



## 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®).

### Crawford House Office Building

Project ID 1000002893  
 Rating system & version LEED-EB:OM v2009  
 Project registration date 12/07/2009



#### O and M Application Decision

CERTIFIED: 40-49, SILVER: 50-59, GOLD: 60-79,  
 PLATINUM: 80+

### LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE (V2009)


ATTEMPTED: 66, DENIED: 1, PENDING: 0, AWARDED: 66 OF 110 POINTS


	<b>SUSTAINABLE SITES</b>	11 OF 26		<b>MATERIALS AND RESOURCES</b>	CONTINUED
SSc1	LEED Certified Design and Construction	0 / 4	MRc7	Solid Waste Mgmt-Ongoing Consumables	2 / 1
SSc2	Building Exterior and Hardscape Mgmt Plan	0 / 1	MRc8	Solid Waste Mgmt-Durable Goods	0 / 1
SSc3	Integrated Pest Mgmt, Erosion Control, and Landscape MgmtPlan	0 / 1	MRc9	Solid Waste Mgmt-Facility Alterations and Additions	0 / 1
SSc4	Alternative Commuting Transportation	10 / 15			
SSc5	Site Development-Protect or Restore Open Habitat	0 / 1		<b>INDOOR ENVIRONMENTAL QUALITY</b>	8 OF 15
SSc6	Stormwater Quantity Control	0 / 1	IEQp1	Minimum IAQ Performance	Y
SSc7.1	Heat Island Reduction-Non-Roof	1 / 1	IEQp2	Environmental Tobacco Smoke (ETS) Control	Y
SSc7.2	Heat Island Reduction-Roof	0 / 1	IEQp3	Green Cleaning Policy	Y
SSc8	Light Pollution Reduction	0 / 1	IEQc1.1	IAQ Best Mgmt Practices-IAQMgmt Program	0 / 1
			IEQc1.2	IAQ Best Mgmt Practices-Outdoor Air DeliveryMonitoring	0 / 1
	<b>WATER EFFICIENCY</b>	11 OF 14	IEQc1.3	IAQ Best Mgmt Practices-Increased Ventilation	0 / 1
WEp1	Minimum Indoor Plumbing Fixture and Fitting Efficiency	Y	IEQc1.4	IAQ Best Mgmt Practices-Reduce Particulates in AirDistribution	1 / 1
WEc1	Water Performance Measurement	1 / 2	IEQc1.5	IAQ Mgmt Plan-IAQ Mgmt forFacility Alterations and Additions	0 / 1
WEc2	Additional Indoor Plumbing Fixture and Fitting Efficiency	5 / 5	IEQc2.1	Occupant Comfort-Occupant Survey	1 / 1
WEc3	Water Efficient Landscaping	5 / 5	IEQc2.2	Controllability of Systems-Lighting	1 / 1
WEc4.1	Cooling Tower Water Mgmt-Chemical Mgmt	0 / 1	IEQc2.3	Occupant Comfort-Thermal Comfort Monitoring	0 / 1
WEc4.2	Cooling Tower Water Mgmt-Non-Potable Water Source Use	0 / 1	IEQc2.4	Daylight and Views	0 / 1
			IEQc3.1	Green Cleaning-High Performance Cleaning Program	1 / 1
	<b>ENERGY AND ATMOSPHERE</b>	22 OF 35	IEQc3.2	Green Cleaning-Custodial Effectiveness Assessment	1 / 1
EAp1	Energy Efficiency Best Mgmt Practices-	Y	IEQc3.3	Green Cleaning-Sustainable Cleaning Products and Materials Purchases	1 / 1
EAp2	Minimum Energy Efficiency Performance	Y	IEQc3.4	Green Cleaning-Sustainable Cleaning Equipment	1 / 1
EAp3	Fundamental Refrigerant Mgmt	Y	IEQc3.5	Green Cleaning-Indoor Chemical and Pollutant Source Control	1 / 1
EAc1	Optimize Energy Efficiency Performance	12 / 18	IEQc3.6	Green Cleaning-Indoor Integrated Pest Mgmt	0 / 1
EAc2.1	Existing Building Commissioning-Investigation and Analysis	2 / 2		<b>INNOVATION IN OPERATIONS</b>	5 OF 6
EAc2.2	Existing Building Commissioning-Implementation	2 / 2	IOc1.1	Innovation in Operations	1 / 1
EAc2.3	Existing Building Commissioning-Ongoing Commissioning	0 / 2	IOc1.2	Innovation in Operations	1 / 1
EAc3.1	Performance Measurement-Building Automation System	0 / 1	IOc1.3	Innovation in Operations	1 / 1
EAc3.2	Performance Measurement-System-Level Metering	0 / 2	IOc1.4	Innovation in Operations	1 / 1
EAc4	On-site and Off-site Renewable Energy	6 / 6	IOc2	LEED® Accredited Professional	1 / 1
EAc5	Enhanced Refrigerant Mgmt	0 / 1	IOc3	Documenting Sustainable Building Cost Impacts	0 / 1
EAc6	Emissions Reduction Reporting	0 / 1		<b>REGIONAL PRIORITY CREDITS</b>	3 OF 4
	<b>MATERIALS AND RESOURCES</b>	6 OF 10	SSc4	Alternative Commuting Transportation	1 / 1
MRp1	Sustainable Purchasing Policy	Y	SSc6	Stormwater Quantity Control	0 / 1
MRp2	Solid Waste Mgmt Policy	Y	WEc2	Additional Indoor Plumbing Fixture and Fitting Efficiency	1 / 1
MRc1	Sustainable Purchasing-Ongoing Consumables	0 / 1	EAc1	Optimize Energy Efficiency Performance	0 / 1
MRc2.1	Sustainable Purchasing Electric-Powered Equipment	1 / 1	EAc4	On-site and Off-site Renewable Energy	1 / 1
MRc2.2	Sustainable Purchasing-Furniture	1 / 1	IEQc2.3	Occupant Comfort-Thermal Comfort Monitoring	0 / 1
MRc3	Sustainable Purchasing-Facility Alterations and Additions	1 / 1			
MRc4	Sustainable Purchasing-Reduced Mercury in Lamps	0 / 1			
MRc5	Sustainable Purchasing-Food	0 / 1			
MRc6	Solid Waste Mgmt-Waste Stream Audit	1 / 1			
			<b>TOTAL</b>		<b>66 OF 110</b>


