

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_2017_VerificationReport_V1-1_060518

Report Title	University of Illinois Urbana-Champaign Campus Wide Clean Energy & Energy Efficiency Verification Report
Client	Second Nature
Pages	24
Date of Issue	5 June 2018
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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 2017 to 31 December 2017. 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 3.7 (21 June 2017); VCS Program Standard, Version 3.7 (21 June 2017); 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 five (5) NCRs and one (1) NIR 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-2017 to 31-December-2017 are free from material misstatement and equal in number to 95,689 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 January 2017 to 31 December 2017, 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 2017 to 31 December 2017. 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 3.7, 21 June 2017
- VCS Program Definitions, Version 3.7, 21 June 2017
- VCS Program Guide, Version 3.7, 21 June 2017
- 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

Barbara Toole O'Neil, Lead Verifier, and Tiffany Mayville and Scott Eaton, Verifiers, performed all verification activities for this engagement. Christie Pollet-Young, 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 12 January 2018. No conflicts were identified.

Introductory Meeting

A planning meeting was conducted between the verification team, Second Nature, and UIUC representatives on 19 January 2018. 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: Micah Kentfield, Mike Marquisse of UIUC, Ruby Woodside of Second Nature; and Barbara Toole O'Neil and Tiffany Mayville of SCS.

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 Representation 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, coal and electricity. 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 the SIMAP calculator that is the online replacement to the Campus Carbon Calculator (CCC; previously called the Clean Air Cool Planet calculator), as consistent with the methodology and Second Nature (formerly ACUPCC) guidance. The appropriate eGRID subregion (SRMW) is used in SIMAP to facilitate the conversion of kWh to CO ₂ e
Accurate calculation of emissions	Scope 1 and Scope 2 Calculations - as well as - emission source primary activity data, application of correct emissions factors.	Reviewed the SIMAP calculator output sheets and the CCC previous years workbook, and CNBN methodology worksheet, as well as primary Scope 1 and 2 activity data.

Materiality threshold	The sum of omissions, errors, and misrepresentations.	Reviewed the SIMAP calculator output sheets and the CCC previous years workbook, 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. (none)	Reviewed monitoring report, Second Nature 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, previous validation and verification reports, 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	RW_3-22_UIUC MR for vintage 2017 Final
2.	VCS Project Description Document	PROJ_DECS_1407_6OCT2014
3.	SIMAP (formerly CCC/CACP)	simap_datainput.xls, S_eCO2_Sum.xls
4.	ACUPCC/Second Nature Tool	SecondNature2016.xls
5.	CNBN Calculation Tool	UIUC Stat-1-Excel-Template-Campus-Wide- FY17 - 1-31-18 (1)
6.	CNBN Calculation Tool	UIUC Stat-1-Excel-Template-Campus-Wide- FY18 (first half) - 1-31-18
7.	Utility Summary	Utility Summary_FY 2017
8.	Utility Summary	Illinois SC exclusion First Half FY18 01-30-17
9.	Physical Boundary MapUtility Summary	Appendix_A
10.	Utility Invoice	E_MAIN_DS4_01_July17
11.	Utility Invoice	E_MAIN_DS4_03_Sept17

12.	Utility Invoice	E_MAIN_DS4_03_Sept17
13.	Utility Invoice	E_MAIN_DS4_09_Mar17
14.	Utility Invoice	July 2017 UIUC_INVOICE_100126-UIUC-GAS (2)
15.	Utility Invoice	November 2017 UIUC_INVOICE_100130-UIUC-GAS (2)
16.	Utility Invoice	March 2017 UIUC_INVOICE_100122-UIUC-GAS
17.	Utility Invoice	September 2017 UIUC_INVOICE_100128-UIUC-GAS
18.	Utility Invoice	Coal Invoices (12 invoices in TIF files)

2.2.2 Methodologies, tools and other guidance provided by the VCS

19. VCS Program Guide, version 3.7, 3.7, 21 June 2017
20. VCS Standard, Version 3.6, 3.7, 21 June 2017
21. VM0025, Campus Clean Energy and Energy Efficiency, version 1.0, 12 February 2014
22. VMD0038, Campus Clean Energy and Energy Efficiency: Campus-Wide Module, version 1.0, 12 February 2014
23. VCS Program Definitions, version 3.7, 21 June 2017
24. VCS Validation and Verification Manual, version 3.2, 19 October 2016
25. VCS Verification Report Template, Version 3.4, 19 October 2016
26. VCS Verification Representation Template, Version 3.3, 19 October 2016

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
27.	03/13/18	Michah Kentfield: University of Illinois Urbana-Champaign	• Verification status • Verification Process • Project Activity Changes • Data & Documentation • Calculations

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 Mr. Kentfield, 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 5 NCRs and 1 NIR 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 and 3 under the VERRA (<http://verra.org/project/vcs-program/>) (formerly Verified Carbon Standard).

