

UNIVERSITY OF ILLINOIS URBANA- CHAMPAIGN CAMPUS WIDE CLEAN ENERGY & ENERGY EFFICIENCY PROJECT VERIFICATION REPORT

Prepared by:
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Project Title	University of Illinois Urbana-Champaign Campus Wide Clean Energy & Energy Efficiency
Version	1.0
Report ID	VCS_SN-UIUC_VerificationReport_V1-3_030416

Report Title	University of Illinois Urbana-Champaign Campus Wide Clean Energy & Energy Efficiency Verification Report
Client	Second Nature
Pages	24
Date of Issue	26 February 2016
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Summary:

SCS Global Services (SCS) has performed a verification of the project activity “UIUC: Campus Wide Clean Energy & Energy Efficiency” in Urbana-Champaign, Illinois, US.

This report presents the verification process, the findings raised during verification, and the conclusions reached by the verification body (VB). This assessment covers the greenhouse gas emissions reductions reported to the Verified Carbon Standard (VCS) for the monitoring period of 01 July 2014 to 31 December 2015. The verification was undertaken to evaluate the representations provided in the current monitoring report and assess whether the compiled data conforms to the Approved VCS Methodology: VM0025 Version 1.0, February 2014; and Module VMD0038, Version 1.0, February 2014.

The evaluation was conducted in accordance to the VCS Program Guide, Version 3.5 (08 October 2013); VCS Program Standard, Version 3.5 (25 March 2015); VCS Approved Methodology VM0025: Campus Clean Energy and Energy Efficiency, Version 1.0 (12 February 2014); and VCS Approved Methodology Module VMD0038: Campus Clean Energy and Energy Efficiency: Campus-Wide Module, Version 1.0 (12 February 2014).

In the course of the verification SCS verifiers developed findings which included New Information Requests (NIRs), Non-Conformity Reports (NCRs) and Opportunities for Improvement (OFIs). All New Information Requests and Non-Conformity Reports have been adequately responded to, resulting in their closure. Opportunities for Improvement are potential non-conformances that have been memorialized for future verifications. During this verification five (5) NIRs were issued which resulted in clarifications and new documents being provided. These clarifications and documents were sufficient to ensure conformance with the verification criteria, and were closed.

On the basis of the information provided and the analyses completed, SCS was able to reach a decision on the emission reductions reported by the project proponent to the Verified Carbon Standard. SCS verified the adequacy of the information provided in the current monitoring report, confirming that this document meets the requirements of the VCS standards and methodologies. Furthermore, SCS was able to reach a positive opinion on the claimed emission reductions presented in the monitoring report. On the basis of the information made available to SCS and the analyses completed during the verification, SCS was able to reach a positive opinion, with a reasonable level of assurance, that the emission reductions represented by the project proponent during the monitoring period of 01-July-2014 to 31-December-2015 are free from material misstatement and equal in number to 102,991 tCO₂e.

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1 INTRODUCTION

1.1 Objective

The objective of the verification was to conduct an independent assessment of the ex-post greenhouse gas (GHG) emission reductions that have occurred as a result of the registered VCS project titled “UIUC: Campus Wide Clean Energy & Energy Efficiency” during the monitoring period from 1 July 2014 to 31 December 2015, in accordance with the VCS verification criteria.

1.2 Scope and Criteria

Scope

The scope of the assessment incorporated the verification of the ex-post GHG emission reductions that occurred as a result of the campus-wide energy efficiency project activities during the monitoring period of 1 July 2014 to 31 December 2015. Validation activities were not included in the verification of the current monitoring period. The verification focused on the material aspects of the project that factor into the emissions reductions assertion represented within the monitoring report. This included:

- Evaluation of conformance with VCS rules and requirements
- Evaluation of monitoring system and procedures
- Evaluation of the GHG data presented in the monitoring report
- Evaluation of the GHG emission reduction assertion represented in the monitoring report

Criteria

Per Section 5.3.1 of the VCS Standard, the assessment criteria include the following:

- VCS Standard, Version 3.5, 25 March 2015
- VCS Program Guide, Version 3.5, 8 October 2013
- VCS Approved Methodology VM0025: Campus Clean Energy and Energy Efficiency, Version 1.0, 12 February 2014
- VCS Approved Methodology Module VMD0038: Campus Clean Energy and Energy Efficiency: Campus-Wide Module, Version 1.0, 12 February 2014

1.3 Level of Assurance

Per Section 5.3.1 of the VCS Standard, this verification report provides a verification opinion that the GHG assertion represented within the monitoring report is free from material misstatement with a reasonable level of assurance.

Materiality is a measure of the significance of errors and omissions with regard to statements and numerical claims made in the documents associated with a GHG project. Information is considered material if its omission or misstatement could be seen to influence any decisions or actions resulting from it. While some amount of error is tolerable, a materiality threshold exists, which if exceeded, would require that the verification body issue a negative verification opinion.

The threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions were evaluated at five percent (5%).