## CREDIT DETAILS

## Credit

STATUS      **POINTS:**  
 POSSIBLE      ATTEMPTED      DENIED      PENDING      AWARDED

	Project Information Forms	0
<b>Plf1: Minimum Program Requirements</b>	<b>Approved</b>	
02/19/2013 <b>STANDARD PRELIMINARY REVIEW</b>		
<p>The LEED Project Information Form has been provided stating that the project complies with all Minimum Program Requirements. The form has been initialed by a Project Team Member. The project is located in Maryville, Tennessee.</p>		
<p>However, the required signatory for this form is the Owner, but the form has been initialed by Bruce Guillaume, a Project Team Member (from Mountain Challenge). It is unclear that this individual is a qualified Owner of this project, as the individual who initialed the form appears to work for the Mountain Challenge, but the Owner of the project is Maryville College.</p>		
TECHNICAL ADVICE:		
Please provide a revised LEED Project Information Form which has been signed by the project Owner Primary Contact.		
<p>If the project team wishes to designate an Agent to complete the Owner Required Signatories on behalf of the Owner Primary Contact, please see the Required Signatory and Common Issues with Owner Information in LEED Online sections of the LEED Online Help Content for additional information including how to request changes to the project Owner Information. Ensure that all necessary documentation, as outlined in the Help Content and based on the chosen compliance path, is provided within the Special Circumstances section of this form for the Final Review.</p>		
04/09/2013 <b>STANDARD FINAL REVIEW</b>		
<p>The LEED Project Information Form has been revised to address the issues outlined in the Preliminary Review comments and includes a clarification narrative indicating that Bruce Guillaume is the Owner Agent. A fully executed Confirmation of Agents Authority Form has been provided, along with a copy of email correspondence with GBCI. The documentation demonstrates form compliance.</p>		
<b>Plf2: Project Summary Details</b>	<b>Approved</b>	
<b>Plf3: Occupant and Usage Data</b>	<b>Approved</b>	
<b>Plf4: Schedule and Overview Documents</b>	<b>Approved</b>	
<b>Plf5: Previously LEED Certified Details</b>	<b>Approved</b>	

