LEED Certification Review Report

This report contains the results of the technical review of an application for LEED® certification submitted for the specified project. LEED certification is an official recognition that a project complies with the requirements prescribed within the LEED rating systems as created and maintained by the U.S. Green Building Council® (USGBC®). The LEED certification program is administered by the Green Building Certification Institute (GBCI®).

CSU College of Engineering Building II

Project ID: 1000011690
Rating system & version: LEED-NC v2009
Project registration date: 12/20/2010

**LEED FOR NEW CONSTRUCTION & MAJOR RENOVATIONS (V2009)**

**SUSTAINABLE SITES**

SSc1 Construction Activity Pollution Prevention
SSc2 Development Density and Community Connectivity
SSc3 Brownfield Redevelopment
SSc4 Alternative Transportation-Bicycle Storage and Changing Rooms
SSc4 Alternative Transportation-Low Emitting and Fuel Efficient Vehicles
SSc4 Alternative Transportation-Parking Capacity
SSc5 Site Development - Protect or Restore Habitat
SSc5 Site Development-Maximize Open Space
SSc6.1 Stormwater Design-Quantity Control
SSc6.2 Stormwater Design-Quality Control
SSc7.1 Heat Island Effect - Non-Roof
SSc7.2 Heat Island Effect - Roof
SSc8 Light Pollution Reduction

**WATER EFFICIENCY**

WEc1 Water Use Reduction-20% Reduction
WEc2 Innovative Water Technologies
WEc3 Water Use Reduction

**ENERGY AND Atmosphere**

EAc1 Fundamental Commissioning of the Building Energy Systems
EAc2 On-Site Renewable Energy
EAc3 Enhanced Commissioning
EAc4 Enhanced Refrigerant Mgmt
EAc5 Measurement and Verification
EAc6 Green Power

**MATERIALS AND RESOURCES**

Mrh1 Storage and Collection of Recyclables
Mrh2 Construction Waste Management
Mrh3 Materials Reuse
Mrh4 Recycled Content

**INNOVATION IN DESIGN**

IDc1.1 Innovation in Design
IDc1.2 Innovation in Design
IDc1.3 Innovation in Design
IDc1.4 Innovation in Design
IDc1.5 Innovation in Design
IDc1.6 Innovation in Design
IDc2 LEED® Accredited Professional

**REGIONAL PRIORITY CREDITS**

SSc2 Development Density and Community Connectivity
SSc6.1 Stormwater Design-Quantity Control
WEc3 Water Use Reduction
EAc2 On-Site Renewable Energy

**TOTAL**

69 OF 110
CREDIT DETAILS

**Project Information Forms**

**PIf1: Minimum Program Requirements**

**Approved**

04/25/2012  **DESIGN PRELIMINARY REVIEW**
The LEED Project Information Form has been submitted stating that the project complies with all Minimum Program Requirements. The project Owner has signed the form as required. The project will comply with MPR 6 (Must commit to sharing whole-building energy and water usage data) via Option 1. The ENERGY STAR Portfolio Manager title is the same as the LEED-NC project name as required. The project is located in Fort Collins, Colorado.

11/08/2012  **DESIGN FINAL REVIEW**
This Project Information Form was previously approved in the Design Preliminary Review. No changes have been made.

10/21/2013  **CONSTRUCTION PRELIMINARY REVIEW**
This Project Information Form was previously approved in the Design Preliminary Review. No changes have been made.

12/13/2013  **CONSTRUCTION FINAL REVIEW**
This Project Information Form was previously approved in the Design Preliminary Review. No changes have been made.

**PIf2: Project Summary Details**

**Approved**

05/01/2012  **DESIGN PRELIMINARY REVIEW**
The LEED Project Information Form has been submitted including the following project summary details. There is one building in this LEED-NC application with a total of three stories and 120,245 gross square feet. The project is 100% new construction. The total site area within the LEED-NC project boundary is 108,625 square feet and the building area to site area ratio is 110.7%. The project is located on a campus. There are eight parking spaces available to the occupants, three floors above grade and one floor below grade (excluding parking levels). The site was previously developed. The building uses energy from natural gas, electricity, district or campus heating and district or campus cooling and uses water from a municipal potable water system. The sewage is conveyed to a municipal sewer system. The total project budget is $44,500,000.

11/08/2012  **DESIGN FINAL REVIEW**
A revised LEED Project Information Form has been submitted stating that total site area within the LEED-NC project boundary is 106,907 square feet and the building area to site area ratio is 112.48%. There are 31 parking spaces available to the occupants. The documentation demonstrates compliance.

10/21/2013  **CONSTRUCTION PRELIMINARY REVIEW**
This Project Information Form was previously approved in the Design Final Review. No changes have been made.

12/13/2013  **CONSTRUCTION FINAL REVIEW**
This Project Information Form was previously approved in the Design Final Review. No changes have been made.

**PIf3: Occupant and Usage Data**

**Approved**

05/01/2012  **DESIGN PRELIMINARY REVIEW**
The LEED Project Information Form has been submitted including the following occupant and usage data. The occupant is University and an occupant type that consists primarily of Core Learning Space: College/University spaces. The building is intended to be owner-occupied after project completion. The occupancy includes standard occupancy patterns. The average users value is 425, the peak users value is 493, the FTE value is 263, and the building is occupied 365 days per year.

11/08/2012  **DESIGN FINAL REVIEW**
This Project Information Form was previously approved in the Design Preliminary Review. No changes have been made.

10/21/2013  **CONSTRUCTION PRELIMINARY REVIEW**
This Project Information Form was previously approved in the Design Preliminary Review. No changes have been made.
12/13/2013 CONSTRUCTION FINAL REVIEW
This Project Information Form was previously approved in the Design Preliminary Review. No changes have been made.

PIf4: Schedule and Overview Documents Approved

04/25/2012 DESIGN PRELIMINARY REVIEW
The LEED Project Information Form has been submitted including the design and construction schedule, the estimated date of substantial construction completion is noted as March 14, 2013, and the estimated date of occupancy is noted as April 25, 2013. The following required documents have been uploaded: exterior and interior renderings, floor plans, building sections, a site plan identifying the LEED project boundary, mechanical schedules and mechanical drawings. Additionally, the building systems narrative and the project narrative have been provided.

11/09/2012 DESIGN FINAL REVIEW
A revised site plan drawing has been provided to account for the changes in the reported LEED project boundary. The documentation demonstrates compliance.