1.4 Summary Description of the Project

VCS Project ID # 1407 is a campus wide clean energy and efficiency project developed by the University of Illinois Urbana-Champaign (UIUC). This project has been carried-out following the approved methodology VM0025 and module VMD0038, which provide a set of performance requirements for campuses to achieve Scope 1 stationary combustion reductions, by Carnegies Class, which, averaged over an Additionality Eligibility Period, exceed specified performance standards. It should be noted that the project does not claim emission reductions from decreases in Scope 2 electricity consumption.

No single technology is relied upon to meet the performance standard requirements for this methodology, but rather a series of energy efficiency/clean energy measures have been adopted campus-wide. UIUC's energy efficiency campus activities include the following:

Behavior change campaigns	☒ Yes	☐ No
Cogeneration and fuel switch	☒ Yes	☐ No
Lighting Retrofits	☒ Yes	☐ No
On-Site Renewables	☒ Yes	☐ No
Boiler retrofits, central heating and cooling upgrades	☒ Yes	☐ No
Building system retro-commissioning and upgrades, including automation	☒ Yes	☐ No
Weatherization Improvements	☒ Yes	☐ No
LEED Certification/Green Buildings	☒ Yes	☐ No
Other innovative strategies	☒ Yes	☐ No

Since signing the Illinois Climate Action Plan in 2010, the UIUC campus has embraced a fuel optimization strategy: where feasible, they have elected to utilize electricity generated from suppliers with lower carbon emissions and reduce their use of on-site existing coal and gas cogeneration facilities. UIUC has also targeted the HVAC systems of inefficient buildings in order to optimize energy use. Each year, buildings are selected from the top 100 energy consumption buildings on campus for recommission. UIUC elected to employ nine of the nine possible energy efficiency activities.

2 VERIFICATION PROCESS

The verification process consisted of the following activities:

Conflict of Interest Review

Blake Troxel, Lead Verifier, along with the team verifier Scott Eaton performed all verification activities for this engagement. Barbara Toole O'Neil was included in the project team as a Technical Expert. Christie Pollet-Young, also a Lead Verifier for SCS, internally review the verification upon completion. A Conflict of Interest (COI) assessment was conducted to identify any potential conflicts of interests with the verification on 4 November 2015. No conflicts were identified.

Introductory Meeting

A planning meeting was conducted between the verification team, Second Nature, and UIUC representatives on 16 December 2015. The purpose of the kick-off meeting was to review the scope, objectives, and timeline of audit; confirm verification criteria; determine any changes in the site, sources, GHG management systems or personnel, and to begin gathering information. The following individuals attended the opening meeting: Blake Troxel, Scott Eaton, and Tiffany Mayville of SCS; Barbara Toole O'Neil, Ruby Woodside and Brett Pasinella of Second Nature; and Ben McCall, Mike Marquissee, Eugenie Jenny Kokini, and Morgan Johnston of UIUC.

Desk Review

SCS received and reviewed the Monitoring Report, project calculations, and supporting documentation to assess initial conformance with the data and documentation requirements provided in the verification criteria. A risk assessment was conducted to identify key factors that impact the reported emission reductions and removals. A Verification Plan was created to focus on the critical elements presenting potential risk for errors with the Project.

Quantitative Review

An assessment of the emission reduction calculation inputs and procedures was performed to review the quantitative analyses undertaken by the project proponent to convert the raw inventory data into emission reduction estimates.

Findings

Throughout the verification, there is the opportunity for an iterative exchange between SCS and the project proponent to gather additional information for review and examination. This exchange includes Findings—New Information Requests (NIR), Non-Conformity Reports (NCR) and Opportunities for Improvement (OFI)—that were issued by SCS to the project proponent. The project proponent is required to sufficiently respond to all NIRs and NCRs in order for SCS to render a verification opinion. At this time any findings that may have been issued have been appropriately addressed by UIUC and subsequently closed by SCS. The Issues Log is attached as Appendix A.

Draft Report and Statement

This step in the verification process includes a final review of the submitted data, completion of the Verification Report, and drafting of the Verification Statement. A draft Verification Report and Statement are completed based on the results of the verification assessment.

Internal Review

The draft report was presented to a SCS Lead Verifier, independent of the verification, who determined the Verification Representation to be justified given the evidence presented. The Verification Report and Verification Representation were then presented to UIUC for review and comment.

Final Report and Statement

Once UIUC approved the report it was then submitted to the VCS for review per the VCS rules. Once VCS approves these documents they are uploaded to the VCS project database for public view.

NOTE: No validation activities were required during this verification, as there were no material project deviations or methodology deviations.