 Sustainable Sites		26	12	1	0	11
SSc1: LEED Certified Design and Construction	Not Attempted	4				
SSc2: Building Exterior and Hardscape Management Plan	Not Attempted	1				
SSc3: Integrated Pest Management, Erosion Control, and Landscape Management Plan	Not Attempted	1				
<b>SSc4: Alternative Commuting Transportation</b>	<b>Awarded</b>	<b>15</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>10</b>
<b>02/19/2013 STANDARD PRELIMINARY REVIEW</b>						
<p>The LEED Credit Form has been provided stating that the project building has achieved a 38.00% reduction in conventional commuting trips. The form indicates that the project participated in an informal commute reduction tracking program in accordance with SCAQMD procedures. Supporting documentation includes a summary of employee commuting survey data and a narrative describing the data collection methodology and protocols used. Copies of the surveys have been provided.</p> <p>However, it is unclear that the appropriate number of occupants has been surveyed. The Plf3 Occupant and Usage Data form indicates that the project building has two full-time employees and three part-time employees (for a total of five regular building occupants), but the SSc4 calculations indicate that the building has six regular building occupants.</p> <p>TECHNICAL ADVICE:</p> <p>Please revise the calculations to list the correct number of building occupants. Ensure consistency across the LEED submittal. Note that regular building occupants are defined as workers who either have a permanent office or workstation or typically spend a minimum of ten hours per week in the project building. Note that based on the information specified under Plf3, the part-time employees may not qualify as regular building occupants.</p>						
<b>04/09/2013 STANDARD FINAL REVIEW</b>						
<p>The LEED Credit Form has been revised to address the issues outlined in the Preliminary Review comments and includes a narrative indicating that a new survey was conducted that accounts for the correct number of regular building occupants. The results of the new survey, revised calculations, and a clarification narrative have been provided. <b>The calculations indicate that the project building has achieved a 52.00% reduction in conventional commuting trips.</b> The documentation demonstrates credit compliance.</p> <p>Please note that although the form narrative indicates that the days on which part-time workers did not work were counted as absent days, the calculations indicate that these days were counted as trips avoided due to a compressed work week. Revising the calculations to appropriately account for part-time worker absenteeism indicates that the <b>project building achieved a 45.45% reduction in conventional commuting trips.</b> For future submittals, ensure that days on which part-time workers did not work are counted as absent days.</p>						
SSc5: Site Development-Protect or Restore Open Habitat	Not Attempted	1				
SSc6: Stormwater Quantity Control	Not Attempted	1				
<b>SSc7.1: Heat Island Reduction-Non-Roof</b>	<b>Awarded</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
SSc7.2: Heat Island Reduction-Roof	Not Attempted	1				
SSc8: Light Pollution Reduction	Not Attempted	1				

 <b>Water Efficiency</b>	<b>14</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>11</b>
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## Energy and Atmosphere

35

20

0

0

22

**EAp1: Energy Efficiency Best Management Practices-Planning, Documentation, and Opportunity Assessment**

Awarded

**03/01/2013 STANDARD PRELIMINARY REVIEW**

The LEED Prerequisite Form has been provided stating that a building operating plan, a sequence of operations, and a preventive maintenance program have been implemented at the project building. In addition, the form states that an ASHRAE Level I Walk-Through Analysis has been conducted during the performance period. The submitted documentation includes a building operating plan, a systems narrative describing the mechanical and electrical systems, excerpts from the current sequence of operations for the building, documentation describing the preventive maintenance program in place at the project building, and the results of the ASHRAE Level I Walk-Through Analysis. Additionally, completed work order reports and an electricity summary have been provided.

