METHODOLOGY ELEMENT ASSESSMENT REPORT

CAMPUS CLEAN ENERGY EFFICIENCY METHODOLOGY

Document Prepared By:
TÜV Rheinland (China) Ltd

Methodology Element Title	Campus Clean Energy Efficiency Methodology Campus Clean Energy Efficiency Campus Wide Module Campus Clean Energy Efficiency LEED Certified Buildings Module	
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Methodology Element Category	Methodology	☒
	Methodology Revision	☐
	Module	☒
	Tool	☐
Sectoral Scope(s)	1 Energy industries (renewable / non-renewable sources) 3 Energy demand	

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Prepared By	TÜV Rheinland (China) Ltd
Contact	Unit 707, AVIC Building, No. 10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing 100022, People's Republic of China. Tel.: +86 10 65 66 66 60 (ext.169) FAX: +86 1065 66 66 67 E-mail: doe@chn.tuv.com
Approved By	Mr. Henri Phan
Work Carried Out By	Mr. Ma. Paa. Puratchikkanal Mr. R Narendra Kumar Mr. R. Murali
Work Reviewed by	Dr. Manfred Brinkmann

Summary:

The VCS methodology team assigned by the DOE (TÜV Rheinland (China) Ltd.), here after called TRC, is been assigned by "Bonneville Environmental Foundation" to perform the assessment of the new VCS methodology "Campus Clean Energy Efficiency". The scope of the assessment is defined as an independent and objective review of the methodology framework and associated modules. The information in these documents is reviewed against VCS Validation and Verification manual v03.0, VCS Program Guide v3.4, VCS Standard, v3.3 and other VCS rules.

The report is based on the assessment of the methodology framework & associated modules undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews and interviews.

Validation methodology and process

The assessment constitutes the following steps:

- Desk review of the methodology and the relevant documents
- Interviews
- Issuance of list of findings.
- Resolution of outstanding issues
- Issuance of final assessment report and opinion

Assessment criteria

The following VCS requirements have been considered:

- VCS Validation and Verification manual v03.0
- VCS Program Guide v3.4
- VCS Standard, v3.3
- VCS Program Definitions V. 3.4, 4
- VCS Guidance for Standardized Methods V. 3.2

The assessment protocol describes a total of (32) findings (Observations) which include:
-(12) Corrective Action Requests (CARs);
-(10) Clarification Requests (CLs);
All the findings are successfully closed based on the response provided by the client.

TRC concludes that the description of methodology element “Campus Clean Energy Efficiency” meets all relevant requirements of the VCS criteria for methodology development.

The TRC therefore recommends that the approval of the methodology element as a VCS methodology element.

Abbreviations

ACUPCC	American College & University Presidents' Climate Commitment
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BAU	Business As Usual
CACP	Clean Air Cool Planet
CDD	Cooling Degree Days
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CH4	Methane
CL	Clarification request
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DOE	Designated operational entity
GHG	Greenhouse gas(es)
HDD	Heating Degree Days
IPCC	Intergovernmental Panel on Climate Change
LEED	Leadership in Energy and Environmental Design
NGO	Non-governmental Organization
tCO2e	Tonnes of CO2 equivalents
TRC	TÜV Rheinland (China) Ltd.
USGBC	US Green Building Council
VCS	Verified Carbon Standard
GWP	Global Warming Potential

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1 INTRODUCTION

1.1 Objective

The purpose of this assessment process is to have an independent third party assess the proposed methodology with respect to VCS Validation verification manual, VCS Standard, the Guidance for Standardized Methods and any other applicable requirements set out under the VCS Program.

1.2 Scope and Criteria

The scope of the assessment is to assess the proposed methodology with respect to the various VCS requirements. Besides the general requirements for Standardized Methods *t*hese include in particular:

1. Eligibility criteria:
   Assessment of whether the methodology's eligibility criteria are appropriate and adequate.
2. Baseline approach:
   Assessment of whether the approach for determining the project baseline is appropriate and adequate.
3. Additionality:
   Assessment of whether the approach/tools for determining whether the project is additional are appropriate and adequate.
4. Project boundary:
   Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of gases included.
5. Emissions:
   Assessment of whether an appropriate and adequate approach is provided for calculating baseline emissions, project emissions and emission reductions.
6. Leakage:
   Assessment of whether the approach for calculating leakage is appropriate and adequate.
7. Monitoring:
   Assessment of whether the monitoring approach is appropriate and adequate.
8. Data and parameters:
   Assessment of whether monitored and not monitored data and parameters used in emissions calculations are appropriate and adequate.
9. Adherence to the project-level principles of the VCS Program:
   Assessment of whether the methodology adheres to the project-level principles of the VCS Program.

1.3 Summary Description of the Methodology Element

The methodology element 'Campus Clean Energy Efficiency' is developed for US colleges and schools to quantify reductions in greenhouse gas (GHG) emissions which are achieved from energy efficiency measures. The Campus Clean Energy Efficiency Methodology document explains how the methodology

can be applied to campuses. There are two ways to apply this methodology, and they are described in two separate modules:

- Campus Clean Energy Efficiency Campus Module: It describes Campus-wide energy-based GHG reductions, based on an inclusive campus-wide boundary. and
- Campus Clean Energy Efficiency LEED Certified Buildings Module: It describes energy-based GHG reductions from individual LEED certified New Construction (NC) or Existing Building (EB) buildings.

2 ASSESSMENT APPROACH

2.1 Method and Criteria

The methodology assessment consists of the following phases:

I	a desk review of the proposed methodology and related documents
II	follow up interviews
III	Issue of a list of observations and findings, resulting in a draft assessment report
IV	the resolution of outstanding issues and the issuance of the final assessment report and opinion.

The following sections outline each step in more detail.

The draft methodology is reviewed against the relevant criteria (see above) and VCS policy documents. The assessment is not meant to provide any consulting towards the developer of the methodology. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the methodology.

2.2 Document Review

The following table outlines the documentation reviewed during the verification:

Ref no.		Reference Document
/P1/	/P1.1/	Methodology framework “Campus Clean Energy Efficiency”, version 1.2 dated 20-June-2013
	/P1.2/	Methodology framework “Campus Clean Energy Efficiency”, version 1.3 dated September 5 2013
/P2/	/P2.1/	Campus-Wide Module, version 1.2, dated 18-June-2013 LEED Certified Buildings Module, version 1.2, dated 21-June-2013
	/P2.2/	Campus-Wide Module, version 1.3, dated September 5-2013 LEED Certified Buildings Module, version 1.3, dated September 5-

	2013
/P3/	Methodology element assessment report of 'Campus clean energy efficiency methodology', prepared by DNV Climate Change Services AS, version 1.2, dated 15-August-2013
/P4/	VCS Association, Validation and Verification Manual, Version 3.0, 4 October 2012 VCS Association, VCS Standard, Version 3.3, 4 October 2012 VCS Association, VCS Program Guide, Version 3.4, 4 October 2012 VCS Association, VCS Program Definitions, Version 3.4, 4 October 2012 VCS Association, VCS Guidance for Standardized Methods, Version 3.2, 4 October 2012 VCS Association ,VCS Methodology Approval Process, Version 3.4, 4 October 2012
/P5/	C. Pyke, *Existing building Energy Star scores for 2008 and 2009 from USGBC database* (EBOM.EAc1.pivot.for.Sue.xlsx)
/P6/	C. Pyke, *Statistics on reductions in energy consumption for institutions of higher education and laboratory space, and K-12 institutions for the state of North Carolina* (NC_Stats_EAc1_breakdown_for_Sue.xlsx)
/P7/	C. Pyke, NC*Combined statistics on reductions in energy consumption for institutions of higher education and laboratory space, and K-12 institutions for the state of North Carolina* (Stats_EAc1_breakdown_for_Sue_1.xlsx)
/P8/	S. Hall, *Energy Star leaders in buildings for 2005-2012 from Energy Star PM Tool.*
/P9/	S. Hall, *2011-2013 log of calls with advisors and contributors to the methodology development* (Communications Log draft.docx)
/P10/	S. Hall, *Documentation of discussion with First Advantage and Second Nature about the draft methodologies, and additional information on the EPA PM tool* (White Paper Summaries DRAFT May 9 2012 vs. 4[1].docx)
/P11/	S. Hall, *July, 2012 summary of the methodological approach for LEED EB and NC using USGBC certified reporting data* (White Paper Summary LEED July 3[1].docx)
/P12/	S. Hall, *Summary of the methodological approach for campus wide scope 1 stationary source emissions* (White Paper Summary Campus Wide Reductions July 11 2012[1].docx)
/P13/	S. Hall, *2012 documentation of draft methodology including use of ACUPCC data and approach to stratification of institutions* (White Paper Summaries Oct 29 update Campus wide MAIN[1].docx)
/P14/	S. Hall, *Summary of general approach and requirements for the methodology* (White Paper Summary LEED July 3 Upgrades vs. 1 Aug 2 Sept 11 vs. 3 post VCS oct 4 post chris oct 10 Oct 18 Oct 30 Nov 13 ADV[1].docx)
/P15/	S. Hall, *Summary of the revised methodological approach for LEED EB and NC with further definition of segmentation and performance metrics* (White Paper Summary LEED Nov 2012[1].docx)
/P16/	S. Hall, *Summary of the revised methodological approach for campus wide scope 1 stationary source emissions* (White Paper Summary Campus Wide Reductions Nov 2012[1].docx*)*
/P17/	Pyke, C. Transparency for a project http://www.gbig.org/activities/leed-1000000117