2.1 Method and Criteria

The verification activities focused on the material aspects of the project that factor into the emissions reductions assertion represented within the monitoring report. These included:

- Evaluation of conformance with VCS rules and requirements
- Evaluation of the project implementation status
- Evaluation of monitoring system and procedures
- Evaluation of the GHG data and calculations
- Evaluation of the GHG emission reduction assertion represented in the monitoring report

The sampling plan is described below:

Parameter	Data Reviewed	Comments
Management system and data tracking	VCS Monitoring Report, Calculation Workbooks, Personnel Interviews, communication, monitoring documentation provided by project proponent.	Reviewed monitoring documentation, and consistency of parameter values throughout documentation, data, and applicable calculation tools.
Sources of emission reductions	Scope 1 and Scope 2 Calculations - as well as - emission source primary activity data	Reviewed Samples of monthly data input contributing to the sum of NPCF energy usage (Project Emissions Adjustments), Project Emissions from Scope 1 sources, and Purchased Electricity. Reviewed invoices for purchased natural gas, electricity, and coal. Due to the number of documents available for the monitoring period, only a sample of months were selected, based on a random sample shown in this sheet. Chiller data consumption was also reviewed to check that the monthly monitored values were consistent with the yearly subtotals.
Correct application of emission factors	VCS Monitoring Report, Calculation Workbooks, project documentation, and data	Reviewed CACP Calculator and CNBN methodology worksheet.
Accurate calculation of emissions	Scope 1 and Scope 2 Calculations - as well as - emission source primary activity data, application of correct emissions factors.	Reviewed CACP Calculator and CNBN methodology worksheet, as well as primary Scope 1 and 2 activity data.

Materiality threshold	The sum of omissions, errors, and misrepresentations.	Reviewed CACP Calculator and CNBN methodology worksheet, as well as primary Scope 1 and 2 activity data.
Evidence to support additionality tests	CNBN workbook, changes in square feet.	Reviewed monitoring report, ACUPCC report, STARS report, and CNBN Worksheet.
Internal QA/QC	VCS Project Description Document, VCS monitoring report, initial validation report, and communication with project staff.	Reviewed monitoring documentation, and information provided by project proponent.
Qualifications & Competency	Review project staff qualifications and experience.	Interaction and communication with UIUC project Staff, review of project staff qualifications, information provided by Technical Expert.

2.2 Document Review

During the course of the verification, the project description, monitoring report and supporting documentation listed in the table below were reviewed, cross checked, and compared with requirements stated in the VCS Rules and the applicable methodology.

2.2.1 Documentation provided by UIUC

	Document	File Name
1	VCS Monitoring Report	Monitoring Report UIUC February 2016 v2.1
2	VCS Project Description Document	PROJ_DECS_1407_6OCT2014
3	VCS Validation Report	VALID_REP_1407_15OCT2014
4	VCS Verification Report	VERIF_REP_1407_01July2011_to_30June2014
5	CACP Calculator Tool	calculator_v8.0 Illinois 2015 02-17-16
6	CACP Calculator Tool	calculator_v8.0 Illinois First_Half_FY2016 01-28-16
7	CNBN Calculation Tool	UIUC_Excel_Template Project Year 4 (FY15) v02-17-16
8	CNBN Calculation Tool	UIUC_Excel_Template First Half of Project Year 5 (halfFY16) v02-17-16
9	Utility Summary	Illinois SC exclusion 02-17-16
10	Utility Summary	Illinois SC exclusion First Half FY16 01-28-16
11	Physical Boundary Map	Appendix_A
12	Utility Summary	Utility Summary_FY_Jan2016

13	Utility Summary	Petascale Electric Usage to date
14	Utility Summary	Petascale Backup_AE_Feb 2015
15	Utility Invoice	DS4 Scaled Electric Usage August 2015
16	Utility Invoice	DS4 Scaled Electric Usage October 2014
17	Utility Invoice	DS4 Scaled Electric Usage September 2014
18	Utility Invoice	PEI Gas bill for Oct 2014
19	Utility Invoice	PEI Gas Bills for Sept 2014 and Aug 2015
20	Utility Invoice	Coal Invoice 8-4-2015
21	Utility Invoice	Coal Invoice 8-6-2015
22	Utility Invoice	Coal Invoice 8-12-2015
23	Utility Invoice	Coal Invoice 8-20-2015
24	Utility Invoice	Coal Invoice 9-1-2015
25	Utility Invoice	Coal Invoice 10-9-2014
26	Utility Invoice	Coal Invoice 10-14-2014
27	Utility Invoice	Coal Invoice 10-21-2014
28	Utility Invoice	Coal Invoice 10-30-2014
29	Utility Invoice	Coal Invoice 11-4-2014
30	Plant Production Report	Plant Production Report 2014-9-30 Data Sep
31	Plant Production Report	Plant Production Report 2014-10-31 Data Oct
32	Plant Production Report	Plant Production Report 2015-8-31 Data Aug

2.2.2 Methodologies, tools and other guidance provided by the VCS

- 32 VCS Program Guide, version 3.5, 8 October 2013
- 33 VCS Standard, Version 3.5, 25 March 2015
- 34 VM0025, Campus Clean Energy and Energy Efficiency, version 1.0, 12 February 2014
- 35 VMD0038, Campus Clean Energy and Energy Efficiency: Campus-Wide Module, version 1.0, 12 February 2014
- 36 VCS Program Definitions, version 3.5, 8 October 2013
- 37 VCS Validation and Verification Manual, version 3.1_1, 8 October 2013
- 38 VCS Verification Report Template, Version 3.3, 8 October 2013
- 39 VCS Verification Representation Template, Version 3.2, 30 October 2014

2.3 Interviews

SCS conducted interviews with the following project personnel to confirm information about the project activities and to supplement the information provided in the project documentation. Information provided in email communications also supplemented the information obtained through the use of telephone interviews.