10/21/2013 CONSTRUCTION PRELIMINARY REVIEW
This Project Information Form was previously approved in the Design Final Review. No changes have been made.

12/13/2013 CONSTRUCTION FINAL REVIEW
This Project Information Form was previously approved in the Design Final Review. No changes have been made.
### Sustainable Sites

**SSp1: Construction Activity Pollution Prevention**

**Awarded 10/21/2013 CONSTRUCTION PRELIMINARY REVIEW**

The LEED Prerequisite Form has been provided stating that the project has implemented an erosion and sedimentation control (ESC) plan which conforms to the 2003 EPA Construction General Permit (CGP). The requirements of the CGP are more stringent than local erosion and sedimentation control standards and codes. The ESC plan addresses the necessary requirements to prevent soil loss, sedimentation, and pollution of the air as required. The periodic inspection log has been provided to confirm that the ESC plan was implemented appropriately. The periodic inspection log confirms that at least three inspections occurred at intervals spaced evenly throughout the site work period and includes sample dates, inspection frequency, and descriptions of any corrective actions taken. The ESC Plan has also been provided.

**POSSIBLE POINTS: 1**

**ATTEMPTED: 1,**

**DENIED: 0,**

**PENDING: 0,**

**AWARDED: 1**

**SSc1: Site Selection**

**Awarded: 1 04/25/2012 DESIGN PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that the project site does not meet any of the prohibited criteria.

**POSSIBLE POINTS: 5**

**ATTEMPTED: 5,**

**DENIED: 0,**

**PENDING: 0,**

**AWARDED: 5**

**SSc2: Development Density and Community Connectivity**

**Awarded: 5 04/25/2012 DESIGN PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that the project complies with Option 2 and the site is located within one half mile of a minimum of ten basic community services and a minimum of one residential district (with a minimum density of ten units per acre). The project site condition is noted as previously developed with existing infrastructure. A scaled aerial map showing the one half mile radius, the locations of the basic services, and the residential district has been provided.

**POSSIBLE POINTS: 1**

**SSc3: Brownfield Redevelopment**

**Not Attempted**

**SSc4.1: Alternative Transportation-Public Transportation Access**

**Awarded: 6 04/25/2012 DESIGN PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that the project complies with Option 2 and is served by six bus lines within one quarter mile walking distance of the project site. A scaled map showing the location of the transit stops has been provided. Although not clearly marked on the uploaded document, the pedestrian route(s) is apparent on campus maps.

**POSSIBLE POINTS: 6**

**ATTEMPTED: 6,**

**DENIED: 0,**

**PENDING: 0,**

**AWARDED: 6**

**SSc4.2: Alternative Transportation-Bicycle Storage and Changing Rooms**

**Awarded: 1 04/25/2012 DESIGN PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that the project includes institutional spaces and that bicycle storage facilities have been provided to serve 46.65% of the LEED-NC project FTE and transient occupants, measured at peak occupancy, and shower facilities for 0.76% of the LEED-NC project FTE occupants. Bicycle storage facilities must be provided for at least 5% of project FTE and transient occupants and shower facilities must be provided for at least 0.5% of FTE project occupants. Plans have been provided showing the location of the bicycle storage and shower facilities.

However, it appears that the bicycle storage facilities will be shared with occupants in the neighboring Green Hall and Allison Hall buildings. In order to meet the requirements of this credit, the use of bicycle storage and shower facilities must be exclusive to occupants for the LEED-NC project or a sufficient quantity of bicycle storage and shower facilities must be provided for all occupants with access to the amenities.

**TECHNICAL ADVICE:**

Please provide additional documentation, such as photographs of installed signage or a statement signed by the building/property owner or manager, to verify that the use of the bicycle storage facilities are exclusive to the occupants of this LEED-NC project.
Alternatively, provide supplemental calculations which confirm that sufficient bicycle storage facilities have been provided to serve all occupants with access to the amenities, including individuals who are not part of this LEED-NC project.

11/08/2012 DESIGN FINAL REVIEW
A narrative response containing calculations combining the project building and the neighboring Green Hall’s FTE data, and revised site plans have been provided to address the issues outlined in the Preliminary Review. The additional calculations indicate that bicycle storage facilities have been provided to serve 40% of the FTE and transient occupants for both buildings. However, the response does not address the other neighboring building, Allison Hall. Nevertheless, given the total number of bicycle storage facilities available and a reasonable estimate of the occupant number of Allison Hall, the credit threshold will still be met. The documentation demonstrates credit compliance.

SSc4.3: Alternative Transportation-Low-Emitting and Fuel-Efficient Vehicles
Awards: 3
POSITIVE POINTS: 3
ATTEMPTED: 3, DENIED: 0, PENDING: 0, AWARDED: 3

04/25/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form has been provided stating that the project complies with Option 1 and provides one preferred parking space for low-emitting and fuel-efficient vehicles (12.5% of total parking capacity). Preferred parking for low-emitting and fuel-efficient vehicles must be provided for at least 5% of the total parking capacity. A site plan highlighting the total parking capacity, the preferred parking spaces, and signage drawings indicating the reserved status of these spaces have been provided.

However, the documentation indicates that the LEED-NC project parking may be shared with other occupants of the neighboring building(s). As it appears that the parking area is shared with other occupants of the neighboring building, the signage must designate that this preferred space is reserved for the LEED-NC project occupants only.

TECHNICAL ADVICE:
Please provide photographs or signage details which confirm that the low-emitting and fuel-efficient parking space is reserved for use solely by occupants of this LEED-NC project. Alternatively, the project may demonstrate that preferred parking spaces for low-emitting and fuel-efficient vehicles have been provided for at least 5% of the total parking capacity of the shared parking area. In this case, provide revised site plans, calculations, and a narrative to demonstrate compliance at the whole-parking area level.

11/09/2012 DESIGN FINAL REVIEW
A revised LEED Credit Form, detailed narrative response, photograph of the preferred sign, shared campus parking plan, revised site plans (with revised LEED project boundary) and campus parking permit information have been provided to address the issues outlined in the Preliminary Review. The project team has re-evaluated the originally reported parking situation and has adjusted the parking information here, in PIf2 (Project Summary Details) and in PIf4 (Schedule and Overview Documents) to reflect that only certain parking spaces in an adjacent shared campus lot are available to the occupants of the project building and other campus buildings. Based on the 31 space designations for specific permit holders, the project complies with Option 1 and provides two preferred parking spaces for low-emitting and fuel-efficient vehicles (6.45% of total parking capacity). The documentation demonstrates credit compliance.