	Click on LEED Dashboard and Compare to show the distributions used in the methodology.
/P18/	The Green Building Information Gateway, *Transparency for a building over time bridging new construction to operations* (http://www.gbig.org/buildings/2777%20Crystal%20Dr,%20Arlington,%20VA%2022202,%20USA)
/P19/	The Green Building Information Gateway, Transparency for an existing building over time (http://www.gbig.org/buildings/320%20Park%20Ave,%20New%20York,%20NY%2010022,%20USA)
/P20/	Chevy "Carbon Stories" web site http://www.chevrolet.com/environmental-projects/carbon-reduction/
/P21/	C.Pyke to Sue Hall, *Climate Leadership Awards Recognize Sustainable Colleges* (http://planetforward.org/climate-leadership-awards/) 21 March 2012
/P22/	S. Hall, Carbon Map Draft V 1.0, xls. 15 March, 2012, *Estimates of carbon reductions at example campuses based on data from Second Nature and ACUPCC.*
/P23/	S. Hall, Chevy_Carbon_Credit_Data analysis 6 SN funds - PAT April30 SH May 3 Bottom 50%.xls, 7 May 2012, *Data from ACUPCC sorted according to degree granting type, and including emissions and building areas.*
/P23/	R. Koester, rjk_tweaks_VCS Methodology Template v3-1 2 College Draft 9 Dec 10.doc. *Review of draft methodology by Dr. R. Koester, Ball State U.*
/P25/	P. Nye, S. Muzzy and S. Hall, *Email on data analysis*, 27 March 2012
/P26/	S. Hall, *Summary of the adjustment equations for increase/decrease of building area (sq. ft.) to be used in methodology* (SQ Ft Eq 2A (2).xls), 11 April 2013,.
/P27/	EPA PM tool *https://www.energystar.gov/index.cfm?fuseaction=target_finder*
/P28/	EPA Energy Star Target Finder https://www.energystar.gov/index.cfm?c=new_bldg_design.bus_target_finder
/P29/	About Energy Star https://www.energystar.gov/index.cfm?c=about.ab_index
/P30/	ACUPCC Reporting System http://rs.acupcc.org/stats/
/P31/	USGBC data http://www.gbig.org/about/data
/P32/	S. Hall, Stakeholder comments, 28 May 2013. *PDF of correspondence listing issues addressed.*
/P33/	US, DOE, EIA Commercial Buildings Energy Consumption Survey (CBECs) : http://www.eia.gov/consumption/commercial/2012-cbecs-building-sampling.cfm Since 1979, *a national survey that collects information U.S. commercial buildings, their energy-related building characteristics,. Commercial buildings include all buildings in which at least half of the floor space is used for a purpose that is not residential, industrial, or agricultural,*
/P34/	World Business Council for Sustainable Development (WBCSD) & World Resources Institute (WRI), *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*, March 2004
/P35/	International Organization for Standardization, *ISO 14064-2:2006 - Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal*

	enhancements
/P36/	The Ohio State University Scope 1 & 2 GHG Emissions (Spreadsheet)
/P37/	ACUPCC Data Stat1 Scope2 Curves Outliers Removed 21February2013.xlsx (Spreadsheet, confirmed vs. ACUPCC homepage)

2.3 Interviews

TÜV Rheinland assessment team performed the 2nd Assessment based on desk review of documents listed in section 2.1. Documentation of the project developer's extensive stakeholder consultation process was considered in particular detail. Validation by interviews was not considered productive in this context and therefore not further pursued.

2.4 Assessment Team

Full name	Affiliation TÜV Rheinland	Role	Appointed for Sectoral Scopes (Technical Areas)
Mr. M P Kanal	India	Team Leader	1.2, 3.1, 6.1, 13.1/13.2, 15.1
Mr. R Narendra Kumar	India	Team Member	1.2, 3.1
Mr. R Murali	India	Team Member	1.2, 3.1
Dr. Manfred Brinkmann	Japan	Reviewer	1.2, 5.1/11.1/12.1, 13.1

2.5 Resolution of Any Material Discrepancy

The objective of this phase is to resolve the observations listed in the draft assessment report. The responses and their implementation in the revised methodology are assessed with respect to meeting the VCS requirements, and closed as appropriate.

The assessment protocol serves the following purposes:

- It organises in a table form, details and clarifies the requirements, which methodology is expected to meet VCS requirements;
- It ensures a transparent assessment process where the TUVR will document how a particular requirement has been verified and the result of the assessment.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the assessment report.

Findings during the assessment can be interpreted as a non-compliance with VCS criteria or a risk to the compliance.

2.6 Internal Quality Control

The final assessment report underwent a technical review by a qualified independent technical reviewer before submitting to VCS approval. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme.

2.7 Other Changes

Certain modifications have been made to the methodology as a result of input from other sources (e.g. DNV/VCS or stakeholder/pilot project discussions) during the assessment. The team has reviewed also these refinements and concludes them to be appropriate. For completeness sake, they include:

- Changing references for "internal leakage" to "PE adjustments for $PE\Delta_y$"
    - to avoid confusion with leakage terminology referring to outside the project boundary
- Clarification regarding applicability conditions for EB-B
    - confirms earlier implied criteria explicitly
- Refinements addressing updates to the EPA Target Finder tool made by US EPA
    - clear, consistent updates given new tool's formatting

3 ASSESSMENT FINDINGS

3.1 Applicability Conditions

Eligibility criteria for projects using this methodology are described separately for Campus-Wide Module and LEED Certified Buildings Module. However common applicability conditions are described in the methodology framework document.

The geographical scope of the proposed methodology is currently limited to the United States college campus, consistent with the availability of relevant baseline information which has been confirmed. Also the campus GHG/energy reduction reporting should be made through credible third party programs eligible under the methodology, whose reporting protocols are credible for GHG project crediting purposes. The methodology framework also specifies some special conditions to use this methodology that preclude double counting and double claiming e.g. projects should have secured rights of ownership; emission reduction from energy services supplied to customers should be excluded. Discussions with stakeholders and experts (e.g. USGBC VP R&D) confirmed the appropriate application of the EPA TF categories given the recent EPA updates to this tool.

Similarly specific applicability conditions to use the modules are given in the respective modules. As updated, they clearly specify the conditions upon which the methodology/module can and cannot be

applied. These applicability conditions are clear and comprehensive (see comments below relative to 4.1.17, 4,3,4, 4.3.5, 4.3.6 and observations 17, 18, 24, 25, 26, 28).

The applicability conditions require the identification of implementation of strategies which gave rise to the project's performance based upon an analysis of strategies adopted by leading proponents (ACUPCC top college performers (those achieving the module benchmarks, within top 15%) and LEED certified building requirements (1% of US buildings performing within top 14% on average) which will be updated every five years to ensure these requirements remain current. As required for methodologies using a performance method for determining additionality, the methodology thus explicitly specifies technologies and/or measures with the requirement that a minimum of two such measures have been adopted.

Whereas these specified technologies will be demonstrably proven technologies, their implementation must be confirmed though not their individual contribution to the emission reductions. Due diligence was applied in consideration of the module's definition of the project starting date which was found to be satisfactory. (See below boxes regarding "Activities / Technologies" and "Project Start date Determination", respectively.)

Activities/Technologies:

The VCS guidelines do not require to separately determining for each of the separately undertaken activities deliver substantive reductions. Rather the requirement is that the substantive reductions are to be achieved via the specifications of the Performance Benchmark (PB). VCS guidance requires that activities be specifically identified: in the performance meth committee, it was clear that a "black box" was not sufficient – activities need to be identified and implemented. But not a performance analysis for each one. The stakeholder process is the means to determining these PB levels not separate levels of technology performance:

"The objective of the expert consultation is to ensure that the level of the performance benchmark metric provides both environmental integrity and sufficient financial incentive to potential projects. ... **The purpose of the expert consultation is to provide input on the appropriateness of the level of the performance benchmark metric."**

Thus substantial performance improvement – which is assured by the performance metric itself – does not require detailed descriptions of the activities or their separate performance.

The VCS guidance recognizes that a performance metric may not and need not even itemize the individual contributions towards such performances from individual technologies (which would require submetering in this case). **" *while a good understanding of the technologies or measures that are available for improving performance in the sector improving performance in the sector is useful, a detailed description of these is not necessarily required"*** Indeed, VCS provides that a methodology can provide examples of activities rather than explicitly identifying required activities: (note use of term "such as") so that methodologies would provide "***examples of such technologies or measures where it is not possible to be explicit about the precise technologies or measures that projects may actually implement"*** Since it is possible to just provide examples of potential technologies, their performance cannot again be a prerequisite.

The onus is to identify technologies as implemented as the sole onus: "***demonstrate that it has implemented some form of technology and/or measure. Note that the project proponent's***

motivation in implementing the technologies and/or measures is not a consideration. Rather, it "***just needs to be established that implementation has occurred."*** This methodology moves beyond this level to require that several activities have been interview from among a list of those demonstrated to have been adopted by campuses delivering at the PB performance level. (See App 5) (Note that, in this context (4.2), the module's use of language "has been employed" is recognized as clearly meaning that the activities have been implemented (per VCS discussion).)

The list of activities is inclusive (via an open list) since it is well recognized that EE performance depends upon the compounding benefits that EE activities deliver. Since the EE benefits compound, it would be inappropriate to exclude any of these activities as not contributing towards substantial performance improvement achieved per the PB performance levels attained. Furthermore every activity has been documented as implemented by colleges achieving substantial performance improvements through an analysis of the outstanding campus performer's Climate Action Plans and the LEED buildings' activities undertaken to reach high LEED performance levels. .

Project Start Date Determination:

The VVB's have discretion to confirm (whether using performance or project methodologies) an appropriate start date for projects. Since (in all these cases) the date is not one fixed entity (e.g. spade breaks ground) but can cover a range over which projects are implemented (e.g. phase I, II, III or as systems are deployed across a million homes (CFLs) or all campus buildings), VCS has already tasked VVBs with confirming appropriate project start dates in all project validations. This same discretion will therefore be applied in this methodology.

VCS defines project start date is "the date on which the project began generating GHG emission reductions or removals". The start dates used in the methodology is the commencement of an ACUPCC GHG reporting period – which is the time when the project's GHG emission reductions begin. VVB's consider this a sensible anchor point. This is particularly sensible for a performance methodology since there will typically be more than one activity (per our applicability conditions) – consistent with the purpose of a performance meth which is to establish BBAU performance without reference to a single, exclusive technology. Thus since there will be activities each of which have may a different implementation timeline, the beginning of the ACUPCC reporting period in which the substantial GHG reductions arise is a sensible project start date.

This approach has several other benefits:

- it provides consistency with the ACUPCC public reporting, promoting transparency and integrity

- it is consistent with the basis upon which the PB metrics were derived – which was based on annual change in emissions between AUPCCC reporting years

- as the date when GHG reductions are first visible it nonetheless enables some activity implementation window to have begun such that reductions in project year 1 have comparable depth as the PB metrics, in the analysis, have achieved

- since this is also the date from which project year 1 begins, it ensures that all the credits issues from project start date onwards are additional. (Had some earlier date been randomly picked, there would have not yet been any assurance of additionality at that point in time since the PB would not have

been passed). Note again as above that additionality is not based on a project-based assessment but upon when the project has passed the PB performance benchmarks.