However, five issues are pending:

1. The building operating plan indicates that the weekend schedule for the building is "NA", but the building operating plan is required to include operating conditions for each of the eight day types (Monday-Friday, Saturdays, Sundays, and Holidays). If the building is not open on the weekend, the building operating plan should indicate that the building is closed and identify any unique operating conditions. Note that page 7 of the ASHRAE Level 1 and 2 report indicates that the building is closed on weekends and holidays except for 2 hours on Saturday; ensure that information reported in the BOP is current and accurate.
2. Although the form narrative indicates that the programmable thermostats are regularly checked, the narrative does not summarize the methods used to implement the building operating plan and the checks performed to verify proper ongoing implementation. Ensure that each operational element noted in the building operating plan (temperature control, HVAC systems, lighting, etc.) is briefly addressed in the form narrative.
3. The preventive maintenance plan is inadequate because the schedule and frequency of maintenance is unclear for the domestic hot water, lighting, and photovoltaic systems. Note that the documentation does outline that monthly HVAC maintenance is required.
4. The breakdown of energy by end use has been broken down based on fuel type, rather than major end uses. The major end uses include lighting, plug loads, heating, HVAC, etc.
5. The summary of findings relating to the generation of the project building site Energy Utilization Index (EUI) is incomplete, as it does not identify a target index and the potential cost savings that might be met by achieving the target index. Note that the target index identified on page 8 is not an improved index and does not account for potential cost savings.

**TECHNICAL ADVICE:**

1. Please revise the building operating plan to include the operating schedule for the weekends for the project building. If the building is closed, ensure that the plan indicates that the building is closed.
2. Revise the form narrative to clearly summarize the methods used to implement the building operating plan and the checks performed to verify proper ongoing implementation.
3. Provide a revised preventive maintenance plan or supplemental documentation to identify a schedule for maintenance and a description of all preventive tasks for each equipment type listed in the systems narrative.
4. Provide a breakdown of total project building annual energy consumption by major end uses or applications. The end use breakdown may take the form of a data table or a graphical summary. Note that a breakdown of energy consumption by fuel type does not satisfy this requirement. Note that submetering is not required to document this breakdown; estimates are acceptable to meet prerequisite requirements.
5. Provide a supplement to the Energy Utilization Index analysis that quantifies the potential cost savings that might be realized by enhancing energy efficiency to achieve the target index, as directed by the Level I Analysis. Note that a target index can be established within the ENERGY STAR Portfolio Manager tool.


Please note the following:


1. The sequence of operations document for the air conditioner does not exactly describe the sequence of operations. As this operations of this building appear to be simple, prerequisite compliance is not affected. For future submittals, ensure that the sequence of operations documentation clearly outlines the required information.
2. The list of potential low-cost/no-cost energy efficiency and conservation upgrades and programmatic changes does not specify the energy demand savings, energy cost savings (consumption + demand), and maintenance cost savings resulting from these improvements. As both measures noted in this prerequisite have been implemented under EAc2.2 Existing Building Commissioning: Implementation, prerequisite compliance is not affected. For future submittals, ensure that all required details are provided for the low-cost and no-cost measures.

