

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



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Summary:

Det Norske Veritas (U.S.A.), Inc. (DNV) of DNV·GL has performed a validation of the project activity "UIUC Campus-Wide Clean Energy & Energy Efficiency Project:" in Urbana, Illinois, US. The validation was performed on the basis of VCS criteria as well as criteria given to provide for consistent project operations, monitoring and reporting.

The purpose of a validation is to have a Validation/Verification Body (VVB) assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCU).

The review of the project design documentation and the subsequent follow-up interviews have provided DNV·GL with sufficient evidence to determine the fulfilment of stated criteria.

During the course of validation, DNV·GL has raised 31 Corrective Action Requests and Requests for Clarifications. The project proponent has addressed these findings to DNV·GL's satisfaction.

In summary, it is DNV·GL's opinion that the project activity UIUC: Campus-Wide Clean Energy & Energy Efficiency Project, in Urbana, Illinois, US, as described in the VCS project description, version 10 dated 6 October 2014, meets all relevant VCS requirements and correctly applies the baseline and monitoring methodology VM0025 (version 1) Campus Clean Energy and Energy Efficiency Methodology and the module VMD0038 (version 1) Campus Clean Energy and Energy Efficiency Module. Hence, DNV·GL requests the registration of the project as a VCS project activity.

The validation was based on the information made available to DNV·GL and the engagement conditions detailed in this report.

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1 INTRODUCTION

1.1 Objective

The purpose of a validation is to have a Validation/Verification Body (VVB) assess the project design. In particular, the project's baseline, estimated emissions/reductions, monitoring plan, and the project's compliance with relevant VCS criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCU).

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project description (PD) for a proposed VCS project activity. The PD document is reviewed against the criteria stated in the VCS Standard (version 3.4) and the approved baseline and monitoring methodology Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0, and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0. The validation was completed in accordance with the principles and the requirements for validation contained in the VCS Validation and Verification Manual.

The validation is not meant to provide any consulting for the university. However, requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Level of Assurance

DNV·GL provides reasonable assurance that the project activity UIUC: Campus-Wide Clean Energy & Energy Efficiency Project meets VCS criteria.

1.4 Summary Description of the Project

UIUC signed the Illinois Climate Action Plan in 2010, and embraced a fuel optimization strategy to reduce GHG emissions. Where appropriate they are purchasing electricity, thus reducing reliance on the on-site existing coal and gas cogeneration facilities. This strategy, combined with the other energy efficiency measures has led to a significant decrease in GHG emissions.

The university identified the high energy-use buildings and developed a plan to re-commission the buildings, with an emphasis on HVAC and temperature systems and controls. Each year, buildings are selected from the top 100 energy consumption buildings. By 30 June 2013, the university completed 40 buildings, with an average of 26.5% reduction in energy consumption. This reduction contributed to a campus-wide 16.09% average annual reduction in GHG emissions.

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation consisted of the following three phases:

- i. document review
- ii. follow-up actions (e.g. on-site visit and telephone or email interviews)
- iii. the closing out of validation findings and the issuance of the final validation report and opinion

The following sections outline each step in more detail.

A validation protocol (checklist) was prepared and the relevant parts of the checklist were included under the relevant sub-sections in section 3 of this validation report. The protocol shows in a transparent manner the validation criteria (checklist questions) and DNV·GL's assessment of these criteria.

2.2 Document Review

The following tables list the documentation that was reviewed during the validation.

2.2.1 Documentation provided by the university

	Author	Document Title / Description	File Name
1.	McCall, B	VCS Project Description Document	UIUC_PDD_v1.doc, 18 April 2014
2.	McCall, B	VCS Project Description Document	UIUC_PDD_v2.doc, 4 May 2014
3.	McCall, B	VCS Project Description Document	UIUC_PDD_v7.doc, 30 May 2014
4.	McCall, B	VCS Project Description Document	UIUC_PDD_v8.doc, 23 June 2014
5.	McCall, B	VCS Project Description Document	UIUC_PDD_v10.doc, 6 October 2014
6.	Marquissee, M.	Ameren NG invoice	06_Dec11_AmerenIP Gas UC.xls, v1.0, 11 Dec 2013
7.	Marquissee, M.	Ameren NG invoice	0610_AmerenIP Gas U_C.xls, v1.0, 18 April 2014
8.	Marquissee, M.	Ameren electricity invoice	2006 DEC Big Group Copy.pdf, 18 April 2014
9.	Marquissee, M.	Ameren electricity invoice	2006 DEC Residential ELEC Copy.pdf, 18 April 2014
10.	Marquissee, M.	Ameren electricity invoice	2006 DEC Small Group.pdf, 18 April 2014
11.	Marquissee, M.	Ameren electricity invoice	2006 DS4 Copy.pdf, 18 April 2014
12.	Marquissee, M.	Invoice during construction	2014-04-02 Gas Boiler Rental Boilers Fund Commit - Design Copy Copy.pdf, 18 April 2014
13.	Marquissee, M.	Abbott power plant data	Abbott ProdConsump - eDNA - Jun 10.xls, 18 April 2014
14.	Marquissee, M.	Abbott power plant data	Abbott ProdConsump - eDNA - Dec 06 for KRE. Xls, 18 April 2014
15.	McCall, B.	CACP tool	Annotated Calculator_v6 9 2013 Illinois mlm edits SH.xls, 18 april 2014
16.	Marquissee, M.	ICG coal invoice	DEC 2006 COAL.pdf, 18 April 2014
17.	Marquissee, M.	Nicor NG invoice	DEC 2006 Nicor Invoice Copy.pdf, 18 April 2014
18.	Marquissee, M.	Nicor NG invoice	DEC 2011 Nicor Invoice Copy.pdf, 18 April 2014
19.	Marquissee, M.	Ameren electricity invoice	E_AmerenBigBill_06_Dec11 Copy.pdf, 18 April 2014
20.	Marquissee, M.	Ameren electricity invoice	E_AmerenBigBill_12_Jun10 Copy.pdf, 18 April 2014
21.	Marquissee, M.	Ameren electricity invoice	E_MAIN_DS4_06_Dec11 Copy.pdf, 18 April 2014
22.	Marquissee, M.	Ameren electricity invoice	E_MAIN_DS4_12_06_10 Copy.pdf, 18 April 2014
23.	Marquissee, M.	Ameren electricity invoice	EG_IPRES_06_10 Copy.pdf, 18 April 2014
24.	Marquissee, M.	Ameren electricity invoice	EG_IPRES_06_Dec11 Copy.pdf, 18 April 2014
25.	Marquissee, M.	Ameren electricity invoice	EG_IPSG_06_10 Copy.pdf, 18 April 2014
26.	Marquissee, M.	Ameren electricity invoice	EG_IPSG_06_Dec11 Copy.pdf, 18 April 2014
27.	Marquissee, M	ICG coal invoice	June 2010 COAL.pdf, 18 April 2014
28.	Marquissee, M	Nicor NG invoice	June 2010 Nicor Invoice Copy.pdf, 18 April 2014

29.	Marquissee, M	Ameren electricity invoice	RE 2006 Dec SG ELEC.txt, 18 April 2014
30.	Marquissee, M	Ameren electricity invoice	RE_2006_Dec_SG_ELEC.pdf, 18 April 2014
31.	McCall, B	Calculation tool	UIUC_April18_v2 FINAL DNV OK.xls, 18 April 2014
32.	McCall, B	All utility summary	Utility Summary_FY_Copy_for_GHG_Trace SH.xls, 18 April 2014
33.	McCall, B	Calculation tool	UIUC_Excel_Template. Xls, 30 May 2014
34.	McCall, B	Permit	Title V Permit 2003-08.pdf, 30 May 2014
35.	Marquissee, M	CACP tool	Annotated Calculator_v6 9 2013 Illinois mlm edits.xls, 12 June 2014
36.	McCall, B	All utility summary	Utility Summary_FY_Copy_for_GHG_Trace.xls, 12 June 2014
37.	McCall, B	Calculation tool	UIUC_April18_v2 FINAL DNV OK - KEY tool.xls, 30 May 2014
38.	Marquissee, M	Campus facilities map	2014 Energy Use Facilities.pdf, 30 May 2014