- it is conservative: to the extent (as with other VCS projects) that there has been some gradual "pre-implementation" of reductions, this will serve to make the baseline and ER's more conservative (smaller)

- stakeholders, whose role is to establish the PBs, supported this approach per VCS guidanceThe module does not stipulate the "first date" of the fiscal or calendar year of ACUPCC reporting because a) in order to be consistent with ACUPCC guidance, which allows campuses to report 12 continuous months' GHG data which ACUPCC does not necessarily stipulate to be fiscal or calendar years; and

b) campuses may have good reasons to not put forward the beginning of a fiscal or calendar year as the start of their project year 1 reporting (e.g., if they seek to meet a GHG goal specified for a particular date which does not coincide with the beginning of their ACUPCC reporting schedule and do not want to start selling credits prior to that date to avoid double counting).

Specifically, the applicability conditions for the LEED module relative to pathways NC, EB-A and EB-B are well founded. The inclusion of the previously implied logic regarding EB-B has now been referenced explicitly such that LEED EB projects which would not have been eligible for LEED certification during the baseline period select EB-A: those with LEED certifiable baselines select EB-B. The EB-A and EB-B pathways are thus mutually exclusive. The upgrades in the references to the use of the EPA TF tool are clear with comprehensive directions now provided in Appendix 2B relative to the building categories selected. (See observations17, 18, 24, 25, 26, 28)

The applicability conditions mentioned in the methodology and module are therefore found to be appropriate for the methodology context.

Hence the team confirms that the applicability conditions of the methodology and frameworks are sufficient to establish whether the methodology could be applied to a proposed project activity.

3.2 Project Boundary

The project boundary requirements for the methodology are described in section 5 of the each module.

Campus-Wide Module:

As per this module, the project boundary and included sources, sinks and reservoirs are described on p. 17-21. The SSR are defined to be consistent with those used to report to the third party GHG reporting entity (e.g. ACUPCC, STARS etc). The campus module includes both stationary combustion and scope 2 electricity

emissions[1] in the project boundary but emission reductions can be claimed optionally in either scope1 and/or scope 2. A table outlining the separate scope 1 and scope 2 emission sources not included under the broad VCS scope 1 and scope 2 designation has been added to the project boundary section to ensure a clear link between AUCPCC/user terminology and the broader GHG scope 1 & 2 terms In the project boundary section the term "scope 1" has been retained; in the module, consistent with the project boundary delineations (focused on stationary combustion and scope 2 electricity reductions) and user requests, the ACUPCC used terminology (see footnote) has been used in other sections. Stationary 1 reductions, to be consistent with ACUPCC labelling, is now referenced as "stationary combustion" rather than "stationary 1 combustion".

Regarding the gases to be included in the project boundary, CO2 emissions from scope 1 stationary on-site energy generation/combustion systems and the CO2 emissions related to scope 2 electricity consumption are mandatorily to be included in the boundary for both in baseline and project condition. The module also provides the option to consider CH_4 and N_2O emissions from scope 1 stationary on-site energy generation/combustion systems and related to scope 2 electricity consumption. This is consistent with the reporting formats used by ACUPCC/STARS (See finding 19). The modules generally refer to CO_{2e}, campuses historical baseline and ER-calculation must be consistent in the choice of whether or not to apply CH_4 and N_2O.

For clarity's sake, the modules now refer to emissions in tons CO2e, since projects opting for CO2 logically are subsumed under CO2e (with notes added for clarity in the project boundary section)[2]. it is appropriate to give projects the choice for reporting CO2 and CO2e since a) the differences for energy-based projects is minimal (est'd at 0.1%) and ER is based on the difference between BE and PE, which, provided that are calculated on a consistent basis (both CO2 or both CO2e) is credible; b) there are CDM

[1] For definitions of "stationary combustion" and "scope 2 electricity emissions", please refer to the ACUPCC "Instructions for Submitting a Greenhouse Gas Report" (see http://rs.acupcc.org/instructions/ghg/). These definitions are correctly entered in the methodology modules. For consistency with the reporting guidelines and actual reporting data, it is preferable to apply these terms also in this context.

[2] Where emissions in the campus module earlier referred to CO2, they now refer to CO2e. Since the project boundary provides the option to report on CO2 only basis, CO2e is a satisfactory label (since CH4 and N2O are not required to be included). A note has been made to this effect in the SSR table in section 4 (e.g. *if you're reporting as CO2 rather than CO2e in this module then the emission references to CO2e below will not include methane and N2O.)*

precedents in JI for this approach, which is acceptable in a VCS system for performance methodologies which has a bottom up development process; c) ACUPCC allows campuses to report CO2 or CO2e so reporting guidance and provisions are consistent; d) ACUPCC reporting systems provide the needed calculations for CO2 and CH4 N2O emissions such that the latter do not need separate equations referenced (as agreed above for CO2) since module builds on ACUPCC reporting. VVB monitoring will be made (as below) against these reporting guidelines.

Both the emissions from stationary on-site combustion systems and the emissions related to scope 2 electricity consumption need to be quantified when applying test 1 of the additionality test, i.e. the campus' annual average change in the project's total GHG emissions must be equal to or less than zero as calculated over the additionality eligibility period. As a result, the project boundary, which incorporates both stationary combustion and scope 2 electricity emissions as described, is appropriate even when projects can elect to secure credits in either stationary 1 or scope 2 electricity reductions. Provisions are nonetheless made for project adjustments via $PE\Delta_y$ if stationary combustion or scope 2 electricity reductions are selected individually; this approach is therefore consistent with and sustains the project boundary selected.

LEED Certified building Module:

As per this module the project boundary is the same as the boundary definition applicable in the LEED NC or EB certification. If the GHG reductions from energy generation systems are located within the project boundary but provide services beyond the project certified building then their GHG's should be excluded from the project boundary. Similarly in the case where GHG from the installation of renewable energy systems within the LEED certified building project boundary, but its energy services or carbon reductions or renewable attributes have been sold to other third parties, then related GHG also should excluded from the project boundary. Both stationary combustion and scope 2 energy emissions are included in the project boundary, consistent with the LEED certification basis. The project boundary setting is therefore conservative and credible.

Regarding the gases to be included in the project boundary, all CO2, CH4 and N2O emissions from scope 1 stationary on-site energy generation/combustion systems and the CO2 emissions related to scope 2 energy consumption are mandatorily to be included in the boundary for both in baseline and project condition. The LEED module does not provides any optional gas to be considered in the project boundary. Since this is consistent with the CO2e reporting for GHG from the EPA Target Finder tool and LEED's energy systems, the boundaries set are appropriate. (See finding 19)The project boundary for both the Campus-wide and LEED certified building Module includes the emissions that are targeted by the measures/technologies

implemented on campus and that are within the control of a campus project proponent.

Hence TUVR concludes the project boundary defined in the methodology is appropriate, adequate and in compliance with the VCS Standard.

3.3 Procedure for Determining the Baseline Scenario

The Campus Clean Energy Efficiency Methodology framework refers to the modules for their respective baseline scenario. The modules provide definition of baseline scenario, procedures to identify the scenario and the baseline calculations separately.

The baseline scenario represents the conditions most likely to occur in the absence of the Project.

For campus-wide and LEED EB-A, the selected baseline scenario represents the historical emissions that occurred prior to the energy efficiency measures being implemented. As per the methodology, the selected baseline scenario needs to be adjusted with the business as usual (BAU) energy efficiency improvement factor of 1.3%/year to reflect BAU energy efficiency gains. Historical baselines are the most plausible scenario given the continuous improvements campuses make retrofitting and upgrading their campus energy systems. (See comments per 4.5.4 and comment 20, 21) The 1.3% BAU EE adjustments, with their reformulation to a geometric basis, ensure the baseline is conservative (see comments per 4.5.5 and observations 9, 10).

For LEED NC and EB-B the baseline comprises the scope 1 and 2 energy-based GHG emissions for a comparable building at the Energy Star 50 performance level, using EPA's Energy Star PM. Hence the baseline scenario identified would be the same as the average performance of similar buildings in the US. The reductions will thus reflect the substantial improvements made to reach the PB performance levels since the same percentile level (50^{th}) has been applied in the baseline scenario (ES50) and the minimum project performance requirements (>LEED 50^{th} percentile). (See comments per 4.5.4 and 4.3.4 and observations 20, 21).

Stakeholder consultations also supported the baselines adopted in both modules (see comments per 4.1.7).

The baseline scenario of each module are described below.

Campus-wide module:

As per this module, the baseline period minimum of 3 year and maximum of up to 5 years (to be decided based on the data availability) which also includes the project year 0 as one of the baseline year. This is conventional best practice for historical baseline setting (see comment 9). At least one of the baseline years should have

been reported via an ACUPCC/STARS or any credible third party GHG public reporting period. The baseline year data should be in consistent with the ACUPCC/STARS or any third party GHG public reporting data[3]. This supports the integrity of the baseline by ensuring that it is established is based upon the same transparent peer-reviewed data that the campuses report publicly. The selected baseline period for stationary combustion reduction and scope 2 electricity reductions do not need to be same if both the credits are sought separately: further notations were applied to confirm that the campus-wide module is to be applied separately for each source of credits sought. (See comment 6)

The module also provides (in appendix 3), the baseline adjustment calculation if the campus area declines or increases by more than 5% during the baseline year. This ensures that the baseline is developed on a conservative basis. (See comment 3)

LEED Certified Buildings Module:

For new construction (NC), the baseline comprises the scope 1 and 2 energy-based GHG emissions for a comparable building at the Energy Star 50 (ES 50) performance level, as determined by using EPA's Portfolio Manager Target Finder tool (which ensures comparable region, size, occupancy, weather and other salient factors). Regulatory codes referenced are as defined in the LEED NC certification system for the building's region (as referenced in the module).

For Existing Building (EB-B) category, the baseline comprises the scope 1 and 2 energy-based GHG emissions for a comparable building at the Energy Star 50 performance level, as determined by using EPA's Portfolio Manager (which ensures comparable region, size, occupancy, weather and other salient factors).

As supported through the stakeholder consultation process, these baselines reflect the conditions most likely to occur in the absence of the project. The use of the EPA TF tool for CO2 calculation purposes ensures that appropriate baseline adjustments are taken into account credibly.

[3] Since the campus-wide baseline is based on historical emissions, it does not need justification under 4.5.6. Emissions will be verified under monitoring procedures by VVB's as further incorporated in the module for clarity. The eligibility of ACUPCC data to create the performance benchmarks is referenced in Additionality section below and appendix A.