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>

Campus Conservation Nationals is a national competition working to encourage energy conservation by students. In FY14, UIUC participated in this competition for the first time, and the winning residence hall had over 10% savings during the competition. For faculty and staff behavior change, the primary effort at UIUC is a program called the “Energy Conservation Incentive Program” or ECIP. ECIP awards the top performing buildings on campus each year, based on the reduction in energy consumption from the previous year’s totals. This effort has shared the energy conservation method with hundreds of Illinois employees in the first year of the program, and we are pleased with the interest shown at this point.

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 F&S, grant agencies, individual departments, the Student Sustainability Committee, and the campus, 118,567 fixtures had been retrofitted by the end of FY13, saving 19,425,042 kWh/year. This program involves grant applications, prioritizing locations, and managing the design, implementation, and tracking aspects. The campus funded fixture retrofits are very close to completion; however, there are several T-12 fixtures in departmentally funded areas on campus, such as large equipment like walk-in refrigerators. Departments with T-12 fixtures need to be informed of the requirement to replace these fixtures, so that the transition can be fully completed in the next years.

On-site renewables	The first rooftop solar was installed on the Business Instructional Facility (2009 LEED Platinum building). This 33kw system was the first large solar project on campus. Since then, solar PV panels have also been installed at the Building Research Council building and solar thermal panels have been installed on the Activities and Recreation Center 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. The central heating through an extensive system of steam tunnels is used for heating the vast majority of campus buildings. The older buildings use steam radiators to heat individual rooms, and the more modern buildings convert the steam to either hot water heating or forced air systems. The campus also has worked on a central cooling system, using Chilled Water. The chilled water system is still under expansion.
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, with an emphasis on HVAC systems and controls and temperature setbacks (often referred to as “scheduling”). Each year, buildings are selected from the top 100 energy consumption buildings. These efforts continue to provide energy efficiency gains throughout the monitoring period. Since the program began in FY08, teams have updated and upgraded systems in 70+ campus buildings, reducing energy consumption by an average of 27% and avoiding \$47M in utility costs for over 10 million gross square feet of facilities
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	The UIUC campus currently features eleven LEED® certified facilities, with more than sixteen projects active in the certification process. 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.

The university is a national leader in sustainable building design by establishing requirements of LEED® Gold certification for all major renovations and new construction projects with values greater than \$5M, applying these techniques to both new construction and historic preservation.

Other innovative strategies Illinois has received innovation points through STARS for various innovative strategies that have decreased our greenhouse gas emissions. One such innovation of note in the energy domain is the 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 Mr. Kenfield, it was confirmed that the monitoring plan was implemented as described in the current monitoring report. Mike Marquissee, and Micah Kenfield, 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 Mr. Kentfield. 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 any 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.

Fiscal data is gathered from the energy team and input to the CACP replacement SIMAP. SIMAP then generates greenhouse gas emissions outputs. 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 SIMAP outputs are also reported publicly to the Climate Leadership Commitment (formerly ACUPCC) and STARS. Because the same input data (the output of the SIMAP) is used for both Climate Leadership Commitment/STARS reporting and the VCS project template, 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 SIMAP 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

Parameter	Included in Project	
$F_{b=x, i}$	☒ 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
$\Delta F_{y,i}$	☐ 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
$SF_{b=x};$ $SF_{p=y}$	Second Nature, 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. 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; SIMAP 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 SAFEGUARDS

5.1 No Net Harm

There are no identified potential negative environmental and socio-economic impacts by implementing this project.

5.2 Local Stakeholder Consultation

There was no stakeholder consultation during this crediting period.

6 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 2017 to 31 December 2017, 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 2017 to 31 December 2017 are free from material misstatement and equal in number to 95,689 tCO₂e.

Monitoring period: From 01-January-2017 to 31-December-2017

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 2017 – 31 December 2017	327,765	239,364	-7,288	95,689
Total	327,765	239,364	-7,288	95,689

APPENDIX A: FINDINGS

NCR 1 Dated 16 Mar 2018

Standard Reference: VCS Standard, Version 3.7, 21 June 2017

Document Reference: Monitoring Report, p. 28

Finding: The PE Adjustment emissions for the first half of PY6(FY2017) is twice the value of the FY2017 full year value. This is inconsistent, please explain and correct if appropriate

Project Personnel Response: The PE Adjustment was calculated following the same methodology as previous years, and as outlined in the PDD and previous monitoring reports.

The PE exclusion works via a calculation based on scope 2 electricity consumption and is specifically anchored to purchased electricity (versus generated). Historically – in every year FY07 – FY16 – at least 55% but typically closer to 60% of the total electricity consumed was from generated, not purchased electricity. UIUC runs a co-gen steam plant, so any time we're heating the facilities, our on-campus generation goes up and purchased electricity goes down. If the back half of calendar year 2016 were warmer and winter got a later start, we'd be consuming more purchased than generated electricity compared to historical and baseline numbers.

During the first half of FY17 UIUC used more purchased than generated electricity. Purchased electricity was an especially high percentage of the total usage for that first half. Because the PE Adjustment calculation is anchored to the electricity purchased, the adjustment for the first half of FY17 was higher than previous years (fourth column of section 4.4 in the monitoring report).