	Date	Name / Organization	Subject
41	12/16/15	Ben McCall, Mike Marquissee, Morgan Johnston & Eugenie Kokini: University of Illinois Urbana- Champaign	• Verification Scope • Verification Process • Project Activity Changes • Data & Documentation
42	02/17/16	Ben McCall: University of Illinois Urbana- Champaign	• Monitoring Report Review • Monitoring Process Review • Data Discussions • Calculation Review • Findings Review

2.4 Site Inspections

No site inspections were conducted during this verification. The supporting documentation and data were very detailed for this project. The data included project documentation, primary data, required calculations, coal, gas and electricity invoices etc. Through additional reviews of the initial validation and verification reports, and interviews with Dr. McCall, SCS determined a reasonable level of assurance could be obtained without an on-site visit.

2.5 Resolution of Findings

Throughout the verification, there is the opportunity for an iterative exchange between SCS and the project proponent to gather additional information for review and examination. This exchange includes Findings—New Information Requests (NIR), Non-Conformity Reports (NCR) and Opportunities for Improvement (OFI)—that were issued by SCS to the project proponent. The project proponent is required to sufficiently respond to all NIRs and NCRs in order for SCS to render a verification opinion. At this time any findings that may have been issued have been appropriately addressed by UIUC and subsequently closed by SCS.

No Forward Action Requests were issued during the verification of the previous monitoring report, and thus there was no need to address issues raised during the previous verification engagement.

During this verification five NIR's were issued which resulted in clarifications and new documents. These clarifications and documents were sufficient to ensure conformance with the verification criteria, and were closed.

A summary of each finding is provided in Appendix A.

2.5.1 Forward Action Requests

No forward action requests were raised during the verification, for the current monitoring period.

2.6 Eligibility for Validation Activities

SCS Global Services (VVB ID 006) holds accreditation through ANSI for the validation for the relevant sectoral scopes 1 & 3 under the Verified Carbon Standard. <http://www.v-c-s.org/scientific-certification-systems-inc>

3 VALIDATION FINDINGS

During this verification and upon review of the project documentation, no validation activities were required as there were no material project deviations or methodology deviations. VCS ID# 1407 is not a grouped project, and there were no findings relative to the scope of validation requirements.

3.1 Participation under Other GHG Programs

This project has only been registered with VCS and has not been registered with any other approved GHG Program.

3.2 Methodology Deviations

No methodology deviations were applied to this project during the current reporting period.

3.3 Project Description Deviations

No project description deviations were applied to this project during the current reporting period.

3.4 Grouped Project

This is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The approved methodology module VMD0038 applies to project activities that result in substantial improvement in a college or university's energy performance through activities that focus on reductions in scope 1 stationary combustion emissions and/or activities that focus on reductions in scope 2 electricity emissions. The project must demonstrate that it has achieved the required substantial reductions in GHG emissions by implementing at least two of the following activities:

- Behavior change campaigns
- Cogeneration and fuel switch
- Lighting retrofits

- On-site renewables
- Boiler retrofits, central heating and cooling upgrades
- Building system retro-commissioning and upgrades
- Weatherization improvements
- LEED certification/green building
- Other innovative strategies

UIUC elected to focus on the reduction in Scope 1 stationary combustion emissions only through the implementation of energy efficiency measures within all applicable categories. For the current monitoring period, UIUC has reported the continued implementation of all of the applicable energy efficiency activities.

EE Project Activity Current Implementation

Behavior change campaigns	In 2013, the provost established the Energy Conservation Incentive Program (ECIP). This program encourages energy conservation through behavioural and structural changes of academic units and cooperation of building occupants. Each year, eight campus buildings receive ECIP awards in two separate categories. The project activities have been continued through the current monitoring period. http://www.fs.illinois.edu/services/utilities-energy/energy-conservation/ecip
Cogeneration and fuel switch	Since signing the Illinois Climate Action Plan in 2010, the UIUC campus has embraced a fuel optimization strategy: where feasible, they have elected to utilize electricity generated from suppliers with a lower carbon footprint and reduce their use of on-site existing coal and gas cogeneration facilities.
Lighting retrofits	With support from Facilities & Services department, grant agencies, individual departments, the Student Sustainability Committee, and the campus, 118,567 fixtures had been retrofitted by the end of FY13. These efforts continue to provide energy efficiency gains throughout the monitoring period.
On-site renewables	Rooftop solar pv panels and solar thermal panels have been installed on several buildings within the UIUC campus. A review of aerial imagery and online energy information confirms the continued use of these installations – and thus the continued energy efficiency gains throughout the monitoring period. http://www.illinienergy.illinois.edu/ ; http://illinois.edu/
Boiler retrofits, central heating and cooling upgrades	The initial central heating and cooling upgrades continue to provide energy efficiency gains throughout the monitoring period