For Existing building (EB-A) category, the baseline scenario comprises the project building's historical scope 1 and 2 energy based GHG emissions prior to project start date. Similar to the campus module, best practices approaches are used to specify the baseline: the EB-A will use a baseline averaged over at least three of the last five years emissions based on the data availability. The CO2 emissions for the baseline will be determined using EPA's Portfolio Manager Target Finder tool on a repeat basis (again ensuring comparable region, size, occupancy, weather and other factors are considered). This baseline is follows the same requirements as the LEED pilot credit-67 documentation (discussions with USGBC VP R&D confirmed that no contiguous three year period was required (as used in pilot credit 67)): a s a result, this EB route could draw upon historical baseline data which would not be available for EB-B buildings. It is noted that consistency for the EB-A baseline with credit 67's approach does not imply that credit 67 is a *required* applicability condition as the module's reference in the Applicability Conditions section makes clear by its use of the term "preferably" which does not confer a mandatory requirement. Similarly, when the module references the option for higher education laboratories to use EPA/DoE's LAB 21 tool to establish the EUI's for EB-A, this is given as an option (not required): any use of such tool will be subject to VVB monitoring to ensure that it has been used appropriately consistent with the LAB 21 reporting procedures (see Monitoring section).

TUVR assessed that the defined baseline scenario and procedures and calculations are appropriate, adequate and in compliance with the VCS Standard.

3.4 Procedure for Demonstrating Additionality

The additionality eligibility tests are provided for each module separately. The modules provide two pre-tests which are to be conducted before the additionality test. The additionality test methods of each module are explained below:

3.4.1 Campus-wind module:

Pre-tests A & B:

The additionality pre-tests are provided whether stationary combustion and/or scope 2 electricity reductions are sought. The Regulatory Surplus test (renamed from the earlier "PreTest A") is to ensure that the project was not mandated or required by local state or federal law or regulation and the pre-test B (now referenced as the "Square Foot Variance Test") is to make corrections in the emission figures if the campus area declines or increases by more than 5% during the baseline period. These tests are appropriate and logically positioned.

Performance Tests:

Test 1 is to confirm that the project campus' annual average percentage change in the project's total GHG emissions comprising total stationary combustion plus scope 2 electricity based GHG emissions must be equal to or less than zero as calculated over the additionality eligibility period relative to project year 1 emissions. This test imposes further constraints and performance requirements upon a campus than Test 2 would achieve on a stand-alone basis, strengthening the beyond business as usual performance requirements; it is also consistent with the project boundary definition.

The test 2E & 2S are to confirm that the campus' annual average percentage reduction in stationary combustion GHG emissions and/or Scope 2 must be equal to or greater than their respective performance benchmark PBS_c and PBE_c respectively .

The additionality eligibility period can be selected between 1 to 5 years. The methodology stipulates that the additionality eligibility period should preferably be at least two years due to the averaging effect that a longer additionality eligibility period has, thus addressing possible weather effects (since the percent reduction per year in GHG emissions is calculated over longer periods of time). (Note that Eq 3 now includes S1TP in denominator for averaging purposes.) This is a cogent approach since (similar to the baseline calculations) longer periods over which the average percentage reduction is calculated are preferable (to take account of weather variances). However, if a single year comprises the additionality eligibility period, weather adjustments must be made to the emissions data: the performance test 1B, 2S-B and 2E-B are provided for this purpose. (See observations 3, 4,5,6,7,8,27,28) The flexibility provided in the selection of the additionality eligibility period is well suited to reflect the period of time over which beyond business as usual measures were selected and implemented by campuses; the additionality eligibility period selected must nonetheless be validated by VVB.
This is consistent with the discussion of project start dates as referenced in section 3.1 above.

There is a clear hierarchy for weather adjustment procedures, now reinforced for clarity in a table in this section of the module, such that establishing the additionality eligibility period does not facilitate gaming. This hierarchy logic establishes that: a) firstly, projects must assess (test 2A) PBS/PBE across a 2-5 year additionality eligibility period; here there is no adjustment of individual emission terms – rather weather fluctuations are addressed through averaging the % reduction projects achieve of the period; b) if test 2A fails, then project must test PBS/PBE in a 1 year additionality eligibility period, in which it is compulsory that weather adjusted terms must be used (per test 2B); c) since the Test 2B equations are of first order approximation only, if a project fails Test 2B, it is only fair that additionality can then be assessed via Appendix 6 regression analysis only for a one year additionality eligibility period: this is left to the last rung in the hierarchy due to its expense and complexity. Thus the hierarchy for establishing the additionality eligibility period is clear and unambiguous

There thus are no inappropriate incentives towards selecting a shorter rather than longer additionality eligibility periods: since the campus module performance tests comprises not only Test 2 but also Test 1 (where absolute reductions in stationary combustion plus scope 2 electricity emissions must be achieved relative to project year 1), projects will only considered additional if both tests are passed. From reviews of a dozen pilot projects, it is unusual for projects – even those delivering at the top 15% of PBS/PBE reduction levels, to pass test 1 in every year; typically projects are additional in only 1 or two out of the total 5 years in which additionality can be evaluated. Furthermore, the way in which EE measures compound their GHG reduction benefits does not result in a simple straight-line improvement in reductions secured (as conceived in the simplified VCS "thought experiment"). Thus, although it might at first be thought that, under a simple math model, there would be an incentive towards shorter additionality eligibility periods, (due to the number of years featuring in the denominator) (countering the instruction towards selecting longer periods), the pilot projects confirm that eligible periods do not follow this logic. Furthermore, the hierarchy instructing the selection of the additionality eligibility period is clear and unambiguous so no gaming is possible: longer periods must be selected if passed.

It should be noted that there is indeed equivalency between the weather adjustment approaches. The performance benchmarks assess whether the GHG reduction achieves a specified annual average percentage reduction: given the weather variance that arise, (say 6% between project year 1 and first year of additionality eligibility period), this would impact the project's annual percent reduction with a similar variance. Thus, if such a variance arises over a single year's additionality period, it would best be addressed through adjustment of emission terms since the variance could be beyond materiality thresholds. However, the averaging process that takes place in equations 3, 8 and 10, for eligibility periods of 2-5 years, reduces such a variance to 1% (for 5 years) and 3% (for 2 years), well below de minimis thresholds. Thus the approach taken for additionality eligibility periods of 2-5 years in length is sound. The assessment team has confirmed this also by investigating pilot case study reviews from fall 2012 for doctoral colleges. Analysis of the data (e.g. /P36/) indicates a variance within less than 5%, i.e. materiality thresholds for the normalized emissions from stationary combustion over a period of 11 years. Further evaluation of ACUPCC data /P37/ for periods of 2-6 years yields similar results. The assessment team therefore concludes that the duration of eligibility period (1 year vs. 2-5 years) is not having a material effect on the validity of results.

Regarding the question as to whether other natural fluctuations could occur on campuses (e.g., changes in head-count) to enable campuses to qualify unduly against the performance benchmarks, the assessment team confirmed that these questions were given careful consideration (consistent with Appendix 5 and the stakeholder reviews) and integrated into the modules. In particular, whereas campuses are typically growing, in the instance when campuses might serve

fewer students, this is addressed by means of the square foot variance procedures specified. It is recognized that the number of students served broadly correlates to the size of the campus. The module therefore addresses square foot variance, especially declines, via the Square Foot Variance Test and Appendix 3. Particularly careful consideration is given to circumstances in which campuses were able to deliver the same level of service per capita while decreasing physical footprint, since this is a particularly demanding sustainability goal that the most aggressive campuses set for themselves. Thus appendix 3 allows for campuses to not adjust for square foot declines if the services delivered to students (as measured in CO_2 per capita) has remained constant or declined. Thus other material fluctuations have been carefully integrated into the module algorithms. Other factors that could possibly cause material fluctuations are not considered plausible.

The module's application of the EPA TF tool has been updated to reflect changes EPA made in the July 2013 update publication of its tool. The categories that LEED buildings use has been reviewed and endorsed by LEED's expert R&D group. The use of the "office" category for "higher education" buildings and laboratories was considered by LEED experts as the most appropriate category to use: for laboratories this is especially conservative, since typical EUI's can range at >400 BTU/ft^2 whereas the office category designation (of 200 BTU/ft^2) creates a very conservative baseline. Clarifications have been also made to ensure that it is clear that a) the EB-A baseline does not need to have three contiguous years' data, following discussions with USGBC; b) use of the GBIG portion is optional and its use does not affect project eligibility (the tool merely allows LEED projects to group more easily to facilitate credit sales for very small projects); c) use of LAB 21 to derive higher ed labs' EUI for EB-A is optional, not required; d) while the PB has been design to be consistent with LEED's credit 67, a project's use of credit 67 for EB-A not required by is only optional; e) the source of the regulatory code for NC is found in the LEED certification documents. The application of the EB-A performance benchmark (20% improvement in a single year) was, according to records /P11/, supported by LEED's expert R&D group; this is consistent with EPA's definition of the percentage improvements for which they award an Energy Star Partner designation; regardless, this performance benchmark also reflects the consensus stakeholder agreement regarding the appropriate performance benchmark for the EB-A category which, consistent with VCS requirements regarding how to establish a performance benchmark, is determinative.

Modules have also now included provisions such that the project performance corresponding to the meeting the "at minimum" eligibility threshold in year 1 to pass the Performance Benchmark testing have now been specified for project years 2 through 10 and projects are required to meet this level each year in order for credits to be issued in that year. To be clear: this does not require that the PB be met every year repeatedly (e.g. 20% improvement also occur between year 1 and 2; 2 and 3 etc). But that the at-minimum level of performance required to pass the PB (e.g. 20% improvement in EUI over project year 0 performance) then form the on-going performance threshold needed for crediting in each subsequent year. It should be noted that for Test 1 (equation 3), the PE adjustments in section 8

sustain the at-minimum requirements that Test 1 initiated in project year one. The intent for this is obviously to avoid displacement between stationary combustion and scope 2 electricity emissions.
The performance tests were established using credible, applicable data sources (ACUPCC), segmented by Carnegie category (well stratified), with performance curve analysis that demonstrated, using a well argued logic, that the resulting campus performances would be comparable to the 85th percentile level of performance among an already "elite" group of campuses (ACUPCC members); in ways that were endorsed through the stakeholder consultation process and several pilot project applications. The ACUPCC data is a satisfactory secondary source under VCS 4.5.6 guidance given ACUPCC's independent status and group peer-review processes (see Appendix A).

It should be noted, however, regarding the monitoring of campus data for ER calculation purposes (which data relates to campus reports/certification documents that apply to ACUPCC): the modules' monitoring plan have now included provisions to ensure that projects supply requested primary data documentation if needed to enable VVB to assure that the data entered into the calculators reflects accurate submissions consistent with ACUPCC reporting guidance (and consistent with standard VVB validation best practices). Thus, the monitoring plan under data sources now provides, via example, further details on the primary data to be collected by campuses and used as input to the ACUPCC calculation tool.

