

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

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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 January 2016 to 31 December 2016. 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 3.6 (19 October 2016); VCS Program Standard, Version 3.6 (19 October 2016); 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 Observations (OBSs). 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 one (1) NCR and three (3) 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-January-2016 to 31-December-2016 are free from material misstatement and equal in number to 56,118 tCO₂e.

Table of Contents

1	Introduction	5
1.1	Objective	5
1.2	Scope and Criteria	5
1.3	Level of Assurance.....	5
1.4	Summary Description of the Project.....	6
2	Verification Process	6
2.1	Method and Criteria.....	8
2.2	Document Review	8
2.3	Interviews	11
2.4	Site Inspections.....	11
2.5	Resolution of Findings.....	11
2.5.1	Forward Action Requests.....	11
2.6	Eligibility for Validation Activities	12
3	Validation Findings.....	12
3.1	Participation under Other GHG Programs	12
3.2	Methodology Deviations.....	12
3.3	Project Description Deviations	12
3.4	Grouped Project.....	12
4	Verification Findings.....	12
4.1	Project Implementation Status	12
4.2	Accuracy of GHG Emission Reduction and Removal Calculations	15
4.3	Quality of Evidence to Determine GHG Emission Reductions and Removals	16
4.4	Non-Permanence Risk Analysis.....	17
5	Verification conclusion	17
	APPENDIX A: Findings	19

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 January 2016 to 31 December 2016, 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 January 2016 to 31 December 2016. 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 3.6, 19 October 2016
- VCS Program Guide, Version 3.6, 19 October 2016
- 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, performed all verification activities for this engagement. Scott Eaton, also a Lead Verifier for SCS, internally reviewed the verification upon completion. A Conflict of Interest (COI) assessment was conducted to identify any potential conflicts of interests with the verification on 13 January 2017. No conflicts were identified.

Introductory Meeting

A planning meeting was conducted between the verification team, Second Nature, and UIUC representatives on 24 February 2017. 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, Ruby Woodside of Second Nature; and Ben McCall 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 and a sampling plan was created 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 Observations (OBS)—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.
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.

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 March 2017 v1.0
2	VCS Project Description Document	PROJ_DECS_1407_6OCT2014
3	CACP Calculator Tool	calculator_v9 FY17 first half
4	CACP Calculator Tool	calculator_v8.0 Illinois First_Half_FY2016 01-28-16
5	CNBN Calculation Tool	UIUC_Excel_Template Project Year 5 (FY16) v032617
6	CNBN Calculation Tool	UIUC_Excel_Template First Half of Project Year 6 (halfFY17) v032617
7	Utility Summary	Utility Summary_FY
8	Utility Summary	Illinois SC exclusion 02-27-17
9	Utility Summary	Illinois SC exclusion First Half FY17 03-01-17
10	Physical Boundary MapUtility Summary	Appendix_A

11	Utility Invoice	Jul 2016 Ameren DS-4
12	Utility Invoice	July 2016 Electricity UIUC_INVOICE_100114-UIUC
13	Utility Invoice	Mar 2016 Ameren DS-4
14	Utility Invoice	March 2016 Electricity UIUC_INVOICE_100110-UIUC
15	Utility Invoice	Nov 2016 Ameren DS-4
16	Utility Invoice	November 2016 Electricity UIUC_INVOICE_100118-UIUC (2)
17	Utility Invoice	Sep 2016 Ameren DS-4
18	Utility Invoice	September 2016 Electricity UIUC_INVOICE_100116-UIUC
19	Utility Invoice	July 2016 Nat Gas UIUC_INVOICE_100114-UIUC-GAS
20	Utility Invoice	March 2016 Nat Gas UIUC_INVOICE_100110-UIUC-GAS
21	Utility Invoice	November 2016 Nat Gas UIUC_INVOICE_100118-UIUC-GAS
22	Utility Invoice	September 2016 Nat Gas UIUC_INVOICE_100116-UIUC-GAS
23	Utility Invoice	March 2016 Coal Invoices
24	Utility Invoice	November 2016 Coal Invoices
25	Utility Invoice	Copy of 2016-3-31 Production Data Mar
26	Plant Production Repot	Copy of 2016-7-31 Production Data Jul
27	Plant Production Repot	Copy of 2016-9-30 Production Data SEPT (3)
28	Plant Production Repot	Copy of 2016-11-30 Production Data Plant Report NOV (3)