Once all of the data for FY17 was available, the ratio of purchased electricity to generated returned closer to average. Calculating the PE Adjustment for the year demonstrates that the entire PE Adjustment should be a lower value. While the unusual first half of FY17 weighted the numbers so that it appears the adjustment should be higher, when looking at the entire year it is clear that the increase in purchased electricity due to the project activities is much lower. The PE Adjustment for the first half of FY17 was conservative.

In order to maintain consistency with previous calculations, and to follow the PE Adjustment calculation methodology outlined in the PDD and previous monitoring reports, we believe it is prudent to maintain the PE Adjustment emissions as reported in the current monitoring report, which includes the lower adjustment for FY17 as a reflection of the complete year's data.

Auditor Response: This issue has been resolved for this year. The NCR has been closed.

Bearing on Material Misstatement or Conformance (M/C/NA): The explanation resolves the impact material misstatement.

NCR 2 Dated 16 Mar 2018

Standard Reference: VCS Standard, Version 3.7, 21 June 2017

Document Reference: Monitoring Report, p. 24 and throughout the document

Finding: P. 24 lists SIMAP as the calculation tool and other places still lists CCC or CACP as the calculation tool for some of the emissions estimates. The document should be reviewed to ensure the proper calculation tool is referenced.

Project Personnel Response: This has been addressed where needed - CACP / CCC are referenced for historical purposes; SIMAP is used for all other reporting purposes beginning with the completion of Fiscal Year 2017. We added a clarifying note that SIMAP is the most recent version of the CACP/CCC

Auditor Response: The clarifying note resolved the confusion. The NCR is closed

Bearing on Material Misstatement or Conformance (M/C/NA): No bearing on material misstatement.

NCR 3 Dated 16 Mar 2018

Standard Reference: VCS Standard, Version 3.7, 21 June 2017

Document Reference: Monitoring Report, p. 25

Finding: P. 25 - another example of references; 'Beyond any automatic changes derived from the use of different version of the CACP calculator as described above (e.g. vs 6.9 compared to vs 7.0), are there any other changes in the project data as submitted for this project year credit verification which have been made (e.g. to earlier year data used for validation or previous verification bases)?'

Project Personnel Response: This has been addressed where needed - CACP / CCC are referenced for historical purposes; SIMAP is used for all other reporting purposes beginning with the completion of Fiscal Year 2017. We added a clarifying note that SIMAP is the most recent version of the CACP/CCC

Auditor Response: There have been no other changes to the data. The NCR is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): No bearing on material misstatement.

NCR 4 Dated 16 Mar 2018

Standard Reference: VCS Standard, Version 3.7, 21 June 2017

Document Reference: Monitoring Report, p. 22

Finding: p. 22 'These fiscal year totals are then entered into SIMAP, the online replacement for the Campus Carbon Calculator (CCC; previously called the Clean Air Cool Planet calculator), which is preferred and approved by the VCS methodology ' Provide evidence that SIMAP is approved by VCS

Project Personnel Response: SIMAP is an online tool used as the next version of the CACP / CCC, rebranded under a new name now that it integrates additional functionality. The shift is akin to CACP being rebranded as CCC. History of the change and further detail available at <https://sustainableunh.unh.edu/calculator>. We updated the monitoring report to clarify this.

Auditor Response: This request has been resolved. The NCR is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): No bearing on conformance

NCR 5 Dated 16 Mar 2018

Standard Reference: VCS Standard, Version 3.7, 21 June 2017

Document Reference: Monitoring Report, p. 9, UIUC Stat-1-Excel-Template-Campus-Wide- FY17 - 1-31-18, UIUC Stat-1-Excel-Template-Campus-Wide- FY18 (first half) - 1-31-18

Finding: The PBS listed on p. 9 of the monitoring report is 16.09%, the UIUC Stat-1-Excel-Template-Campus-Wide- FY17 - 1-31-18.xls lists PBS as 16.08%, and UIUC Stat-1-Excel-Template-Campus-Wide- FY18 (first half) - 1-31-18 lists PBS at 17.73%. Please explain the discrepancy and provide updates.

Project Personnel Response: The minor incongruity between p. 9 and the excel template for FY17 have been revised to both read 16.08% for consistency. The 17.73% amount for the first half spreadsheet is due to it using different baseline data (July - December data) rather than full fiscal year, but is congruous with prior reported half-year sheets. Both numbers far exceed the 5% minimum requirement.

Auditor Response: The explanation is acceptable and resolves the discrepancy. The NCR is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): No bearing on material misstatement

NIR 6 Dated 16 Mar 2018

Standard Reference: VCS Standard, Version 3.7, 21 June 2017

Document Reference:

Finding: Please provide the December 2017 electricity consumption., E_MAIN_DS4_01_Nov17

Project Personnel Response: This has been provided.

Auditor Response: Information provided 23 March 2018. The NIR is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): Minimal bearing on material misstatement