Furthermore, the module references specific GHG reporting programs (i.e., ACUPCC, STARS and the Climate Registry) which meet the requirements under 4.1.7 of the VCS Standard specifying that, if a standard (and its default factors by incorporation) are to be used for project GHG reporting purposes, they must have been established consistent with 4.5.6. This implies that the standards and their default factors must have been peer reviewed when they were established, however, it does not mean that all GHG **data** reported in all circumstances using these standards must as well have been peer reviewed (which obviously no standard could possibly control by itself). In the context of a project under this module, reported data will be validated by the VVBs. ACUPCC, STARS and the Climate Registry developed their standards through rigorous peer review processes. Should projects seek to use another credible third party GHG reporting program, the VVB will need to ensure that it meets 4.1.7 (as now referenced in the module), consistent with the above logic.
The performance tests are therefore well founded; refinements in the module text have nonetheless been applied to ensure that the application of this approach is clear.

3.4.2 LEED Certified building module:

Pre-tests A:
The Regulatory Surplus Test :
The Regulatory Surplus Test is provided to ensure that the project was not mandated or required by local state or federal law or regulation.

Performance Tests:

A separate performance tests are provided for all NC, EB-A and EB-B to ensure that the project achieve expected level of performance.

The performance tests were established using credible, applicable data sources (LEED), segmented by category (well stratified) across both LEED building type (NC, EB), building sectors (higher ed, labs and k-12 schools) and applicable EPA TF sectors; with performance curve analysis that demonstrated, using a well argued logic, that the resulting building performances would be comparable to an 86th percentile level nationally (the LEED average); with extensive expert input from USGBC; in ways that were endorsed through the stakeholder consultation process and several demonstration project applications.

The basis for the EB-A 20% improvement as BBAU is derived from the US EPA Energy Star program which confirms that a very small portion of schools/colleges achieve more than a 20% improvement in EUI in a single year (circa 3% -- see Module Appendix 5). All such references, performance graphs etc are given in Appendix 5.

USGBC's LEED data is also satisfactory (establishing PB's in LEED module) since it is also an independent secondary source whose data is third party audited. The EPA Energy Star data (which is referenced in the LEED module's Appendix 5) for EB-A's 20% improvement is satisfactory since it is an independent secondary source provided by a government agency. All sources for establishing PB's thus meet requirements under 4.5.6 VCS guidance.

It should be noted, however, regarding the monitoring of campus data for ER calculation purposes (which data relates to campus reports/certification documents that apply to LEED/EPA ES): the modules' monitoring plan have now included provisions to ensure that projects supply requested primary data documentation if needed to enable VVB to assure that the data entered into the calculators reflects accurate submissions consistent with LEED/EPA TF reporting guidance (and consistent with standard VVB validation best practices). This documentation is not needed for LEED data that has already undergone third party LEED certification; although any EPA TF data not sourced from the LEED certification would also need such supporting documentation.. Thus, the monitoring plan under data sources now provides further details on the primary data to be collected by campuses and used as input to the ACUPCC calculation tool. There is no need include all parameters, but some examples will be provided. For LEED, information in the LEED certification are the primary data

Modules have also now included provisions such that the project performance corresponding to the meeting the "at minimum" eligibility threshold in year 1 to pass the PB testing have been specified and projects are required to meet this level each year in order for credits to be issued in that year. To be clear: this does

not require that the PB be met every year repeatedly (e.g. 20% improvement also occur between year 1 and 2; 2 and 3 etc). But that the at-minimum level of performance required to pass the PB (e.g. 20% improvement in EUI over project year 0 performance) then form the on-going performance threshold needed for crediting in each subsequent year.

As per TUVR assessment result, all the additionality tests provided ensure that only the project which are business as usual (BAU) will be considered as additional under this methodology. All performance benchmarks were developed on a stratified basis; using credible sources of historical data from which to derive their performance benchmarks (from ACUPCC/LEED); using transparent analysis via performance curves for each sector (see Appendix 5); establishing credible performance requirements comparable to the 85th percentile achievements for the sector (as referenced by UNFCCC); based upon expert input and in ways supported by the stakeholder consultation process (see Appendices 4 and 5). (See comments per 4.1.14, 4.1.17, 4.1.18, 4.5.5, 4,5,6 and observations 3, 4,5,6,7,8, 27, 28)

Hence TUVR concludes additionality demonstrations provided in the methodology are appropriate, adequate and in compliance with the VCS rules.

It should be noted that, since the stakeholder consultation process is central to the establishment of the performance benchmarks and baselines, that TUVR's review of the series of white papers used to develop the same; other stakeholder supporting materials; Chevrolet's Environmental Advisory board, USGBC and ACUPCC contributions; and the detailed description of the stakeholder process itself found in Appendix 5 confirm stakeholders' contributions and support for the methodology's approach and PB's adopted.

3.5 Baseline Emissions

The baseline emission calculation methods are provided in separately in the respective module.

For campus-wide and LEED EB-A, baseline emissions (BE) are determined based on historical emissions of the specific campus or LEED certified building (average annual emissions determined based on actual emissions during the 3-5 years prior to project year 1). For NC and EB-B buildings in Campus Clean Energy Efficiency LEED Certified Buildings Module the baseline calculations use the CO_2 emissions from ENERGY STAR 50 rated comparable buildings.

Considering the business as usual (BAU) improvement in US campus, the baseline emissions are for both modules adjusted by a business as usual (BAU) energy efficiency improvement factor of 1.3%/year to reflect BAU energy efficiency gains. Refinements to these calculations have now been made to discount the baseline on a geometrically compounding basis. (See comments per 4.5.5 and observations 9, 10, 31)

Baseline emissions calculations method in campus module consist of the stationary combustion emissions and scope 2 electricity-based emissions consistent with the source of credits sought and credible third party reporting via ACUPCC/STARs. For the LEED module, baseline emissions are calculated using the EPA PM tool using specific building information including square footage, occupancy, computers, and percent of the building heated/cooled. Both emission calculation approaches are appropriate for project crediting purposes.

Both the baseline emission calculation methods provide clear and transparent equations for the calculation the baseline emission with conservative assumptions and adjustments for variances which are verified and found to be correct. (See comments per 4.5.5, 4.1.18)

Hence TUVR assessed that the calculation of baseline emissions are appropriate, adequate and in compliance with the VCS Standard

3.6 Project Emissions

The project emission calculation methods for each module are provided separately.

For campus module, the project emissions calculation method provided for both stationary combustion emissions and scope 2 electricity-based emissions. For the LEED module, project emissions are calculated using the EPA PM tool using specific building information including energy data and square footage, occupancy, computers, and percent of the building heated/cooled.

For campus-wide, projects may select stationary combustion and/or scope 2 electricity reductions for crediting purposes, depending upon where the campus has achieved beyond business as usual performance. This approach is cogent since performance methodologies are design to not be overly prescriptive regarding how emission reductions are achieved but rather ensure that a beyond business as usual level of GHG reduction performance has been achieved. Given this flexibility, the methodology nonetheless puts in place provisions to ensure that estimated reductions are conservative. Thus should emissions increase between stationary combustion emissions and scope 2 electricity-based emissions as a result of Adjustment Technologies, the project emissions are adjusted via $PE\Delta_y$ The revised language applied to address these emission adjustments is sound and avoid potential confusion with project leakage; furthermore, the threshold under pathway b) has now been further constrained to 5%, consistent with WRI de minimis parameters. Changes in terminology (removing references to “internal leakage”) have been made to avoid confusion with project leakage. Thus, should stationary combustion emission technologies (Adjustment Technologies) result in increases in scope 2 electricity-based emissions (or vica versa), the project emissions are now

adjusted by using conservative adjustment factors ($PE\Delta_y$) and appropriate terminology and calculation methods. (See observations 11, 12, 13, 14)

With regard to square foot adjustments during the project period, thus impacting PE calculations, the module has a clear, well founded approach to all square foot adjustments. Namely that adjustments for sq ft take place via Appendix 3 during the baseline period (whether sq ft is declining or growing more than 5%). During the project period, declining sq ft is addressed via PSQFT term in section 8 equation 1. Currently sq ft growth during the project period is not incorporated since it is clear that this is conservative: any sq ft increases would increase PE, thus reducing ER. However, it is also recognized that, given the application of performance benchmark parameters in project years 2- 10, the module will make sq ft adjustments made during the project period for PB testing in project years 2 – 10 in order to not unduly penalize campuses for growing when they are seeking to confirm that the "at minimum" PB thresholds required to be additional in year 1 have continued to be met in subsequent years.

With regard to the provisions for "new site" area adjustments in section 4, project boundary, the specific conditions, stated in the module, under which these "new site" adjustments are allowable; some textual refinements are now included for clarity to make the applicability conditions at the beginning of these paragraphs.

The project emission calculation methods therefore provide clear and transparent equations for the calculation the project emission with conservative assumptions and adjustment mechanisms which are verified and found to be correct. (See comments per 4.1.18 and observations 11, 12, 13, 14)

TUVR assessed that the procedures and calculations for the determination of project emissions are appropriate, adequate and in compliance with the VCS Standard.

3.7 Leakage

The measures implemented under this methodology are not expected to result in leakage in terms of changes of anthropogenic emissions by GHG sources that occur outside the project boundary. (See comment 22.) Hence the leakage is considered as de minimis for this methodology.

> TUVR concludes that the procedures and calculations for the determination of the net GHG emissions reductions are appropriate, adequate and in compliance with the VCS Standard.

3.8 Quantification of Net GHG Emission Reductions and/or Removals

Calculation method of emissions reductions provided in the methodology is verified and found to be correct, conservative and appropriate for the methodology context.

For square foot declines during the project period, an adjustment calculation has been provided that is found to be credible. (See comment 25) The revised formula for Equation 1 (addressing $PE\Delta_y$) is also satisfactory.

Hence TUVR concludes that the emission reduction calculation provided in the methodology is appropriate, adequate and in compliance with the VCS Standard.

TUVR concludes that the procedures and calculations for the determination of the net GHG emissions reductions are appropriate, adequate and in compliance with the VCS Standard.

3.9 Monitoring

All parameters required to monitor the data needed to determine the baseline and to monitor the emission reductions are listed in the methodology, together with appropriate instructions for measurement and QA/QC procedures.

The strength of the monitoring systems is reinforced by the fact that it builds upon the sound foundations of project data which have already been public reported, peer reviewed (for ACUPCC) and (for LEED) undergone third party certification. Data quality assurance procedures thus benefit from these supporting reporting frameworks.