SSc4.4: Alternative Transportation-Parking Capacity
Awards: 2
POSITIVE POINTS: 2
ATTEMPTED: 2, DENIED: 0, PENDING: 0, AWARDED: 2

04/27/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form has been provided stating that no net increase in parking has resulted from the LEED-NC project scope of work. The project Owner has signed the form as required.

SSc5.1: Site Development-Protect or Restore Habitat
Not Attempted
POSITIVE POINTS: 1

SSc5.2: Site Development-Maximize Open Space
Awards: 1
POSITIVE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

04/25/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form has been provided stating that the project site does not have local open space zoning regulations therefore the project complies with Case 2. 64,672 square feet of open space has been provided which is more than the footprint of the LEED-NC building (33,319 square feet). Additionally, 61% of this dedicated open space is vegetated. A minimum area of open space equal to the footprint of the LEED-NC building is required and at least 25% of that dedicated open space must be vegetated. The pedestrian hardscape has been included in the calculations of this credit. SSc2 (Development Density and Community Connectivity) has been earned as required. The calculations do not include wetlands or naturally designed ponds. The project Owner has signed the form as required. A site plan highlighting the dedicated open space has been provided.
A revised LEED Credit Form and revised site plan drawing have been provided to account for the changes in the reported LEED project boundary. The site contains 64,329 square feet of open space and 62.25% of this area is vegetated. The documentation continues to demonstrate credit compliance.

POSSIBLE POINTS: 1

SSc6.1: Stormwater Design-Quantity Control
Not Attempted

SSc6.2: Stormwater Design-Quality Control
Not Attempted

ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

SSc7.1: Heat Island Effect, Non-Roof
Awarded: 1

10/21/2013  CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that 100% of nonroof base building hardscape surfaces will be mitigated through the use of open-grid paving systems and materials with an SRI of at least 29 therefore the project complies with Option 1. A minimum of 50% is required. The table listing materials with an SRI of at least 29 has been provided as required. The landscape plan including information regarding paving materials has been provided.

However, three issues are pending:

1. The site plan provided indicates that the 3,983 square feet of open-grid pavement system is porous concrete which does not meet the definition of open-grid pavement system in the context of this LEED credit. Open grid pavement systems must be less than 50% impervious and accommodate vegetation in the open cells. Although the porous concrete used on the project may have a perviousness of greater than 50% in the context of water infiltration, it does not appear to contain vegetation in the open cells.

2. The site plan provided indicates that there is 1,707 square feet of cobble that has not been accounted for in the Credit Form. Cobble would be considered a nonroof hardscape in the context of this credit and must be accounted for in the credit calculations.

3. The site plan provided indicates that there is 20,304 square feet of “Concrete Plaza SRI +29” and 5,666 square feet of “Concrete Non Plaza”, but the area of compliant new grey concrete reported in Table SSc7.1-1 Reflective Materials is 25,970 square feet. Based on the annotations on the site plan, it is not clear that the 5,666 square feet of “Concrete Non Plaza” has an SRI of 29 or greater as required.

TECHNICAL ADVICE:

1. Please provide photographs of the pervious paving to confirm that the pervious paving system is less than 50% impervious and accommodates vegetation in the open cells. If the pervious pavement system does not meet the credit criteria, revise the form to exclude this site area for the hardscape contributing towards credit achievement.

2. Revise the Credit Form to account for the 1,707 square feet of cobble and provided documentation of the SRI for this hardscape material. Note that SRI must be calculated according to ASTM E 1980, reflectance measured according to ASTM E 903, ASTM E 1918, or ASTM C1549, and emittance measured according to ASTM E 408 or ASTM C 1371.

3. Please provide documentation confirming that all concrete on the project site has an SRI of at least 29. Revise the form as appropriate.

12/13/2013  CONSTRUCTION FINAL REVIEW

A revised form and site plan which quantifies the separate hardscape areas have been provided to address the issues outlined in the Preliminary Review.

However, two issues are noted:

1. The value reported for total area of all nonroof hardscape surfaces omits the Open Cell Pavers area. Revising the total area to account for this results in a total area of all nonroof hardscape of 33,546 sf. Since additional information regarding the Open Cell Pavers is lacking, LEED compliance could not be determined for the paver material.

2. No additional information has been provided to confirm the SRI value of the “Concrete Non Plaza” hardscape material.

Nevertheless, revising the calculations for the worst-case scenario to account for both issues results in 60.5% of nonroof base building hardscape surfaces mitigated through the use of materials with an SRI of at least 29. The documentation demonstrates credit compliance.

SSc7.2: Heat Island Effect-Roof
Awarded: 1

04/26/2012  DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that 112% of the base building roof surface has a Solar Reflectance Index of 101 therefore the project complies with Option 1. A minimum of 75% of the roof with a minimum SRI of 78 is required. The roof slope is
noted as less than or equal to 2:12. The table listing the compliant SRI roofing materials has been provided. The project has selected the Licensed Professional Exemption (LPE) for this credit. The LPE has been claimed by Jennifer Cordes. The Team Administration tab indicates that this individual holds a valid professional license and is eligible to claim the LPE.

SSc8: Light Pollution Reduction
POSSIBLE POINTS: 1
Not Attempted
Water Efficiency

WEp1: Water Use Reduction-20% Reduction  
Awarded

04/26/2012 DESIGN PRELIMINARY REVIEW
The LEED Prerequisite Form and water use calculations have been provided stating that the project has reduced potable water use by 41% from a calculated baseline design through the installation of high efficiency water closets and urinals, metering lavatory faucets and low-flow kitchen faucets and showerheads. A minimum reduction of 20% is required. A plumbing fixture schedule has been provided.

Please note that floor plan drawings indicate that the project includes two unisex restrooms on the first floor that do not contain urinals. The calculations in the form automatically assume that 100% of male occupants will use restrooms that contain urinals. If a percentage of male occupants will not have access to or will not be expected to use restrooms with urinals, the default Total Daily Uses for water closets and urinals will need to be adjusted in the form accordingly. Nevertheless, considering the size of the building and number of occupants distributed throughout the spaces, a recalculation using a reasonable estimate of male occupants utilizing the unisex restrooms instead of the restrooms with urinals does not significantly affect the water use calculation results.