Building system retro-commissioning and upgrades	UIUC has worked through high energy-use buildings to re-commission the buildings, with an emphasis on upgrading HVAC systems and controls. Each year, buildings are selected from the top 100 energy consumption buildings. These efforts continue to provide energy efficiency gains throughout the monitoring period.
Weatherization improvements	From 2010 to 2013, major deferred maintenance projects prioritized weatherization improvements of campus buildings. A list of completed projects is online at http://www.fs.illinois.edu/services/capital-programs/deferred-maintenance/project-list . These efforts continue to provide energy efficiency gains throughout the monitoring period.
LEED certification/green building	There are currently 12 University of Illinois buildings/capital projects which have received LEED certification. Six are LEED Silver, three are LEED Gold, and three are LEED Platinum. These efforts continue to provide energy efficiency gains throughout the monitoring period. http://fs.illinois.edu/projects/leed-certifications
Other innovative strategies	An innovative strategy employed by UIUC is the use of a web-based Illini Energy Dashboard, which provides clearly understandable data describing the energy consumption rate of selected campus buildings so that users can make educated choices about their energy-use habits. http://www.illinienergy.illinois.edu/

Upon review of the documentation and information provided by UIUC, with respect to the energy efficiency activities listed above, it was confirmed that there were no material discrepancies between the project implementation and the project description as provided in the monitoring report.

Through communication with Dr Ben McCall, it was confirmed that the monitoring plan was implemented as described in the current monitoring report. Mike Marquissee, Stephanie Lage, and Ben McCall were accountable for carrying out the monitoring activities on behalf of the project proponent. The GHG data was collected, aggregated, stored, calculated, controlled, and reported in accordance with the monitoring plan set out in the monitoring report. Quality control and quality assurance procedures were confirmed by project personnel and documentation provided by Dr Ben McCall. Upon review of the documentation and information provided by UIUC, it was confirmed that there were no material discrepancies between the actual monitoring system and the monitoring plan set out in the Project Description.

It was confirmed by project personnel that the GHG emission reductions or removals generated by the project have not been included in an emissions trading program any other mechanism that includes GHG allowance trading.

It was confirmed by project personnel that the project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification.

It was confirmed by project personnel that the project has not participated or been rejected under any other GHG programs since validation or previous verification.

There were no previously validated methodology deviations for this project listed in the previous verification report.

Through review of the documentation and information provided by UIUC, it was concluded that there were no material discrepancies between current project implementation and the project implementation as described in the project description.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The approved VCS Methodology Module VMD0038 employs a series of parameters to calculate the project emissions reductions. The parameters are calculated using primary activity data from the university operations and are used in multiple equations throughout the methodology module for both performance tests and emissions reductions calculations. SCS reviewed primary data sources and selected samples of data for comparison in order to confirm the accuracy of the emissions reductions calculations.

The Clean Air Cool Planet (CACP) calculator version 8.0 was used to generate greenhouse gas emissions outputs based on the university's aggregate energy consumption data for the reporting period. These outputs were directly entered into the CNBN project calculation template to conduct the applicable performance tests, and to calculate the baseline emissions (BE), project emissions (PE), and emissions reductions (ER) for the monitoring period. The CACP outputs are also reported publicly to ACUPCC and STARS programs, which include a stakeholder review process to establish and maintain procedures for accountability. This standardized approach controls for errors in GHG reporting and reduces the risk of ER calculation errors.

SCS conducted a manual recalculation of a sample of UIUC's primary energy consumption data to crosscheck the values input into the CACP calculator. The audit team then crosschecked the inputs into the CNBN calculation template to identify transposition errors between datasets. Additionally, the audit team performed a sample of checks to confirm the accuracy of spreadsheet formulae, conversions and aggregations, and consistent use of data and parameters across the calculation worksheets.

The data and parameters required at validation include those provided in the table below:

Parameter	Included in Project	
PBSc	☒ Yes	☐ No
PBE _c	☐ Yes	☒ No
B	☒ Yes	☐ No

HDD _{p=y}	☐ Yes	☒ No
CDD _{p=y}	☐ Yes	☒ No
SCAP	☒ Yes	☐ No
E2AP	☐ Yes	☒ No

The data and parameters required for annual monitoring include those provided in the table below:

Parameter	Included in Project	
SF _{b=x}	☒ Yes	☐ No
SF _{p=y}	☒ Yes	☐ No
F _{b=x, i}	☒ Yes	☐ No
F _{p=y, i}	☒ Yes	☐ No
E _{b=x}	☒ Yes	☐ No
E _{p=y}	☒ Yes	☐ No
Y	☒ Yes	☐ No
ΔE _y	☒ Yes	☐ No
AT _{y,i}	☐ Yes	☒ No
PSH _{b=x}	☒ Yes	☐ No
PSH _{p=y}	☒ Yes	☐ No
PC _{b=x}	☒ Yes	☐ No
PC _{p=y}	☒ Yes	☐ No
ΔF _{y,i}	☐ Yes	☒ No

Through review of the documentation and information provided by UIUC, it was concluded that the GHG emissions reductions have been quantified correctly in accordance with the project description and the applied methodology. Materiality calculation checks were conducted for each Fiscal Year portion of the monitoring period, as well as for the total monitoring period. The Net GHG emission reductions or removals recalculated by the audit team were found to have a less than 5% difference from the value reported. Therefore, the audit team concludes with a reasonable level of assurance that the emission reductions calculations are accurate within the applicable materiality threshold.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Parameter	Evidence Provided	Evaluation Method	Assessment
SF _{b=x} ; SF _{p=y}	ACUPCC & STARS GHG Reports; Campus Map	These documents were reviewed, along with the monitoring report, and affirm that there is no change in square footage from the previous verification. The square footage value was consistent with ACUPCC/STARS reporting. The campus map was compared with the previous documentation and with aerial imagery. The	The evidence and affirmations provided are of sufficient quality and detail to be verifiable with a reasonable level of assurance, and are in conformance with the verification criteria.