Refinements in the monitoring parameters and systems (e.g. adding precision alongside confidence levels) were made. (See comment 16, 32)

Provisions have been entered into the module (in the monitoring section) reflecting the fact that, relative to the parameters involved in ACUPCC reporting re data inputs, the VVB would:

a) review the project's data entries to ensure that the reporting procedures followed by campus in making the ACUPCC CO2 calculations are consistent with those required under ACUPCC reporting guidelines

b) have access to supporting documentation for review that the VVB can inspect relative to the input data used to make the ACUPCC CO2 calculations (e.g. fuel inputs, emission factors, contextual data) to ensure that the information entered into calculator conforms to the ACUPCC guidance

The module's monitoring section now provides further clarity by also giveing examples of the parameters that ACUPCC reporting typically relies upon: these parameters are not, however, given their own "parameter boxes" within

the module because this would i) duplicate AUCPCC system ii) risk becoming out of date with AUCPCC definitions iii) has already been specified by ACUPCC.

In campus wide parameters boxes for those variables already specified, references have been made in order to a) confirm the source of the data (e.g. for BE or PEy via ACUPCC reports) would be the CO2 results from ACUPCC calculations; b) any associated inputs that ACUPCC would require to calculate these emissions would again need to be available for review by VVB's based on suitable primary documentation that campuses would supply (see above), consistent with ACUPCC guidance

For the LEED module: references have been made in order to specify whether data is to be sourced a) from LEED certification docs or b) EPATF results or c) (optionally for EB_A) LAB 21. If b) or c), module refinements now make clear (per monitoring section) that the project results would need to have available the primary documentation that campuses relied upon for this data input, consistent with EPATF/LAB 21 definitions. If the relevant data comprises energy calculations for project years subsequent to year 1, module refinements again make clear that they will be calculated on a comparable basis to that used for the original LEED certification energy calculations (thus docking year 1 energy data to subsequent years, calculated on a comparable basis). Since the module will rely on LEED's calculation protocols, against which the VVB's will make assessments to ensure proper calculations have been made, there does not need to be a reference back to define again all the LEED parameters for energy calculations again. In the monitoring section, for any contextual data (e.g. occupancy, sq ft) which did not feature in the original LEED documentation, the VVB would expect to see primary data documentation consistent with EPA TF/LAB 21 definitions to ensure that data entered is appropriate.

The monitoring section for the LEED module now also makes clear the source of the data to be used via via new refinements as follows:

1. The module clearly indicates whether/when the energy inputs are from metered/estimated or LEED certification document sources
2. Any occupancy or contextual terms referenced rely upon definitions used by EPA TF in their tool – and thus again are subject to VVB review to ensure that primary documentation would be available relative to those terms to ensure data was entered accordingly (noting that for some of these terms, the parameters could have been referenced in the LEED certification docs)

3. In reliance upon the EPA TF definitions and protocols (or for EB-A higher ed labs, optionally the LAB 21 EUI calculations), the module has not created new parameter boxes for these contextual terms. VVB review practices will be referenced as above

The Assessment team therefore concludes that the methodology procedures for project monitoring are appropriate, adequate and in compliance with the VCS Standard.

3.10 Data and Parameters

The specification for monitored and not monitored data and parameters were found to be appropriate, adequate and in compliance with the VCS rules.

Consistent with the refinements referenced in the Monitoring section above, further clarifications have been made in applicable parameter boxes in the modules regarding the sources of data needed consistent with the VVB verification procedures referenced in 3.9

Data and parameters to be used for additionality and baseline determination are consistent with those necessary for the respective reporting / certification schemes. Campus-wide data is public and subject to peer-review scrutiny. With respect to the LEED module, they are also independently verified by independent 3rd party assessment. Similarly, parameters required for monitoring and ER calculation are complete and can reliably be determined.

Minor refinements in the module texts now provided for clarity have also been reflected in the data parameter descriptions provided in section 9.

The VCS data requirements relating to performance methodologies are also satisfactory (see comments in 4.5.6).

TUVR concludes that the methodology adheres to the VCS project principles and are appropriate, adequate and in compliance with the VCS Standard.

3.11 Use of Tools/Modules

Since the methodology is applicable for two different contexts ie, applied campus-wide to all campus buildings and applied individually to LEED certified buildings, the methodological requirements are described separately in the following two modules.

- Campus Clean Energy Efficiency Campus-Wide Module
- Campus Clean Energy Efficiency LEED Certified Buildings Module

The modules references are correctly made in the methodology framework sections and found to be easily traceable.

TUVR assessed that the defined applicability conditions of both the modules are appropriate, adequate and in compliance with the VCS Standard.

3.12 Adherence to the Project Principles of the VCS Program

The methodology satisfies VCS principles of relevance, completeness, consistency, accuracy, transparency and conservativeness, In particular with respect to conservativeness of ER calculations, adjustment factors have been made on several fronts. Transparency relating to the establishment and analysis supporting the performance benchmarks is sound. Relevance is established via the current limitation of the geographical scope to only the US which ensures that sufficient data for a conservative baseline determination is made. Completeness of procedures, alongside consistent, accurate algorithms will also ensure that application of the methodology will result in emission reductions that are real.

TUVR concludes that the methodology adheres to the VCS project principles and are appropriate, adequate and in compliance with the VCS Standard.

3.13 Relationship to Approved or Pending Methodologies

There are no pending methodologies that would serve the same purpose.

3.14 Stakeholder Comments

No stakeholder comments were received through the VCS public stakeholder process which closed on 21-May-2013.

4 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Please refer Appendix A for the resolution corrective action request (CAR) and clarification request (CL).

5 ASSESSMENT CONCLUSION

The assessment was performed on the basis of VCS criteria for methodology development. The methodology was prepared based on the requirements of the

- VCS Standard V.3.3, 4 October 2012
- Validation and verification standard, version 3.3, 4 October 2012
- VCS Program Guide V. 3.4, 4 October 2012
- VCS Program Definitions V. 3.4, 4 October 2012,
- VCS Guidance for Standardized Methods V. 3.2, 4 October 2012, and
- VCS Methodology Approval Process V3.4, 4 October 2012

From the assessment of the validation team the DOE concludes that the proposed VCS Methodology "Campus Clean Energy Efficiency" (version 1.3, Septmeber 5 2013) meets all relevant requirements of the VCS. The Corrective Action Requests listed in Appendix A could be closed satisfactorily with minor modifications to the methodology, which is considered robust and suitable to develop GHG projects meeting the VCSA requirements.

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6 REPORT RECONCILIATION

First assessor – State whether the revisions made to the methodology element during second assessment are approved, and state the version and issuance date of the methodology element that is receiving this approval (ie, the version of the methodology that was produced during second assessment). This section shall be left blank in the draft first assessment report.

Second assessor – Detail any and all revisions to this report that were required to reconcile with the first assessment report.

7 EVIDENCE OF FULFILMENT OF VVB ELIGIBILITY REQUIREMENTS

TÜV Rheinland (China) Ltd (TUVR) is an accredited Designated Operational Entity for the CDM, accredited for sectoral scopes 1-15, and thus an eligible validation/verification body under the VCS program for the sectoral Scopes 1 and 3 applicable to this assessment of the new methodology, Campus Clean Energy Efficiency. TUVR has completed more than 200 CDM validations in sectoral scope 1 in the period July 2011 to June 2012 and more than 10 CDM validations in sectoral scope 3.

8 SIGNATURE

Signed for and on behalf of:

Name of entity: TÜV Rheinland (China) Ltd

Signature: _____

Name of signatory: Henri Phan 

Date: _____

Appendix-A

No.	CAR CL		Observation (CAR/CL)	Summary of project owner response	Validation team conclusion
1.	01		Section 2: The percentage of annual average change of Baccalaureate and Masters in scope-2 electricity PBS_c is not consistent with the values mentioned in the methodology framework document	Editorial error has been corrected in Section 2 of Campus-wide Module	Closed: Amendment has been confirmed
2.	02		Section 6: It is mentioned that for estimating baseline for the square foot variation cases, the approach mentioned in VM0018 is followed. Kindly check whether it is correct or not.	Neither 008 or 0018 address sq ft variances. However, at stakeholders' recommendations, we follow WRI GHG Protocol for campuses which change from year to year either > 5%/yr or <0%/year. The earlier footnote is no longer applicable (since it references new vs existing areas which was used in an earlier version of Appendix 3 but has now been updated). So the footnote has also now been deleted to be consistent.	Closed: The footnote has been removed now.
3.	03		Section 7: In the pre-test B, it is mentioned that the square foot declines during the project period, adjustments will be	Per footnote 15, growth >5%/year during project period is conservatively set aside (and no adjustments made) since Co2	Closed: Argument is accepted

			made to emission reduction calculations. Clarify the approach to be followed if the square foot increase during project period.	reductions will still be conservative based on calculations as they stand. Only sq ft growth >5% during baseline period is addressed to make sure that the baseline is set up appropriately. Setting the baseline adjustment threshold at 5%/year is conservative also since GHG reductions of up to 5% could arise but not be counted if sq ft was growing this fast. For declines in square footage, however, where credits could erroneously be earned as a result of reduction in campus size, this consideration is addressed during both baseline period and the project period.	
4.	04		Section 7: In the performance benchmark tests, specify the project year to which the additionality eligibility period emission will be compared.	Project year 1 The text has been amended to provide this clarity	Closed: Amendment has been confirmed
5.	05		Section 7:	Over the periods covered,	Closed:

			Clarify how the equation provided for Pre-test B (equation 2B) is appropriate to address the annual average percentage change.	differences in simple and geometric percent changes are minimal. WRI specifies 5% as their de minimis threshold without requiring its application on simple or geometric basis. So it is appropriate to use the arithmetic algorithm here. It is also consistent with the arithmetic algorithm we use to derive the PB's (See below)	Argument is accepted.
6.	06		Section 7: The emission reduction calculation baseline year for the stat 1 and scope 2-electricity can be different. Hence two different notation is used (ie, for stat 1 (S1 TP) & scope 2 (E2TP)). However for the additionality baseline years a common notation is used (ie, B) in equation 2.B Please clarify the additionality baseline year for both stat 1 and scope 2-electricity should be same for any project case.	Stationary combustion and scope 2 reductions are treated as separate projects. There is no obligation to bring both through for certification. Activities undertaken on campus to reduce Stationary combustion on site generation emissions may well follow a different timelines/sequence than those for EE in scope 2 electricity emissions. There is no a priori reason to therefore constrain baseline or eligibility periods to be the same. The additionality eligibility period reflects the timeline under which	Closed: Argument is accepted. Also clarification is included in the methodology.

