ENERGY & ATMOSPHERE CATEGORY

ENERGY & ATMOSPHERE PREREQUISISTE 1

Issue EAp1.01

OWP/P Architects, New Buildings Institute

RECONSIDER THRESHOLD FOR INDEPENDENT CA

The 25,000 sf determination for a project firm member to provide the commissioning seems arbitrary and may be a disincentive for some project to pursue LEED. Since this is generally a project cost/market hurdle, maybe this should be based on total project cost. Additionally, the criteria of 875,000 Btu per hour seems like a problem for some projects that may have small cooling requirements and large process loads. Maybe a better criteria would be the overall peak energy consumption. Add "and shall meet Advanced Buildings Benchmark v1.1 Appendix A: Acceptance Requirements for High Performance Buildings" to last sentence in first bullet and replace "25,000 GSF with 50,000 GSF" and "875,000" with "1,750,000."

Response - EAp1.01

The threshold for allowing a member of the design/construction team to serve as the commissioning provider is being added to make LEED more accessible to small projects that may not have the resources to add an additional team member to the project. While an area-based threshold is somewhat arbitrary, it is consistently documentable and is consistent with ASHRAE standards. ASHRAE 90.1 2004, 6.7.2.4 states, “Systems Commissioning. HVAC control systems shall be tested to ensure that control elements are calibrated, adjusted and in proper working condition. For projects larger than 50,000 ft2 conditioned area, detailed instructions for commissioning HVAC systems shall be provided” As a result, the Requirement has been simplified to use 50,000 gross square feet as the basis for the relaxing the requirement for an independent Commissioning Authority.

Issue EAp1.02

USGBC

CLARIFY INDEPENDENT CA

The term "independent" has been unclear to many users, and should be defined up front. In the requirements, state explicitly that the commissioning authority (except for small projects) must be hired directly by the owner and not responsible for project design or supervision. Currently this is only hinted in the submittal requirement.

Response - EAp1.02

The Requirements have been revised to clarify the use of the term independent and to state that the CA shall report to the owner, regardless of the structure of the contracts.

Issue EAp1.03

Architectural Energy Corporation, Arup, Green Building Services, Cx Associates

REVISE OWNER'S PROJECT REQUIREMENTS

The verbiage "according to the owner's project requirements" gives me some grief. Too often this specific information is not clearly defined enough to be suitable for this credit's purpose. The credit should read, "according to the construction documents". The specs and drawings for the project should clearly define the operating characteristics for the building and its systems. The placement of the owner's performance requirements under commissioning may not be the best place for it. . . Perhaps the development of the OPR should be added as an independent-overall prerequisite to enable the team to ascertain the owner's priorities as we work to help make their vision a more sustainable reality.

Response - EAp1.03

Two modifications have been incorporated to address this issue: 1) Clarify the requirements for the OPR and BOD...i.e.The Owner shall document the Ownerís Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CA shall review these documents for clarity and completeness. The Owner and design team shall be responsible for updates to their respective documents. 2) The LEED reference manual will clarify expectations for the OPR and BOD. Also, the Intent has been revised to state: Verify that the buildingís energy related systems are installed, calibrated and perform according to the owners project requirements, basis of design, and construction documents. LEED-NC v2.2 does not allow for adding credits.

Issue EAp1.04

New Buildings Institute

ALLOW FOR ACCEPTANCE TESTING RATHER THAN CX

Add "and shall meet Advanced Buildings Benchmark v1.1 Appendix A: Acceptance Requirements for High Performance Buildings" to last sentence in first bullet and replace "25,000 GSF with 50,000 GSF" and "875,000" with "1,750,000." This will provide a clear path for smaller buildings to assure proper construction observation and testing occurs prior to building occupancy. It also provides a way to clearly document the commissioning requirements in the construction documents, provides a ready-made commissioning plan, and provides pre-developed templates for the commissioning report (www.poweryourdesign.com). The Advanced Buildings Benchmark is currently referenced in LEED-CI and proposed LEED-Core and Shell and was developed using an ANSI-like consensus process in conjunction with the building industry.

Response - EAp1.04

The Advanced Buildings Benchmark v1.1 Appendix A: Acceptance Requirements for High Performance Buildings will be referenced in the LEED-NC v2.2 Commissioning Reference Guide as an excellent example of commissioning procedures, but will not be a part of the core credit language.

Issue EAp1.05

[none listed] (2), TestMarcx, Moseley Architects, EEI, MacDonald-Miller Facility Solutions, US Green Building Council, KEMA Green, Green Building Services, Cx Associates

MAKE LEED CX REFERENCE GUIDE AVAILABLE

The LEED 2.2 Commissioning Reference Guide is referenced in the credit, even though this document is not yet published on the USGBC web site. This Guide should be available for members to view, so that they are aware of what the commissioning process for LEED buildings will look like in version 2.2.

Response - EAp1.05

There will not be a separate Cx reference guide. The Rating System has been revised to capture the complete requirements and the NC 2.2 Reference Guide will contain numerous clarifications, guideline expectations, and references for LEED Cx as it relates to: Owner’s project requirements Basis of Design, Commissioning plan, Commissioning specification, Performance verification documentation, Commissioning summary report, Commissioning Design Review, Commissioning Submittal Review, and Systems Manual.

Issue EAp1.06

Interface Engineering, Inc., KJWW Engineering Consultants, Taylor Engineering, Bazzani Associates

DO NOT MANDATE INDEPENDENT CA

This credit can be improved by eliminating the requirement for an independent commissioning authority in the first requirement. There is no need to create a separate professional service category of commissioning authority, when this service can be performed by mechanical engineers and mechanical designers just as well. With this requirement, USGBC is dramatically reducing the number of people who can do commissioning, without a good reason, and possibly dramatically increasing the cost of this prerequisite by limiting competition for this service. There is no evidence that an "independent" commissioning authority can do a better job than a design engineer. We object to the word "independent." Hiring an independent CxA adds to first costs and does not necessarily provide improved Cx. We have been commissioning our own projects for years and find that not only is the system commissioned as well or better than a third party could do (who knows the design intent better than the designer?), but we improve as designers by learning what does and does not work in practice. Because a CxA is independent does not make him or her a good CxA. In fact we have seen an explosion of people jumping into the Cx business because of this prerequisite and providing very low fees for "LEED Cx," doing just as little as possible to meet LEED requirements. When we as designers do our own Cx, we not only want to meet the prerequisite requirements, but we want the system to actually work well! We have a legal and professional responsibility in this regard, whereas a third party Cx does not.

Response - EAp1.06

The revised requirements focus more on the minimum qualified individual as the Commissioning Authority (CA) to lead, review, and oversee the completion of the commissioning process activities. Anyone on the project team can implement the requirements. An "independent" commissioning agent with no other role in the project will, in general, provide more objective verification of all phases of design, construction, handover, and operations than a team member who has additional responsibilities for design or installation. However, additional flexibility has been added in the revised requirements to accommodate a wider range of approaches to meeting the intent of this prerequisite.

Issue EAp1.07

Wiss, Janney, Elstner Associates Inc., Sebesta Blomberg & Associates Inc., JohnsonDiversey, Inc.

INCLUDE BUILDING ENVELOPE

The building enclosure is a critical element that needs to be included under this prerequisite. A thermally inefficient building envelope as installed and sometimes as designed cannot always be accurately determined using energy analysis software (such as DOE-2)in trying to capture some of the credits EA

Credit 1 or evaluation completed under EA Prerequisite 2, especially at interface and other transition conditions. . . National Institute of Building Sciences (NIBS) is in the process of finalizing for public comment Guideline 3 for Building Enclosure Commissioning Requirements.

Response - EAp1.07

LEED-NC v2.2 EAp1 lists the minimum systems that must be commissioned, but projects may include other systems in the commissioning process as appropriate. Although not required, we advocate in the Strategies and Technology section that Owners should also consider including water related systems, building envelope systems and other building systems in the commissioning process as appropriate. Building envelope commissioning has been pursued and awarded as an Innovation Credit.

Issue EAp1.08

[none listed] (3), Earthly Ideas LLC

REFERENCE EXISTING RATHER THAN CREATING NEW CX REQUIREMENTS

Why is the USGBC taking on developing yet another guide that will have to be updated in the future as well as redefined for other LEED products? Canít the information be part of the Reference Manual or Project Workspace or reference existing CX documents? This seems to be a departure from the way the USGBC handles other credits. Typically you reference ASHRAE or other entity and donít write the requirements yourselves. Add: The technical reference ASHRAE Guideline 0 The Commissioning Process is an ANSI approved guideline. “Benefits of Commissioning” section belongs in the Reference Guide or Strategies."

Response - EAp1.08

There are numerous existing industry standard commissioning guidelines that vary somewhat in scope, depth, and approach to commissioning, and LEED does not specifically endorse one commissioning standard. Also LEED-NC may apply to a broad range of buildings, including naturally ventilated and residential buildings, which may not be addressed by ASHRAE Guideline 0 or other industry commissioning standards. The revised LEED-NC v2.2 Reference Guide will contain clarifications, guideline expectations, and industry references.

Issue EAp1.09

[None Listed] (2), Zimmer Gunsul Frasca Partnership, HTI Architects Inc., EcoSmith Design and Consulting

SUPPORT CHANGES

I agree on the changes made to this credit.

Response - EAp1.09

No response required.

Issue EAp1.10

Dome-Tech Group, [none listed]

INCLUDE O&M TRAINING

Training and O&M manual review and approval need to be made a part of this prerequisite.

Response - EAp1.10

For LEED-NC v2.2 commissioning oversight of O&M training and O&M manual reviews have been moved to EAc3 Enhanced Commissioning. As part of clarifying the intent of EAc3 away from 'Additional' Commissioning and toward 'Enhanced' Commissioning, the focus of the CX credit will be to begin the commissioning process early during the design process and execute additional activities after systems performance verification is completed. The intent of the prerequisite focuses only on verifying systems performance.

Issue EAp1.11

Grumman/Butkus Associates, Green Building Services

REQUIRE MORE SUBMITTALS

The Commissioning Plan or specifications or other descriptive documents should be required as one of the submittals. It reveals much about the work and is a good way to determine compliance.

Response - EAp1.11

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAp1.12

Dome-Tech Group

DEFINE CA QUALIFICATIONS

USGBC needs to make the specific requirements for the CxA qualifications and training available for review, or this review is crippled from the start. . . The CxA experience requirements should include mandatory training by BCA, ASHRAE or the University of Wisconsin. It should also require certification by one of the five currently available organizations--BCA, University of Wisconsin, AEE, NEBB or AABC, at least for someone in the firm. But all Cx employees should have the training. There is no regulation as to who provides Cx at this time, and many are doing it who have no idea what they are providing.

