions	Answers
	spaces for Increased Ventilation Credit?	
26	EQ CREDIT 2 What are the requirements for naturally ventilated spaces?	Design in accordance with the Carbon Trust Good Practice Guide 237. Determine that natural ventilation is an effective strategy by following the flow diagram process of the CIBSE Application Manual 10:2005 and Use diagrams and calculations to show that the design of natural ventilation systems meets CIBSE Application Manual 10: 2005 OR use models to predict that ventilation will meet minimum ASHRAE 62.1-2004 for 90% of occupied spaces.
27	EQ CREDIT 2 What are the three basic methods for ventilating buildings?	Active Ventilation (Mechanical), Passive Ventilation (natural), and Mixed-mode Ventilation (both mechanical and natural)
28	What codes are applicable in meeting the requirements of increased ventilation?	<ul style="list-style-type: none"> • ASHRAE 62.1-2004: Ventilation for Acceptable IAQ • Carbon Trust Good Practice Guide 237 (1998): Natural ventilation in non-domestic buildings • CIBSE Application Manual 10 (2005): Natural ventilation in non-domestic buildings
29	EQ CREDIT 3 What is EQ Credit 3 called?	Construction IAQ Management Plan
30	EQ CREDIT 3 What is the intent of Construction IAQ Management Plan Credit?	<ul style="list-style-type: none"> • Reduce IAQ problems resulting from Construction/Renovation process • Help to sustain comfort and well-being of construction workers and building occupants
31	EQ CREDIT 3 How many points are available for Construction IAQ Management Plan?	Two Credit 3.1: Construction IAQ Management Plan – During Construction Credit 3.2: Construction IAQ Management Plan – Before Occupancy
32	EQ CREDIT 3.1 What are the requirements under Construction IAQ Management Plan?	<ul style="list-style-type: none"> • <u>Standards-</u> Meet or exceed the recommended measures of SMACNA guideline for occupied buildings under construction, Chapter 3 (2007). • Protection of on-site absorptive material (insulation, carpeting, ceiling tile and drywall)

No.	Questions	Answers
		<p>from moisture damage, and</p> <ul style="list-style-type: none"> • If permanently installed air handlers are used during construction, filters of Minimum Efficiency Reporting Value (MERV) of 8 to be used at every return air grill per ASHRAE 52.2-1999.
33	<p>EQ CREDIT 3.1 What are the strategies for achieving EQ Credit 3.1?</p>	<ul style="list-style-type: none"> • Control pollutant sources <ul style="list-style-type: none"> ○ spec materials with low VOC's ○ control exhaust fumes • Interrupt Contamination Pathways <ul style="list-style-type: none"> ○ depressurize work areas ○ provide temporary barriers • Housekeeping activities <ul style="list-style-type: none"> ○ protect porous surfaces ○ dust control • Schedule the installation of materials to avoid contamination
34	<p>EQ CREDIT 3.2 When is Credit EQ3.2 applicable?</p>	<p>After construction but before occupancy</p>
35	<p>EQ CREDIT 3.2 What are the flush-out requirements of Credit EQ3.2</p>	<p>Supply a total air volume of 14,000 cubic foot (CF) of outdoor air per sq-ft of floor area while maintaining an internal air temperature of at least 60°F and relative humidity no higher than 60%.</p>
36	<p>EQ CREDIT 3.2 What are the flush-out requirements of Credit EQ3.2, if occupancy occurs prior to flush out?</p>	<ul style="list-style-type: none"> • Supply 3500 CF outside air per sq-ft of floor area and ventilate at .30 CF per sq-ft. Continue minimum 3 hours until 14,000 CF per sq-ft of O/A is delivered. • Use MERV 13 filters for HVAC
37	<p>EQ CREDIT 3.2 What are the 2 options to achieve Construction IAQ Management Plan Credit 3.2?</p>	<p>Building flush-out or conduct indoor air quality testing.</p>
38	<p>EQ CREDIT 3.2 What standard applies for the baseline IAQ test?</p>	<p>U.S. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air.</p>
39	<p>EQ CREDIT 3 What are the strategies for a Construction IAQ Management Plan?</p>	<p>Protect the HVAC system during construction, control pollutant sources, interrupt pathways for contamination, sequence material installation to avoid contamination, and flush out or test the contaminant levels prior to building occupancy.</p>