				aggressive GHG were delivered in recent years. The baseline needs to reflect a longer-term threshold from which reductions were achieved. Thus if one were to compare the Stationary combustion project and a scope 2 electricity project, arising on the same campus, there would be no reason why the baseline period (B) for each would need to be the same (provided is met the 3-5 year period requirements); similarly the additionality eligibility period for each (S1TP and E2TP) need also not be the same. We consider that the module will be applied twice if both Stationary combustion and scope 2 electricity credits are sought. So we did not introduce the complexity of two notations for the baseline period B. We have however included a footnote for clarity here and a comment baseline section too so	

				that it's clear that the baseline period need not be the same if both credits are sought.	
7.		07	As per the equation 5 the factor HDDCFb will reflect the actual of the year 1. But this is not an average factor that can be applied for any year. So the weather effects are not averaged out. Please clarify how this is appropriate	The averaging of weather impacts takes place in Test A versions by averaging the annual GHG reduction rate achieved over 2-5 years. This HDDCFb factor only applies if a 1 year additionality eligibility period is selected. The formula used exactly matches that used as precedent in VM 008. It is the ratio between the year 1 HDD and the prior baseline year's HDD (here project year 0). Given lessons arising from pilot projects, we found that this algorithm, although approved by VCS, is only first order approximate: so appendix 6 addresses a more refined regression method if more accuracy is needed beyond first order.	Closed: Argument is accepted
8.		08	It is mentioned that the Appendix 6 should be used for the weather	We have clarified the text to avoid any confusions:	Closed: Further clarification is include in the methodology

			adjustments if the Test 1B is not passed. The Test 1.B just provides weather calculation adjustment when the additionality eligibility year is 0. It does not produce any pass or fail results. So please explain how this sentence is applicable.	*Tests 1B provides a (simpler but) first order set of emissions figures which are then used to conduct additionality eligibility testing for incorporating weather adjustments; if the first order adjusted emissions figures do not result in Test 1B being passed, an alternative set of algorithms are provided in Appendix 6, based on regression analyses which are more fine-tuned, are used to establish weather adjusted emissions figures which may be substituted and used to qualify under Tests 1B.* This means that if the Test-1A based on the weather adjusted Eb=1 & Fb=1 (calculated in Test 1.B) fails, we cannot directly confirm the project is non – additional. So appendix 6 should be used to recalculate the adjusted Eb=1 & Fb=1 and these adjusted factors again used in test 1.B. In this case only after using Appendix 6, we can able to confirm if the project is non-additional.	

				We have included this further clarification as a footnote for VVB's	
9.		09	Section 8.1.1: As per foot note 5 in section 2, around 5% emission reduction is possible in many colleges in the baseline condition itself. Even 1.3% reduction in emission is considered as BAU However as per equation 12, the baseline emissions are averaged out for the emission reduction calculation. So please clarify how considering the average emission baseline year is conservative.	The baseline is indeed conservative already given that up to 5% reductions could arise via sq ft expansions without credits being allowed – particularly when the 1.3% discount for BAU EE gains is nonetheless applied. However the averaging of historical baselines is a very standard practice; cherry picking one year over another risks introducing other variances and doesn't accomplish the weather averaging and other benefits that the current approach secures. All stakeholder supported this conventional approach for historical baselines	Closed: Argument is accepted considering the common approach.
10.		10	Section 8.1.1: Equation 13 mentions the following formula for calculation of baseline emission for any year. $BE_y = BE * (1 + 0.013 * (y - 1))$ The emission reduction of 1.3% every	The equation has been updated in this campus module and the LEED module.	Closed: Amendment has been confirmed

			year compared to previous year will form as geometric progression (not arithmetic progression). Hence the equation is not appropriate.		
11.		11	Section 8.3.1: As per option b, if the size of the resulting scope 2 emission increases because Stationary combustion leakage activities and these increases are less than 10%, the leakage will be considered as zero. The 10% threshold for these leakage is a considerable emission. Please clarify how this can be neglected? Note 2013-09: Due to deliberations between VCS and the Methodology developer, the term "Leakage" is unfortunate in this context and therefore the methodology assumes the term "Adjustment Technology" instead.	Firstly, the terminology for internal leakage has now been changed: these adjustments are now referenced as $PE\Delta_y$ The threshold for de minimis emissions has now been adjusted to 5%, which is the WRI GHG default factor for de minimis considerations.	Closed: Amendment has been confirmed
12.		12	Section 8.3.1: Please clarify if the leakage emissions is more than 10% also, option c) or d) can be selected?	Firstly, the terminology for internal leakage has now been changed: these adjustments are now referenced as $PE\Delta_y$	Closed: Argument is accepted

				Option c) and d) can only be selected if the Stationary combustion technology is not expected to generate increases in net electricity based emissions of more than 10%, per the equation: this is the case for Stationary combustion technologies except CHP and geothermal, which are precluded from pursuing c) and d). Indeed, if the adjustment is more than 10% of the (BEy – PEy) then the c) test will fail. For all technologies, unless you pass a) or b) (where there would be no $PE\Delta_y$ adjustments since qualified under the other scope for credits or incremental emissions are considered by VVB as de minimis) then projects must select an approach from c) d) e) or f) . If the net emissions are higher (for CHP or geothermal) then projects cannot apply c) or d) avenues: these	

				routes are precluded. Projects must pick e) or f). For these technologies f) is hard to pass due to its constraints; so they will default to measuring the actual emissions for $PE\Delta_y$ which is e). This is the pathway which has already been proven to be applicable for pilot projects in geothermal.	
13.		13	Section 8.3.1: As per equation 15, the emission for every year in the crediting period needs to be calculated. After calculation if the leakage emissions are less than 10% then $PE\Delta_y$ leakage should be considered as zero. If the leakage emissions are monitored every year during the crediting period, the why cannot we use the same l$PE\Delta_y$eakage in the emission reduction calculation?	Again, the terminology for internal leakage has now been changed: these adjustments are now referenced as $PE\Delta_y$ This point relates to a concern re the expense and complexity of monitoring for actual incremental scope 2 electricity emissions. Routes c) and d) do not require actual electricity emissions increases (as an example for stat 1 $PE\Delta_y$) to be calculated in detail. If reasonable estimates can be made and it's clear that the increment is within the 10% threshold then the	Closed: Argument is accepted

				formula allows you to calculate $PE\Delta_y$ in terms of BE and PE figures which projects already have determined in the earlier GHG calculations. Thus the only time you'd need to calculate net electricity emission increases with considerable complexity as a basis to adjust your credits would be under e) and projects will have to do this if they can't show that $PE\Delta_y$ is within the 10% threshold (e.g. for CHP and geothermal).	
14.		14	The equation 16 is $\sum_{p=1}^{y} \Delta E_{p=y} \leq E_{b=1} - E_{p=1}$ If the condition fulfils then the leakage is zero. As per this equation, the leakage emission equivalent to year 1 scope 2 electricity emission reduction will be neglected during the crediting period. This seems to be very high.	Again, the terminology for internal leakage has now been changed: these adjustments are now referenced as $PE\Delta_y$ The concern here is that a year of emission reductions will be claimed. However, Eq 16 relates to scope 2 electricity emissions (and differences which they generate between project year 1 and the first baseline year) – not differences during the same period in the stat 1	Closed: Argument is accepted

				credits. Rather, the question being raised in the $PE\Delta_y$ calculations is whether there have been enough reductions in scope 2 electricity during an equivalent baseline period (in scope 2 emissions, not stat 1 where credits are sought) to offset any increase as electricity consumption goes up as the new Stationary combustion generation Adjustment technology is applied. So if the electricity ***savings*** have been large enough (ie declining steadily during the baseline period years) such that the increase in scope 2 electricity emissions due to the stat 1 techs during project year are STILL SMALLER taken cumulatively than the reductions achieved in scope 2 over the baseline period, then we can set aside the $PE\Delta_y$ as zero. This implies that to set aside the the increase in scope 2 emissions a campus must have delivered an absolute reduction over a 5-15 year	

				period – a considerable (and rare) feat, particularly given a) the rate of campus sq ft expansion during the project period which cannot be taken into account for ER calculation purposes (implying that a 5% reduction in GHG/year arising from sq ft expansions is not credited); and b) the very long time period over which ABOSLUTE reductions in scope 2 electricity CO2 emissions would need to have been secured and sustained. For example, let us say that a campus installed Stationary combustion technologies to earn ERy in Stationary combustion credits. During its first baseline year, it had emissions of *scope 2 electricity* based CO2 emissions of 100k tons; 5 years later in project year 1, its electricity based emissions were 90k tons. If the increase in electricity-based CO2 emissions due to the Stationary combustion technologies were 500	

				tons CO2 per year, the cumulative total by project year 10 would be 5k tons, bringing scope 2 electricity emissions in project year 10 to 95k tons. However it is clear that this 5k ton increase would still be less than the 10k tons decrease achieved in scope 2 electricity emissions during the baseline period; that is the total CO2 emissions due to electricity consumption in project year 10 (95k tons) would still be less in ABSOLUTE terms than the equivalent emissions in the first baseline year (100k tons), 15 years previously. Under such circumstances, it is reasonable to set the $PE\Delta_y$ CO2 adjustments for Stationary combustion technology's electricity consumption to zero.	
15.		15	Section 8.4: In the equation 26, square foot variation adjustment factor is calculated as below	If Eq 26 is triggered for project years y compared to y-1, then for subsequent project years after project year y, that is for project	Closed: Argument is accepted

			$PSQFT\Delta_y = 1 + \left(SQPE_y - SQPE_{y-1}\right) / SQPE_{y-1}$ Please clarify how this equation is appropriate for the variation with respect to any project as the square foot is compared with previous year but not with the baseline year.	year y+n, you need to use the second algorithm per Eq 27 ... which adjusts the CO2 credits in a similar way but indexed to the original square footage in year y-1 until the campus sq ft total recovers to the same size as it was in project year y-1	
16.		16	Section 9.3: In the sampling requirements mention both confidence level and precision level required.	Project levels have been set at 90% confidence, 10% precision levels in both modules	Closed: Amendment has been confirmed
	LEED certified Building Module				
17.	17		The usage of terminologies, language, framing of sentence shall be made more transparent for easy interpretation and easy audit by VVB's. Example: Under applicability, the selection criterion for Carbon reductions and ES performance levels are not very clear. For example it is mentioned that Carbon reductions and ES performance levels *preferably integrated to LEED*	See edits already made in both modules The reference to "preferably integrated into GIBG portal" has been addressed via the earlier comments; this is a new information web portal that USGBC is building to help projects report their data/reductions to potential purchasers in order to aggregate	Closed: Amendment has been confirmed