Response - EAp1.12

The proposed requirement is that the CA shall have documented commissioning authority experience in at least two similar building projects that demonstrate adequate experience acceptable for the project. The Potential Strategies and Technologies section of the requirement prompts Owners to seek out qualified individuals to lead the commissioning process with experience reflecting a high level of:
*energy systems design and operation knowledge
*commissioning planning and process management
*hands-on field experience with energy systems performance, interaction, start-up, balancing, testing, troubleshooting, operation, and maintenance procedures
*energy systems design and installation experience
*energy systems automation control knowledge

Issue EAp1.13

[none listed]

ALLOW FOR FACTORY TESTING

Suggest that factory commissioning of units and unit controls be included in the reference manual. This would save time and expense.

Response - EAp1.13

Factory testing may be appropriate for many building systems and components but does not replace the need to verify the performance of these systems once they have been placed in the building and connected to other building system components.

Issue EAp1.14

ZGF Partnership

INCLUDE WATER SYSTEMS

Under Commissioned Systems add: "Stormwater or greywater recycling systems."

Response - EAp1.14

Although not required, we advocate in the Strategies and Technology section that Owners should also consider including water related systems, building envelope systems and other building systems in the commissioning process as appropriate. Additional commissioning of stormwater and grey water systems can be awarded as an Innovation Credit.

ENERGY & ATMOSPHERE PREREQUISITE 2

Issue EAp2.01

NRDC, New Buildings Institute

ADOPT E-BENCHMARK INSTEAD OF / OR AS ALTERNATE TO ASHRAE 90.1-2004

The Advanced Building Benchmark (E-Benchmark) performance standard should be adopted instead of, or as an alternate to ASHRAE 90.1-2004 because the E-Benchmark standard is [1] more energy efficient, [2] simpler, [3] voluntary versus mandatory, [4] better supported than ASHRAE standard - having manuals and

training program templates, [5] universally applicable, [6] cost effective for meeting targeted levels of efficiency, [7] allows prescriptive and performance based approach, [8] establishes clear beyond code performance levels, [9] contains acceptance test protocols, [10] references Energy Star benchmarking process which will adress real world efficiency concerns, [11] is referenced in LEED CI & LEED Core & Shell. Further, the low number of states requiring ASHRAE 90.1-1999 versus 2001 indicates that the population will be unfamiliar with ASHRAE 90.1-2004.

Response - EAp2.01

Advanced Buildings Benchmark and the ASHRAE Advanced Energy Design Guide have been added as compliance options under EAc1. The decision was made to allow projects that earn credit using one of those alternative programs for EAc1 to automatically satisfy EAp2. However, we do not feel it would be appropriate to use these programs exclusively for satisfaction of this prerequisite.

Issue EAp2.02

US EPA, US National Park Service, The Cadmus Group

ESTABLISH ENERGY TARGET & BENCHMARK BUILDING PERFORMANCE

In addition to current EAp1 requirements, there should be a requirement to [1] establish a whole building energy consumption target, and [2] document the EPA performance rating showing the estimated energy use of the building compared against other similar US buildings. This should be accomplished using the EPA's Target Finder. The reasoning for this is that buildings can achieve LEED certification while using greater than average energy per square foot than similar US buildings; and this should not be the case for buildings intentionally designed to meet high standards for sustainability. A rating score of 65 has been suggested as a requirement, since 60 is the prerequisite for LEED-EB, and new buildings should perform better than existing buildings.

Response - EAp2.02

We intend to include EPA’s Target Finder in the requirements language for this credit; final language was not available for inclusion in the second public comment version.

Issue EAp2.03

Architectural Energy Corporation

ALTERNATE COMPLIANCE METHODS FOR ATYPICAL BUILDINGS

Atypical buildings such as laboratories and hospitals have difficulty complying with certain portions of ASHRAE 20.1-2004 due to the uniqueness of the building type. Other energy modeling protocols such as Labs 21 should be allowed for showing compliance for these building types.

Response - EAp2.03

Incorporating an alternate standard versus ASHRAE 90.1-2004 for atypical buildings is beyond the scope of LEED v. 2.2 revisions and is anticipated for inclusion in the Application Guides process.

Issue EAp2.04

THW Design

"MORE STRINGENT" CODE COMPLIANCE UNCLEAR:

It is not always clear which code (ASHRAE 90.1 or local code) is more stringent. Some components of the local code may be stricter than ASHRAE-90.1 while others may be less stringent. Suggestions for addressing this include: [1] requiring compliance on whichever section or subsection is stricter, not the whole of the ASHRAE standard or the whole of the local energy code; [2] requiring code compliance submittals for both codes (ASHRAE 90.1 and local code); and [3] creating explicit rules for comparing the local code to ASHRAE 90.1.

Response - EAp2.04

Requiring project teams to determine and prove which code is more stringent may place an undue burden on the design team, particularly since buildings must already comply with local code in order to obtain building permits. The credit language has been revised to require demonstration of compliance with ASHRAE 90.1 or a local code that has been approved in advance by the USGBC as a substitute for ASHRAE 90.1 for this prerequisite.

Issue EAp2.05

Sustainable Design Consulting

REFERENCE TAG GUIDELINE

A LEED 2.2 version TAG Guideline sample submittal should be created, and referenced.

Response - EAp2.05

A sample submittal will be made available for LEED v2.2 in the Reference Guide.

Issue EAp2.06

Cx Associates

REQUIREMENT IS TOO LOW

This prerequisite uses a consensus standard that will be adopted in many states as the minimum energy efficiency standard. LEED should raise the bottom levels of efficiency above national standards.

Response - EAp2.06

Since most states are currently using the 1999 version of ASHRAE 90.1 rather than the 2001 version, it is estimated that state adoption of the 2004 ASHRAE 90.1 standard will occur over a period of several years. ASHRAE 90.1-2004 is significantly more stringent than the 2001 and 1999 versions; therefore, requiring compliance with ASHRAE 90.1-2004 will raise the bar significantly above current standard practice.

Issue EAp2.07

Architectural Energy Corporation, HTI Architects

REQUIREMENT GOOD

ASHRAE 90.1-2004 is approximately 10-15% more stringent than the 90.1-1999 standards; this is an improvement.

Response - EAp2.07

No response required.

Issue EAp2.08

THW Design

REQUIREMENT IS TOO HIGH, 90.1-2001 IS BETTER

Requirement should be changed to 90.1-2001 because most states have not adopted 90.1-2001, much less 90.1-2004, and 90.1-2004 is much stricter than 90.1-1999.

Response - EAp2.08

LEED is a voluntary standard for developing high performance, sustainable buildings. Consequently, LEED should lead the way in adopting progressive minimum standards for energy efficiency.

Issue EAp2.09

Zimmer Gunsul Frasca Partnership

REQUIREMENT IS TOO HIGH, SHOULD REMAIN 90.1-1999

Requirement should remain the same as LEED v. 2.1 requirement (ASHRAE 90.1-1999), since 90.1-2004 adds cost to engineering services.

Response - EAp2.09

LEED is a voluntary standard for developing high performance, sustainable buildings. Consequently, LEED should lead the way in adopting progressive minimum standards for energy efficiency.

Issue EAp2.10

The Weidt Group

MANDATORY MEASURES NOT NECESSARY WITH PERFORMANCE APPROACH

The mandatory measures from (a) reduce the flexibility of the performance path. For example, a (CFC free) refurbished chiller that does not meet the mandatory provisions for cooling efficiency would not be allowed, even if other energy conservations measures throughout the building make the overall performance of the building better than the ASHARAE 90.1 2004 compliant version. The project would be forced to use a new chiller and reject the refurbished chiller. As written, this prerequisite will eliminate choices that may be economically attractive and decrease the aggregate use of materials in the environment, working against the overall spirit of LEED. Suggest revising requirement so that performance approach can

be used, without mandatory measures from (a) being required IF the proposed building performance achieves at least 1 point under EA Credit 1. Comments: This will give those projects seeking to get better than the prescriptive code more flexibility and allow them to use the most appropriate means to achieve energy efficiency.

Response - EAp2.10

In many cases, mandatory measures address items not covered by prescriptive standards. For example, lighting schedules must be modeled identically in the budget and proposed design; however, mandatory measures ensure that lighting will be switched off during unoccupied periods. Providing the option for performance-based compliance without reference to mandatory provisions would open loopholes which could jeopardize energy efficiency. If the chiller is refurbished it is allowed by 90.1-2004 to be used when alterations are made to HVAC in existing buildings. There are five (5) exceptions to Section 6.1.1.3 that would allow the commenter to use refurbished equipment and still comply with EAp2.

Issue EAp2.11

The RETEC Group

LOWER LAB BUILDING REQUIREMENT

Since lab buildings use more fan horsepower than the ASHRAE 90.1-1999 limits, lab minimum building performance requirements should be dropped by 10%.

Response - EAp2.11

ASHRAE 90.1 has specific fan horsepower energy allowances for systems which incorporate filtration or other processes that increase static pressure and require more horsepower. The case for reducing laboratory building performance requirements is not made clearly or with any specific supporting documentation. A Labs Application Guide will address the unique issues relevant to Labs.

Issue EAp2.12

[none listed]

ADD STRATEGY

For Potential Technologies and Strategies Add “adjacent landscape”.

Response - EAp2.12

The potential technologies and strategies listed address the most common technologies and strategies which can be applied to gain credit using ASHRAE Appendix G. Adjacent landscape is not addressed within Appendix G.

Issue EAp2.13

KEMA Green

STATE ENERGY CODES

Since California is recognized as having the strictest energy efficiency code, LEED NC v 2.2 should recognize Title-24 as an alternative to ASHRAE 90.1-2004. This would remove ASHRAE learning curve for CA design professionals.

Response - EAp2.13

The prerequisite has been revised to allow local entities to obtain approval in advance for the use of a local code in lieu of ASHRAE 90.1.

Issue EAp2.14

Grumman/Butkus Associates

REVISE INTENT STATEMENT

Change intent to read: ”Establish the minimum level of energy efficiency for the proposed building or the renovated building the proposed building systems.” This will address renovations as well as new construction.

Response - EAp2.14

The title page of the standard indicates that LEED-NC v 2.2 applies to New Construction & Major Renovations. It is not necessary to reiterate this for the individual credits.

Issue EAp2.15

Moseley Architects

REVISE TECHNOLOGIES & STRATEGIES TEXT

The technologies and strategies section should include mention of the specific computer simulation software that is acceptable for use.

Response - EAp2.15

The referenced standard (ASHRAE 90.1-2004) documents the computer simulation software requirements for showing compliance with energy performance requirements.

Issue EAp2.16

PolySteel of Austin

FURTHER DESCRIBE ASHRAE 90.1-2004 REFERENCES

Submittals (a) & (b) as an individual, could there be a discussion of what these various sections refer to? I assume the committee has addressed the standards against the various state energy codes, with a goal of beating the state codes by X% or more.

Response - EAp2.16

The ASHRAE 90.1-2004 standard defines each reference clearly. A separate discussion within the LEED-NC v 2.2 rating system is not necessary. The prerequisite has been revised to allow local entities to obtain approval in advance for the use of a local code in lieu of ASHRAE 90.1.

ENERGY & ATMOSPHERE PREREQUISITE 3

Issue EAp3.01

[None Listed]

PROVIDE NEW TITLE FOR EAp3

Prerequisite 3 and EA 4 As they both focus on the same subject, they might do better to have the same title - Refrigerant Selection. Clearer and more general titles will age much more gracefully as LEED evolves and other requirements are adopted for this important area.