No.	Questions	Answers
40	EQ CREDIT 3 What is the submittal requirement for EQ Credit 3?	Construction Phase
41	EQ CREDIT 4 What is EQ Credit 4 called?	Low-Emitting Materials
42	EQ CREDIT 4 What is the intent of Low-Emitting Materials Credit?	Reduce the quantity of indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of installers and occupants.
43	EQ CREDIT 4 How many points are available for Low- Emitting Materials?	Four Credit 4.1: Low-Emitting Materials – Adhesives & Sealants Credit 4.2: Low-Emitting Materials – Paint & Coatings Credit 4.3: Low-Emitting Materials – Carpet Systems Credit 4.4: Low-Emitting Materials – Composite Wood and Agrifiber Products
44	EQ CREDIT 4.1 What materials does EQ Credit 4.1 cover?	Adhesives & sealants
45	EQ CREDIT 4.1 What is the minimum requirement for implementing EQ Credit 4.1?	All ADHESIVES and SEALANTS used in interior of building (inside weather proofing system & applied on-site) are to comply with South Coast Air Quality Management District (SCAQMD) Rule #1168 and Green Seal (GS) Standard for Commercial Adhesives GS-36.
46	EQ CREDIT 4.1 What materials are applicable for EQ Credit 4.1?	Flooring adhesives, fire-stopping sealants, caulking, duct sealants, plumbing adhesives, and cove base adhesives.
47	EQ CREDIT 4.1 What is the standard for EQ 4.1?	<ul style="list-style-type: none"> • South Coast Air Quality Management District Rule #1168 July 1, 2005 and note January 7, 2005. • Green Seal (GS) Standard for Commercial Adhesives GS-36.
48	EQ CREDIT 4.2 What materials does EQ Credit 4.2 cover?	Paints & coatings
49	EQ CREDIT 4.2	All paints, coatings and primer used in interior of

No.	Questions	Answers
	What are the standards for IEQ 4.2?	building to comply with following: <ul style="list-style-type: none"> • PAINTS : Green Seal (GS) 11 • Anti-Corrosive and Anti-Rust Paints applied to interior ferrous metal: <i>Green Seal's GS-03</i>. • Clear Wood Finishes, Floor Coatings, Stains, Sealers, Shellacs: South Coast Air Quality Management District (SCAQMD) Rule 1113.
50	EQ CREDIT 4.3 What material does EQ Credit 4.3 cover?	Carpet systems
51	EQ CREDIT 4.3 What is the standard for EQ 4.3?	All carpets and carpet cushions installed in building interior shall meet testing and product requirement of the <i>Carpet and Rug Institute's</i> Green Label Program. All carpet adhesives must meet the requirements of EQ4.1.
52	EQ CREDIT 4.4 What materials does EQ Credit 4.4 cover?	Composite wood & agrifiber products
53	EQ CREDIT 4.4 How are composite wood and agrifiber products defined?	Particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates, and door cores. Materials considered fit-out, furniture, and equipment (FF&E) are not included.
54	EQ CREDIT 4.4 What is the standard for EQ 4.4?	Products must contain NO added urea formaldehyde resins .
55	EQ CREDIT 4 What are the strategies to meet EQ Credit 4?	Specify low-volatile organic compounds (VOC) materials in construction documents. Ensure that VOC limits are clearly stated in each section where adhesives and sealants are addressed.
56	EQ CREDIT 5 What is EQ Credit 5 called?	Indoor Chemical & Pollutant Source Control
57	EQ CREDIT 5 What is the intent of Indoor Chemical & Pollutant Source Control Credit?	Minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants.
58	EQ CREDIT 5 How many points are available for Indoor Chemical &	One

No.	Questions	Answers
	Pollutant Source Control?	
59	EQ CREDIT 5 What is the requirement of EQ Credit 5?	<ul style="list-style-type: none"> • Minimize and control pollutant entry • Minimize Cross contamination between occupied areas • Install permanent entryway systems at least 6'-0" long to capture dirt <ul style="list-style-type: none"> ○ grates ○ grills • Exhaust rooms where hazardous chemicals are stored <ul style="list-style-type: none"> ○ keep negative pressure at .50 cfm/sq-ft • If Mechanically Vented , installed filters should have MERV 13 rating or better
60	EQ CREDIT 5 What is required for Indoor Chemical & Pollutant Source Control Credit?	Permanent entry way systems to capture dirt (roll mats okay only if weekly cleaning service); provide areas with deck-to-deck partitions with separate outside exhausting (hard lid ceiling ok ay instead of deck-deck partitions; -5 PA necessary temperature); In mechanically ventilated buildings, MERV 13 filters used at every return and outside air that is to be used for supply air.
61	EQ CREDIT 5 What are the strategies to meet EQ Credit 5?	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 and grates; Install high-level filtration systems in air handling units processing both return air and outside supply air.
62	EQ CREDIT 5 What codes and standards apply to EQ Credit 5?	ASHRAE 52.2-1999: Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size.
63	EQ CREDIT 6 What is EQ Credit 6 called?	Controllability of Systems
64	EQ CREDIT 6 How many points are available for Controllability of Systems?	Two Credit 6.1: Controllability of Systems – Lighting Credit 6.2: Controllability of Systems – Thermal Comfort
65	EQ CREDIT 6.1 What is the intent of Controllability of Systems	Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces to promote productivity, comfort,