2.2.2 Methodologies, tools and other guidance provided by the VCS

- 29 VCS Program Guide, version 3.6, 19 October 2016
- 30 VCS Standard, Version 3.6, 19 October 2016
- 31 VM0025, Campus Clean Energy and Energy Efficiency, version 1.0, 12 February 2014
- 32 VMD0038, Campus Clean Energy and Energy Efficiency: Campus-Wide Module, version 1.0, 12 February 2014
- 33 VCS Program Definitions, version 3.5, 8 October 2013
- 34 VCS Validation and Verification Manual, version 3.1_1, 8 October 2013
- 35 VCS Verification Report Template, Version 3.3, 8 October 2013
- 36 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
37	02/24/17	Ben McCall: University of Illinois Urbana-Champaign	• Verification Scope • Verification Process • Project Activity Changes • Data & Documentation

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 Observations (OBS)—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 1 NCR and 3 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.illinienenergy.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, Micah Kenfield, 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 9.0 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
ΔEy	☒ 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 material 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 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.	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
$F_{b=x,i}$; $F_{p=y,i}$	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 January 2016 to 31 December 2016, 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 January 2016 to 31 December 2016 are free from material misstatement and equal in number to 56,118 tCO₂e.

Monitoring period: From 01-January-2016 to 31-December-2016

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 January 2016 – 31 December 2016	332,082	223,565	43,399	56,118
Total	332,082	223,565	43,399	56,118

APPENDIX A: FINDINGS

NIR 1 Dated 20 Mar 2017

Standard Reference: VCS Standard, Version 3.6, Section 2.4.1: Accuracy & Conservativeness

Document Reference: calculator_v9 FY16 (PY5); calculator_v9 FY17 first half

Finding: Section 2.4.1 of the VCS Standard states, "The application of principles is fundamental in ensuring that GHG-related information is a true and fair account. The principles below shall provide the basis for, and shall guide the application of, the VCS rules and requirements: Accuracy - Reduce bias and uncertainties as far as is practical; Conservativeness: Use conservative assumptions, values and procedures to ensure that net GHG emission reductions or removals are not overestimated."

In the "EF_Electric" tab of the Campus Carbon Calculator the emission factors identified for calendar year 2016 reference emission factors from the eGRID2012 GHG Annual Output Emission Rates. However, the EPA has released the eGRID2014v2 GHG Annual Output Emission Rates which are more accurate and conservative than the 2012 values. Please identify why the most up-to-date and accurate emission factors should not be used in the calculation of emission reductions for the current offset project - and how this complies with the VCS principles of "Accuracy" and "Conservativeness".

Project Personnel Response: In our opinion, the key phrase in the VCS Standard is "as far as is practical." UIUC does not maintain the Campus Carbon Calculator, and we have used the most recently released version of the Calculator, in accordance with both the methodology and the project description document. It would be possible in principle to make an ad hoc modification of the CCC to incorporate the just-released eGRID2014v2, but from a practical perspective this is impractical for a number of reasons. First and foremost, it violates the consistency of process envisioned in the methodology and the PDD. Second, it would introduce a discrepancy between UIUC's submission for VCS verification and its submission for Second Nature reporting; a key element of the PDD is consistency in reporting to different entities to facilitate peer review and transparency, and our use of the most recent released version of the CCC is consistent with Second Nature and STARS guidance for GHG reporting. Third, having a campus modify the CCC for this purpose runs the risk of each campus having a different version of the CCC, which would make comparisons between campuses impractical and jeopardize the entire basis of the methodology.