Response - EAp3.01

EAp3 will be renamed "Fundamental Refrigerant Management" and EAc4 will be renamed "Enhanced Refrigerant Management".

Issue EAp3.02

University of Rochester, FVB Energy Inc.

ALLOW FOR CFC PHASE-OUT PLAN

The USGBC should be more flexible on this requirement. If a facility has a central cooling plant using CFC's, submitting the details of a phase out plan should be reviewed in the context of the overall facility as well as the specific project to determine if the project was still truly satisfying the intent of the LEED program.

Response - EAp3.02

The Requirements language has been revised to acknowledge that phase out plans will be evaluated on a case-by-case basis for meeting the intent of the prerequisite.

Issue EAp3.03

Grumman/Butkus Associates

LICENSED ENGINEER

The licensed professional engineer should be the responsible party that signs off on this credit.

Response - EAp3.03

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAp3.04

New Buildings Institute

PROVIDE EAp3 IF EAc4 IS OBTAINED

Add exception "If EAc4 is obtained for HVAC equipment". This meets the goal of reducing CFC's (the title of the prerequisite) while balancing energy production pollution by allowing more efficient "peak-load" equipment to be installed in LEED-NC v2.2 projects. The Advanced Buildings Benchmark v1.1 contains equipment criteria that differentiates between high peak-performance and high part-load performance. Our research into our specifications is the basis of this comment.

Response - EAp3.04

EAp3 requires elimination of any CFC refrigerants that may be included in existing HVAC equipment that will be used to serve the project. EAc4 provides a credit for projects that use non-CFC refrigerants with limited direct ODP and GWP. While related to the same issue, EQp3 and EAc4 have distinct Intents and Requirements.

Issue EAp3.05

TriState HVAC Equipment LLC

DO NOT ALLOW R-123 IN LEED BLDGS

If this program is to be viewed seriously it must eliminate any loophole which allows for the environmentally hazardous and toxic R-123 to continue to be promoted. Provide 1 point for using a Montreal Protocol approved refrigerant. Provide 2 points for replacing a Phase out refrigerant with a non phase out refrigerant. Disqualify a project for installing equipment with refrigerants identified as those to be phased out. Otherwise the LEED program will have too many loopholes and it will not be taken seriously or at least not considered a real "Green" program.

Response - EAp3.05

EQp3 requires compliance with the Montreal Protocol, but does not mandate early compliance or elimination of refrigerants that remain commercially available and have not yet been phased out. A substantial change to the prerequisites is outside the scope of v2.2.

ENERGY & ATMOSPHERE CREDIT 1

Issue EAc1.01

NRDC, New Buildings Institute, Alliance to Save Energy

ALLOW E-BENCHMARK AS ALTERNATE TO ASHRAE 90.1-2004

E-Benchmark should be adopted as an alternative compliance pathway for EAc1; a separate column should be included listing the number of LEED points associated with each discrete level of performance within E-Benchmark. Reasons for allowing E-Benchmark as alternate compliance method include: [1] higher baseline level of efficiency than ASHRAE 90.1-1999 (which should qualify for additional EAc1 points); [2] similar simulation methodologies to ASHRAE 90.1-2004 (references Appendix G); [3] allows single path for energy performance documentation for LEED, Energy Star, and Utility incentive programs; [4] already referenced by LEED-CI and LEED Core and Shell; [5] allows prescriptive or performance path, making documentation easier for small, low budget buildings; [6] increases chances that buildings will accomplish true energy savings by modeling performance ranks against actual US average building performance.

Response - EAc1.01

An alternative compliance path has been added to the Requirements for the use of Advanced Buildings Benchmark (aka E-Benchmark). See draft Rating System for details.

Issue EAc1.02

Alliance to Save Energy, US EPA, The Cadmus Group, Inc.

REQUIRE EPA ENERGY STAR RATING IN ADDITION TO / AS ALTERNATE TO ASHRAE 90.1

The EAc1 credit should improve building energy usage beyond average US buildings of a similar type. Designing to code still misses important energy strategies (fan systems, controls) and can still result in a building that is better than code, but its estimated performance is below average. Including a whole building target will allow study of the relationship between beating code and estimated energy performance. To achieve the financial and environmental value from buildings, it is important that they perform better than average when built and operated. It is important to send a market signal now, that buildings should have an expectation to use a certain level of energy, given a set of assumptions known during the design phase. There are a number of things that can cause a building design not to perform as expected -some are due to assumptions of use and operational issues after it is built. Codes do a good job creating a minimum efficiency for some building systems and components, however, they are not intended to estimate the whole building performance of the building. It is important to require codes and continue to improve on them, but not to use code as a measure of building performance. The design stage is the time to move beyond efficient components and address sizing issues, building system integration, control issues, fan system design and other things that are not addressed well by the building code. Adding a design target that estimates how a building should perform is an important signal in the market. The EAc1 points table should list both a minimum energy cost savings and a minimum EPA Energy Performance rating (e.g. 1 point requires 10.5% improvement over ASHRAE 90.1-2004 and EPA Energy Performance Rating of 75; 4 points requires 24.5% beyond ASHRAE 90.1-2004 and EPA rating of 80, etc.). [OR] The EPA Energy Performance Rating should be allowed as an alternate form of compliance with the following number of points for each EPA performance rating: [1] 63; [2] 67; [3] 71; [4] 75; [5] 79; [6] 83; [7] 87; [8] 91; [9] 95; [10] 99.

Response - EAc1.02

An alternative compliance path has not been created for Energy Star ratings because we were not able to determine a defensible correlation between ASHRAE Standard 90.1 and EnergyStar. The results will vary by: (1) envelope construction (e.g. mass vs. frame wall); (2) HVAC system (e.g. package vs. central); (3) lighting (e.g. office vs. restaurant); (4) fuel type (e.g. electric vs. gas space heat); (5) climate (e.g. Anchorage vs. Miami); (6) square footage of building (affects ratio of interior zone area to perimeter zone area); (7) building form (number of stories and orientation).

Issue EAc1.03

Taylor Engineering

ENERGY COST RATHER THAN ENERGY CONSUMPTION CLARIFIED:

"Energy consumption" is vague since units are not specified (Btu, kW, source Btu, dollars)? Second, in the second sentence it is not clear how the added process energy is modeled to make up the 25%. If added to internal loads, this will also affect HVAC energy usage. In both instances, change "energy consumption" to "energy costs". Standard 90.1 uses costs as the common unit so that usage of various utilities can be added together.

Response - EAc1.03

The requirements have been revised to exclusively reference cost as the performance metric.

Issue EAc1.04

NRDC, Green Building Services, JohnsonDiversey, Inc., The Weidt Group

ELIMINATE REQUIREMENT FOR 25% PROCESS ENERGY

The 25% process energy requirement overestimates the process energy in some buildings, and should be eliminated. If all energy end uses need to be modeled, it will limit the type of energy modeling software that can be used. Process energy loads that are not regulated by mandatory or prescriptive portions ASHRAE 90.1 2004 (for obvious reasons) should be left to the modeler's best judgment (the submittals do get reviewed, and the USGBC through its reviews does discourage dishonest or inaccurate modeling).

Response - EAc1.04

The 25% minimum process energy requirement is a default minimum. Lower process energy usage is allowed but requires supporting documentation justifying the process energy assumptions. The requirements language has been revised accordingly.

Issue EAc1.05

KEEN Engineering, Architectural Energy Corporation, OWP/P Architects, Taylor Engineering, The Weidt Group, Affiliated Engineers, Inc.

CLARIFY REQUIREMENT FOR 25% PROCESS ENERGY

Better define how to reach the 25% process energy requirement if it is not already met. 25% process energy is too general, and should be varied by occupancy type. Determination of process loads may be labor-intensive, could require multiple energy model iterations, could energy modeling costs, & could result in system oversizing. The 25% requirement may cause modelers to increase plug loads, producing artificial HVAC savings. Instructions should require that additional process energy (added to meet the 25% level) should not impact HVAC system loads. The "non-regulated" energy uses required by Appendix G can account for 50% of the total energy use in mild climates. Since there is no established baseline for these "non-regulated" energy uses, % savings targets are considerably reduced, and LEED points should reflect this. Give intent for process power requirements. Rather than restricting process loads at the resultant energy consumption, they should be restricted as equipment w/sf for space types or building types (These can be published in the Reference Guide).

Response - EAc1.05

The 25% minimum process energy requirement is a default minimum. Lower process energy usage is allowed but requires supporting documentation justifying the process energy assumptions. To address the concern of buildings with unusually high process energy usage, credit for energy efficiency measures impacting process energy use will be allowed within EAc1. These measures must be documented using the Exceptional Calculation Method (ASHRAE 90.1-2004, G2.5). The requirements language has been revised accordingly.

Issue EAc1.06

[none listed]

CLARIFY PROCESS LOAD ID CREDIT APPROACH

The language on process loads encourages projects to apply for separate ID credits for process load reduction. This implies that multiple ID credits are available, depending on how many processes were made more efficient. Clarify that process loads are considered together, not separately, for a single ID credit. If multiple ID points are available for process load reduction, this should be based on percent energy reduction, not on number of systems addressed.

Response - EAc1.06

In response to other comments regarding process loads, energy savings associated with process energy usage will now be allowed within the EAc1 credit. Therefore, further clarification for the ID credit approach is no longer necessary.

Issue EAc1.07

Architectural Energy Corporation, Gabel Associates, LLC, JohnsonDiversey, Inc.

USE LEED v2.1 APPROACH FOR PROCESS LOAD

This change to include process loads will not be favorable to certain manufacturing sectors and have an overall negative effect on market transformation. We suggest that LEED v2.2 should isolate process loads and not be included in the calculation of energy saving percentages. The process loads should be a separate credit to support energy conservation in process loads. The energy conservation improvements should be measured by a benchmark which is sector specific, i.e. food or other processing equipment. Buildings in milder climates (such as many areas of California) which also have a lot of receptacle and/or process loads are unfairly penalized in the calculation of % Energy Cost Savings. If you do the math, you see that the "dead weight" in both baseline and proposed design can artificially reduce the % Energy Cost Savings.

Response - EAc1.07

To address the concern of buildings with unusually high process energy usage, credit for energy efficiency measures impacting process energy use will be allowed within EAc1. These measures must be documented using the Exceptional Calculation Method (ASHRAE 90.1-2004, G2.5). The requirements language has been revised accordingly.

Issue EAc1.08

NRDC, JohnsonDiversey, Inc.

ALLOW CREDIT FOR PROCESS ENERGY

Credit should be allowed for certain real improvements to process energy such as high efficiency kitchen and laundry equipment, LCD Screens, laptops, IT policies maintaining EnergyStar sleep mode, etc. Some buildings, such as a computer data center or a refrigerated warehouse may have 80% of their energy cost related to the process load in that facility. The same approval process that is currently used for achieving process load savings under ID Credit 1 should be incorporated as part of EAc1. In order to allow differences in the process load between the proposed and baseline building, the user would need to demonstrate that the reduction in process energy use is due to some innovation that is different from standard practice for similar equipment. This proposed change would also address the inconsistency in achieving credits for facilities with different levels of process energy use (and the need for the 25% process minimum). The points awarded would be on a straight percentage basis with all energy use eligible. Since all energy use is eligible, the table of cost savings verses points should be the same as in Version 2.1.