POSSIBLE POINTS: 4

WEc1: Water Efficient Landscaping  
Not Attempted

WEc2: Innovative Wastewater Technologies  
Not Attempted

WEc3: Water Use Reduction  
Awarded: 4

POSSIBLE POINTS: 4

04/26/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form has been provided stating that the project has reduced potable water use by 41% from the calculated baseline design fixture performance. A minimum reduction of 30% is required.
The LEED Prerequisite Form has been provided stating that the fundamental commissioning report for the project energy-related systems has been completed. The required commissioning authority experience of the project team Commissioning Agent has been provided, and the documentation confirms that the Owner Project requirements (OPR) and Basis of Design (BOD) are consistent with the final construction documentation and completed project. The executive summary of the commissioning report which includes a list of the systems commissioned and a summary of issues corrected and a list of any major outstanding/unresolved issues have been provided.

However, the following eight review comments requiring a project response (marked as Mandatory) must be addressed for the Final Review. For the remaining review comments (marked as Optional), a project response is optional. Please leave the original documentation provided for this Prerequisite uploaded to LEED online for comparison in the next review phase and provide a narrative response to each Preliminary Review comment that has been addressed by the project team.

Please note that the form appears to contain internal errors i.e. the end uses for which additional rows are added to Tables EAp2-4 and EAp2-5 may not properly translate to Tables EAp2-14 and EAp2-15, and it appears that the electric usage for the minor end uses are all summed together using the Miscellaneous category while the natural gas usage is omitted. These issues are currently being addressed by GBCI. In the meantime, whenever possible, please keep all end use data within the established rows in Tables EAp2-4 and EAp2-5. Additionally, please review Tables EAp2-14 and EAp2-15 to confirm correct transfer of data from Tables EAp2-4 and EAp2-5, and provide notification to the reviewer of any internal form errors found.

TECHNICAL ADVICE:

RESPONSE COMMENTS REQUIRING A PROJECT RESPONSE (Mandatory):
1. The floor construction as indicated in Table 1.4.1 does not appear to have been modeled in the Baseline case as required by Table G3.1#5(Baseline)(b). Please revise the raised floor construction in the Baseline model to steel-joist floors with the corresponding assembly U-factor from Table 5.5-5, and update Table 1.4.1A accordingly. In the case of this building, the raised floor construction U-factor should be 0.038 (R-30.0).

2. The Baseline and Proposed case supply airflows and fan power have been summarized in supporting documents CSUE2_BaseCase_Fan_Power_Details.pdf and CSUE2_DesignedCase Mechanical Systems.pdf, respectively. However, the values indicated in these supporting documents are inconsistent with the provided SA-Reports for many of the systems in both cases. The most significant example in the Baseline case is PSZ 3, which has been reported with a supply airflow of 9,078 cfm and a fan power of 9.52 kW in CSUE2_BaseCase_Fan_Power_Details.pdf, but the SA-Report indicates a supply airflow of 111,111 cfm and a fan power of 97,037 kW for PSZ 3. In the Proposed case, each CUH system appears to be modeled with significantly higher supply airflow and fan power than reported in CSUE2_DesignedCase Mechanical Systems.pdf. Please revise the supporting documentation to be consistent with the SA-Reports for the Final Review. Please verify that the baseline case airflow rates were sized based on a 20 degrees F supply-air-to-room-air temperature difference per G3.1.2.8, and that the modeled fan power for each Baseline system is consistent with the system fan power allowance of Section G3.1.2.9. Please verify that the Proposed case airflow rates and fan power for each system reflect the actual building design.

3. The provided supplemental narrative indicates that the central cooling plant efficiency includes all pumps and cooling towers, and therefore the energy use for these individual pieces of equipment was set to zero in the Proposed case as indicated in Table 1.4.3. While including any central plant cooling towers and pumps in the cooling plant efficiency is appropriate, any on-site distribution pumps should be modeled directly as designed. Additionally, the SA-Report indicates that a pump power has been modeled for each of the pumps reported as 0 kW in Table 1.4.3. Please verify that all on-site pumps have been modeled in the Proposed case as designed, and update Table 1.4.3 to be consistent with the SA-Report for the Final Review.

4. Table 1.4.4 indicates that a tank type service water heater has been modeled in the Baseline case and compared to an instantaneous water heater in the Proposed case. However, the Baseline service water heater should be the same type as the Proposed case and based on the minimum efficiency requirement from Table 7.8. Additionally, Table 1.4.4 lists electric point-of-use water heaters serving two small family restrooms in the Proposed case, but the simulation results do not report any electric service water heating energy. The Baseline case should also be modeled with electric water heaters for the corresponding spaces. Please revise the Baseline service water heaters to be the same type as the Proposed service water heaters and based on the minimum efficiency requirements of Table 7.8. Please verify that the electric water heaters have been modeled in both cases, and provide a narrative justification if there is no electric service water heating energy in the Final Review.
5. Supporting calculations have been provided to document the savings associated with water saving fixtures in the Proposed case consistent with WEc3 (Water Use Reduction). However, the annual water consumption figures reported on the WEc3 form include the total for all flush and flow fixtures from WEp1 (Water Use Reduction, 20% Reduction). Only the water use of the flow fixtures (252,180 gallons/year for the Baseline case and 127,760 gallons/year for the Proposed case) should be factored into the hot water calculations for this prerequisite. Please revise the service hot water savings calculations to be based on only the hot water use of the flow fixtures from WEp1, revise the model, and update the form as necessary.

6. The energy savings reported for space heating do not appear to be substantiated based on the energy inputs reported in the Section 1.4 Tables. Review the Baseline and Proposed inputs for the model to confirm that they conform to ASHRAE 90.1-2007 and LEED modeling protocol. Provide sufficient information regarding the energy inputs in the Section 1.4 Tables and an accompanying narrative to justify the reported energy savings.

7. The ES-D report from the Proposed model appears to be provided in the file CSUE2_BaseCase_ESD_10312011.pdf rather than the Baseline ES-D report. Therefore, the energy costs reported in Table EAp2-11 of the form could not be verified. Please provide the Proposed and Baseline ES-D reports for the Final Review.

8. Please provide a separate narrative describing any additional changes made to the energy models between the Preliminary and Final Review phases not addressed by the responses to the review comments.