Finally, it is worth considering whether the impracticalities outlined above, and in particular the proposed deviation from both the PDD and Second Nature and STARS reporting guidance, are outweighed by the need for accuracy in the calculation. To examine this, we performed a quick calculation to determine the magnitude of the "error" introduced by using eGRID2012 rather than eGRID2014v2. In eGRID region SRMW, the CO2 EF increased by 3.6% from eGRID2012 to eGRID2014v2. Thus we can expect our estimated Scope 2 emissions to increase by a similar factor, from 162,404 tons to 168,219 tons for FY16. Plugging this into the Excel template, we find that this changes the PE Adjustment from 13,544 tons to 14,029 tons, and the calculated emissions reductions from 67,072 to 66,587 tons, a 0.72% change, which is below the materiality threshold.

Given the impracticalities of making an ad hoc modification to the CCC, the immaterial impact that such a modification would make, and also considering that the eGRID factors represent only an

approximation of the actual Scope 2 emissions in the first place, it is our opinion that we should maintain the consistency of using the most recent released version of the CCC, in accordance with the PDD and the methodology.

Auditor Response: Understanding the inherent trade-off between accuracy and consistency as identified in the response, the audit team accepts the explanation provided by the project team. Issue Closed.

Issue Closed.

NIR 2 Dated 20 Mar 2017

Standard Reference: Approved VCS Methodology Module VMD0038, Version 1.0, 12 February 2014

Document Reference: Monitoring Report UIUC March 2017 v1.0

Finding: Section 5 of the module states, "The spatial extent of the project boundary must be consistent with the boundary used to report to the relevant third-party GHG reporting program (eg, ACUPCC, STARS). The boundary can be comprised of either the entire campus (all college facilities) or a campus which represents a standalone entity within the university system, provided that this is consistent with the campus's reporting for the relevant third-party GHG reporting program."

Please indicate whether there have been any major changes between the project boundary reported in the previous monitoring period and the project boundary reported in the current monitoring period.

Project Personnel Response: There have been no changes to the project boundary between the previous monitoring period and the current monitoring period.

Auditor Response: Issue Closed.

Issue Closed.

NIR 3 Dated 20 Mar 2017

Standard Reference: Approved VCS Methodology Module VMD0038, Version 1.0, 12 February 2014

Document Reference: Monitoring Report UIUC March 2017 v1.0

Finding: Section 5 of the module states, "Changes in the campus area must be accounted for within the project boundary".

Can you please confirm that UIUC's Second Nature 2016 GHG Report, indicates the "Gross square feet of building space" as 21,625,434 square feet.

Project Personnel Response: UIUC's 2016 report to Second Nature is still under preparation, as it is not due until May 1, 2017. However, the 2016 version of the Campus Carbon Calculator submitted as part of this verification process will be used for the Second Nature reporting. Thus, we confirm that the square footage of 21,625,434 listed in the calculator submitted with verification will also be used in our 2016 Second Nature reporting.

Auditor Response: The project team's explanation is accepted by the audit team. Issue Closed.

Issue Closed.

NCR 4 Dated 20 Mar 2017

Standard Reference: Approved VCS Methodology Module VMD0038, Version 1.0, 12 February 2014; Section 7.1

Document Reference: UIUC_Excel_Template Project Year 5 (FY16) v022717; UIUC_Excel_Template First Half of Project Year 6 (halfFY17) v030117

Finding: Section 7.1 states that, 'The campus' annual percent reduction in stationary combustion emissions calculated over the additionality eligibility period relative to project year 1 must be equal to or greater than the relevant stationary combustion additionality performance benchmark, PBSc." Table 2 of the module indicates that the Doctoral PBSc value equals 5.68%.

Cell B44 on the Summary tab of the UIUC_Excel_Template Project Year 5 (FY16) v022717 and UIUC_Excel_Template First Half of Project Year 6 (halfFY17) v030117 workbooks indicates that the PBSc value is 5.86%. While this error does not substantively affect the outcome of the "Stationary Combustion Additionality Benchmark Test", and therefore does not affect final Emission Reduction calculations - it does indicate the incorrect PBSc value and should be corrected.

Project Personnel Response: Cell B44 on both Excel Templates has been changed from 5.86% to 5.68%, as suggested. We confirmed that there is no impact on the emission reduction calculations.

Auditor Response: The audit team has confirmed the corrections have been made in the corresponding documents. Issue Closed.

Issue Closed.