Response - EAc1.08

In response to the concerns described here, the LEED v2.1 rating system will be revised to allow credit for energy efficiency measures impacting process energy use within EAc1. These measures must be documented using the Exceptional Calculation Method (ASHRAE 90.1-2004, G2.5). The requirements language has been revised accordingly.

Issue EAc1.09

FVB Energy, Seton Healthcare Network Facilities, Lawrence Berkeley National Labs

EFFICIENCY MEASURES MISSED BY ASHRAE STANDARD - DISTRIBUTED HEATING / COOLING, COGEN

ASHRAE 90.1-2004 does not allow buildings to take credit for energy performance improvements associated with district cooling and/or heating; nor does it properly credit cogeneration in district cooling

and/or heating plants serving individual buildings seeking LEED certification. A LEED v2.1 CIR EAc1 Ruling dated 2/24/2004 stated that the USGBC would examine this issue, and identify a proper methodology for comparison; however, this is not reflected in the LEED version 2.2 language. Credit should be allowed both for cogeneration for individual buildings, and campus and/or district-wide CHP. Energy performance for distributed heating and/or cooling applications should have a means of accounting for differences between total purchased heating or cooling costs and the true energy costs (since purchased heating and cooling costs include maintenance, equipment, and labor costs - resulting in an unfair comparison with other utility costs).

Response - EAc1.09

The USGBC has not yet developed consensus on an approach for demonstrating energy improvements associated with distributed cooling / heating and cogeneration. After further deliberation on this issue, the USGBC will identify, and provide documentation for a proper methodology for comparison.

Issue EAc1.10

Architectural Energy Corporation

ALTERNATE CREDIT METHODS FOR ATYPICAL BUILDINGS

Atypical buildings such as laboratories and hospitals have difficulty complying with certain portions of ASHRAE 20.1-2004 due to the uniqueness of the building type. Other energy modeling protocols such as Labs 21 should be allowed for calculating performance for these building types.

Response - EAc1.10

This issue is being addressed through the development of a LEED Application Guide for Laboratories.

Issue EAc1.11

Desert Moon Productions, Inc.

TEXT REVISIONS:

At the beginning of Requirements: "Reduce the proposed building performance rating...", change "Reduce" to "Increase".

Response - EAc1.11

The revised requirements language eliminates this issue.

Issue EAc1.12

[none listed]

POINT THRESHHOLDS - CLARIFICATION

Clarify whether rounding up will be allowed, and from what significant figure.

Response - EAc1.12

Rounding up is generally not allowed in the LEED Rating System. However, the USGBC is undergoing a refinement of the documentation and certification process that will provide additional clarity on the adjudication of credit achievement.

Issue EAc1.13

Sustainable Design Consulting

REFERENCE TAG GUIDELINE

A LEED 2.2 version TAG Guideline sample submittal should be created, and referenced.

Response - EAc1.13

A sample submittal will be made available for LEED v2.2 in the Reference Guide.

Issue EAc1.14

MacDonald-Miller Facility Solutions

TEXT REVISIONS:

Applicants may not understand "interactive" loads (second paragraph under "Submittals").

Response - EAc1.14

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAc1.15

Arup, MacDonald-Miller Facility Solutions, Moseley Architects

TEXT REVISIONS:

Delete "showing the" at the beginning of the second line of first paragraph under "Submittals".

Response - EAc1.15

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAc1.16

Promech, Inc.

TEXT REVISIONS:

Revise 3rd bulleted paragraph under "Requirements" to read: ...Must be assumed to have a minimum process energy consumption that is not less than 25% of the total energy consumption for the baseline building.

Response - EAc1.16

This paragraph of the requirements has been revised and addresses this issue.

Issue EAc1.17

Sebesta Blomberg & Associates, Inc.

TEXT REVISIONS:

Under 'Requirements' section, the phrase "...analysis shall be revised ..." is inaccurately worded. Consider using 'reperformed' rather than 'revised'. The analysis can be reperformed using different parameter values based on a revised design, which it appears is the intent of this section.

Response - EAc1.17

This paragraph of the requirements has been revised and addresses this issue.

Issue EAc1.18

The Delta Institue

TEXT REVISIONS:

Chart heading should be % Energy Performance Savings;

Response - EAc1.18

“% Energy Cost Savings” is believed to be the most accurate description of the listed percentages; this terminology is used to reduce confusion regarding the basis for calculating the percentage savings.

Issue EAc1.19

Grumman/Butkus Associates

TEXT REVISIONS:

Change intent to read: ”Achieve increasing levels of energy performance above the baseline energy performance calculated in EA Perquisite 2 to reduce environmental impacts associated with excessive energy use.”

Response - EAc1.19

While EAc1 uses a different baseline comparison than the EAp2 prerequisite (Appendix G vs. Section 11), the wording of the intent is effective in establishing the link between the credit and prerequisite for users of LEED and has been left as is.

Issue EAc1.20

ARUP, The Delta Institute

REVISIONS ARE GOOD

I agree with the intent of this credit. This credit is an essential part of the rating system; no improvements needed.

Response - EAc1.20

No response required.

Issue EAc1.21

Cx Associates, HTI Architects, Fox & Fowle Architects, P.C., US Fish and Wildlife Service

ENERGY PERFORMANCE TARGETS ARE TOO LOW

Energy points can easily be gained without much change to standard design. Performance targets should be set 5% higher. Changes to EA Credit 1 appear to reduce LEED's expectations for energy conservation: first, steps are now separated by 3.5% reductions, as opposed the to former 5%; EA Credit 1 can remain at its higher standard by retaining the 5% step for energy use reduction, and by retaining the distinction between new and existing buildings. If the standards aren't being revised to be stricter than LEED v. 2.1, they should remain the same as LEED v. 2.1. it appears the thresholds for all buildings get lower in version 2.2. I believe the LEED rating system should stand for exemplary performance and encourage higher thresholds and this credit seems to be going in the opposite direction. Even if it is difficult to acheive the current higher percentages, having them available challenges teams to make creative solutions. Lowering standards only encourages the Status Quo. I believe that the credit as structured in 2.1 was adequate.

Response - EAc1.21

ASHRAE 90.1-2004 establishes a baseline energy performance that is substantially better than 90.1-2001 standards. In addition, the inclusion of process loads as part of the building's total calculated energy cost

will make the apparent percentage improvements beyond ASHRAE 90.1 lower than in LEED v. 2.1. Therefore, the energy performance point thresholds for LEED-NC v 2.2 encourage better energy performance than the current LEED v 2.1 thresholds.

Issue EAc1.22

FVB Energy, Architectural Energy Corporation, The Cadmus Group, Inc., Seton Healthcare Network Facilities

ENERGY CONSUMPTION RATHER THAN ENERGY COST

Energy consumption/conservation should be used rather than energy cost as the basis for showing energy performance. Due to the variance in energy rates and energy rate structures across the U.S., energy cost is an unfair comparison.

Response - EAc1.22

After careful review of the available energy performance standards, LEED selected ASHRAE 90.1 due to it's wide use by local code authorities and its applicability across multiple building types and climate zones. The USGBC will continue to evaluate alternate energy performance standards for future versions of LEED; however, for LEED-NC v. 2.2, the USGBC believes that the ASHRAE 90.1-2004 standard provides the best available option for documenting energy performance. Energy cost is the metric used in this standard.

Issue EAc1.23

Moseley Architects

POINT THRESHHOLDS - EVEN NUMBERS

The points should use even numbers (i.e. 5%, 10%, 15%, etc.). Nobody sits in a planning meeting, and sets targets for improving energy performance by 31.5% beyond ASHRAE.

Response - EAc1.23

The USGBC established the energy performance point thresholds based on a linear scale of energy performance. Since LEED-NC v2.2 now requires process loads to be included in the reported energy costs for the building, and since LEED now references a much more stringent baseline standard, increasing the performance increments to 5% would make the last 5 energy performance points extremely difficult to achieve cost effectively. We would expect project teams to round up to the next whole percent or higher when setting design goals to create a margin of safety in meeting the target.

Issue EAc1.24

Architectural Energy Corporation,

POINT THRESHHOLDS REQUIRE FURTHER ANALYSIS

No technical basis is provided for the current point structure. More detail & technical analysis is needed to substantiate the point structure.

Response - EAc1.24

The USGBC established the energy performance point thresholds based on a linear scale of energy performance. The point thresholds account for the fact that process energy will compose at least 25% of the building loads, and that ASHRAE 90.1-2004 requires greater levels of minimum efficiency than ASHRAE 90.1-1999. Analysis indicates that each EAc1 point requires a superior level of energy performance compared against LEED-NC v2.0 and v2.1.

Issue EAc1.25

[none listed]

POINT THRESHHOLD REVISION

Reduce the savings percentages starting from 5% with an increment of 5% for every additional point. This will make achieving the first few points as hard as it is in v2.1 and successive points will become harder to achieve than v2.1. Get rid of the interpolation values; use even performance increments of 5%.

Response - EAc1.25

The USGBC established the energy performance point thresholds based on a linear scale of energy performance. Since LEED-NC v2.2 now requires process loads to be included in the reported energy costs for the building, and since LEED now references a much more stringent baseline standard, increasing the performance increments to 5% would make the last 5 energy performance points extremely difficult to achieve cost effectively. Awarding a point for only 5% energy savings lowers the bar further than desired for LEED v2.2.

Issue EAc1.26

Lawrence Berkeley National Laboratory

REQUIRING PROCESS ENERGY MODELING IS GOOD

I would like to affirm the decision to include ALL loads in the calculation procedures. This is a huge improvement over 2.1.

Response - EAc1.26

No response required.

Issue EAc1.27

Lawrence Berkeley National Laboratory

CLARIFY WHAT COUNTS AS PROCESS ENERGY

Please ensure that laboratory fumehoods are considered as part of regulated loads, not process - there are tremendous efficiency opportunities in fumehoods.

Response - EAc1.27

As with kitchen hood exhaust, laboratory fumehoods are considered regulated loads, and not process energy in LEED v2.2.

Issue EAc1.28

NRDC

REPLACE ELECTRIC RESISTANCE HEAT WITH MORE EFFICIENT HEAT SOURCE IN ASHRAE BUDGET CASE

Electric resistance-heated buildings can comply with ASHRAE 90.1-2004 while still using large amounts of electric heat, which in most parts of the country produces far more emissions of health-damaging air pollutants as well as greenhouse gases than other heating fuels or systems. A building can achieve a building can achieve a spuriously large percent savings from the ASHRAE standard by using electric

resistance in the reference building and then using reduced, but still excessive, amounts of electric resistance heating in the proposed building. To plug this loophole, require that the base building use heat pumps for both space heating and water heating.