2.2.2 Methodologies, tools and other guidance by the VCS or any VCS approved GHG program

39. VCS: VCS Guidance, Standardized Methods, version 3.3_0, 8 October 2013
40. VCS: VCS Policy Brief: Double Counting: Clarification of Rules, version 1, 1 February 2012
41. VCS: VCS Program Definitions, version 3.5, 8 October 2013
42. VCS: VCS Program Guide, version 3.5, 8 October 2013
43. VCS: VCS Project Description Template, version 3.2_0, 8 October 2013
44. VCS: VCS Registration and Issuance Process, v3.5_0, 8 October 2013
45. VCS: VCS Standard, version 3.4, 8 October 2013
46. VCS: VCS Validation and Verification Manual, version 3.1_1, 8 October 2013
47. VCS: VCS Validation Report Template, version 3.3, 8 October 2013
48. VCS: VM0025, Campus Clean Energy and Energy Efficiency, version 1.0, 12 February 2014
49. VCS: VMD0038, Campus Clean Energy and Energy Efficiency: Campus-Wide Module, version 1.0, 12 February 2014

2.2.3 Documents used by DNV GL to cross-check information provided by the university

Resource	URL
50. Clean Air-Cool Planet Calculator; v. 6.9, 2014,	http://cleanair-coolplanet.org/
51. American College & University President's Climate Commitment, 2014 and Reporting System	http://www.presidentsclimatecommitment.org/ http://rs.acupcc.org/
52. Carnegie Foundation for the Advancement of Teaching, 2014 and institution lookup tables	http://classifications.carnegiefoundation.org/ http://classifications.carnegiefoundation.org/lookup_listings/institution.php
53. University of Illinois at Urbana-Champaign (UIUC)	http://illinois.edu/about/about.html http://illinois.edu/resourcesfor/visitors.html http://strategicplan.illinois.edu/goals.html#goal4
54. STARS – Sustainability Tracking, Assessment and Rating System of AASHE.	https://stars.aashe.org/
55. Global Reporting Initiative	https://www.globalreporting.org/Pages/default.aspx

2.3 Interviews

DNV GL performed interviews with below listed persons to confirm information provided by the university and/or to obtain information additional to that provided in the project description and any supporting documents.

	Date / Type of interview	Name / Organization	Topic
56.	12 May 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Ben McCall Professor campus-sustainability@illinois.edu	• Project overview • Campus district heating projects • Campus climate commitment • Detailed discussion of project documents provided to date
57.	12 May 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Michael Marquissee Facilities Director mlmarqui@illinois.edu	• Project overview • Campus district heating projects • Campus climate commitment • Detailed discussion of project documents provided to date
58.	12 May 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Sue Hall President Climate Neutral Business Network	• Project overview • Campus district heating projects • Campus climate commitment • Detailed discussion of project documents provided to date
59.	28 May 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Ben McCall Professor campus-sustainability@illinois.edu	• Review of CAR/CLs submitted and university responses
60.	28 May 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Michael Marquissee Facilities Director mlmarqui@illinois.edu	• Review of CAR/CLs submitted and university responses
61.	28 May 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Sue Hall President Climate Neutral Business Network	• Review of CAR/CLs submitted and university responses
62.	11 June 2014 ☐ On-site ☐ Face-to-face at office ☒ Telephone ☐ E-mail	Ben McCall Professor campus-sustainability@illinois.edu	• Close out of CAR/CLs and additional documents submitted and university responses. Close out of remaining issues.

- | | | | |
|-----|---|---|--|
| 63. | 11 June 2014
☐ On-site
☐ Face-to-face at office
☒ Telephone
☐ E-mail | Sue Hall
President
Climate Neutral Business Network | <ul style="list-style-type: none"> • Close out of CAR/CLs and additional documents submitted and university responses. Close out of remaining issues. |
| 64. | 26 June 2014
☐ On-site
☐ Face-to-face at office
☒ Telephone
☐ E-mail | Ben McCall
Professor
campus-sustainability@illinois.edu | <ul style="list-style-type: none"> • Close out of remaining minor items and final review. |
| 65. | 26 June 2014
☐ On-site
☐ Face-to-face at office
☒ Telephone
☐ E-mail | Sue Hall
President
Climate Neutral Business Network | <ul style="list-style-type: none"> • Close out of remaining minor items and final review |

2.4 Site Inspections

No site inspections were conducted during this validation. The supporting data was extremely detailed for this project. The data included project announcements, pictures, campus announcements as well as the required calculations, equipment purchase orders, coal, water and electricity invoices etc. Through additional reviews including satellite map (Google maps) reviews and interviews with Dr. McCall and Mr. Marquissee, DNV GL determined they could confirm the same reasonable level of assurance without an on-site visit.

2.5 Resolution of Findings

The objective of this phase of the validation was to resolve any issues which needed be clarified prior to DNV GL's conclusion on the project's compliance with applicable VCS requirements.

A corrective action request (CAR) is raised if one of the following occurs:

- I. The university has made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- II. The applicable VCS requirements have not been met;
- III. There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

The validation identified 31 CARs and CLs. Most of the CARs requested additional information be added to the PD. The CARs and CLs were satisfactorily addressed by the project proponent. Please refer to Appendix A for further details.

2.6 Forward Action Requests

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to VCS requirements for registration.

No FARs were identified during this validation.

3 VALIDATION FINDINGS

3.1 Project Details

3.1.1 *Project type, technologies and measures implemented, and eligibility of the project*

The project proponent, UIUC signed the Illinois Climate Action Plan in 2010, and embraced a fuel optimization strategy to reduce GHG emissions. Where appropriate they are purchasing electricity, thus reducing reliance on the on-site existing coal and gas cogeneration facilities. This strategy, combined with the other energy efficiency measures has led to a significant decrease in GHG emissions.

The university identified the high energy-use buildings and developed a plan to re-commission the buildings, with an emphasis on HVAC and temperature systems and controls. Each year, buildings are selected from the top 100 energy consumption buildings. By 30 June 2013, the university completed 40 buildings, with an average of 26.5% reduction in energy consumption.

The project meets all applicable VCS eligibility criteria, as confirmed by DNV GL in the following:

- The project activity has not created or attempted to create another form of environmental or carbon credit. The project was not previously rejected under other GHG programs.
- Proof of the right of ownership was confirmed as described below.

The project falls into sectoral scope activities number 1 (energy/renewable/non-renewable) and number 3 (demand management) as defined by VCS. The project start date is 1 July 2011 (Fiscal year (FY) 2012). The project applies VCS methodology VM0025 and VMD0038 as defined below, which was approved on 12 February 2014. Based on the VCSA requirement that validation of projects applying a new methodology shall be completed within two years of the approval of the methodology by the VCSA and within four years of the project start date, DNV-GL can confirm the project's eligibility under the VCS.

The project meets the applicability requirements of VM0025 and VMD0038:

- UIUC is located in Urbana, Illinois in the middle of the United States.
- UIUC is an institution of higher education (undergraduate and graduate) and is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. (http://www.ncahlc.org/component/com_directory/Action,ShowBasic/Itemid,1872/)
- UIUC is a four year Doctoral granting university listed by the Carnegie foundation (http://classifications.carnegiefoundation.org/lookup_listings/institution.php)
- UIUC consistently reports to the ACUPCC system (<http://rs.acupcc.org/>), a third party GHG reporting program since FY2008 and to STARS AASHE (<https://stars.aashe.org/institutions/university-of-illinois-urbana-champaign-il/report/2013-07-31/>)
- The ACUPCC FY2008 report covers the 1 July 2007 – 30 June 2008 inventory, one of the baseline years. The FY2012 report covers the project start year. UIUC meets the applicability requirement by reporting to ACUPCC.
- The university identified the high energy-use buildings and developed a plan to re-commission the buildings, with an emphasis on HVAC and temperature systems and controls, with an average of 26.5% reduction in energy consumption. The campus has described activities implemented in two of the nine categories possible (weatherization and boiler retrofits/heating/cooling upgrades). The university implemented a total of seven activities out of a possible nine categories and described them in the PD

The estimated average fiscal yearly emissions reductions are 33 811 tCO₂e with a total estimated emissions reduction of 338 112 tCO₂e over the ten year crediting period.

The project meets the eligibility and applicability requirements of the VCS methodology VM0025 and module VMD0038.

DNV GL considers the project description of the project contained in the PD to be complete. The PD complies with the VCS Template PD, version 3.2, 2013.

3.1.2 Project start date and crediting period

The project start date and the start date of the crediting period is 1 July 2011 and was confirmed during interviews, and review of the campus data (<http://illinois.edu/>) The validation has been completed as required by the VCS Standard v. 3.4, within two years of the first approval of the methodology and within four years of the project start date. The methodology was approved 12 February 2014. The crediting period is ten years until 30 June 2021.