REVIEW COMMENTS THAT DO NOT REQUIRE A PROJECT RESPONSE, BUT MAY LEAD TO AN IMPROVED PERFORMANCE RATING IF ADDRESSED (Optional):
9. The Baseline boiler capacities, hot water pump power, and hot water pump flow reported in Table 1.4.3 are inconsistent with the provided PV-A report. Additionally, the hot water pump power appears to be modeled lower than the 19 W/gpm allowed by Section G3.1.3.5. Please revise the Baseline water-side HVAC parameters reported in Table 1.4.3 to be consistent with the simulation outputs for the Final Review. Please revise the Baseline hot water pump power to be consistent with the requirement of Section G3.1.3.5.

REVIEW COMMENTS THAT DO NOT REQUIRE A PROJECT RESPONSE FOR THIS PROJECT, BUT SHOULD BE CONSIDERED AS EDUCATIONAL NOTES FOR FUTURE SUBMITTALS (Optional):
10. The unmet load hours reported in Table EAp2-2 are inconsistent with the hours indicated in the provided BEPS and BEPU reports. Since the modeled unmet load hours still comply with the requirements of Section G3.1.2.2, this issue should be noted for future projects.

11/08/2012 DESIGN FINAL REVIEW
The LEED Prerequisite Form has been revised to address the issues outlined in the Preliminary Review and states that the project has achieved an energy cost savings of 45.36% using the ASHRAE 90.1-2007 Appendix G methodology. Revised supporting documentation has been provided including a narrative response to Preliminary Review comments, revised hot water savings calculations, and revised Section 1.4 Tables. Sufficient information has been provided to address all issues raised in the Preliminary Review. The total predicted annual energy consumption for the project is 4,547,361 kWh/year of electricity, 81,471 therms/year of natural gas, 791,000 kBtu/year of process chilled water, and 28,970 therms/year of process steam. The documentation demonstrates prerequisite compliance.

EAp3: Fundamental Refrigerant Management  Awarded

04/26/2012 DESIGN PRELIMINARY REVIEW
The LEED Prerequisite Form has been provided stating that there are no CFC-based refrigerants in the HVAC systems which serve the LEED-NC project.

EAc1: Optimize Energy Performance  Awarded: 17

05/01/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form and supporting documentation have been provided stating that the project is new construction and has achieved an energy cost savings of 43.52% using the ASHRAE 90.1-2007 Appendix G methodology. Minimum energy cost savings of 12% is required for all new construction projects.

However, EAp2 (Minimum Energy Performance) is denied pending clarifications.

TECHNICAL ADVICE:
Please see the comments within EAp2 and resubmit this credit.

11/08/2012 DESIGN FINAL REVIEW
The LEED Credit Form and supporting documentation have been provided stating that the project is new construction and has achieved an energy cost savings of 43.52% using the ASHRAE 90.1-2007 Appendix G methodology. Minimum energy cost savings of 12% is required for all new construction projects. The documentation demonstrates credit compliance.
**EAc2: On-Site Renewable Energy**

**POSSIBLE POINTS: 7**

**Not Attempted**

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**EAc3: Enhanced Commissioning**

**POSSIBLE POINTS: 2**

**Awarded: 2**

**ATTEMPTED: 2, DENIED: 0, PENDING: 0, AWARDED: 2**

**10/21/2013 CONSTRUCTION PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that enhanced commissioning has been implemented. The project team Commissioning Agent has signed the form as required. The form includes the completion dates for the comprehensive commissioning review tasks. The systems manual covering the commissioned systems and future operating information and a Commissioning Scope of Work and Proposal from the Commissioning Agent describing post-construction commissioning activities have been provided.

However, the Commissioning Scope of Work and Proposal is not equivalent to a signed contract.

**TECHNICAL ADVICE:**

Please provide the signed contract between the Owner and the Commissioning Agent which ensures post-construction commissioning activities.

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**EAc4: Enhanced Refrigerant Management**

**POSSIBLE POINTS: 2**

**Awarded: 2**

**ATTEMPTED: 2, DENIED: 0, PENDING: 0, AWARDED: 2**

**04/26/2012 DESIGN PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that the project selected refrigerants and HVACR systems that minimize or eliminate the emission of compounds that contribute to ozone depletion and global climate change. Additionally, any fire suppression systems in the LEED-NC project do not use ozone-depleting substances including CFCs, HCFCs, or halons. The refrigerant impact calculation indicates that the total refrigerant impact of the LEED-NC project is 58 per ton, which is less than the maximum allowable value of 100.

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**EAc5: Measurement and Verification**

**POSSIBLE POINTS: 3**

**Not Attempted**

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**EAc6: Green Power**

**POSSIBLE POINTS: 2**

**Awarded: 2**

**ATTEMPTED: 2, DENIED: 0, PENDING: 0, AWARDED: 2**

**10/21/2013 CONSTRUCTION PRELIMINARY REVIEW**

The LEED Credit Form has been provided stating that the project has a two-year purchase agreement to procure 70% (6,368,000 kWh) of the electricity for this LEED-NC project that meets the Green-e definition for renewable power and therefore applies Option 1. A minimum of 35% of the required electricity must be provided by green power. The project has utilized the whole building energy simulation method in EAp2: Minimum Energy Performance as outlined in ASHRAE/IESNA90.1-2007. The proof of purchase for off-site renewable energy has been provided.

The LEED Credit Form indicates that the project is pursuing the Exemplary Performance option for this credit and that the project reserves one point within the Innovation and Design category for this strategy.
MRp1: Storage and Collection of Recyclables  

Awarded  

04/26/2012 DESIGN PRELIMINARY REVIEW  
The LEED Prerequisite Form has been provided stating that the project has provided appropriately sized dedicated areas for the collection and storage of materials for recycling, including cardboard, paper, plastic, glass, and metals. The narrative describing the size, accessibility and dedication of recycling storage areas and a floor plan showing the location of the recycling storage areas within the LEED-NC project have been provided. The area is adequately sized and located, and the narrative confirms the expected volume and pick-up frequencies.

MRc1.1: Building Reuse—Maintain Existing Walls, Floors and Roof  
Not Attempted  
POSSIBLE POINTS: 3

MRc1.2: Building Reuse, Maintain 50% of Interior  
Not Attempted  
POSSIBLE POINTS: 1

MRc2: Construction Waste Management  
Awarded: 1  
10/21/2013 CONSTRUCTION PRELIMINARY REVIEW  
The LEED Credit Form has been provided stating that the project has diverted 57.98% of the on-site generated construction waste from landfill. A minimum of 50% diverted is required. Calculations and a Construction Waste Management Plan have been provided to document the waste types and receiving agencies for the diverted materials.