Response - EAc1.28

ASHRAE 90.1-2004 Appendix G only allows electric resistance heat in the baseline design for Variable Volume Systems with supply temperature reset controls based on zone demand. Given the modeling requirements established in Appendix G, it would be difficult to show large savings in electric reheat energy usage between the budget and propose design when electric resistance heating is used. The ASHRAE 90.1-2004 standard appropriately addresses the concerns described here.

Issue EAc1.29

MechoShade Systems, Inc., Albanese Organization, Aspen Skiing Company

EFFICIENCY MEASURES MISSED BY ASHRAE STANDARD (VARIOUS):

[1] In the ASHRAE standard, the use of highly efficient systems by the nature of this standard must be compared to the less efficient alternatives of THE SAME SYSTEM TYPES. However some systems in their nature are highly efficient when compared to how a typical building would have been designed in the project area. This standard does not recognize nor reinforce such choices for more efficient systems.[2] This credit should provide a way to demonstrate the energy benefits of natural ventilation. [3] Interior shades must currently be modeled identically in the budget and design energy case, due to unpredictable occupant control of these devices. However, automated interior shading devices connected to the BMS have a predictable and quantifiable impact on building performance; and the benefits derived from these shading devices should be reflected in the proposed case energy model.

Response - EAc1.29

ASHRAE 90.1-2004 Appendix G already addresses all of these concerns: [1] Appendix G establishes baseline comparison systems based on building size, type, and number of stories. These systems are used rather than like system types in the baseline case. [2] Appendix G provides a method for crediting fan energy savings associated with natural ventilation. [3] Appendix G permits automated interior shading devices to be modeled in the proposed design.

Issue EAc1.30

Building Envelope Solutions, Inc.

EFFICIENCY MEASURES MISSED BY ASHRAE STANDARD - AIR LEAKAGE:

The primary cause of heat loss in modern insulated buildings after the mechanical systems is air leakage. Without setting a minimum airtightness standard, there is no assurance that a minimum airtightness will be achieved, let alone a superior level of performance. ASHRAE does not set a standard at this time and the LEED rating system has an opportunity with this new version to encourage and reward a higher level of performance with respect to air barriers.

Response - EAc1.30

A LEED v. 2.1 CIR dated 02/17/2003 provides a structure for defining improvements in air leakage using the ASHRAE 90.1 exceptional calculation methodology (G2.5). The USGBC does not intend to establish infiltration requirements separate from ASHRAE within LEED v2.2. This will be included in the Reference Guide discussion.

Issue EAc1.31

Delta T Corporation

EFFICIENCY MEASURES MISSED BY ASHRAE STANDARD - DESTRATIFICATION DURING WINTER FOR HIGH-CEILINGED BUILDINGS:

Provisions do not promote de-stratification during winter in spaces with high ceilings that can save up to 30% of heating costs. Where ceiling heights exceed 20 ft, consideration should be given to installing fans capale of vertically circulating 0.3 of the air volume of the space each hour to reduce heating load while maintaining comfortable air temperatures near floor level.

Response - EAc1.31

The Exceptional Calculation Methodology (G2.5) should be applied to destratification for high-ceilinged buildings, as it should be applied to other energy efficiency measures that do not have express instructions for modeling methodology within ASHRAE 90.1-1994 Appendix G.

Issue EAc1.32

KEEN Engineering, KEMA Green, Collaborative for High Performance Schools, Taylor Engineering

MORE STRINGENT LOCAL CODE ALLOWANCE

Limiting the energy code compliance to ASHRAE 90.1-2004 will require two different building simulations for some projects, increasing design costs. The USGBC needs to clarify whether California Title-24 or other stringent local code will be allowed, and what the point structure will be. The use of AHSRAE instead of California state energy standards would be an unrealistic and unnecessary burden on the local design community. California energy efficiency standards are the strictest in the nation, thereby achieving the intent of this credit. In addition, Title 24 will be changing at the end of 2005 (getting more strict). At that time, we recommend LEED re-consider the table of optimized building performance points to reflect the resulting higher performance buildings. TDV should be allowed rather than cost to demonstrate improvements in energy performance.

Response - EAc1.32

An allowance for the use of local codes has been added to EA prerequisite 2 to ensure projects are not forced to perform 2 code analyses to meet the prerequisites for LEED certification. However, the LEED EA TAG decided to limit energy performance to a single standard (ASHRAE 90.1-2004) to ensure the integrity of the LEED-NC v2.2 rating system. Earlier versions of LEED allowed alternate compliance with California Title-24, but did not provide similar options for other states. Furthermore, local energy codes may be more stringent for some systems, and less stringent for others, affording an unfair advantage to buildings where less stringent requirements are applied. The USGBC is continuing to evaluate this issue and examine options for integrating local codes.

Issue EAc1.33

[none listed]

DOCUMENTATION REQUIREMENTS:

Summary printouts from energy modeling software can be very difficult to interpret, and the format, information provided, and readability varies widely. It is CRITICAL that the submittal requirements include a system by system table listing energy performance (similar in format to the currently required ECB form, but not cost-based). Ideally, this form would be part of the Letter Template.

Response - EAc1.33

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements and is a high priority item.

Issue EAc1.34

Architects BCRA, Bazzani Associates, Fox & Fowle Architects, P.C.

EXISTING BUILDINGS CREDIT:

Will there be no difference between new and existing building energy models and credits, or does 90.1-2004 include a difference in application for this purpose? Clarify the differences between new and existing building modeling and the energy credits each may apply for. Bring back the distinction between new construction and existing construction. Working with exisitng thermal envelopes of historic buildings is clearly a challenge. There should be some extra credit here. By eliminating the division between existing and new buildings, this credit now unintentionally discourages reuse of existing buildings which are more challenging to increase energy performance. Reuse of existing buildings is a better use of the finite resources during construction.

Response - EAc1.34

ASHRAE 90.1-2004 Appendix G allows the envelope of existing buildings to be modeled in the baseline comparison case using the envelope properties prior to renovation. For most existing buildings, this affords substantial opportunities for energy improvements. Consequently, a separate point structure for existing buildings is not required.

Issue EAc1.35

[none listed]

APPROPRIATE TO MOVE EXISTING / NEW BUILDING DISTINCTION:

Deleting the distinction between old and new buildings is a good idea.

Response - EAc1.35

No response required.

Issue EAc1.36

Weyerhaeuser

EMBODIED ENERGY ALTERNATIVE METHOD

The language should be expanded to permit the inclusion of the “big picture” related to energy use - rather than simply based on operating energy.

Response - EAc1.36

There are no widely available, recognized standards that can be used to document embodied energy. However, the innovation category can be used to show improvements in embodied energy between the budget and proposed design. All assumptions should be documented for both the budget and proposed design.

Issue EAc1.37

[none listed]

ADD POINTS FOR ZERO ENERGY BUILDINGS

Add points for a zero-net energy use facility. This should be worth 15 points, more than the sum of the highest energy optimization points plus the maximum renewable energy credits.

Response - EAc1.37

The guidelines established by the USGBC for the development of v2.2 do not allow for the addition of new Prerequisites or Credits. You are encouraged to provide this input to future versions of LEED that involve the addition of new prerequisites and credits. Some additional points for this measure can also be achieved in LEED-NC v.2.2 with innovation credits.

Issue EAc1.38

[none listed]

TRANSFER POINTS FROM ENERGY & ATMOSPHERE TO SITE SELECTION:

Energy use is very important but it is ridiculous that the energy and atmosphere category has greater value by far than site selection. Over prioritizing conservation of energy through technical design, while making the critical sustainability issue a token category. Reflects very poorly on the entire USGBC program, losing respect among land use planning community, including those who write the codes that could otherwise encourage certification. Reduce total E&A Points to 10; transfer the remainder to Site Selection.

Response - EAc1.38

The guidelines established by the USGBC for the development of v2.2 do not allow for the addition of new Prerequisites or Credits, or the transfer of credit from one category to another. You are encouraged to provide this input to future versions of LEED that involve the addition of new prerequisites and credits.

Issue EAc1.39

Southwest Clean Air Agency

CONSIDER BOILER & GENERATOR IMPACTS ON AIR QUALITY

Natural gas fired boilers (i.e., HVAC equipment) can be tuned for increased energy efficiency, reduced air pollution emissions or an optimum condition between these two parameters. Points should be added for minimizing Air Quality Impacts (AQI) from HVAC equipment. Also, inform contractors that air quality permits may be required for the building HVAC equipment.

Response - EAc1.39

The guidelines established by the USGBC for the development of v2.2 do not allow for the addition of new Prerequisites or Credits. You are encouraged to provide this input to future versions of LEED that involve the addition of new prerequisites and credits.

Issue EAc1.40

Sebesta Blomberg & Associates, Inc.

TEXT REVISIONS:

Under 'Submittals' section, recommend that term 'SHGC' be defined prior to first use to provide clarity and avoid possibility of confusion.

Response - EAc1.40

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAc1.41

Grumman/Butkus Associates

TEXT REVISIONS:

Revise submittal language: “Provide the LEED-NC Letter Template, signed by a professional licensed engineer, declaring the percentage of energy saved for the proposed or renovated building. Provide a statement comparing the baseline model to the revised model. “

Response - EAc1.41

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.
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ENERGY & ATMOSPHERE CREDIT 2

Issue EAc2.01

Labs21, NREL, OWP/P Architects

CREDIT SHOULD NOT BE RESTRICTED TO POWER GENERATION:

Labs21 and NREL would like to see low temperature solar thermal (such as solar water heating and solar ventilation preheat http://www.nrel.gov/docs/fy01osti/29913.pdf) qualify for renewable energy credit under LEED 2.2 EA credit 2. The 2.1 reference package under Strategies states “Note that passive solar, solar water heatingÖ do not qualify for points under this credit because they do not generate power.” Low temperature solar thermal does not generate electricity, but it is often the most cost effective renewable technologies and meets the credit intent of “Ö reduce environmental impact associated with fossil fuel use.” Thermal energy is typically produced on site by the burning of fossil fuel, which creates emissions at the site. If electricity is used for the thermal energy needs than using solar thermal provides an equivalent

benefit on an energy use basis of generating electricity with renewables on site. Giving credit for the use of low temperature solar thermal would alleviate the current conflict between 2.2 and the AGL, which is based on the Labs21 EPC, which gives credit for all solar. From the EPC: Technologies & Strategies Assess the project for renewable energy potential including: solar (PV and active thermal), wind, geothermal, biomass, hydro, and biogas strategies. See: http://labs21.lbl.gov/EPC/ea2.htm. If thermal solar is not allowed, this should be clarified in the rating system to match the statement of the reference guide.

Response - EAc2.01

The requirements have been revised to allow solar thermal systems to contribute to this credit. Additional guidance on calculations and definitions will be provided in the Reference Guide.