3.1.3 Ownership and other programs

The university owns the project equipment and therefore has the right of use of the equipment that generates the project GHG emissions reductions. There are no existing regulatory limits on GHG emissions in Illinois or other regulatory or planning requirements to implement energy efficiency measure. The university is not seeking other forms of environmental credits, nor have they been rejected by any other GHG program. The university does participate in the American College and University Presidents Climate Commitment (ACUPCC) and the Sustainability Tracking Assessment Rating System (STARS) voluntary reporting programs. UIUC confirmed that credits sold under the VCS project will be reported to ACUPCC and STARS./58/

DNV GL confirmed that description in the PD is complete and accurate by reviewing the PD, power plant logs and at <http://illinois.edu/>.

3.1.4 Additional information relevant to the project

There is no additional information relevant to the project. The PD describes the project and is complete.

3.2 Application of Methodology

3.2.1 Title and Reference

Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0, 2014

Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0, 2014

3.2.2 Applicability

The assessment of the project's compliance with the applicability criteria of Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0 and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0 are documented in detail in the table below. In summary, the project meets the applicability criteria as a degree granting institution of higher education located in the US. The university applied the Campus-Wide module appropriately.

Checklist Question	Assessment by DNV GL
How was it validated that project complies with the following applicability criteria: The project includes an existing campus in the United States?	The University of Illinois at Urbana-Champaign (UIUC) is located in Urbana and Champaign Illinois in the United States. http://illinois.edu/map/view and https://www.google.com/maps/place/Champaign,+IL/@40.114631,-88.2771096,12z/data=!3m1!4b1!4m2!3m1!1s0x880cd08dde97691b:0x30f57847b475bfcf?hl=en
How was it validated that project complies with the following applicability criteria: The campus must meet with one of the following ACUPCC Carnegie classifications: four year (Doctoral, Masters, and Baccalaureate), two year (Associate) and Special colleges and universities?	UIUC is a four year Doctoral granting university listed by the Carnegie foundation at: http://classifications.carnegiefoundation.org/lookup_listings/institution.php
How was it validated that project complies	UIUC reports to the ACUPCC system, a third

with the following applicability criteria: The campus reports (and has reported) GHG emissions through ACUPCC, STARS, The Climate Registry or another third-party GHG reporting program (see definition for third-party GHG reporting program) for at least project year 1 and one of the baseline years. Where GHG emissions have been reported through a third-party GHG reporting program besides ACUPCC, STARS or The Climate Registry, the project proponent must provide justification that such program meets with the definition for a third-party GHG reporting program in Section 3 (e.g., with respect to providing public, transparent and credible GHG reporting)?

How was it validated that project complies with the following applicability criteria: The project must demonstrate that it has achieved the required substantial reductions in GHG emissions by implementing at least two of the activities listed in the module?

How was it validated that project complies with the following applicability criteria: This module is not applicable to K-12 schools?

party GHG reporting program since FY2007 and reported in FY2008, 2009, 2010, 2011, 2012 and 2013, and to the AASHE STARS program. FY2012 is the project start year.

ACUPCC

http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL

STARS AASHE

<https://stars.aashe.org/institutions/university-of-illinois-urbana-champaign-il/report/2013-07-31/>

The FY2008 report covers the FY2008 inventory, one of the baseline years. The FY2012 report covers the project start year.

UIUC has undertaken a fuel optimization strategy to reduce GHG emissions. The university has implemented seven of the possible nine energy efficiency measures in VM0038. This strategy, combined with the other energy efficiency measures has led to a significant decrease in GHG emissions and enabled the school to meet the requirements of VM0038. /5/. UIUC calculated an average 16.09% reduction in GHG emissions exceeding the VM0038 performance benchmark of 5.68% for doctoral degree granting institutions. Supporting documentation was provided UIUC is an institution of higher education (undergraduate and graduate) and is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. The status can be seen at: http://www.ncahlc.org/component/com_directory/Action,ShowBasic/Itemid,/instid,1872/

3.2.3 Project Boundary

The identified boundary of the project is the main campus of the UIUC and selected sources and gases are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within or outside the project boundary as a result of the implementation of the proposed project activity.

Emissions (Baseline and Project)	Source	Gas	Included / Excluded	Justification
Scope 1	Stationary Combustion	CO ₂	Included	This is the only scope 1 source of emissions relating to renewable energy and energy efficiency targeted by this module. CO ₂ emissions constitute the largest
		CH ₄	Optional Included? Check if yes	

			☒	source of emissions. CH ₄ and N ₂ O are included in ACUPCC reporting for completeness even though the emissions are small. Where included, they must be included in both baseline and project case.
	Mobile Combustion	N ₂ O	Optional Included? Check if yes ☒	Transportation fleet improvements are not eligible project activities.
		CO ₂	Excluded	
		CH ₄		
	Fugitive	N ₂ O		Not relevant to energy-based GHG emissions
		CO ₂	Excluded	
		CH ₄		
	Process	N ₂ O		Not relevant to energy-based GHG emissions
		CO ₂	Excluded	
		CH ₄		
Scope 2	Purchased Electricity	CO ₂	Included	93 to 97 percent of campus scope 2 emissions are from purchased electricity based on GHG emissions data reported to ACUPCC. CO ₂ emissions constitute the largest source of emissions. CH ₄ and N ₂ O are included in ACUPCC reporting for completeness even though the emissions are small. Where included, they must be included in both baseline and project case.
		CH ₄	Optional Included? Check if yes ☒	
		N ₂ O	Optional Included? Check if yes ☒	
	Purchased Heat	CO ₂	Conditional Included? Check if yes ☐	This source has a relatively small contribution to a campus' energy performance. This source is conservatively excluded from the quantification of baseline and project emissions except where adjustment technologies may impact this source of emission as described in the project emissions adjustment section. For UIUC, there is no purchased heat to be considered in the PE Adjustment calculations.
		CH ₄	Check N/A if non purchased N/A ☒	
		N ₂ O		
	Purchased Cooling	CO ₂	Conditional Included? Check if yes ☐	This source has a relatively small contribution to a campus' energy performance. This source is conservatively excluded from the quantification of baseline and project emissions except where adjustment technologies may impact this source of emission as described in the project emissions adjustment section. For UIUC, there is no purchased cooling to be considered in the PE Adjustment calculations.
		CH ₄	Check N/A if non purchased N/A ☒	
		N ₂ O		

	Purchased Steam	CO ₂	Conditional Included? Check if yes ☐ Check N/A if non purchased N/A ☒	This source has a relatively small contribution to a campus' energy performance. This source is conservatively excluded from the quantification of baseline and project emissions except where adjustment technologies may impact this source of emission as described in the project emissions adjustment section. For UIUC, there is no purchased steam to be considered in the PE Adjustment calculations.
		CH ₄		
		N ₂ O		

Checklist Question	Assessment by DNV-GL
What are the project's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined?	The project boundary is the university boundary. A map of the school was provided and shows the project boundary. http://illinois.edu/map/view. The geodetic coordinates for 610 E. John St., the Chancellor's office, were confirmed at https://www.google.com/maps/place/610+E+John+St/@40.1093563,-88.2300217,17z/data=!3m1!4b1!4m2!3m1!1s0x880cd73f1bc3c1f1:0x8db5748665a19d6c The campus is 4,552 acres with 647 buildings. http://illinois.edu/about/overview/facts/facts.html With such a large campus the Chancellor's office location was chosen as the appropriate location for providing the geodetic coordinates. The coordinates were measured with a calibrated GPS device.
Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	DNV-GL deems this an appropriate choice. The GHG sources identified were Scope 1 stationary combustion emissions and Scope 2 indirect emissions from purchased electricity. This project only claims emissions reductions for Scope 1 stationary combustion emissions. The documents reviewed were PD, Ameren, ICG invoices, coal, electricity and gas spreadsheets.
Do the system boundaries for the project as described in the PD fully comply with the project boundaries stipulated by the applied baseline methodology?	Yes the system boundaries are the main campus boundaries and is the same as that reported in ACUPCC. The applied baseline methodology is defined on p. 11 of VMD0038. http://illinois.edu/map/view and http://rs.acupcc.org/
The spatial extent of the project boundary must be consistent with the boundary used to report to the relevant third-party GHG reporting program (e.g., ACUPCC, STARS). The boundary can be comprised of either the entire campus (all college facilities) or a	The spatial extent of the project boundary is the same as that used in reporting to ACUPCC. The university boundary is the project boundary. http://illinois.edu/map/view, http://rs.acupcc.org/ and Appendix A of the PD.