No.	Questions	Answers
	Credit 6.1?	and well-being of building occupants.
66	EQ CREDIT 6.1 What is the requirement of EQ 6.1?	<ul style="list-style-type: none"> • Provide individual lighting controls for 90% of the building occupants to enable adjustments to suit individual task needs • Provide multi-occupant lighting system controls that meet group needs and preferences.
67	EQ CREDIT 6.2 What is the intent of Credit 6.2?	Provide a high level of thermal comfort system control by individual occupants or by specific groups in multi-occupant spaces to promote productivity, comfort, and wellbeing of building occupants.
68	EQ CREDIT 6.2 What is the requirement of EQ 6.2?	<ul style="list-style-type: none"> • Provide individual comfort controls for 50% of the building occupants. • Operable windows can be used instead if <ul style="list-style-type: none"> ○ occupants are stationed within 20 feet inside of and 10 feet to either side of the operable part of the window ○ meets the meets standards of ASHRAE 62.1-2004 for natural ventilation • Provide thermal comfort controls for multi-occupancy rooms, adjustable to suit needs of various groups to occupy the space. Maintain relative humidity levels between 30%-60%. <ul style="list-style-type: none"> ○ thermal comfort conditions under ASHRAE 55-2004
69	EQ CREDIT 6.2 What standard describes thermal comfort?	<ul style="list-style-type: none"> • ASHRAE 62.1-2004: Ventilation for Acceptable Indoor Air Quality • ASHRAE 55-2004: Thermal Environmental Conditions for Human Occupancy
70	EQ CREDIT 6.2 How is comfort system control defined for Controllability of Systems?	Control over one of the following factors: air temperature, radiant temperature, air speed, and humidity.
71	EQ CREDIT 6.2 What are strategies to achieve Controllability of Systems Credit?	Design for occupant controls: lighting controls and task lighting, operable windows, underfloor HVAC with individual diffusers.
72	EQ CREDIT 7 What is EQ Credit 7 called?	Thermal Comfort

No.	Questions	Answers
73	EQ CREDIT 7 How many points are available for Thermal Comfort?	Two Credit 7.1: Thermal Comfort – Design Credit 7.2: Thermal Comfort- Verification
74	EQ CREDIT 7.1 What is IEQ Credit 7.1 called?	Thermal Comfort – Design (Indoor Environment Air Quality)
75	EQ CREDIT 7.1 What is the intent of Thermal Comfort Credit 7.1 Design?	Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.
76	EQ CREDIT 7.1 What is the requirement of EQ Credit 7.1?	<ul style="list-style-type: none"> • Design HVAC and building envelope to comply with ASHRAE standard 55-2004, Thermal Comfort Conditions for Human Occupancy. • Evaluate air temperature, radiant temp, air speed, relative humidity. • Coordinate with EQ P1. EQ 1 & EQ 2.
77	EQ CREDIT 7.2 What is IEQ Credit 7.2 called?	Thermal Comfort, Verification
78	EQ CREDIT 7.2 What is the requirement of EQ Credit 7.2?	<ul style="list-style-type: none"> • Survey within 6-18 months after occupancy for anonymous responses of overall satisfaction of thermal performance. • Develop a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with the thermal comfort in the building. Plan should be in accordance with ASHRAE 55-2004.
79	EQ CREDIT 7.1 and 7.2 What are the strategies to achieve Thermal Comfort Credits 7.1 and 7.2?	Establish comfort criteria according to ASHRAE 55-2004 and design building envelope and systems capable of maintaining criteria expectations.
80	EQ CREDIT 8 What is EQ Credit 8 called?	Daylight & Views
81	EQ CREDIT 8 How many points are available for Daylight & Views?	Two Credit 8.1: Daylight and Views – Daylight 75% of Spaces Credit 8.2: Daylight and Views – Views for 90% of Spaces
82	EQ CREDIT 8	Provide for the building occupants a connection