Issue EAc2.02

Moseley Architects, Albanese Organization, SunJuice, Seton Healthcare Network Facilities, OWP/P Architects, Solar Design Associates

CREDIT REQUIREMENTS TOO HIGH:

The bar should be lowered for this credit - it's too expensive in first cost to get enough folks interested to transform the market, substantially more costly than implementing energy efficiency measures. The inclusion of process loads in the building energy cost also raises the requirement over LEED-NC v. 2.1. Since it's such a big first cost, even folks who are moderately interested in PV are likely to not purchase any since they won't be awarded the point. The threshhold should be lowered in order to get more folks familiar and comfortable with PV technology. A multitude of smaller installations is going to go a lot further in transforming the market than one or two big ones. In an urban context it is almost impossible to achieve this credit due to the vertical nature of an urban context, shading from adjacent buildings, orientation to the sun, wind speeds. Suggested adjustments to percentage requirements include: [a] 1%, 5%, and 10% for 1, 2 and 3 points respectively; [b] 2% for 1 point; [c] 3%, 6%, & !2% for 1, 2, & 3 points respectively;

Response - EAc2.02

The LEED v2.2 inclusion of process loads, as well as miscellaneous loads such as exterior lighting, parking garage lighting, and garage ventilation will substantially increase the quantity of site-generated energy necessary to meet the 5%, 10%, and 15% requirements. Since the renewable energy credit is intended to function as a market driver for promoting site-generated renewable power systems, and since the proposed LEED v2.2 renewable power point thresholds will likely discourage many teams from including any site-generated renewable power in their project, the thresholds have been reduced in the new draft requirements.

Issue EAc2.03

Architectural Energy Corporation

FORMAT ISSUES:

Why aren't EAc2.1, 2.2, and 2.3 set up like EAc1? It's the same in the sense that the requirements and submittals are the same for each of the three, but depending on what percentage the project reaches it gets a certain number of credits. This should simply be EAc2. Combine these three credits into one credit with three levels like Optimize Energy Credit.

Response - EAc2.03

Credit EAc2.1, 2.2 & 2.3 have been consolidated into one credit with three levels to match the format of EAc1.

Issue EAc2.04

Arup

BASIS OF COMPARISON SHOULD BE BASED ON ENERGY CONSUMPTION

The current metric of this calculation is dollars, which for EA 1 makes some sense to allow peak shaving strategies. The credit would be better served to consider using energy produced on site in terms kWh's rather than $. Base the percentage on the total building energy as determined in EA Prerequisite 2 and convert all fuels, district utilities and electricity to a common unit (e.g. kWh) and compare that to the annual energy yield of the on site renewable energy. The percentage calculations may be cumbersome or even “gamed” by creative accounting as there are a number of ways to figure the costs of various systems. What processes do we use for figuring the costs of PV, wind, and a variety of other resources? For example, PV could meet the 10% criteria while providing less than 5% of the building energy supply. Such confusion and snappy accounting may increase the cynicism toward solar economics.

Response - EAc2.04

The use of energy cost as the metric for comparison simplifies the documentation, keeping it consistent with the methodology prescribed in EAc1 and the performance compliance method for EAp2. The LEED-NC v2.2 reference guide will document procedures for determining costs [1] based on the average annual electric rate calculated in the proposed case energy model, or [2] by including the renewable energy system in the energy simulation, running a separate calculation excluding the system from the energy simulation, and calculating the cost difference between the two runs.

Issue EAc2.05

Primera Engineers, Inc.

CREDIT SHOULD NOT BE RESTRICTED TO POWER GENERATION:

The "renewable" source should be opened to include any source of energy from solar, wind, biomass, etc. The credit would not allow for the use of solar hot water or heat generated through biomass. Renewable sources will be defined as electricity produced through renewable sources, or heat generated from renewable sources as defined by Green-e or similar standard.

Response - EAc2.05

The requirements have been revised to allow solar thermal systems to contribute to this credit. Additional guidance on calculations and definitions will be provided in the Reference Guide.

Issue EAc2.06

HTI Architects Inc.

CREDIT REQUIREMENTS ARE GOOD:

No changes made.

Response - EAc2.06

As a number of other comments pointed out, the originally suggested requirements and the high first costs for site generated renewable electricity would probably deter many project teams from installing site-generated renewable electricity systems. Consequently, revised point thresholds have been established which will better promote the use of site-generated renewable energy.

Issue EAc2.07

[none listed]

BASIS OF COMPARISON WRONG

Achievement of these credits is based on energy COST percentage, even though the performance calculation in EA1 is no longer cost-based. This will invite a great deal of uncertainty in the calculations and documentation, since there will be no consistent information about building energy costs, and no way to back check the renewable performance percentage with energy model results. It will also be very difficult to calculate the contribution of on-site renewables to Eac1 if the renewables documentation is cost-

based and the performance calculation is energy based. Revise the calculation to eliminate reference to annual energy cost; use the same basis of achievement as Eac1 (percent of annual energy USE).

Response - EAc2.07

EAc1 (which is based on ASHRAE 90.1-2004 Appendix G) is still based on energy cost, not energy consumption. The language in EAc1 referencing energy consumption has been clarified. ASHRAE 90.1-2004 defines baseline building performance as "the annual energy cost for a building design intended for use as a baseline for rating above standard design." Proposed building performance is also based on annual energy cost. Consequently, cost remains the best metric for comparison with EAc1 calculations.

Issue EAc2.08

HTI Architects Inc., FVB Energy Inc.

LEED 3.0 RECOMMENDATIONS:

[1] Recommend increasing the requirement to 10% for 1 point, 15% for 2 points, and 25% for three points on LEED v3.0. [2] Shift energy & renewable energy calculations to a consumption/usage basis versus coxt. [3]

Response - EAc2.08

The recommendations apply for LEED-NC v3.0, and are not applicable for LEED-NC v2.2

Issue EAc2.09

NRDC

CREDITS SHOULD BE IDENTICAL TO LEED-EB

The renewable energy and renewable electricity industries are highly dependent on LEED and a consistent structure in LEED for providing a reliable source of growth for their industries. Having disparate standards in NC and EB dilutes this market transformation capability. We have yet to see any compelling evidence why EB and NC should be different in this regard and since EB has consolidated the green power and renewable energy credits, we should consider doing the same in NC. Finally, we wish to clarify that not all emerging renewable electricity certification protocols are deserving of LEED status. For example, the Environmental Resources Trust certification protocol is less rigorous than the benchmarks established by either Green-e or Climate Neutral Network and should not be included.

Response - EAc2.09

The recommendations made here go beyond the scope of LEED v2.2 revisions. You are encouraged to provide this input to future versions of LEED that involve substantial revisions to credit structure, and to the quantity of available credits.

Issue EAc2.10

US Fish and Wildlife Service, Pasadena Walks!

ADDITIONAL CREDITS FOR RENEWABLE ENERGY:

Higher levels of renewables are easily obtainable, but the rating provides no incentive to do so. For example, the City of Pasadena Dept. Of Water and Power can provide up to 100% Green Power (generally wind-generated) to a building, with no structural changes necessary. In addition, in many regions photo voltaics could supply a higher percentage of power, but again, there is no incentive to go beyond a bear minimum. EA Credits 2.1-2.3 could be improved by either addition of sub-points to 100% renewable energy (e.g., c2.4 = 40%, c2.5 = 80%); or re-scaling c2.1 = 25% renewable, c2.2 = 50%, c2.3 = 100%). Additionally, power fed back onto the grid from the site should be rewarded. I personally prefer adding points (rather than rescaling), because energy conservation is vital to overall conservation efforts, and those who achieve high self-sufficiency levels should be duly rewarded.

Response - EAc2.10

The guidelines established by the USGBC for the development of v2.2 do not allow for the addition of new Prerequisites or Credits. You are encouraged to provide this input to future versions of LEED that involve the addition of new prerequisites and credits.

Issue EAc2.11

BFGC Architecture

PROVIDE CONFIRMATION THAT ON-SITE GENERATED POWER CAN BE USED TO “FEED” POWER GRID

The utility companies do not encourage self-use of power generated on-site by solar or wind, they want it to be fed directly back into the grid without on-site storage. Please clarify that these credits are for generation of replacement energy for grid use and not strictly for self-use.

Response - EAc2.11

The credit is intended to reward projects that generate power on-site through renewable means (solar, wind, etc.) There is no stipulation that the power be fed directly into the building or stored in batteries for later use. From a financial standpoint, it benefits most projects to use this power directly, reducing demand for utility provided power, however, if this is not allowed by local utilities, the power generated on-site can be fed back into the grid, still reducing demand on the utility infrastructure.

ENERGY & ATMOSPHERE CREDIT 3

Issue EAc3.01

OWP/P Architects, Grumman/Butkus Associates

REWORD "IN THE SPIRIT OF"

"in the spirit of" is subject to many interpretations. Maybe this could say, "meeting the intent of."

Response - EAc3.01

The requirements section has been revised and addresses this issue.

Issue EAc3.02

Paladino & Company, Green Building Services, [none listed] (3), Moseley Architects

DESIGN REVIEW REQUIREMENTS ARE VAGUE

Task one is unclear on whether the CxA must actually do a DD and CD review or whether they simply must be hired (but could remain inactive) prior to the end of DD. Task 4 should be split into two distinct tasks (verify that training is completed should be a separate task from having a contract for a post-occupancy review). On the strength side, however, the samples and templates are much needed - so glad they are being created.

Response - EAc3.02

The requirements section has been revised and addresses this issue.

Issue EAc3.03

USGBC, [none listed]

DEFINE INDEPENDENT

The submittal uses the term "independent" commissioning authority. In the requirements, state explicitly that the commissioning authority must be hired directly by the owner and not responsible for project design or supervision.

Response - EAc3.03

The requirements section has been revised and addresses this issue.

Issue EAc3.04

Arup

NOT ALL PROJECTS HAVE DD PHASE

Not all projects have a clearly defined Design Development (DD) phase. Perhaps this is immaterial as long as the project can demonstrate that the commissioning agent was brought on-board early in the project's design phases.

Response - EAc3.04

The requirements section has been revised to create a more flexible timing of the commissioning design review.

Issue EAc3.05

US Green Building Council

CORRECT TYPO

Typo. In the potential technologies and strategies section, first sentence should read: The LEED-NC 2.2 Commissioning Reference Guide on the USGBC Web site (linked) provides detailed guidance....

Response - EAc3.05

The text has been revised and corrects this issue.

Issue EAc3.06

Arup, Grumman/Butkus Associates

NUMBER REQUIREMENTS SECTION

If the requirements are will be referred to as Requirement 1, Requirement 2, Requirement 3 and Requirement 4, the requirements should be labeled this way under the Requirements section.

Response - EAc3.06

The requirements have been numbered (rather than bulleted) for clarity.

Issue EAc3.07

[none listed] (4), Colorado Springs Utilities, Dome-Tech Group, ZGF Partnership, KEMA Green, EEI

MAKE LEED CX REFERENCE GUIDE AVAILABLE

It is difficult to comment on this credit without knowing what's in the "Commissioning Reference Guide".

Response - EAc3.07

There will no longer be a separate LEED Commissioning Reference Guide. All of the relevant content will be contained with the Rating System and the overall Reference Guide.