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.

The project boundary includes both stationary combustion emissions and scope 2 electricity emissions, and project proponents may seek emission reductions under either, or both, of these scopes. Where reductions under both scopes are sought, the project must determine the net emission reductions under each scope, which are then added together to determine the total reductions in stationary combustion emissions and the scope 2 electricity emissions. Where emission reductions are sought under only one scope, adjustments to the project emissions need to be made.

The project boundary includes Scope 1, stationary combustion emissions and Scope 2 electricity emissions. UIUC seeks reductions under scope 1 stationary combustion emissions only. Scope 1 stationary combustion emissions include the Abbott Power Plant coal and natural gas boilers to generate steam, and energy efficiency measures to reduce heating/cooling demand. Using Equation 22 for PE adjustments, the project emissions were adjusted because of the increased demand for electricity, part of the university's sustainability strategy to reduce campus emissions. This was confirmed in the calculation tool, the ACUPCC report and the Ameren and other utility invoices. /6/-/38/

GHG emission reductions which arise from on-site energy generation systems that provide services beyond the university's own needs (e.g., to nearby hospitals) must be excluded from the project boundary.

Were appropriate sources excluded?

Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?

No services were provided to other entities. This was confirmed by review of the PD/5/, interviews and review of Abbott Power Plant data and summaries.

The project does not involve other emissions sources. All sources were identified including vehicle emissions that are not included in the methodology. This was confirmed in the ACUPCC report. <http://rs.acupcc.org/>

3.2.4 Baseline Scenario

The methodology uses a standardized approach to the baseline and additionality determinations. Standardized methods are methodological approaches that standardize the determination of the crediting baseline for a given class of project activity. VCS defines two types of standardized methods: performance methods and activity methods. Individual projects need only meet the conditions and apply the pre-defined criteria set out in the standardized method.

For VM0025, VMD0038, the UIUC baseline scenario comprises the historical campus-wide scope 1 stationary combustion emissions for the coal and natural gas-fired boilers prior to the project start date for reductions in stationary combustion emissions, for additionality testing purposes, and the historical campus-wide scope 2 electricity related emissions prior to the project start date for reductions in scope 2 electricity emissions.

The university used five years of data to develop the baseline emissions estimates. The data included the project start year (FY2012) as described in the methodology and the five years prior to the start of the project (FY2007-2011). During that time, there was no need to adjust the baseline for changes in the area (square footage) of the university buildings. The university used Test 2 in section 7.1 of VMD0038 to calculate the change in square footage, which was less than a 5% increase and was not declining. The input data for the calculation was confirmed from the ACUPCC report. Therefore no adjustment because of changes in the area (square footage) was required. /9/37/ and <http://rs.acupcc.org/>

FromVMD0038:

The university must have baseline data available that meets the following conditions:

- The baseline emissions must be estimated based on data from the baseline period. The baseline period must include project year 0 and three to five consecutive years prior to the project start date.
- For project year 1 and at least one of the baseline years, data must be publically-available through ACUPCC, STARS or another third-party GHG reporting program.

The assessment of the project's compliance with the applicability criteria of Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0 and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0 are documented in detail in the in the table below.

Checklist Question	Assessment by DNV-GL
Are baseline emissions determined over a three- to five-year period?	Baseline emissions are determined over a five year period. This was confirmed in the calculation tool./37/
Data must be from a baseline period which includes project year 0 and three to five consecutive years prior to project start date. The baseline period must be justified relative to the data that most accurately reflects historical emissions that are comparable to the campus conditions during project crediting period.	The campus used a five year baseline, FY2007-FY2011, which included project year 0 (FY2011). The campus began tracking GHG emissions in 2006 and made the commitment to the ACUPCC in FY2007. The data is internally consistent. The baseline period was confirmed at http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL and in the calculation tool /37/ and ACUPCC report.
Where reductions are sought for both stationary combustion emissions and scope 2 electricity emissions, the same baseline period does not have to be used for both.	The five year baseline includes the previous consecutive years and most accurately reflects historical emissions prior to project start date.
Data for project year 1 and at least one of the years in the baseline period must have been reported through ACUPCC, STARS or another third-party GHG reporting program. This may require new ACUPCC campus signatories to report on additional years beyond what is required by ACUPCC's two year reporting window.	The project is only requesting credits for Scope 1 stationary combustion emission reductions.
	Data was reported for the baseline years (FY2007-FY2011) and the project start year (FY2012) through ACUPCC.
	ACUPCC http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL
	The numbers reported in the ACUPCC and the CACP tool and the calculation tool were spot checked and the spot check was consistent /35/37/.
Where GHG inventory data have not been reported publicly in a given baseline year and are used for the determination of baseline emissions, the same reporting framework as used for publicly reported data must be consistently applied (i.e., the	The reporting framework for ACUPCC was used for all calculations in the PD and shown in the calculation tool. /5/37/.

reporting framework used by ACUPCC, STARS or other third-party GHG reporting programs must be applied).

The choice of annual reporting periods (e.g., calendar, fiscal, other) must be consistent through the project crediting period and the baseline period. The 37 reporting period should be consistent with that selected for public reporting to the relevant third-party GHG program.

Where the project requires adjustments for square footage, the square footage-adjusted baseline emissions must be applied for both the additionality tests and quantification of baseline emissions.

The project reporting period is consistent with internal accounting procedures at the university and with ACUPCC fiscal year reporting (1 July to 30 June). See

http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL

Area (sq. ft.) adjustments were not required since the changes in were less than 5% increase and were not declining. Supporting documentation was provided and checked as available in http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL /5/37/.

In conclusion, DNV GL confirmed the assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable.

3.2.5 Additionality

This methodology uses a standardized approach and performance method for determination of additionality. The complete set of four steps must be followed during validation, using data from project year 1 and the relevant additionality eligibility period. An additionality eligibility period is a historical reference period which includes project year 0 and one to five consecutive years prior to project year 1. The data must publicly report GHG emissions to ACUPCC, The Climate Registry, STARS or another third-party GHG reporting program for at least project year 1 and one of the baseline years. For this project the university passed additionality testing when comparing all five prior years' GHG emissions to those in FY2012: reflecting the reduction achieved and the time period when the campus strategy was implemented. The university selected FY2009 as the first year of its additionality eligibility period, establishing a three year (FY2009-2011) additionality eligibility period. The university used the CACP calculator to calculate emissions estimates, using facility data from the Facilities Management division.

The four steps of the additionality determination are discussed below:

Step 1. Regulatory Surplus. The project shall not be mandated by any law, statute or other regulatory framework. See the assessment table below for confirmation of compliance.

Step 2. Square Foot Variance. The university must determine whether the campus' total square footage has increased by more than five percent per year on average or declined at all over the additionality eligibility period or baseline period

Step 3. Net Decrease in Total Energy-Based Emissions. The university must show a net decrease in total energy-based emissions over one of the additionality eligibility periods. The energy based emissions are those associated with scope 1 stationary combustion emissions and scope 2 electricity emissions.

Step 4. Additionality Benchmarks: The relevant additionality benchmark must be met for emission reductions in project year 1 over the same additionality period in which Test 3 has been passed for the campus to be deemed additional; it must also pass Test 4 in subsequent project years y for emission reductions in that project year to be deemed additional. Only emission reductions that are deemed

additional can be included in the quantification of net GHG emission reductions. The relevant benchmark is determined based on the campus' Carnegie class classification and the project scope selected: scope 1 stationary combustion emission and scope 2 electricity emissions.

The assessment of the project's compliance with the additionality criteria of Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0 and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0 are documented in detail in the in the table below.