No.	Questions	Answers
	What is the intent of Daylight & Views Credit?	between indoors spaces, and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.
83	EQ CREDIT 8.1 What is the requirement of EQ 8.1?	<ul style="list-style-type: none"> • <u>Option 1 – Glazing Factor Calculation</u> <ul style="list-style-type: none"> ○ Achieve min. 2% glazing factor in minimum of 75% of regularly occupied areas. • <u>Option 2 – Daylight Simulation Model</u> <ul style="list-style-type: none"> ○ Through computer simulation, demonstrate min. daylight illumination level of 25 footcandles in min of 75% of regularly occupied areas. • <u>Option 3 – Daylight Measurement</u> <ul style="list-style-type: none"> ○ Through records of indoor light measurements, demonstrate daylight illumination level of 25 footcandles in min. of 75% of regularly occupied areas. • <u>All Cases</u> <ul style="list-style-type: none"> ○ Only area associated with room (actual square footage) can be applied toward the 75% total area calculation ○ provide daylight redirection and/or glare control devices
84	EQ CREDIT 8.1 At what height and above are window areas considered daylight glazing?	7'6"
85	EQ CREDIT 8.1 What areas are excluded from EQ Credit 8.1?	Copy rooms, storage areas, mechanical, laundry and other low occupancy support areas.
86	EQ CREDIT 8.1 What task areas are excluded from EQ Credit 8.1?	Spaces where tasks would be hindered by the use of daylight.
87	EQ CREDIT 8.2 What is the requirement of EQ 8.2?	Achieve direct line of sight to the outdoor environment via vision glazing from 90% of all regularly occupied spaces.
88	EQ CREDIT 8.2 Between what heights are windows considered vision glazing?	Glazing between 2'-6" to 7'-6" <u>Plan View:</u> <ul style="list-style-type: none"> • Area within sight lines drawing from perimeter vision glazing. <u>Section View:</u>

No.	Questions	Answers
		<ul style="list-style-type: none"> • Direct line of sight can be drawn from area to perimeter vision glazing.
89	EQ CREDIT 8.2 What are the techniques to achieve Daylight & Views Credit?	Design the building to maximize daylighting and view opportunities.
90	EQ CREDIT 8.2 What are the strategies to achieve Daylight & Views Credit?	Building orientation, shallow floor plates, increased perimeter, lower partition heights, interior and exterior shading devices, high performance glazing and photo integrated light sensors.
91	EQ CREDIT 8.2 What techniques verify Daylight & Views Credit?	Glazing Factor Calculations OR physical or computer modeling to assess footcandle and daylight factors.
92	EQ CREDIT (GENERAL) What is the biggest area of improvement to avail EQ Credits?	HVAC It has opportunity to gain up to 7 credits in: <ul style="list-style-type: none"> • Outdoor Air Delivery Monitoring • Increased Ventilation • Construction IAQ Management Plan (during construction) • Construction IAQ Management Plan (before occupancy) • Controllability of Systems (Thermal Comfort) • Thermal Comfort (Design) • Thermal Comfort (Verification)

Summarizing.....

Suggested Strategies for Indoor Environment Quality include but not limited to:

- Ensure high quality indoor air by meeting or exceeding ASHRAE 62-1999 as a basis of design.
- Ensure thermal comfort by meeting or exceeding ASHRAE 55-1992 as a basis of design.
- Specify low VOC / low toxic finishes and materials, such as Green Seal-certified paints; composite wood and agrifiber products with no added urea-formaldehyde resins; carpet systems certified by Carpet & Rug Institute Green Label Program; adhesives meeting South Coast Air Quality Management District guidelines; flooring, ceiling wall covering, paints and other interior finishes and materials meeting Washington State indoor air quality guidelines.
- Minimize use of carpets and other materials that attract, absorb and re-release indoor pollutants.

- Specify permeable wall covering and other materials to prevent trapping of water and microbial growth.
- Establish green housekeeping protocols.
- Design to reduce pest infestation opportunities.
- Install permanent entryway systems (e.g., grates) to trap dirt and particulates.
- Position air intakes to prevent contamination from vehicle exhaust and other sources paying attention to prevailing winds.
- Assure easy access to inspect and clean filters and ductwork in each straight run.
- Ventilate enclosed parking areas and other source areas (smoking areas, housekeeping, copying rooms, hazardous waste).
- If building cannot be 100% non smoking, provide total environmental separation for non smokers and assure no feed in to ventilation system.
- Provide building occupants access to daylight, views and operable windows where appropriate.
- Provide user controls for airflow, temperature, light (integrated with daylighting - see also Energy section).
- Provide carbon dioxide monitoring system to provide feedback on space ventilation performance.
- Specify materials, products, mechanical systems and design features to attenuate sound and vibration, and not to exceed Room Criteria (RC) ratings listed for Hospital and Clinics in Table 34 of Chapter 46, Sound and Vibration Control, 1999 ASHRAE Application Handbook.