Issue EAc3.08

HTI Architects Inc., Zimmer Gunsul Frasca Partnership

AGREE WITH CHANGES

I agree on the changes made to this credit.

Response - EAc3.08

No response required.

Issue EAc3.09

KJWW Engineering Consultants

DO NOT REQUIRE CONTRACT WITH OWNER

Commissioning during design and the additional tasks presented should be by a third party to derive the full benefit and performance desired. However, requiring the firm to have a direct contract to the owner is not required. Many owners are uncomfortable having multiple contracts and would like the CxA to be part of the design team with a contract to the prime consultant, normally the architect.

Response - EAc3.09

There requirement states that the commissioning agent report to the owner but not necessarily be contracted directly to the owner, since projects will have a wide variety of contracting structures, which may or may not allow for a prescribed structure.

Issue EAc3.10

[none listed]

"PRIOR" IS TOO VAGUE

The word “prior” (referring to when to hire the Cx agent) is too vague. For the Cx agent to be affective, they should be hired before 50% schematic design.

Response - EAc3.10

The requirements language has been written to balance effectiveness and flexibility. While the Reference Guide will advise early hire of the commissioning authority, we do not believe credit achievement should depend on proof of this activity in a a precise project phase.

Issue EAc3.11

Sustainable Design Consulting, Building Envelope Solutions, Inc.

INCLUDE BUILDING ENVELOPE

I feel that building envelope commissioning is also very important to achieving an energy-efficient project that will reduce environmental impacts associated with excessive energy use.

Response - EAc3.11

LEED lists the minimum systems that must be commissioned, but projects may include other systems in the commissioning process as appropriate. Although not required, we advocate that Owners should also consider including water related systems, building envelope systems and other building systems in the commissioning process as appropriate. Building envelope commissioning has been pursued and awarded as an Innovation Credit.

Issue EAc3.12

Earthly Ideas LLC

REFERENCE EXISTING RATHER THAN CREATING NEW CX REQUIREMENTS

Why is the USGBC taking on developing yet another guide that will have to be updated in the future as well as redefined for other LEED products? Canít the information be part of the Reference Manual or Project Workspace or reference existing CX documents? This seems to be a departure from the way the USGBC handles other credits. Typically you reference ASHRAE or other entity and donít write the requirements yourselves.; See above and below.; Change "additional" to "enhanced" in the Requirements section to address new credit name of "enhanced."

Response - EAc3.12

There are numerous existing industry standard commissioning guidelines that vary somewhat in scope, depth, and approach to commissioning, and LEED does not specifically endorse one commissioning standard. Also LEED-NC may apply to a broad range of buildings, including naturally ventilated and residential buildings, which may not be addressed by ASHRAE Guideline 0 or other industry commissioning standards.

Issue EAc3.13

Turner Building Science

CREDIT UNDER-RATED

Considering the cost and effort involved in attaining this credit and the value it has to the owner, this credit is under rated point wise in the rating system. It could be broken down to provide separate points the peer review process, building start up and commissioning and the re-commissioning plan and training program; Add one point for peer review and shop drawing verification Add one point for the commissioning plan and implementation Add one point for the re-commissioning plan and owner training.

Response - EAc3.13

LEED-NC v2.2 does not allow for adding or deleting credits.

Issue EAc3.14

Architectural Energy Corporation, Taylor Engineering

REQUIRE SHORT TERM MONITORING

It could be improved to require the Cx provider to analyze short-term monitored data of the commissioned systems. By taking data and analyzing it, the Cx provider will find additional problems in equipment performance and operation that were overlooked during the testing period, as the tests are not performed with an occupied building, and the building loads are essentially simulated during the tests.

Response - EAc3.14

Although short term monitoring may be a valuable commissioning activity for certain projects, requiring this effort for all projects is not warranted. EAc5 provides a separate LEED credit for energy system monitoring and verification.

Issue EAc3.15

TestMarcx

RESOLVE ISSUES PRIOR TO OCCUPANCY

This point asks for a plan to resolve outstanding issues. Although I advocate a warranty review at 8-10 months, outstanding issues may be resolved prior to occupancy.

Response - EAc3.15

It is not feasible to require that all projects resolve all outstanding issues prior to occupancy. Some outstanding commissioning issues may be in dispute, while other issues may have no clear diagnosis or resolution prior to occupancy.

ENERGY & ATMOSPHERE CREDIT 4

Issue EAc4.01

[None listed] (8), Air COnditioning Equipment Sales, Inc, Delta-T Systems, Inc. (2), DMG Corporation (5), Gorham/Schaffler Inc (2), H.V.A.C. Sales (1997) Ltd., Havtech (5), HBA, Inc. (3), Heat Transfer Solutions, Inc. (7), HEAVEN ENGINEERING LLC, Hoffman and Hoffman (6), HTS Engineering Ltd (5), Kasmerchak Gonzalez & Associates, LLP, McQuay (6), Mech. Prod. Intrmntn., Mechanical Products Intermountain, Midwest Engineering Ltd., Norman S. Wright Mechanical Equipment Corporation, Olympic, Overstreet Equipment, Inc., ROME, EDDLEMAN & ASSOC., INC., Schwab Vollhaber Lubratt, Inc. (2), Stoermer-Anderson Inc., T. P. Woodside, Inc. (3), Thermal Components Co (2), Thermosystems, Inc., TMI, TriState HVAC Equipment LLC, Vemco Inc., Ward Mechanical Equipment (2), York International (4)

NO BASIS FOR LEAKAGE OR LIFE ASSUMPTIONS

Fixing values for leakage rate (1%), refrigerant life (30 years) and end of life loss (3%) leaves refrigerant charge as the only true variable. However, there are no independent industry standard tests (such as ARI performance testing and certification) to verify that the actual values for leakage rate, refrigerant life and end of life loss match the values in the equation of the proposed Version 2.2. Without verification, there will be no measurable environmental value to earning Credit 4.0.

Response - EAc4.01

The requirements have been revised to assume a single lifecycle refrigerant loss rate with a default of 2%. This default will apply unless applicants can document and demonstrate a lower lifecycle leakage rate (through manufacturer data, a preventative maintenance plan that minimizes refrigerant loss, and an end-of-life plan for preventing refrigerant loss). The credit has also been revised to default equipment life based on information from the 2003 ASHRAE Applications Handbook guidelines. The ASHRAE defaults for equipment life will be allowed to be changed only if applicants can document and demonstrate longer equipment life."

Issue EAc4.02

High Plains Architects, P.C.

ALLOW CREDIT FOR PASSIVE BUILDINGS

As the credit is currently structured, there is no incentive to design a building in such a manner that no refrigerants are required. For some building types in many climates, passive means or evaporative cooling can be used to the use of refrigerants altogether.

Response - EAc4.02

The credit text has been revised to allow projects with no chemical refrigerant use in their base building HVAC&R systems to obtain the point.

Issue EAc4.03

Simon & Associates, Inc. - Green Building Consultants, Moseley Architects, [None listed] (3), Karpinski Engineering Inc., Architects BCRA, PAE Consulting Engineers, Green Building Services, EcoSmith Design and Consulting, BFGC Architecture

TOO COMPLICATED

The new requirements, as written, are far too confusing and technical for the average design team member to understand or tackle.

Response - EAc4.03

Supporting materials in the LEED-NC v2.2 Reference Guide will provide guidance on meeting this credit. While the embedded equation appears complex, this information should be readily available from manufacturers.

Issue EAc4.04

JohnsonDiversey, Inc.

TECHNICAL CORRECTION: REMOVE HALON

Halon is a trade name, and should either carry the TM mark or not be used in the credit.

Response - EAc4.04

The trademark symbol will be added in the final copy of the credit.

Issue EAc4.05

Sebesta Blomberg & Associates, Inc.

TECHNICAL CORRECTION: ERRORS IN TEXT

Under the 'Requirements' section, the formula for calculating multiple units of base building appears to be in error. The left bracket ([) should be to the right of the summation symbol . . the definition of Qtotal appears to be in error. The or should be an and...

Response - EAc4.05

The formatting corrections will be made in the final copy.

Issue EAc4.06

[None listed], DuPont

TECHNICAL CORRECTION: REMOVE HFCs:

Remove reference to HFC: HFCs are not considered ozone depleting substances. Please delete HFCs from the language AND fire suppression systems that do not contain ozone depleting substances -- CFC's, HFC's, HCFC's or Halons.

Response - EAc4.06

“HFCs” has been removed from the text in that section.

Issue EAc4.07

BFGC Architecture

CHANGE “GLOBAL WARMING” TO “NEGATIVE ENVIRONMENTAL IMPACT”

The use of the term “Global Warming” in the intent section is more of a political statement than a scientific imperative. Perhaps, the term “negative environmental impact” would be more appropriate.

Response - EAc4.07

We do not believe this change is necessary in the context of the credit intent.

Issue EAc4.08

[None Listed] (13), Air Conditioning Equipment Sales Inc., Airtech Equipment Inc., ASHRAE, Deckman Company, Delta-T Systems Inc. (2), DMG Corporation (7), Environmental Control Corp, FVB Energy Inc., Gorham/Schaffler Inc (2), H.V.A.C. Sales (1997) Ltd., Havtech (8), HBA, Inc. (3), Heat Transfer Solutions (9), HEAVEN ENGINEERING LLC, Hoffman and Hoffman (6), HTS Engineering Ltd (5), Kasmerchak Gonzalez & Associates LLP, LONG Building Technologies Inc., McQuay International (8), Mechanical Products Intermountain (4), Midwest Engineering Ltd., Norman S. Wright Mechanical Equipment Corporation, Olympic, Oregon Air Reps, Overstreet Equipment Inc., Powers of Arkansas (2), ROME, EDDLEMAN & ASSOC. INC., Schwab Vollhaber Lubratt, Inc. (2), Stebbins-Duffy Inc, Stoermer-Anderson Inc., T. P. Woodside, Inc. (3), Thermal Components (2), Thermal-Netics, Inc. (2),

Thermosystems Inc., TMI, TriState HVAC Equipment LLC, Vemco Inc., Verne Simmonds Co., Ward Mechanical Equipment (2), York International (16)

REVERT TO v2.1

The version should stay as in v2.1. Anything else will be a compromise of the core initiatives of the USGBC and the LEED Rating System.

Response - EAc4.08

LEED-NC v2.2 EAc4 is based on work performed by the LEED Technical and Scientific Advisory Committee (TSAC) culminating in a final report in November 2004. TSAC was diligent with this issue and elicited industry and public input throughout the investigation and reporting process. The fundamental recommendation of TSAC was to revise this credit to incorporate both direct GWP and ODP concerns into EAc4 and not to limit the credit to only ODP.

Issue EAc4.09

[None listed] (7), Bazzani Associates, Boland Trane, Damuth Trane, FERMILAB, HTI Architects Inc., Hunton Trane, KJWW Engineering Consultants, Specialty AC Products, Tozour - Trane (7), Trane (7)

STRONGLY SUPPORT

Strongly support revised credit.

Response - EAc4.09

No response required.