Checklist Question	Assessment by DNV-GL
Step 1: Regulatory Surplus (Test 1) Project proponents must demonstrate regulatory surplus in accordance with the rules and requirements regarding regulatory surplus set out in the latest version of the VCS Standard.	There are no laws, statutes or regulations requiring GHG emissions reductions in Illinois for any institution of higher education or other regulatory or planning requirements to implement energy efficiency measures such as those implemented by UIUC. There are no relevant national or sectoral policies or circumstances that would lead to any new laws or regulations. This was confirmed at http://www2.epa.gov/laws-regulations/laws-and-executive-orders and http://www2.epa.gov/laws-regulations/policy-guidance and http://www.in.gov/idem/4087.htm
Step 2: Square Foot Variance (Test 2) The campus' emissions during the additionality eligibility period and baseline period must be adjusted for variances in square footage	The university must determine whether the campus' total square footage has increased by more than 5% per year on average or declined over the additionality eligibility period or baseline period. A test was conducted as required by sections 7.3.1 and 7.3.2 of VMD0038. The result of the calculation assessing the change in square footage was less than 5% showing no need to adjust emissions estimates for changes in area (square footage) for the baseline years or the additionality eligibility determination. The calculations were documented in the supporting data and information./5/35/37/. Supporting documentation was provided and checked as available in http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL
Step 3: Net Decrease in Total Energy-Based Emissions (Test 3) The campus must experience a net decrease in total energy-based emissions over one of the eligible additionality eligibility periods (see definition of total energy-based emissions). An additionality eligibility period is a historical reference period which includes project year 0 and one to five consecutive years prior to project year 1.	The additionality eligibility period is more than one year and hence no weather adjustments are required per VMD0038 Test 3 was conducted as required by sections 7.3.3 and 7.3.4 of VMD0038. The result of the calculation in the calculation tool showed for Test 3 that the total energy-based emissions over the additionality eligibility period FY2009-12 declined. The selected additionality period (FY2009-11) included project year 0 (FY2011) and project year 1 (FY2012) and was 2 consecutive years prior to project year 1 for a total of 3 years. Supporting documentation was provided and checked in/5/6/.
Step 4: Additionality Benchmarks (Test 4)	Test 4 was conducted as required by sections

The relevant additionality benchmark must be met for emission reductions in project year 1 for the campus to be deemed additional and in subsequent project years for emission reductions in that project year to be deemed additional.

7.3.5 to 7.3.7 of VMD0038. The tests include an evaluation of whether there needs to be an adjustment to the emissions estimates based on unusual weather that is not conforming to the normal 30 year average weather for the area. No weather adjustments needed to be applied since the university used an additionality period of more than one year. Test 4 and Test 3 were both passed for additionality eligibility periods of three years (the selected period) and other potential additionality eligibility periods (2, 4 and 5 year periods).

The result of the calculation indicated the university achieved an annual average 16.09% reduction in scope 1 stationary combustion emissions during FY2009-12, which exceeds the Doctoral granting institution benchmark of 5.68% emissions reductions. This is the same additionality eligibility period in which Test 3 was also passed, as required. The calculations were documented in the supporting data and information /5/35/.

The benchmark was developed from ACUPCC data for Carnegie class doctoral granting institutions. See VMD0038 for development of the benchmark and <http://rs.acupcc.org> or <http://acupcc.org> Equation 8 was the relevant equation from VMD0038 p. 24. The calculation is shown in /37/

3.2.5.1 Additionality - Conclusion

In conclusion, it is sufficiently demonstrated that the project followed and completed the four step benchmark approach as a standardized approach to determine additionality as required in VMD0038.

3.2.6 Quantification of GHG Emission Reductions

Based on the calculations the implementation of the project activity will result in an average *ex-ante* estimation of emission reduction conservatively calculated to be 33 811 t CO₂e on average per year for the ten year crediting period.

UIUC uses the Clean Air Cool Planet (CACP) calculator as the preferred/approved means of determining CO₂e emissions for VM0025 and VMD0038. Data for input to the CACP calculator is gathered and managed through the Energy Services Administration (ESA) within the Facilities and Services office within the university. The CACP calculator is also the preferred calculator for ACUPCC and STARS reporting. The CACP calculator has been peer reviewed by universities using the calculator and in use for more than ten years. The risk of calculation error is much less than the risk from a new calculation tool, and therefore the uncertainty associated with calculation error is low. The calculation tool associated with VMD0038 has been peer reviewed by the pilot universities using the new methodology. The supporting data used in the CACP and other tools is managed by the ESA at the university. A more detailed description of the data management system is below.

The output data from the CACP calculator is used as input to a tool to quantify the baseline emissions and the project emissions using the equations from section 7.3 of VMD0038. For this project only

equations related to scope 1 stationary combustion emissions were used to calculate the project and baseline emissions. Leakage was evaluated during the development of the methodology and modules and is set to zero for this type of project.

The assessment of the project's compliance with the calculation of GHG reductions criteria of Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0 and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0 are documented in detail in the in the table below.

Checklist Question	Assessment by DNV-GL
Baseline emissions	
Baseline emissions must be calculated over all baseline years included in the baseline period	Baseline emissions were calculated as required in VMD0038 for all five baseline years(FYyears)/37/
Where the campus requires adjustments for square footage, then square footage-adjusted baseline emissions must be applied. Note that weather-based adjustments must not be applied in the quantification of baseline emissions.	Square footage adjustments were not required since the campus square footage was not increasing at more than 5% annually or decreasing. Supporting documentation was provided and checked as available in http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnege_class=DR&state_or_province=IL /5/37/.
To adjust for business as usual energy efficiency gains, BE must be adjusted each project year y to take account of an assumed US average 1.3 percent efficiency improvement factor,	BE is adjusted assuming the US average 1.3 % efficiency improvement factor /37/ stat 1 calcs, E198 and down and http://www.eia.gov/emeu/efficiency/ee_ch1.htm and http://www.eia.gov/forecasts/aeo/
Are the calculations documented according to the approved methodology and in a complete and transparent manner?	The calculations are documented in the calculation tool /37/and PD according to VM0038.
Have conservative assumptions been used when calculating the baseline emissions?	A conservative assumption is one in which the choice results in a lower total emissions reductions estimate. For this project, only the Scope 1 stationary combustion emissions reductions are claimed while other energy efficiency measures were implemented on campus as described in the PD. The CACP calculator uses average emissions factors from referenced public sources rather than specific emissions factors. For this project those emissions factors are a conservative and appropriately used across all activities. All assumptions are in /10/ and underlying methodology conservative assumptions are described in VM0025 and VMD0038
Are uncertainties in the baseline emission estimates properly addressed?	Conservative assumptions have been used and confirmed. Data for the baseline emissions was reviewed for trends, maximum emissions and average emissions and can be reviewed for baseline data in /37/ summary tab B188 down UIUC uses the Clean Air Cool Planet (CACP) calculator for determining CO ₂ e emissions for VM0025 and VMD0038. Data input to the CACP calculator is gathered and managed through the



Energy Services Administration (ESA) within the Facilities and Services office within the university. The CACP calculator has been peer reviewed by universities using the calculator and in use for more than ten years. The emissions factors in the CACP calculator are from referenced public sources. The risk of calculation error is much less than the risk from a new calculation tool, and therefore the uncertainty associated with calculation error is low.

Uncertainties in baseline emissions estimates were further addressed by evaluating the data and trends for the baseline years and emissions estimates. /37/. For example, the longest baseline was selected as the most conservative to represent historical emissions prior to project activities.

Project emissions

Are the calculations documented according to the approved methodology and in a complete and transparent manner?

The calculations are documented in the PD/5/ and in /37/. They are complete in /37/. DNV GL confirmed the calculations used are according to the approved methodology VM0038.

Have conservative assumptions been used when calculating the project emissions?

Conservative assumptions have been used. Data for the project emissions was reviewed for trends, maximum emissions and average emissions and can be reviewed for project data in /5/. The assumptions are in /37/ and underlying methodology conservative assumptions are described in VM0025 and VMD0038.

Are uncertainties in the project emission estimates properly addressed?

See also the comment above in baseline emissions for further discussion on conservativeness.

For this methodology, the inherent uncertainty in using generally accepted calculation tools (CACP) and publicly available emissions factors has been defined as acceptable and more certain than other methods of calculation. DNV has confirmed that these calculation tools and emissions factors are acceptable and present a low risk of uncertainty or error.

Uncertainty as defined by VCS is "Uncertainty is a parameter associated with the result of measurement that characterizes the dispersion of the values that could be reasonably attributed to the measured amount." P. 14/41/.