SECTION - 7

INNOVATION AND DESIGN PROCESS

Every building is a unique blend of site, program, people, budget, with a unique set of challenges and opportunities. Innovative, integrative design practices recognize that new solutions emerge from a process of creative problem solving and "thinking out of the box".

Currently, projects pursuing LEED Certification have the opportunity to earn up to four points for two types of credits in the Innovation & Design Process (ID) credit category: exemplary performance related to existing LEED credits and innovative performance.

LEED ID Credit 1 - Innovations in Design credits for innovative performance are awarded up to 4 points in one of two ways:

- By significantly exceeding the requirements of the rating system, or
- Alternatively by demonstrating innovation by a method that is not specifically addressed by current LEED rating systems.

As a general rule of thumb, ID credits for *exceptional* performance are awarded for doubling the credit requirements and/or achieving the next incremental percentage threshold. For instance, an ID credit for exemplary performance in water use reduction (WE Credit 3) would require a minimum of 40% savings (20%=WE Credit 3.1; 30%=WE Credit 3.2, etc.).

Note that the LEED ID Credits are evaluated for each project. It is important to note that the award of an ID Credit for one project at a specific point in time does not constitute automatic approval for a similar strategy in a future project. Innovation credits are not awarded for the use of a particular product or design strategy if the technology aids in the achievement of an existing LEED credit.

LEED ID Credit 2 - One credit may be obtained in this category if a participant on the project team holds LEED accreditation. Please note that only one point is awarded regardless of how many LEED Accredited Professionals are on the team.

No.	Questions	Answers
1	What does ID stand for?	Innovation & Design Process
2	How many prerequisites, credits and points are there in the Innovation and Design Category?	<ul style="list-style-type: none">• Prerequisite – 0• Credits- 2 credits [ID Credit 1 and 2]• Points - 5 points [4 points for ID Credit 1 and 1 point for ID Credit 2]
3	What percentage ID contributes to overall LEED credit points?	7% [5 / 69 x 100]
	ID CREDITS	
4	ID CREDIT 1 What is ID Credit 1 called?	Innovation in Design

No.	Questions	Answers
5	ID CREDIT 1 What is the intent of ID Credit 1?	To provide points for exceptional performance above the requirements set by LEED and/or innovative performance categories not addressed by LEED.
6	ID CREDIT 1 How many points are available in ID Credit 1?	Four
7	ID CREDIT 1 What are the requirements for each Innovation and Design point?	In writing, identify the intent of the proposed innovation, the proposed requirement for compliance, and the proposed submittals to demonstrate compliance, and the design approach that might be used to meet the requirements.
8	ID CREDIT 1 What are the Submittal Requirements for ID Credit 1?	When submitting an ID credit, project teams must outline the proposed credit intent, requirement(s) for compliance, and submittal(s) necessary to demonstrate compliance, as well as provide a summary of potential design approaches that may be used to meet the requirements. All submittals shall be furnished during design stage.
9	ID CREDIT 1 Give few examples of ID Credits for innovative performance.	A representative list of innovative performance ID credits: <ul style="list-style-type: none"> • Low-Emitting Furniture & Furnishings • Organic Landscaping / Integrated Pest Management Program • IAQ testing that goes beyond LEED requirements • Managing water and air effluent (managing exhaust, heat recovery, exterior catch basins, aim towards zero discharge) • Passive natural ventilation (thermal chimney, eliminating mechanical ventilation) • Employee wellness (fitness center, game room, first aid examination rooms etc) • Educational Outreach Program • Green Housekeeping • High Volume Fly Ash Construction
10	ID CREDIT 2 What is ID Credit 2 called?	LEED Accredited Professional
11	ID CREDIT 2 What is the intent of ID Credit	To support and encourage the design integration required by a LEED-NC green building project and to

No.	Questions	Answers
	2?	streamline the application and certification process.
12	ID CREDIT 2 How many points are available in ID Credit 2?	One
13	ID CREDIT 2 What is the requirement for ID Credit 2?	<p>One credit may be obtained in this category if a participant on the project team holds LEED accreditation.</p> <p>[Consider assigning at least one principal participant to the project team who has successfully completed one of the three LEED Accredited Professional examination tracks (NC, EB, CI)].</p>
14	ID CREDIT 2 What are the Submittal Requirements for ID Credit 2?	Provide name of LEED AP, company, brief description of his/her role, and copy of LEED AP Certificate.