Parameter	Evidence Provided	Evaluation Method	Assessment
		Project Proponent also confirmed in a telephone interview that the project boundary had not changed, and that the utility meters associated with these facilities has not changed.	
$F_{b=x,i}$; $F_{p=y,i}$	Natural Gas Utility Invoices; Coal Invoices; Plant Production Reports; CNBN Calculator; CACP Calculator	The energy use summary and supporting primary evidence sampled for these fuel sources was reviewed for consistency with the Monitoring Report and calculator worksheets. This information is detailed and demonstrates the reporting documentation is derived from the relevant invoices, and conforms to the defined monitoring procedures. The Plant Production Reports complement the Coal Invoices and allow for a reasonable level of assurance that the coal consumption is as processed and recorded. Natural gas purchase information is straightforward, as is delineation of resulting project emissions.	The evidence provided is of sufficient quality and detail to be verifiable with a reasonable level of assurance, and in conformance with the verification criteria.
$E_{b=x}$; $E_{p=y}$ ΔE_y ; $PE\Delta$	Electricity Utility Invoices; Petascale Facility Electricity Consumption Data; CNBN Calculator; CACP Calculator	The energy purchase evidence provided and computing facility energy consumption evidence provided were reviewed for consistency with the Monitoring Report and calculator worksheets. This information is detailed and demonstrates the reporting documentation is derived from the relevant invoices and monitoring sources, and conforms to the defined monitoring procedures. The process for aggregation of the utility information and computing facility was also discussed via phone interview in greater detail to ensure competency and understanding of the flow of information.	The evidence provided is of sufficient quality and detail to be verifiable with a reasonable level of assurance, and in conformance with the verification criteria.

4.4 Non-Permanence Risk Analysis

Non-permanence risk analysis is not relevant for this project.

5 VERIFICATION CONCLUSION

The objective of the verification was to conduct an independent assessment of the ex-post greenhouse gas (GHG) emission reductions that have occurred as a result of the registered VCS project titled “UIUC: Campus Wide Clean Energy & Energy Efficiency” during the monitoring period from 1 July 2014 to 31 December 2015, in accordance with the VCS rules. The scope of the assessment incorporated the set of activities, detailed in this report, required to verify of the ex-post GHG emission reductions that occurred as a result of the campus-wide energy efficiency project activities during the monitoring period. SCS verified the adequacy and accuracy of the historical information provided in the monitoring report, confirming that this document meets the requirements of the verification criteria.

On the basis of the information made available SCS and the analyses completed during the verification, SCS was able to reach a positive opinion, with a reasonable level of assurance, that the emission reductions represented by the project proponent during the monitoring period of 1 July 2014 to 31 December 2015 are free from material misstatement and equal in number to 102,991 tCO₂e.

Monitoring period: From 01-July-2014 to 31-December-2015

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Project emissions adjustments (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01 July 2014 – 30 June 2015	338,675	271,524	270	66,880
01 July 2015 – 31 December 2015	168,382	123,873	8,398	36,111
Total	507,057	395,397	8,668	102,991

APPENDIX A: FINDINGS

NIR 2015.1 dated 02/10/2016

Standard Reference: VCS Standard v3.5, section 3.1.1; VMD0038 Campus-Wide Module, section 9.3

Document Reference: calculator_v8.0 Illinois 2015 01-28-16; calculator_v8.0 Illinois First_Half_FY2016 01-28-16; Monitoring Report UIUC January 2016 v1; UIUC_Excel_Template First Half of Project Year 5 (halfFY16) v01-28-16; UIUC_Excel_Template Project Year 4 (FY15) v01-28-16b; Utility Summary_FY_Jan2016

Finding: Section 3.1.1 of the VCS Standard v3.5, refers to the "Principles" section (2.4.1), which provides guidance on "Completeness": "include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures." In addition, section 9.3 of the Campus-Wide Module states that "Project proponents must make available evidence and data to enable the validation/verification body to: Review the supporting documentation used to generate the GHG inventory reports submitted to the relevant third-party GHG program (eg, fuel consumed, electricity consumed, emission factors, contextual data) to ensure that the information used to develop the GHG inventory conforms to the third-party GHG program guidance and reflects campus-wide energy consumed."

Please explain the difference between the FY 2015 Calculator Input and Methodology Tool Input for Total Purchased Electricity (176,356,444 kwh, column IP from the Utility Summary) and the Utility Summary sum for FY 2015 Total Purchased Electricity Usage (181,762,491 kwh, column IL). Please describe why certain bills are excluded from the column IL sum, with justification and evidence they should be excluded. Please also provide explanation as to why the sum of Purchased Electricity for the first half of FY2016 in sheet "FIRST HALF FY Calcs" of the Utility Summary excludes values from columns included in column IP of sheet "Summary Usage_Costs".