For these projects, uncertainty refers to the potential errors in data entry, data transfer and data management. The university has a robust data entry, data transfer and data management system that is internally and independently audited on a yearly basis. This was confirmed by reviewing the PD, monitoring plan and

	interviewing staff/5/37/62-65/
Project Emission Adjustments Where the project only qualifies for GHG emission reductions for stationary combustion emissions, the quantification of reductions must be adjusted when technologies or measures implemented to reduce stationary combustion emissions result in increases in scope 2 electricity, scope 2 heat emissions, scope 2 cooling emissions and/or scope 2 steam emissions OR Where the project only qualifies for GHG emission reductions for scope 2 electricity emissions, the quantification of reductions must be adjusted when technologies or measures implemented to reduce scope 2 electricity emissions result in increases in stationary combustion emissions and/or scope 2 heat emissions, scope 2 cooling emissions and/or scope 2 steam emissions.	Using Equation 22 the project emissions were adjusted because the fuel optimization strategy employed led to a shift from on-site generation to imported electricity consumption. This was confirmed in the calculation tool, the ACUPCC report and the Ameren invoices /7/8/9/ http://rs.acupcc.org/search/?institution_name=University+of+Illinois+at+Urbana-Champaign&carnegie_class=DR&state_or_province=IL The calculations were made using pathway f. Pathway f is the most conservative PE Adjustment calculations in VMD00038, resulting in the least emissions reductions. Calculations were consistent with methodology guidance. The project is only claiming GHG emissions reductions for Scope 1 stationary combustion emissions.
Emission Reductions - Algorithms and/or formulae used to determine emission reductions: - All assumptions and data used by the project proponent(s) are listed in the PD and related document submitted for registration. The data are properly referenced - All documentation is correctly quoted and interpreted. - All values used can be deemed reasonable in the context of the project activity - The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PD and supporting files to be submitted for registration.	Only Scope 1 stationary combustion emissions reductions and relevant Scope 2 electricity emissions were calculated for this project. The calculations were confirmed as correctly applied and data found in the calculation tool and CACP calculator /35/37/. The assumptions were outlined in the PD and applied from the VMD0038. The values input to and output from the CACP calculator were audited internally on a yearly basis. They are reasonable in the context of the project and location /5/37/ and were confirmed using E-grid data http://www.epa.gov/cleanenergy/energy-resources/egrid/ The methodology uses outputs from the CACP calculator that are audited. The data used from CACP can be used to replicate the emissions reductions calculated in the calculation tool./5/37/

3.2.7 Methodology Deviations

No deviations were applied to the project.

3.2.8 Monitoring Plan

As stated above, the CACP calculator as is used for determining CO₂e emissions for the baseline years as well as the project years. Data for input to the CACP calculator is gathered and managed through the Institute for Sustainability, Energy, and Environment (iSEE) in coordination with Energy Services

Administration (ESA), Facilities and Services office of the university. Oversight of the processes are provided by the Director of the iSEE.

The data used to calculate emissions using the CACP are gathered monthly from utility meters and invoices. The data is stored and managed through the ESA office. iSEE staff then input the data to the CACP for GHG calculations and further calculations required under VMD0038. Oversight is provided by the Director of iSEE.

The assessment of the project's compliance with the monitoring requirements of Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0 and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0 are documented in detail in the in the table below.

Checklist Question	Assessment by DNV-GL
Monitoring plan	
Data and parameters monitored	
Do the means of monitoring described in the plan comply with the requirements of the methodology?	VMD0038 requires "The project proponent must establish, maintain and apply a monitoring plan and GHG information system that includes criteria and procedures for obtaining, recording, compiling and analyzing data, parameters and other information important for quantifying and reporting GHG emissions. Monitoring data must be drawn from the relevant ACUPCC, STARS, The Climate Registry or other third-party GHG reporting program reports. Use of any other data must be clearly justified by the project proponent, including justification of any discrepancies with third-party GHG reporting program data." And the VCS Standard, v .3.4, p. 22.
Does the monitoring plan contain all necessary parameters, and are they clearly described?	The information management systems for gathering the required data for the methodology are described adequately in the monitoring plan. The input to the calculation tool is from the CACP tool for ACUPCC reporting /5/35/37/
In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	The parameters for Scope 1 stationary combustion emission calculations are clearly described in the monitoring plan in the PD and were checked within the calculation tool /5/37/
In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	The underlying primary data for fuel consumption is measured using standard industrial measures. The coal is measured using a weigh-bin with load cells before being attached to the coal feed system. The natural gas is measured using an industrial standardized dry gas meter provided by the utility. And electricity is measured using a standard electric meter measuring current (kWh) provided by the utility. The accuracy of each device (load cell, dry gas meter or electric meter) has been established by the manufacturer. For a load cell the accuracy is established in-situ for the operation and is typically a small percentage of total weight, e.g. +/- 1%. For the dry gas and electric meters the accuracy is established by the manufacturer to

In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.

Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.

Is the recording frequency adequate for all monitoring parameters? Describe each parameter.

utility and regulatory specifications. In each instance, the accuracy for each device is appropriate for the industry and supplier.

For coal, the weigh bin sensors are calibrated as required by the coal supplier and/or supplier on at least an annual basis. The dry gas meter and electricity meters are maintained by the utility and calibrated before installation. Each supplier has over 50 years' experience with the maintenance and calibration of their equipment. In each instance, the calibrations are appropriate for the industry and supplier.

The monitoring frequency is appropriate for the parameters. Data for fuel and electricity data for parameters F, E, ΔE_y, PSH, PC is gathered monthly through invoices/6/7/8/9/10/. The campus-Wide area (parameter SF) is update yearly during annual audits which was confirmed during an interview.

The recording frequency for parameter F, E, PSH and PC is gathered monthly. Parameter ΔE_y and SF are calculated annually. The recording frequency is adequate and follows the requirements of the methodology.

It is DNV GL's opinion, that the university is able to implement and maintain the monitoring plan as required by VM0025 and VMD0038 and described in the monitoring plan in the PD.

3.2.8.1 Parameters

The following parameters were available at validation and used for the project and these parameters will not be monitored:

Parameter	Description	Assessment by DNV-GL
PBS _c	The scope 1 stationary combustion additionality performance benchmark for Carnegie class	The correct performance benchmark was selected from VMD0038, p. 20 and explained in Appendix I, p. 50.
B	Baseline period that is 1-5 years	A baseline period of 5 years was selected, and this is considered adequate.
SCAP	The scope 1 stationary combustion additionality eligibility period	An additionality eligibility period of 3 years was selected (FY2009-11).

The following parameters are used throughout the baseline years as well as the project years. The input data is provided by university staff as described above in 3.2.8 and in the PD.

Monitored	Description
SF _{b=x}	The total campus-wide area (square footage).
SF _{p=y}	The total campus-wide area (square footage).
F _{b=x, i}	Stationary combustion emissions in the applicable year for each fuel type
F _{p=y, i}	Stationary combustion emissions in the applicable year for each fuel type
E _{b=x}	Scope 2 electricity emissions in the applicable year
E _{p=y}	Scope 2 electricity emissions in the applicable year

y	The project year
ΔE_y	Incremental scope 2 electricity emissions in project year y due to stationary combustion adjustment technologies
$PSH_{b=x}$	Scope 2 emissions from purchased steam or heat emissions in the applicable year
$PSH_{p=y}$	Scope 2 emissions from purchased steam or heat emissions in the applicable year
$PC_{b=x}$	Scope 2 emissions from purchased cooling in the applicable year
$PC_{p=y}$	Scope 2 emissions from purchased cooling in the applicable year

The following parameters listed in VMD0038 were not relevant for this project and were not used

<u>At validation</u>	<u>Monitored</u>
PBE_c	$AT_{y,i}$
$HDD_{p=y}$	$\Delta F_{y,i}$
$CDD_{p=y}$	
E2AP	

The equations used in this project were reviewed in the supporting information provided by the university and were confirmed as appropriate and properly used.

3.2.8.2 Management system and quality assurance

The university has a robust internal audit and QA process and participates in external audits for financial and environmental management reasons. The primary data (natural gas, electricity and coal consumption) is input to a management system. The data is verified and cross checked within the ESA office. During the year the data is randomly sampled and cross checked with invoices and other records. The data for input to the CACP is further checked by the Director of the iSEE and output from the CACP is checked by both divisions before submission to ACUPCC, STARS or used in these calculations.

Internal cross checking and auditing is also in place for other mandated reporting including environmental permits. The university also conducts annual financial audits each year and is audited by suppliers to the university. That review includes checking invoices for utility (gas, electricity and coal) purchases.

Checklist Question	Assessment by DNV-GL
Ability of project proponent(s) to implement monitoring plan	
How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	Per VMD0038 p38. "The project proponent must establish, maintain and apply a monitoring plan and GHG information system that includes criteria and procedures for obtaining, recording, compiling and analyzing data, parameters and other information important for quantifying and reporting GHG emissions. Monitoring data must be drawn from the relevant ACUPCC, STARS, The Climate Registry or other third-party GHG reporting program reports. Use of any other data must be clearly justified by the project proponent, including justification of any discrepancies with third-party GHG reporting program data." And the VCS Standard, v .3.4, p. 22

Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?

Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?

Will all monitored data required be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?