MRc3: Materials Reuse  
Not Attempted  
POSSIBLE POINTS: 2

MRc4: Recycled Content  
Awarded: 2  
10/21/2013 CONSTRUCTION PRELIMINARY REVIEW  
The LEED Credit Form and the LEED Materials and Resource Calculator have been provided stating that 24.25% of the total building materials content, by value, has been manufactured using recycled materials. A minimum of 10% is required. The recycled material meets the ISO 14021 definitions of post- and pre-consumer material. Manufacturer documentation has been provided for at least 20% of the compliant materials as required.

MRc5: Regional Materials  
Awarded: 1  
10/21/2013 CONSTRUCTION PRELIMINARY REVIEW  
The LEED Credit Form and the LEED Materials and Resource Calculator have been provided stating that 18.27% of the total building materials value includes building materials and products that have been manufactured and extracted within 500 miles of the project site. A minimum of 10% must be extracted and manufactured within 500 miles of the project site. Manufacturer documentation has been provided for at least 20% of the compliant materials as required.

Please note that Steel Bar and Reinforcing Steel from Nucor Plymouth, and HBM Misc Metals from Nucor are reported as 100% regional although the combined recycled content for each product reported in MRc4: Recycled Materials is less than 100% (97.7%). Although it may be reasonable to expect that the recycled content of the products could have been recovered for recycling within 500 miles of the project site, it is not clear that the remaining percentage of raw materials (iron ore, etc.) would have been extracted from the earth within 500 miles of the project site as well. However, when the Credit Form is revised to account for these materials having no regional content (worst-case scenario) the total regional materials for the project is 16.71% and the issue does not affect credit achievement.

MRc6: Rapidly Renewable Materials  
Not Attempted  
POSSIBLE POINTS: 1

MRc7: Certified Wood  
Awarded: 1
10/21/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form and the LEED Materials and Resources Calculator have been provided stating that 82.54% of the total wood-based building materials are certified in accordance with the principles and criteria of the Forest Stewardship Council (FSC). A minimum of 50% is required. Vendor invoices have been provided for 100% of all FSC certified wood products.
Indoor Environmental Quality

IEQp1: Minimum Indoor Air Quality Performance
Awarded

05/02/2012 DESIGN PRELIMINARY REVIEW
The LEED Prerequisite Form has been provided stating that the project is mechanically ventilated and mechanically conditioned, therefore the project applies Case 1. The project has utilized the ASHRAE 62MZCalc spreadsheet and a narrative has been provided describing how the critical zones were selected and how all occupiable zones are accounted for in the critical zone calculations. The project team Ventilation Systems Designer has signed the form as required. The ASHRAE 62MZCalc spreadsheet confirming that the breathing zone outdoor air intake ventilation rates for all occupied spaces meets the minimum established in ASHRAE 62.1-2007 has been provided.

However, ASHRAE 62MZCalc spreadsheets have not been provided for AHU-2A and AHU-2B.

TECHNICAL ADVICE:
Please provide ventilation calculations for AHU-2A and AHU-2B to verify that the outdoor airflow requirements have been met for these systems. Please also provide verification that the exhaust requirements of Table 6-4 have been met for any applicable spaces, such as science laboratories.

11/08/2012 DESIGN FINAL REVIEW
The LEED Prerequisite Form has been revised to address the issues outlined in the Preliminary Review and ASHRAE 62MZCalc spreadsheets have been provided for AHU-2A and AHU-2B as requested. The documentation demonstrates prerequisite compliance.

IEQp2: Environmental Tobacco Smoke (ETS) Control
Awarded

04/26/2012 DESIGN PRELIMINARY REVIEW
The LEED Prerequisite Form has been provided stating that the project minimizes exposure to ETS-containing air by prohibiting smoking within 25 feet of all entries, outdoor air intakes, and operable windows. Additionally, smoking is prohibited within the building. The project Owner has signed the form as required. Drawings and a narrative confirming the signage system communicating the exterior smoking policy have been provided.

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

IEQc1: Outdoor Air Delivery Monitoring
Awarded: 1

05/01/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form has been provided stating that the project meets the credit criteria for a mechanically ventilated space. A CO2 sensor has been installed within each densely occupied space and these sensors are programmed to generate an alarm when the conditions vary by 10% or more from the design value. Drawings confirming the location of the CO2 sensors in each densely occupied have been provided. An outdoor airflow measurement device has been installed for all systems where 20% or more of the design supply airflow services non-densely occupied spaces and these devices are programmed to generate an alarm when the conditions vary by 10% or more from the design value. Drawings showing the outdoor airflow measurement devices have been provided.

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

IEQc2: Increased Ventilation
Awarded: 1

05/01/2012 DESIGN PRELIMINARY REVIEW
The LEED Credit Form has been provided stating that the project AHUs are able to meet the ASHRAE 62.1-2007 outdoor air requirement and therefore applies Case 1. The project has increased breathing zone outdoor air ventilation rates to all occupied spaces by 30% above the minimum rates. The design outdoor air intake flow for all zones must be at least 30% greater.

However, IEQp1 (Minimum Indoor Air Quality Performance) has been denied pending clarifications.

TECHNICAL ADVICE:
Please see the comments within IEQp1 and resubmit this credit.

11/09/2012 DESIGN FINAL REVIEW
The issues outlined in IEQp1 (Minimum Indoor Air Quality Performance) have been addressed. The documentation demonstrates credit compliance.

IEQc3.1: Construction IAQ Management Plan-
Awarded: 1
During Construction

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

10/21/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that the project developed and implemented a Construction IAQ Management Plan that followed the referenced SMACNA Guidelines. The form narrative describes how absorptive materials were protected from moisture damage during the construction and preoccupancy phases. The project team Contractor has signed the form as required. Permanently installed air handling units were operated during construction. For all permanently installed air handling units that were operated during construction, a MERV 8 filter was installed at each return air grille during construction and these filters were replaced immediately prior to project occupancy with a MERV 14 filter. A copy of the Construction IAQ Management Plan has been provided.

IEQc3.2: Construction IAQ Management Plan-Before Occupancy

Denied

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 1, PENDING: 0, AWARDED: 0

10/22/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that an IAQ Management Plan was implemented for this project which includes post-construction measures and therefore the project applies Option 1 - Path 2. Prior to initial occupancy, the space was flushed out with a minimum of 3,500 cubic feet of outdoor air per square foot of floor area. Once occupied, the space was ventilated at a minimum rate of 0.30 cfm/square foot of outside air or the design minimum outside air rate determined in IEQp1: Minimum Indoor Air Quality Performance, whichever is greater, until a total of 14,000 cubic feet per square foot of outside air was delivered to the space. A copy of the IAQ Management Plan and a narrative describing the flush-out procedure, including flush-out dates, internal temperature, and relative humidity, have been provided.