Client Response: First, we apologize for the confusion caused by the labeling of column IP of tab "Summary Usage_Cost" in our campus Utility Summary_FY spreadsheet. This is a historical artifact of the early days of our GHG accounting before the campus boundaries were established in the Project Description Document. If you look at the Input tab of our CCC, cell BX35 (for FY14) has a note that was added during the last verification process to back up the origin of the entries in column BX. This sums only four entries from the Utility Summary_FY sheet [the references are to the FY14 version of Utility Summary_FY...these columns shifted in the past fiscal year, so while they used to be columns DX, DR, EA, and ED, they are now columns EA, DR, ED, and EG, respectively]. It is the values in these four columns that are summed for column BX in the FY15 and first-half-FY16 versions of the CCC. These same four values are used in column E of the "First Half FY calcs" tab.

Second, column IL (Total Purchased Electric Usage) in Utility Summary_FY sums 32 different meters, and represents all of the bills we pay in house -- not necessarily those related to this campus. This sum includes many properties that are outside of the campus boundaries (as defined in the Project Description Document), for example Willard Airport, Allerton Park, and the Dixon Springs agricultural research facility in southern Illinois. The sum of the four values described above (EA, DR, ED, and EG) is what was used in the validation process, in the verification for FY12-14, and (consistently) in the current monitoring report. A map showing the project boundaries was supposed to have been included in the PDD but it appears it was not incorporated; this map (Appendix_A.pdf) has been uploaded to the Dropbox and we

will consult with VCS about how to add it to the publicly available project documents.

Third, during verification discussions, we identified a minor clerical error in cell BX36 of the CCC: it was incorrectly entered as 176,356,444 when the correct value (summing DR324+EA324+ED324+EG324 in our Utility Summary_FY) is 176,330,722. We have updated this value in the CCC, and then updated the resulting entries in the SC Exclusion and Excel Template spreadsheets. The final tonnage for FY15 changes by only 21 tons (far less than the materiality threshold), but we wanted to correct this error so all documents are consistent. The monitoring report has also been correspondingly updated. The revised files [calculator_v8.0 Illinois 2015 02-17-16.xlsm ; Illinois SC exclusion 02-17-16.xlsx ; Monitoring Report UIUC February 2016 v2.doc ; UIUC_Excel_Template First Half of Project Year 5 (halfFY16) v02-17-16.xlsx ; UIUC_Excel_Template Project Year 4 (FY15) v02-17-16.xlsx] have been uploaded to Dropbox in folder "Revisions 02-17-2016".

Auditor Response: Thank you for these clarifications. The audit team now has a better understanding of the distinctions between different columns described in the Utility Summary sheets. It is also clear which utilities contribute to the subtotals, and through phone discussion the audit team gained a reasonable level of assurance that the use of specific utility bills are correctly attributed to the project boundary. We appreciate the documentation update to include the value consistent with the subtotal in the Utility Summary, and the value used in calculations for FY2016. As noted, the difference is immaterial. The utility information provided and calculations documents are in conformance with the Monitoring Report and verification criteria, so this finding is closed.

Closing Remarks: The client's response adequately addresses the finding.

NIR 2015.2 dated 02/10/2016

Standard Reference: VCS Standard v3.5, section 3.1.1; VMD0038 Campus-Wide Module, section 9.3

Document Reference: calculator_v8.0 Illinois 2015 01-28-16; calculator_v8.0 Illinois First_Half_FY2016 01-28-16; Monitoring Report UIUC January 2016 v1; Utility Summary_FY_Jan2016

Finding: Section 3.1.1 of the VCS Standard v3.5, refers to the "Principles" section (2.4.1), which provides guidance on "Completeness": "include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures."

The value input in the CACP Calculator for Electric Output (kwh) the first half of FY 2016 is 302,056,794 kwh, the same value as input for FY 2015, and inconsistent with the "GENERATED ELECTRIC USAGE IN kWh" FY 2016 subtotal value in column IS of the Utility Summary sheet for the first half of FY 2016. Please provide evidence of calculation for monthly Generated Electricity Usage in kwh, as input in column IS of the Utility Summary.

Client Response: Column AC (Electric Output) of the Input tab of the CCC is not used in the CCC's calculation of GHG emissions. Consequently, we did not update that column for the first-half-FY16 version of our CCC, as this version was compiled specifically for this monitoring report and does not (and cannot) contain full-fiscal-year data. A complete version of the CCC will be compiled after the end of FY16.

Auditor Response: Thank you for the clarification. Because the values are not included within the project boundary and scope, it is not necessary to correct the specific values for the purposes of the audit team's verification activities.

Issue. Closed.

Closing Remarks: The client's response adequately addresses the finding.