The PD includes a description of the data management plan and quality control procedures. This was confirmed during interviews with the project proponents and by checking data in the calculation tool/37/ and <http://rs.acupcc.org>

Record keeping is maintained on a monthly basis as described in the PD. This was confirmed during interviews with the project proponents and reviewing monthly invoices./6/7/8/

The data management systems have been in place within the university for many years with scientific and financial cross checks and periodic audits. The systems were described in the PD, confirmed during interviews and cross checked by review of invoices and the calculation tool/5/35/37/59-61/

The data for this project will be kept longer than two years after the end of the last crediting period. The project records are part of the larger university systems and will be kept as required to meet numerous regulations, e.g. financial, environmental which meets the requirements of VM0025 and VMD0038. This was confirmed during interviews and review of the PD/5/62-65/

DNV GL can confirm the monitoring requirements of VM0025 and VMD0038 are in place and applied properly in this project.

3.3 Non-Permanence Risk Analysis

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

3.4 Environmental Impact

An Environmental Impact Assessment (EIA) was not completed for this project

3.5 Comments by Stakeholders

Stakeholder consultations were not completed for this project.

4 VALIDATION CONCLUSION

Det Norske Veritas (U.S.A.), Inc. of DNV-GL has performed a validation of the project activity UIUC: Campus-Wide Clean Energy Efficiency Project in Urbana, Illinois, US. The validation was performed on the basis of VCS criteria as well as criteria given to provide for consistent project operations, monitoring and reporting.

The purpose of a validation is to have a Validation/Verification Body (VVB) to assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCU).

The review of the project design documentation and the subsequent follow-up interviews have provided DNV GL with sufficient evidence to determine the project correctly applies the baseline and monitoring methodology Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0 and Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0.

UIUC signed the Illinois Climate Action Plan in 2010, and embraced a fuel optimization strategy to reduce GHG emissions. Where appropriate they purchase electricity, reducing reliance on the on-site existing coal and gas cogeneration facilities. This strategy, combined with the other energy efficiency measures has led to an average 16.09% decrease in GHG emissions.

The university identified the high energy-use buildings and developed a plan to re-commission the buildings, with an emphasis on HVAC and temperature systems and controls. Each year, buildings are selected from the top 100 energy consumption buildings. By 30 June 2013, the University completed 40 buildings, with an average of 26.5% reduction in energy consumption.

The total emission reductions from the project are estimated to be on the average 33 811 tCO₂e per year over the selected 10 year crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount will be achieved for this project.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design, and it is DNV GL's opinion that the university is able to implement the monitoring plan.

In summary, it is DNV GL's opinion that the project activity The UIUC: Campus-Wide Clean Energy Efficiency Project in Urbana, Illinois, US, as described in the VCS project description, version 9 dated 24 June 2014, meets all relevant VCS requirements and correctly applies the baseline and monitoring methodology VCS VM0025 and module VMD0038. Hence, DNV GL requests the registration of the project as a VCS project activity.

The validation was based on the information made available to DNV GL and the engagement conditions detailed in this report.

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Appendix A: Resolution of Corrective Action Requests and Clarification Requests

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
1.	The PD was prepared in V3.1. The current VCS PD template is V3.2 which can be found at http://www.v-c-s.org/program-documents .	The PDD has been migrated to the new version of the template, which addresses this item and many of the items below.	The PD is in the new template. Closed
2.	Project Summary: The VCS requirement is Provide a summary description of the project to enable an understanding of the nature of the project and its implementation, including the following (no more than one page): • A summary description of the technologies/measures to be implemented by the project. • The location of the project. • An explanation of how the project is expected to generate GHG emission reductions or removals. • A brief description of the scenario existing prior to the implementation of the project. • An estimate of annual average and total GHG emission reductions and removals Section 1.1 does not include all of the items listed above and includes items not required in Section 1.1.	A written summary of activities included in the check boxes has been incorporated into the PDD as Appendix D. A total (conservative) estimate of emission reductions for all 10 years of the project has been added to the PDD.	The project summary has been revised. Closed
3.	Contact information for the project proponent was provided as well his title. However, the role and responsibility for the project proponent was not provided in Section 1.3 of the PD.	A forward reference to the monitoring plan (provided in Appendix C) has been added to this section of the PDD.	Closed
4.	Contact information for the additional staff was provided as well his title. However, the role and responsibility of Mr. Marquissee was not provided in Section 1.4 of the PD.	A forward reference to the monitoring plan (provided in Appendix C) has been added to this section of the PDD.	Closed
5.	On p. 5 of the VCS PD Template v3.2, VCS requires: Indicate the scale of the project (project or large project) and the estimated annual GHG emission reductions or removals for the project crediting period.	Conservative estimates for the entire project period have been added to the PDD. The updated 10 year Excel template has been sent, using conservative flat line projections for 2014 onwards.	The estimates are appropriate and included in the PD. Closed

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	This PD provides actual data for three years, but no estimates for the remaining crediting period.		
6.	The PD should include a short description of all activities even though the methodology only requires description of at least two activities.	A summary of the activities referred to by the check boxes has been provided in the PDD as Appendix D.	Closed
7.	Per the VCS PD Template, v3.2 p. 6: Indicate the project location and geographic boundaries (if applicable) including a set of geodetic coordinates.	This appears to be a duplicate of item #8; see below.	Closed
8.	Per the VCS PD Template, v3.2 p. 6: Indicate the project location and geographic boundaries (if applicable) including a set of geodetic coordinates A map is not required and if included should be contained within the PD.	A map especially prepared for this purpose to show the areas included in our GHG reporting boundary was provided as a separate PDF file because it could not be included in the Word format of the PDD. This file will be appended to the final PDD after it is converted into PDF format. Geodetic coordinates have now also been added to section 1.9 of the PDD.	File received. Closed
9.	Per the VCS PD Template, v3.2, p. 6: Describe the conditions existing prior to project initiation and demonstrate that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction. Where the baseline scenario is the same as the conditions existing prior to the project initiation, there is no need to repeat the description of the scenarios (rather, just state that this is the case and refer the reader to Section 3.1 (Baseline Scenario). The PD does not include a description of the project conditions prior to the project initiation. The description of the project activities could also describe the situation prior to the project and be referenced in this section.	This has been addressed in the standard language updates to the PDD.	The language is appropriate. Closed

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	The boxes in Section 1.10 are not completed.		
10.	Per the VCS PD Template, v3.2, p. 6 Identify and demonstrate compliance of the project with all and any relevant local, regional and national laws, statutes and regulatory frameworks. On p. 8 of the PD the question focuses on energy efficiency measures even though this project is claiming credits for more than energy efficiency measures... Compliance has to be applied to the entire campus for a campus-wide project. This section of the PD needs to include compliance with relevant local, regional and federal laws. Specifically, the PD should indicate the major air permits, e.g. Title V.	This has been addressed in the standard language updates to the PDD, and we have indicated that we are subject to Title V. A copy of our Title V permit has been provided.	The language is appropriate and the permit has been reviewed. Closed
11.	The language used on p 8 of the PD is Are the campus' EE measures nonetheless more broadly in compliance with prevailing local regional and national laws. The term 'broadly in compliance' is not precise. Permits are very specific with little latitude for interpretation which is implied by the term 'broadly'.	The phrase "more broadly" has been removed from the PDD.	Closed
12.	Section 2.11 does not require a statement that GHG reductions are not mandated. That issue is addressed in Section 2.12.2 and 2.12.3. The statement thus should be removed here.	Campuses can respond to both questions in order to be clear on all aspects relating to regulatory considerations clearly.	The language can remain as is; no action is required. Closed
13.	From VCS Std, v3.4,p. 17: The project description shall be accompanied by documentary evidence establishing conclusively one or more of the following rights of use: Please provide documentary evidence establishing the right of use chosen in the PD. Example documents include written agreements or contracts.	Written agreements may not exist. UIUC believes the existing questions in the PDD are responsive to rights of use.	A description by the university is sufficient. Closed
14.	From VCS PD Template v. 3.2, p. 7 'List all other programs under which the project is eligible to	This has been addressed through changes to the PDD template.	Closed