Issue EAc4.10

[None listed], Sustainable Design Consulting

CLARIFY WHAT IS BASE BUILDING HVAC&R

Please clarify what is and isn't considered base building, for example: water coolers and elevator machine rooms.

Response - EAc4.10

The LEED-NC v2.2 Reference Guide will define a standard for what is a base building HVAC&R system based on whether the equipment is permanent or temporary/portable, and the amount of refrigerant contained in the equipment.

Issue EAc4.11

Taylor Engineering LLC

ELIMINATE CREDIT

If the credit is to remain (and we feel it should be deleted), revise it to: 1. Include a list of acceptable refrigerants . . . 2. If any refrigerant that is not listed (e.g. R-22) is to be used, then and only then must the formula be used to show compliance.

Response - EAc4.11

The guidelines established by the USGBC for the development of v2.2 do not allow for the addition of new Prerequisites or Credits. LEED has chosen to emphasize a calculation based performance approach over prescriptive lists of 'approved' or 'unapproved' refrigerants.

Issue EAc4.12

[None listed]

LIST QUALIFYING REFRIGERANTS

How about listing the current refrigerants that comply with the calculation as an alternate for other refrigerants not listed?

Response - EAc4.12

This is a performance based credit that does not prescribe particular refrigerants, but rather establishes performance criteria for refrigerant selection and management. Specific refrigerants that 'qualify' for this credit, however, will not be listed.

Issue EAc4.13

Tozour-Trane

HOW WAS THRESHOLD ESTABLISHED?

Define the purpose of how the value of 100 was defined.

Response - EAc4.13

LEED-NC v2.2 EAc4 is based on work performed by the LEED Technical and Scientific Advisory Committee (TSAC) culminating in a final report in November 2004. The value of 100 was developed by TSAC as a reasonable threshold to differentiate refrigerant selection with low combined direct ODP and GWP impacts. This threshold will be adjusted to 400 to account for revisions to the default assumptions for refrigerant leakage rates and equipment life.

Issue EAc4.14

Grumman/Butkus Associates

LICENSED ENGINEER

Revise submittal text to read: ”Provide the LEED-NC Letter template, signed by a licensed professional engineer, demonstrating that the buildings.”

Response - EAc4.14

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAc4.15

[None listed]

HOW EASY?

How easy is the credit?

Response - EAc4.15

It cannot be fully known how many LEED-NC v2.2 projects will be able to obtain this credit.

ENERGY & ATMOSPHERE CREDIT 5

Issue EAc5.01

[None Listed], Architectural Energy Corporation, G. F. Shymko & Associates Inc., EEI

ELMINATE OPTION C

This comment is being submitted on behalf of the IPMVP Green Buildings Sub-Committee. The underlying problem with this credit is that the intent or objective is not clear since the two Requirement references for achieving the credit are conceptually dissimilar and have entirely different purposes and outcomes. . . It is suggested that the USGBC decide on a single intent for this credit and reference the associated appropriate IPMVP approach. The incongruence between the two proposed Requirement references is at the very least confusing, particularly to the practitioner who is not familiar with M&V concepts and practices. . . the IPMVP Green Buildings Sub-Committee recommended that basing the credit solely on IPMVP Vol. III would be most appropriate given the new construction focus of the LEED NC document. . .Delete, in its entirety, the Requirements reference to IPMVP Vol. I Option C. Leave the remaining language intact.

Response - EAc5.01

The Requirements reference to IPMVP Vol. I Option C have been removed from the revised credit text. Only Option B and D from Volume III of IPMVP will be acceptable methods.

Issue EAc5.02

Sustainable Design Consulting, Green Building Services, [None Listed], Zimmer Gunsul Frasca Partnership

LANGUAGE IS TOO VAGUE

The option selected shall be appropriate for the size and nature of the building" is a very vague instruction--give guidance.

Response - EAc5.02

To reduce confusion, the text "The option selected shall be appropriate for the size and nature of the building" has been removed from the credit.

Issue EAc5.03

HTI Architects Inc., [Non Listed]

AGREE WITH CHANGES

I agree on the changes made to this credit.

Response - EAc5.03

No response required.

Issue EAc5.04

Turner Building Science

PROVIDE ADDITIONAL CREDITS

This credit is key to what LEED is all about, delivering performance to the building owner. More incentive is required to justify the cost of these services balanced with the value to the owner. Considering the cost and effort involved in attaining this credit and the value it has to the owner, this credit is under rated point wise in the rating system. It could be broken down to provide separate points for net energy usage, actual delivered indoor air quality, sustainable operations of systems that include verification of system calibrations.; Add an additional point for meeting the energy budget established for the building.

Response - EAc5.04

LEED-NC v2.2 does not allow for adding or deleting credits.

Issue EAc5.05

[None Listed]

INCLUDE CORRECTIVE ACTION

Provide a process for corrective action to ensure energy savings are realized if the results of the Measurement and Verification plan indicate that energy savings are not being achieved.

Response - EAc5.05

LEED-NC v2.2 EAc5 is intended to provide building owners and operators with the tools to diagnose energy problems in their facilities. Corrective action is inherent to a monitoring and verification program, but is also a building operations issue (and not a design and construction activity).

Issue EAc5.06

[None Listed]

M&V SHOULD BE AN OWNER ISSUE

M&V activities are largely reliant on owners to implement. The responsibility needs to be more specifically related to building owners than engineers.

Response - EAc5.06

The LEED Rating System does not set requirements for who can serve as the responsible party for a particular credit. There is too much variability in this situation to restrict the options for project teams in this regard.

Issue EAc5.07

New Buildings Institute

ADD ENERGYSTAR REQUIREMENT

Allow ENERGY STAR as a means of obtaining this credit. This is a viable alternative to hiring an engineering team to meet IMPVP requirements, promotes long-term building performance, is consistent with LEED-EB requirements and reduces the cost of achieving LEED certification.

Response - EAc5.07

LEED-NC is primarily focused on design and construction with only limited criteria related to building operations. LEED-EB is intended to provide criteria for building operations and includes credit for meeting EnergyStar. It would be problematic to award a LEED-NC credit based on the EnergyStar system, which requires one year of utility bill data.

Issue EAc5.08

[None Listed]

PROVIDE SUPPORT

IPMVP Option C has not been supported by USGBC there remain significant “infrastructure” support that need to be developed to insure that proper guidance is given to projects and that the ability to evaluate projects using this option are done so properly.

Response - EAc5.08

The Requirements reference to IPMVP Vol. I Option C have been removed from the revised credit text. Only Option B and D from Volume III of IPMVP will be acceptable methods. Also, the LEED-NC v2.2 Reference Guide will provide additional guidance on complying with this credit.

Issue EAc5.09

[None Listed]

M&V PERIOD IS TOO SHORT

One year is too short for the implementation requirement. Many buildings take this long to commission for all seasons and adjust, so the data will not necessarily be valid.

Response - EAc5.09

LEED-NC is primarily focused on design and construction and to “set the stage” for successful building operation. Requirements that extend too far beyond the design and construction timeline are not a good fit for the current structure of LEED-NC.

Issue EAc5.10

Moseley Architects

PROVIDE A SAMPLE M&V PLAN

This credit should offer a sample M&V plan and sample templates much like the commissioning prerequisite and credit.

Response - EAc5.10

The LEED-NC v2.2 Reference Guide will include sample components of an M&V Plan.

ENERGY & ATMOSPHERE CREDIT 6

Issue EAc6.01

Consumers Energy, [None Listed] (2), Cascade Engineering, Earthly Ideas LLC, Michigan Interfaith Power & Light, global green usa, Mainstay Energy, Environmental Resources Trust, Native Energy, Vermont Energy Investment Corp, Summit Blue Consulting, NRDC, Resource Systems Group Inc, Environmental Resources Trust, ARCADIS, Mackinaw Power, LLC, Inland Empire Utilities Agency, United Financial of Illinois Allow alternative green power certificaiton options.

Response - EAc6.01

The LEED-NC v2.0 version of this credit was inadvertently copied into the v2.2 draft. The intent was to retain the requirement for Green-e equivalence in v2.2, and the text has been restored accordingly.

Issue EAc6.02

Center for Resource Solutions, Union of Concerned Scientists, [None Listed]

KEEP GREEN-E AS REFERENCE STANDARD

It has come to our attention that Environmental Resources Trust, which operates a less-strict renewable energy certification, has submitted comments requesting that their EcoPower brand be eligible for LEED. While Green-e is open to competition in the arena of renewable energy certification, we know that EcoPower has less-strict criteria than Green-e and we are afraid that USGBC and its LEED participants may not be aware of differences between Green-e and EcoPower. ERT has a lower requirement for new renewables and lack of clear criteria for eligible hydro and biomass sources. The Green-e standard is the product of a broad range of stakeholders, and should remain the LEED standard for renewable energy.

Response - EAc6.02

The LEED-NC v2.0 version of this credit was inadvertently copied into the v2.2 draft. The intent was to retain the requirement for Green-e equivalence in v2.2, and the text has been restored accordingly.

Issue EAc6.03

[None Listed]

HARMONIZE LEED EB & LEED NC REQUIREMENTS

"The renewable energy and renewable electricity industries are highly dependent on LEED and a consistent structure in LEED for providing a reliable source of growth for their industries. NRDC believes that having disparate standards in NC and EB dilutes this market transformation capability."

Response - EAc6.03

The suggested change would require changes to the credit structures that are outside the scope of the LEED v2.2 program.

Issue EAc6.04

Green Building Services

TEXT CHANGE

"The requirement notes “electricity” but submittals state “energy”. It should be clear that it is electricity and not energy consumption."

Response - EAc6.04

The Submittals section has been removed as part of an on-going process to streamline the LEED documentation and certification process. This issue has been noted for the development of the new submittal requirements.

Issue EAc6.05

HTI Architects Inc., [None Listed]

Agree

Response - EAc6.05

None required.

Issue EAc6.06

[None Listed]

Clarify if on-site power generation satisfies this credit.

Response - EAc6.06

The intent states "grid-source" energy technologies, indicating that the electricity used to satisfy this credit must be sourced from the grid (i.e., not site-generated). This is also clear from the requirements. On-site power generation does not qualify (on-site power generation is covered in EA Credit 2).

Issue EAc6.07

US Fish and Wildlife Service, Renewable Choice Energy, Primera Engineers, Ltd.

Add another credit for 100% Green Power Purchases.

Response - EAc6.07

The guidelines established by the USGBC for the development of v2.2 do not allow for the addition of new Prerequisites or Credits. As with other LEED credits, a point may be achieved under the Innovation category for exceeding a performance-based LEED credit by the next logical step (100% for two years). These are called "Exemplary Performance" credits.

Issue EAc6.08

[None Listed]

REDUCE REQUIREMENTS

"Are many achieving this credit at the 50% requirement? At this requirement, the point is fairly expensive. Might it make sense, as with the varying levels for the renewable energy credits, to offer 1 point for a lower level, 25% - 30% maybe?"

Response - EAc6.08

No data has been provided to support changing this credit. Approximately 30% of all certified projects earned this credit.