NIR 2015.3 dated 02/10/2016

Standard Reference: VCS Standard v3.5, section 3.1.1; VMD0038 Campus-Wide Module, section 9.3

Document Reference: calculator_v8.0 Illinois 2015 01-28-16; calculator_v8.0 Illinois First_Half_FY2016 01-28-16; Monitoring Report UIUC January 2016 v1; Utility Summary_FY_Jan2016

Finding: Section 3.1.1 of the VCS Standard v3.5, refers to the "Principles" section (2.4.1), which provides guidance on "Completeness": "include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures." In addition, section 9.3 of the Campus-Wide Module states that "Project proponents must make available evidence and data to enable the validation/verification body to: Review the supporting documentation used to generate the GHG inventory reports submitted to the relevant third-party GHG program (eg, fuel consumed, electricity consumed, emission factors, contextual data) to ensure that the information used to develop the GHG inventory conforms to the third-party GHG program guidance and reflects campus-wide energy consumed."

Please provide statements of monthly natural gas purchases (Just from the "NICOR Urbana Gas Delivered [UA] Market" column of the Utility Summary) and coal purchases ("Coal Burned Cost" column of Utility Summary, include units), as well as monthly invoices of electricity purchased (Just for values from "IP MAIN SUB DS4 SCALED USAGE" input in column of Utility Summary) for the monitoring period.

Client Response: We are grateful to SCS for selecting the months of September 2014, October 2014, and August 2015 as sample months, to alleviate the burden of providing invoices for all 18 months of the monitoring period. The requested documents have been uploaded to the Dropbox in a folder called "Utility statements & Backup". We wish to clarify that the coal quantities reported in the Utility Summary and CCC are for coal consumption (as monitored by hoppers at the power plant), whereas we can only provide invoices for coal purchased. Coal consumption is the amount of coal burned, which may include some burned from inventory, and some burned from daily deliveries. The invoices show adequate stocks on hand, but the quantity burned will not match the received and invoiced quantity.

Auditor Response: Thank you for providing the additional documentation and the clarification regarding the coal invoices. The audit team will review the documents and the issue can be considered closed. However, should additional questions arise from the review provided documents, further findings may be issued.

Closing Remarks: The client's response adequately addresses the finding.

NIR 2015.4 dated 02/10/2016

Standard Reference: VCS Standard v3.5, section 3.1.1; VMD0038 Campus-Wide Module, section 9.3

Document Reference: "Petascale Electric Usage to date"; UIUC_Excel_Template First Half of Project Year 5 (halfFY16) v01-28-16; UIUC_Excel_Template Project Year 4 (FY15) v01-28-16b; Utility Summary_FY_Jan2016

Finding: Section 3.1.1 of the VCS Standard v3.5, refers to the "Principles" section (2.4.1), which provides guidance on "Completeness": "include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures." In addition, section 9.3 of the Campus-Wide Module states that "Project proponents must make available evidence and data to enable the validation/verification body to: Review the supporting documentation used to generate the GHG inventory reports submitted to the relevant third-party GHG program (eg, fuel consumed, electricity consumed, emission factors, contextual data) to ensure that the information used to develop the GHG inventory conforms to the third-party GHG program guidance and reflects campus-wide energy consumed."

The "Petascale Electric Usage to date" sheet provides reported monthly values of energy consumption used to determine subtotals for the monitoring period. Please provide any primary data (i.e. invoices, metered data, etc...) that was used to input the monthly values into the "Petascale Electric Usage to date" sheet.

Client Response: We are grateful to SCS for selecting the month of February 2015 as a sample month, to alleviate the burden of compiling this backup for all 18 months of the monitoring period. These data (Petascale Backup_AE_Feb 2015.xlsx) have been uploaded to the Dropbox in the folder "Utility statements & Backup".

Auditor Response: Thank you for providing the additional documentation regarding the Petascale invoices. The audit team will review the documents and the issue can be considered closed. However, should additional questions arise from the review of the provided documents, further findings may be issued.

Closing Remarks: The client's response adequately addresses the finding.

NIR 2015.5 dated 02/23/2016

Standard Reference: VMD0038 Campus-Wide Module, Section 9.2

Document Reference: Monitoring Report UIUC February 2016 v2

Finding: Section 9.2 of VMD0038 identifies parameters PSHb=x, PSHp=y as "Scope 2 emissions from purchased steam and/or heat emissions in the applicable year"; and parameters PCb=x, PCp=y as "Scope 2 emissions from purchased cooling in the applicable year".

The "Monitoring Report UIUC February 2016 v2" states in Section 3.2 Data and Parameters Monitored that PSHb=x, PSHp=y, PCb=x, and PCp=y are "applicable parameters used in this monitoring report".

However, upon review of the project data and calculations, there does not seem to be any evidence that the project includes Scope 2 emissions from purchased steam, heat and/or cooling emissions. Please clarify whether, PSHb=x, PSHp=y, PCb=x, and PCp=y are parameters included within this monitoring period.

Client Response: Our campus does not purchase steam or cooling; we were advised in the last verification round that these needed to be included as "monitored parameters" in the sense that they are monitored to be zero. Hypothetically at some point in the future the campus could choose to purchase steam or cooling (even though we have no infrastructure to enable that), so I think that is the reason these parameters needed to be monitored.

Auditor Response: Thank you for this clarification. The issue is closed.

Closing Remarks: The client's response adequately addresses the finding.