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	participate (to create another form of GHG-related environmental credit)' and VCS Definitions p. 5 for GHG Programs, 'A formal or organized program, system or arrangement for the recognition of activities leading to GHG emissions reductions or removal, and/or the crediting or issuance of instruments representing, or acknowledging, GHG emission reductions or removals.' VCS does not define Environmental Credit. ACUPCC, STARS and GRI are GHG reporting systems and do not sell or trade environmental credits. From the requirement and definitions above it isn't clear that those programs should be reported in this section and the rationale needs to be included for how sections 2.2 and 4 are relevant.	References to ACUPCC/STARs reporting address the intent of 1.12.4 which is to avoid double counting/reporting/claiming. Re: GHG-environmental credits such as RECs: These same sites are the locations where verifiers can establish whether RECs have been transacted by campuses against which REC certificates can be reviewed to ensure accurate GHG accounting/reporting within CACP/ACUPCC/VCS project templates. RECs, per VCS guidance for VMD0038, are addressed in section 2.3 Project Boundary. UIUC did not trade in RECs so no certificates are provided.	
15.	Per VCS PD Template, v3.2 p. 8. Demonstrate and justify how the project activity(s) meets each of the applicability conditions of the methodology(s), and tools (where applicable) applied by the project. Address each applicability condition separately" Per VMD0038, p. 10, not all Applicability Conditions are included in this section. The following Applicability Conditions are not addressed: • The project is on an existing campus in the US • The project must demonstrate... by implementing two of the following activities: etc. In addition to including the missing items in the Section 2.2, supporting documents demonstrating how the project activities meet the applicability conditions need to be provided.	We believe that all required AC questions are addressed in the PDD. The fact that UIUC is an existing campus in the US is asserted in the PDD supported by an accompanying web reference. Supporting documentation for our Carnegie class is available at the Carnegie Foundation website (http://classifications.carnegiefoundation.org/lookup_listing/view_institution.php?unit_id=145637), which has been included in the PDD. Our ACUPCC and STARS information is also publicly accessible at the URLs: http://rs.acupcc.org/search/?abs=&q=University%20of%20Illinois%20at%20Urbana-Champaign and https://stars.aashe.org/institutions/university-of-illinois-urbana-champaign-il/report/2013-07-31/	Closed
16.	The Note on p. 14 is confusing. For instance, EE technologies are not identified in section 1.8 or actions	This note has been deleted before the PDD is finalized.	Closed

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	to ensure no double counting are not required to be addressed in this section.		
17.	Per VCS PD Template, v3.2 p. 8. Define the project boundary and identify the relevant GHG sources, sinks and reservoirs for the project and baseline scenarios (including leakage if applicable). The project boundary should include geodetic information as well.	We have added a statement in section 2.3 of the PDD referring to the map in Appendix A. .	Closed
18.	Provide supporting documents for the floor space (square foot) of the university, e.g. specific ACUPCC url.	Gross square footage is reported annually to ACUPCC which is considered public and peer reviewed.	The url is provided above. Closed
19.	On p. 20 of the PD, Additionality Eligibility Period – the complete dates e.g. 1 July 2010 is missing.	This has been added to the PDD and responses provided.	The date has been added. Closed
20.	Per the VCS PD Template p. 10: Describe the procedure for quantification of baseline emissions and/or removals in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values). The equations used are not specified or numbered. For example on p. 22 “Based on equations 12 and/or 23:” does not explain which equations were used or why. Then further “Based on equations 13/24” is not clear.	This has been addressed in the updates to the standard language of the PDD.	The issue has been addressed Closed
21.	Per VCS PD Template v3.2, Provide the ex-ante calculation (estimate) of baseline emissions/removals, project emissions/removals, leakage emissions and net GHG emission reductions and removals in the table below. The Table is incomplete	This information has been added to the PDD.	The table is complete Closed
22.	No monitoring plan was described as required by	The monitoring plan has been included in the PDD as Appendix C.	The plan is included.

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	VMD0038 p38. "The project proponent must establish, maintain and apply a monitoring plan and GHG information system that includes criteria and procedures for obtaining, recording, compiling and analyzing data, parameters and other information important for quantifying and reporting GHG emissions. " The PD should describe the reporting framework that was used (i.e. CACP) and how the main parameters are actually monitored. An explanation of what data is used and how it is input to whatever calculator that was used is missing. For example, what type of reports are used for aggregating the inputs to the CACP calculator.		Closed
23.	The parameters are not clearly described as required by VMD0038 p38, and the VCS Standard, v3.4, p. 22. Reference to the section 9.1 and 9.2 does not explain what parameters were used and what parameters weren't used. Nor does the reference provide information on the data used.	This has been addressed by updates to the PDD and responses provided.	The parameters are identified. Closed
24.	Per the VCS PD Template p. 13 Describe the process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters set out in Section 4(Data and Parameters Monitored) above. Include details on the following: • The methods for measuring, recording, storing, aggregating, collating and reporting data and parameters. Where relevant, include the procedures for calibrating monitoring equipment. • Any sampling approaches used, including target precision levels, sample sizes, sample site locations, stratification, frequency of measurement and QA/QC procedures.	This information is provided in the newly provided monitoring plan in Appendix C.	The plan is provided. Closed

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	Reference to the section 9.1 and 9.2 does not explain what parameters were monitored and used and what parameters weren't used. Nor does the reference provide information on the monitoring requirements above. The description of the data monitored to meet the requirements of VMD0038, VCS Std v. 3.4 and VCS PD Template, v. 3.2 p. 13 is incomplete.		
25.	Please provide supporting documents on the dates of the first contracts for the project activity and the first construction activity.	In the revised PDD, links to our campus's Illinois Climate Action Plan (iCAP) Portal have been provided to corroborate our description of activities.	The url is provided. Closed
26.	Please provide "2014 Energy Use Facilities.pdf", which was assembled by campus Facilities & Services staff to show the buildings that are included in our GHG reporting	Done	The PDF was provided and is sufficient. Closed
27.	The gross square feet of building space is listed as 21, 095,727 on the ACUPCC site. http://rs.acupcc.org/ghg/3004/ The net assignable square foot is 13,322,741 for the FY 2014 at http://dmi.illinois.edu/cp/ Besides gross vs. net, provide an explanation of the ~7 million square foot difference.	The ACUPCC reporting involves the gross square footage (GSF) of all buildings on campus to which we provide energy services (those buildings indicated on the special campus map provided as Appendix A). In contrast, the Division of Management Information (DMI) website tracks net assignable square footage (NASF), which is determined by drawing a line around the interior walls of a particular room or space such as classroom, office, lab, or work rooms. NASF does not include non-assignable areas, such as hallways, common areas, stairwells, maintenance areas, etc. This calculation is based on standards published in the most recent Postsecondary Education Facilities Inventory and Classification Manual issued by the U.S. Department of Education Office of Educational Research and Improvement (http://nces.ed.gov/pubs2006/2006160.pdf). The industry standard is that about 60-65% of gross	The explanation is sufficient. Closed

	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
		square footage is net assignable square footage; in our case, the value is 63.2%.	
28.	Illinois has an Emission Reduction Market System (ERMS) for volatile organic materials. http://www.epa.state.il.us/air/erms/ Does UIUC participate in this program?	The Associate Director for Safety & Compliance at UIUC Facilities & Services, David Wilcoxon, has informed us that he is not aware of any UIUC participation in the ERMS program.	The explanation is complete. Closed
29.	The Title V permit is not available via Illinois EPA (http://www.epa.state.il.us/air/permits/caapp.html). Provide a link or copy of the permit.	Our Title V permit for 2003-2008 has been provided in PDF format. According to David Wilcoxon, the university filed a permit renewal application in 2008, which enables the university to continue operating under the existing permit until the Illinois EPA issues a new permit.	The explanation is complete. Closed
30.	In the EPA database (http://echo.epa.gov/facility_search_results) address for the campus is listed as 101 S Gregory St. The PD lists 110 Peabody St. as the address.	The address 101 S. Gregory Street was the address of our Environmental Compliance group, which applied for the Title V permit. The PDD actually lists the official campus address in section 1.9 as 601 E. John St., which is the building where our Chancellor works. This address is the one for which the geodetic coordinates were provided. 1101 W. Peabody is BJM's mailing address. A campus our size has many street/ mailing addresses; in our case spanning two cities!	The explanation is sufficient. Closed
31.	On the 06_Dec11_AmerenIP Gas UC.xls, Main tab, there is a note from M. M. "Total 2,846,503 therms Pipeline gas - see Nicor Invoice for 12/2011. The totals on the Nicor invoice don't match the number in the note.	This was the result of a copy-and-paste error; the cross-referenced notation should read: "Abbott gas used – Nicor Gas Invoice. To utility Summary Cell BW274. Total 2,892,780 therms." (not 2,846,503 therms)	The explanation is complete. Closed