However, the narrative does not include outdoor delivery rates or address the flush-out procedures after occupancy. The narrative only addresses the flush out procedures prior to occupancy (providing 3,500 cubic feet of outdoor air per square foot prior to building occupancy).

TECHNICAL ADVICE:
Please provide a revised narrative and calculations including the outdoor air delivery rates and addressing the flush-out procedures after the early occupancy. See the LEED Reference Guide for Green Building Design and Construction, 2009 Edition (Updated June 2010), for additional guidance.

12/16/2013 CONSTRUCTION FINAL REVIEW

A revised form, narrative and flush-out calculations have been provided. The revised LEED Credit Form has been provided stating that an IAQ Management Plan including post-construction measures was implemented for this project and therefore the project applies Option 1 - Path 1. The project conducted a flush-out prior to occupancy by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%. A copy of the IAQ Management Plan and a narrative describing the flush-out procedure, including flush-out dates, an occupancy date consistent with PIf4: Schedule and Overview Documents, outdoor delivery rates, internal temperature, and relative humidity, have been provided.

However, the second floor shell space consisting of greater than 10,000 sf has not been flushed-out. As explained in the narrative, no supply ducts serve this space. Based on the floor plan submission, this space(s) are not subject to exclusion from the credit requirements. As discussed in the Reference Guide, alternatives to utilizing the building's HVAC system are possible. The documentation does not demonstrate credit compliance.

IEQc4.1: Low-Emitting Materials-Adhesives and Sealants

Awarded: 1

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

10/21/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that all adhesive and sealant products comply with the VOC limits of the referenced standards for this credit. A summary of all interior adhesive and sealant products has been provided along with VOC data for each product confirming that they comply with the referenced VOC limits. The project team Contractor has signed the form as required. Manufacturer documentation has been provided for at least 20% of the products as required.

IEQc4.2: Low-Emitting Materials-Paints and Coatings

Awarded: 1

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

10/21/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that all interior paints and coatings applied on-site comply with the VOC limits of the
referenced standards for this credit. A summary of all interior paints and coatings has been provided along with VOC data for each product confirming that they comply with the referenced VOC limits. The project team contractor has signed the form as required. Manufacturer documentation has been provided for at least 20% of the products as required.

IEQc4.3: Low-Emitting Materials - Flooring Systems

Awarded: 1

PENDING POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

10/21/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that all interior flooring materials and finishes meet or exceed applicable criteria for the Carpet and Rug Institute, South Coast Air Quality Management District, or FloorScore. The adhesives used have a VOC level of less than 50 g/L that complies with IEQc4.1: Low-Emitting Materials - Adhesives and Sealants. A summary of the products along with data for each product has been provided in the form. Manufacturer documentation has been provided for at least 20% of the materials and for at least 20% of the adhesive and sealant products as required.

IEQc4.4: Low-Emitting Materials - Composite Wood and Agrifiber Products

Not Attempted

POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

IEQc5: Indoor Chemical and Pollutant Source Control

Awarded: 1

05/02/2012 DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that the project includes high-volume exterior entryways. Permanent entryway systems that are at least ten feet long in the primary direction of travel have been installed immediately within the required entryways to capture dirt and particulates. A floor plan showing the location of the installed permanent entryway systems including measurements has been provided. The project includes spaces where hazardous gases or chemicals are present or used. These spaces have been designed to be sufficiently exhausted to create a negative pressure in respect to all adjacent spaces and these spaces include self-closing doors and deck-to-deck partitions or a hard-lid ceiling. The Isolated Exhaust System Areas table has been completed and confirms that air recirculation is not present for any of the hazardous gas or chemical areas. Mechanical drawings highlighting the location of the chemical/hazardous gas usage areas, room separations and associated exhaust systems have been provided. The project is mechanically ventilated and all supply air systems serving regularly occupied spaces have been outfitted with a new filtration media with a rating of at least MERV 13 immediately prior to occupancy. Mechanical schedules confirming the installed filtration media have been provided.

IEQc6.1: Controllability of Systems - Lighting

Awarded: 1

PENDING POINTS: 1
ATTEMPTED: 1, DENIED: 0, PENDING: 0, AWARDED: 1

05/02/2012 DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that lighting controls are provided to enable 100% of occupants to make adjustments to suit individual task needs and preferences. A minimum of 90% of individual workstations must have individual lighting controls. The project includes shared multi-occupant spaces and lighting controls have been provided for 100% of the shared multi-occupant spaces. A minimum of 100% of shared multi-occupant spaces must have lighting controls. Drawings confirming the location of the individual controls and the location of shared multi-occupant spaces, including activities and types of lighting controls have been provided.

However, the documentation indicates that some multi-occupant spaces do not have the required shared lighting controls (Typical Design Studios). Note that occupancy and daylight sensors alone do not qualify for credit compliance in shared multi-occupant spaces. The narrative regarding the lighting must document that the lighting controls in the space enable adjustment that meets group needs and preferences. If daylighting is used, there should be glare control, lighting level controls and room darkening shades where required by function (e.g. IFAS presentations are anticipated in the space).

TECHNICAL ADVICE:
This credit requires that transient groups share lighting controls in all shared multi-occupant spaces (such as dimming, or multi-level lighting). Please provide a narrative to demonstrate that the Design Studio spaces have adequate controls to provide functionality to suit the activities within.

IEQc6.2: Controllability of Systems - Thermal Comfort

Awarded: 1

11/08/2012 DESIGN FINAL REVIEW

A narrative response has been provided to address the issue outlined in the Preliminary Review and states that the conference rooms and design studios allow for multi-level manual control of the lighting. The documentation demonstrates credit compliance.
05/02/2012 DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that the required ventilation and temperature controls are provided to enable 60.74% of the occupants with the ability to make adjustments to suit individual needs and preferences. A minimum of 50% of individual workstations must have individual thermal controls. The project includes shared multi-occupant spaces and thermal controls have been provided for 100% of the shared multi-occupant spaces. A minimum of 100% of shared multi-occupant spaces must have thermal controls. The project is mechanically ventilated. The project team Mechanical Designer has signed the form as required.