04/09/2013 **STANDARD FINAL REVIEW**


The LEED Prerequisite Form has been revised to address the issues outlined in the Preliminary Review comments and summarizes the methods used to implement the building operating plan and the checks performed to verify proper ongoing implementation. The building operating plan has been revised and includes the operating schedule for the weekends. A revised preventive maintenance plan has been provided that identifies the maintenance schedule and describes the preventive maintenance tasks for each equipment type listed in the systems narrative. Additionally, a breakdown of total project building annual energy consumption by major end use has been provided. The ASHRAE audit report has been revised and includes a target energy use intensity (EUI). A clarification narrative further outlines the target EUI and the associated cost savings. A revised list of potential low-cost/no-cost energy efficiency and conservation upgrades and programmatic changes has been provided specifying the energy savings, energy cost savings, and maintenance cost savings resulting from these improvements. The documentation demonstrates prerequisite compliance.


<b>EAp2: Minimum Energy Efficiency Performance</b>	<b>Awarded</b>					
<b>EAp3: Fundamental Refrigerant Management</b>	<b>Awarded</b>					
<b>EAc1: Optimize Energy Efficiency Performance</b>	<b>Awarded</b>	<b>18</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>12</b>
<b>EAc2.1: Existing Building Commissioning- Investigation and Analysis</b>	<b>Awarded</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>EAc2.2: Existing Building Commissioning- Implementation</b>	<b>Awarded</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>EAc2.3: Existing Building Commissioning-Ongoing Commissioning</b>	<b>Not Attempted</b>	<b>2</b>				
<b>EAc3.1: Performance Measurement-Building Automation System</b>	<b>Not Attempted</b>	<b>1</b>				
<b>EAc3.2: Performance Measurement-System-Level Metering</b>	<b>Not Attempted</b>	<b>2</b>				
<b>EAc4: On-site and Off-site Renewable Energy</b>	<b>Awarded</b>	<b>6</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>6</b>
<b>EAc5: Enhanced Refrigerant Management</b>	<b>Not Attempted</b>	<b>1</b>				
<b>EAc6: Emissions Reduction Reporting</b>	<b>Not Attempted</b>	<b>1</b>				

 <b>Materials and Resources</b>		10	6	0	0	6
<b>MRp1: Sustainable Purchasing Policy</b>	<b>Awarded</b>					
<b>MRp2: Solid Waste Management Policy</b>	<b>Awarded</b>					
<b>MRc1: Sustainable Purchasing-Ongoing Consumables</b>	<b>Not Attempted</b>	1				
<b>MRc2.1: Sustainable Purchasing Electric-Powered Equipment</b>	<b>Awarded</b>	1	1	0	0	1
<b>MRc2.2: Sustainable Purchasing-Furniture</b>	<b>Awarded</b>	1	1	0	0	1
<b>MRc3: Sustainable Purchasing-Facility Alterations and Additions</b>	<b>Awarded</b>	1	1	0	0	1
<b>MRc4: Sustainable Purchasing-Reduced Mercury in Lamps</b>	<b>Not Attempted</b>	1				
<b>MRc5: Sustainable Purchasing-Food</b>	<b>Not Attempted</b>	1				
<b>MRc6: Solid Waste Management-Waste Stream Audit</b>	<b>Awarded</b>	1	1	0	0	1
<b>MRc7: Solid Waste Management-Ongoing Consumables</b>	<b>Awarded</b>	1	2	0	0	2
<b>MRc8: Solid Waste Management-Durable Goods</b>	<b>Not Attempted</b>	1				
<b>MRc9: Solid Waste Management-Facility Alterations and Additions</b>	<b>Not Attempted</b>	1				

	<b>Indoor Environmental Quality</b>	<b>15</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>
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 Innovation in Operations	6	5	0	0	5
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	<b>Regional priority</b>	<b>4</b>	<b>4</b>	<b>3</b>
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TOTAL	110	66	1	0	66
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**REVIEW SUMMARY**

## Review

## POINTS:

SUBMITTED    RETURNED    SUBMITTED    DENIED    PENDING    AWARDED

O and M Preliminary	01/24/2013	03/01/2013	64	0	21	37
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O and M Final	03/25/2013	04/19/2013	29	1	0	66
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