However, two issues are pending:
1. The drawings provided do not confirm the location of the individual thermal controls and the location of shared multi-occupant spaces thermal controls as required.
2. Table IEQc6.2-1 indicates operable windows as the thermal comfort controls for 75 private offices, GA Suite 201 and GA Suite 321, but no information has been provided confirming that the windows meet LEED requirements. In addition, it appears that the size of spaces 201 and 321 may preclude the use of operable windows as the sole thermal comfort control for occupants of the spaces.

Operable windows may be used in lieu of individual controls for those occupants located within 20 feet of the exterior wall and within 10 feet of either side of the operable part of the window(s). The areas of operable window must meet the requirements of ASHRAE 62.1-2007, paragraph 5.1 Natural Ventilation.

TECHNICAL ADVICE:
1. Please provide drawings demonstrating that at least 50% of the occupants are provided at least one individual control to enable adjustments to suit individual needs and preferences. Additionally identify the shared multi-occupant spaces and detail how the groups have access to controls providing thermal comfort within these spaces.
2. Provide scaled space drawings and window specifications along with calculations demonstrating that all operable windows contributing to the requirements of this credit serve occupants that are 20 feet inside of and 10 feet to either side of the operable part of the windows, and that the areas of operable window(s) meet the requirements of ASHRAE 62.1-2007, paragraph 5.1 Natural Ventilation.

11/09/2012 DESIGN FINAL REVIEW

HVAC piping plan drawings locating space thermal comfort controls and scaled space drawings with window area calculations have been provided to address the issues outlined in the Preliminary Review. The documentation demonstrates credit compliance.

IEQc7.1: Thermal Comfort-Design Awarded: 1

05/01/2012 DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that the mechanically ventilated and mechanically conditioned project space is in compliance with ASHRAE 55-2004. The project has utilized Table IEQc7.1-1 to determine credit compliance. The metabolic rate and clothing insulation, weather design conditions, and operating conditions have been provided for both the cooling and heating mode. Supporting documentation to confirm that all design conditions fall within the ASHRAE 55-2004 acceptable ranges has been provided.

However, the provided documentation indicates that the percentage of dissatisfied people (PPD) may exceed the 10% limit. The design summer temperature and humidity point on the provided copy of Figure 5.2.1.1 is outside of the acceptable range for 0.5 clo. Using the specific environmental conditions and personal factors indicated on the form also results in a PPD of greater than 10%. For example, using an air temperature of 72 degrees F, an air speed of 30 fpm, a relative humidity of 50%, a metabolic rate of 1.2 met, and a clothing insulation of 0.54 clo results in a PPD of 19%.

TECHNICAL ADVICE:
Please provide additional documentation that confirms that the combination of assumed personal factors, operative temperature, air speed, and humidity are predicted to limit the percentage of dissatisfied occupants to 10% or less.

11/08/2012 DESIGN FINAL REVIEW

A detailed thermal comfort design narrative and ASHRAE-55 comfort calculations have been provided to address the issues outlined in the Preliminary Review. The narrative indicates that the reported temperature (72 degrees F) is used for design calculations, while the actual operating conditions are set to 78 degrees F in cooling and 68 degrees F in heating. The provided thermal comfort calculations verify that these operating conditions fall within the ASHRAE-55 acceptable ranges. The documentation demonstrates credit compliance.

IEQc7.2: Thermal Comfort-Verification Awarded: 1

05/01/2012 DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been provided stating that a permanent monitoring system and process for corrective action are in place to ensure performance to the desired comfort criteria as determined by the credit requirements. The project Owner has signed the form as required. A sample questionnaire and a narrative which identifies the comfort criteria, strategy for ensuring performance to the
comfort criteria, description of the permanent monitoring system implemented, and process for corrective action have been provided.

However, IEQc7.1 is denied pending clarifications.

TECHNICAL ADVICE:
Please see the comments within IEQc7.1 and resubmit this credit.

11/09/2012 DESIGN FINAL REVIEW
The issues raised in IEQc7.1 (Thermal Comfort - Design) have been addressed. The documentation demonstrates credit compliance.

IEQc8.1: Daylight and Views-Daylight
POSSIBLE POINTS: 1
Not Attempted

IEQc8.2: Daylight and Views-Views
POSSIBLE POINTS: 1
Not Attempted
10/14/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been submitted stating that the project achieves exemplary performance for EAc6: Green Power as specified in the LEED Reference Guide for Green Building Design and Construction, 2009 Edition. The requirement for exemplary performance in EAc6 is to purchase 70% of electricity from renewable sources. The project team has provided documentation demonstrating 70%, which meets the exemplary performance requirement.

IDc1.2: Innovation in Design Awarded: 1

04/28/2012 DESIGN PRELIMINARY REVIEW

The LEED Credit Form has been submitted stating that the project team has implemented all five prerequisites and two credits from the Labs21 Environmental Performance Criteria (EPC) to improve the efficiency and design of the project building. The project has met the requirements for Sustainable Sites Credit 1: Safety and Risk Management-Air Effluent, Water Efficiency Prerequisite 1: Laboratory Equipment Water Use, Water Efficiency Credit 1: Process Water Efficiency: Meter Installation, Water Efficiency Credit 2: Process Water Efficiency: 30% Reduction, Energy & Atmosphere Prerequisite 1: Assess Minimum Ventilation Requirements, Materials & Resources Prerequisite 1: Hazardous Material Handling, Materials & Resources Credit 1: Chemical Resource Management, Indoor Environmental Quality Prerequisite 1: Laboratory Ventilation, Indoor Environmental Quality Prerequisite 2: Protection & Notification Systems and Indoor Environmental Quality Credit 2: Containment Device Commissioning. Narratives and supporting documentation has been provided for each EPC prerequisite and credit attempted.

IDc1.3: Innovation in Design Not Attempted

IDc1.4: Innovation in Design Not Attempted

IDc1.5: Innovation in Design Not Attempted

IDc2: LEED® Accredited Professional Awarded: 1

10/21/2013 CONSTRUCTION PRELIMINARY REVIEW

The LEED Credit Form has been submitted stating that a LEED AP has been a participant on the project development team. A copy of the LEED AP award certification for April Wackerman has been included as required.
Regional priority

SSc2: Development Density and Community Connectivity
POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: , PENDING: , AWARDED: 1

WEc3: Water Use Reduction
POSSIBLE POINTS: 1
ATTEMPTED: 1, DENIED: , PENDING: , AWARDED: 1
## REVIEW SUMMARY

### Design Preliminary

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