			GBIG integrated program. So as per VVB's understanding this is optional and not mandatory. Please clarify. In addition, it is mentioned in the same line that the *other salient EPA PM performance factors* will be considered in the determination of emission and ES performance based eligibility factor. Eligibility condition is not very clear on what is the other salient EPA PM performance factor. Please clarify.	projects. This does NOT affect project eligibility or performance or validation or verification. The use of this portal is therefore entirely discretionary and relates to ease of sale for credits. Other "salient PM performance factors' have been addressed in the edits made for specificity and clarity in the LEED module.	
18.	18		The applicability mentioned for Module II, EB-B mention only about exclusion of US higher education campus laboratories. No explanation is provided for what has been included to qualify applicability. Also please clarify the difference between Campus laboratory of EB-A and EB-B.	As addressed in the LEED module comments, the eligibility for EB-B includes (per the first statement) all higher ed buildings and k-12 schools (but not labs per the exclusion). Further specificity regarding building types and the corresponding EPA TF categories to be used was nonetheless provided in the upgrades relating to the revision to the EPA TF tool as	Closed: Argument is accepted

				generated July 2013. Further specificity relative to the EB-B applicability condition requiring projects to have been eligible for LEED certification during their baseline (the complement to EB-A applicability condition) has also been added. Campus labs (per appendix 5) are eligible for EB-A because this relies upon a 20% improvement in EUI within a single year and measurements for this can be credibly established from LEED documents and EPA TF energy inputs. However the PB for EB-B is an Energy Star score, (>ES 86) which requires regression-based analytics in the EPA TF tool and this level of data analysis is not available for labs. (This is also referenced in footnotes in this section now as part of the July 2013 updates for EPA TF)	

19.	19		Justification/explanation about the Source and Sink for the following GHG gases CH_4 and N_2O are not very clearly explained in the project boundary section. The query is related to any emission related to N_2O and CH_4 from Stationary combustion Scope 2 etc not related to CO_2 conversion. What will be the source and sink for CH_4 and N_2O. Please clarify.	These considerations are addressed in the footnotes provided in both modules; these gas impacts are very small and arise as a result of the energy generation systems; they are therefore included/excluded at project's discretion to enable them to be consistent with their public reporting to ACUPCC/STARS for campus-wide projects. They are included in LEED module since EPA TF reports in terms of CO2e.	Closed: Argument is accepted
20.	20		The selection of most plausible baseline scenario and alternative scenario is not mentioned clearly in the methodology. In addition it is unclear	1. In a performance methodology, the baseline is already selected and prescribed on a justified basis. There is therefore a confusion here	Closed: Argument is accepted

			that USGBC/EPA/LEED/ES is mandated by the US government in the given time scale. Please clarify.	re performance vs project requirements. The baselines specified in the modules result from the stakeholder consultation process which examined alternatives through a series of white papers and supported the baselines adopted as credible and appropriate. 2. The USGBC/EPA/LEED is not mandated by the US gov't. There is no mandatory action involved that the US gov't requires here.	
21.	21		There is no explanation provided in the methodology about "the project activity wouldn't have occurred in the absence of the intervention of the carbon market" or the probability of such scenarios.	There is a confusion regarding the approach that a performance methodology requires: this is essentially a financial additionality assessment consideration for project-based methodologies rather than performance methodologies. Nonetheless in these modules, in appendix 5, the carbon revenue contribution to the incremental	Closed: Argument is accepted

				capital has been calculated, consistent with a project approach, to ensure its salience. A 5-25% return on capital is typically achieved by projects (per general analysis and pilot project results) representing a significant incentive. This analysis goes beyond what the performance methodology requires.	
22.	22		Though it is stated the BAU has been accounted in baseline emissions calculation, the indirect emission related to project activity by transfer and usage of technology and equipment, indirect increase of emissions shall be analysed and exclusion of such emissions shall be explained. In addition, the lifecycle emissions are not considered in the methodology for leakage purpose.	Two sources of leakage were discussed and set aside as not material. 1. Reductions in fossil fuel emissions (as represented in stat 1 combustion and scope 2 electricity emissions) that take place on campus sites (and for scope 2 electricity at utility site) will commensurately reduce any up/downstream related emissions associated with this fossil fuel energy consumption's delivery	Closed: Argument is accepted

				beyond these boundaries (e.g. in pipelines). Thus setting this aside these impacts (which are further reductions) is conservative. 2. Re equipment transfers for energy based technologies on campuses: a) Re Stationary combustion: systems on campuses are typically very old (boilers aka 50-70 years) sustained through maintenance budgets and lacking capital allocation to update. When these systems are finally upgrade, if they are not held on campus for back up emergency purposes (whereupon their emissions would still be included in the campus stat 1 emissions), they are not re-used due to age, inaccessible locations and operational expense compared to more efficient equipment available after so many	

				decades for other users to purchase. b) Re scope 2 electricity equipment: reuse of this EE equipment is rare, again due to the very high deferred maintenance levels typical on campuses (which results in very old systems that are unattractive). Capital expenditure costs per item are also low so recovery costs (for labor etc) represent a significant barrier to reuse. If reuse occurs, it will only be cost effective for the new owners if the energy operating costs associated with displacement of their even older equipment are positive – and thus further energy savings will have been secured. These further energy savings are not included in project credits to be conservative; rather they are actually subtracted out under the BAU 1.3% discounting of the baseline applied.	

23.		23	The following points needs to be clarified and if necessary shall be corrected, 1) Punctuation mark shall be used for clear identification of name and email address 2) The number mentioned in contact is not very clear. Please clarify is that a phone number or PIN code. 3) Formatting shall be appropriate throughout the document and Table of content shall be linked to auto update field. 4) Abbreviations are missing in the methodology.	These edits have been made in the relevant modules for 1, 2 and 4. The TOC is accurate and the document so large that getting auto updates risks further destabilizing the computers on which it runs (computer crashes have frequently been reported due to the document's size).	Closed: Amendments has been confirmed
24.		24	The explanation for exclusion of K12 school is not clear for Module-I.	As referenced in App 5, K-12 schools are excluded from module 1 "campus wide" as there are no performance parameters through which to establish a PB; ACUPCC data historically refers only to college campuses; there is no k-12 data available upon which to create performance benchmarks. By contrast, LEED data historically does include k-12 schools and a separable basis so k-12 PB	Closed: Argument is accepted

				elements can be included.	
25.		25	It can be clarified with example of some of the technology and strategy under section 4.2, page 16.	There are comprehensive details for these eligible strategy steps in Appendix 2B (based on LEED certification procedures and typical campus-wide strategies undertaken by leading campuses). Furthermore, there will be excel templates and PDD templates for project developers to use which will assist their completion of these tasks.	Closed: Argument is accepted
26.		26	It is unclear, how EPA PM calculations are again is matched to the LEED project segmentation. Please clarify.	As provided in the comments and module updates for EPA TF tool's July 2013 updates, the module provides explicit instructions to map the LEED building type onto the EPA building categories.	Closed: Argument is accepted
27.		27	Under performance Benchmark calculation: the following shall be clarified,	In the relevant modules, re #: 1. The text has been deleted from the chart – as reflected	Closed: Amendments has been confirmed

			1) It is mentioned in applicability that campus laboratories are excluded. However the performance bench mark mentioned here seems to be contradicting with the applicability conditions. 2) %EUI increase over code will consider values which are greater than or equal to % or only % increase values? 3) For PB_{nc}, it is mention for Higher ed Lab the percentage between 26-8. Please clarify the same.	in earlier module changes 2. The project % increase in EUI over code will be compared to the % increase in EUI over code achieved by LEED buildings at the 50^{th} percentile level of achievement 3. Per earlier edits, 26% is now entered	
28.		28	It is unclear under EB-B Performance TEST, the explanation provided for Occupancy.	EB-B includes provisions for occupancy because the PB requirement is that the building achieve and ES 86 performance level. And the LEED building's performance level under ES adjusts for occupancy levels when the data is entered into EPA TF. Edits in the EPA TF data sections,	Closed: Amendments has been confirmed

				have also been made for clarity.	
29.		29	The following website shall be updated throughout the methodology, *https://www.energystar.gov/index.cfm?fuseaction=target_finder*	The web references have been updated throughout both modules to reflect internet changes.	Closed: Amendments has been confirmed
30.		30	The following explanation shall be clarified under **For NC and EB-B**, *"note that the automatic calculation of the GHG reductions which are made within the EPA PM, while estimating PE, will not be the same as the resulting GHG reductions as calculated through this module since the ES 50 building (in the PE calculations) will use the same fuel mix as the design building (the LEED certified building) which is not the correct fuel mix assumption to use for this module."*	The notes provided indicate the specific details as intended.	Closed: Amendments has been confirmed
31.		31	Equation 35 shall be rechecked.	Equation 35 was rechecked and amended to reflect a geometric progression.	Closed: Amendments has been confirmed

32.		32	Methodology shall provide procedures on measurement, type of equipment, whether sampling is involved or 100% data is monitored etc, quality of assurance in the methodology.	As in earlier revisions, requested details have now been provided. Furthermore, the modules are clear on their monitoring/measurement expectations: measurements will follow same protocols used for ACUPCC /STARS and LEED. Since these represent the best practice reporting/monitoring procedures for campuses and campus-LEED certified buildings, they are incorporated by reference. EPA TF then calculates CO2 emissions from energy LEED outputs on a standardized basis. The modules thus draw upon the practices from these other third party, often certified, publicly transparent systems (see Appendix 5). From this point, the monitoring for VVBs relates to ensuring that these systems have been used (and data is consistent with public reporting).	Closed: Amendments has been confirmed

Appendix-B

Assessment of specific requirements pertaining to Performance Benchmark Methodologies

A Campus Clean Energy Efficiency Campus-Wide Module

VCS methodology requirement	Compliance status	Evaluation
4.1.14 In case the level of the performance benchmark metric for determining additionality and for the crediting baseline are different, how is this difference justified?	Not applicable	For campus-wide, historical baselines are used so the question of comparability between performance benchmarks for baselines and additionality assessment does not arise; project baselines are used. Therefore the requirement is not applicable.
4.1.17 The methodology shall provide a description and analysis of the current distribution of performance within the sector as such performance relates to the applicability of the methodology or each performance benchmark.	Fulfilled	Performance distributions including appropriate stratification are analyzed within ACUPCC reporting scheme, segmented by Carnegie code. Applicability of the PBs are sound, establishing requirements at the 85th percentile level of performance drawn from a population that is already very progressive (ACUPCC members with active GHG reduction goals) compared to most US campuses.
4.1.17 The methodology shall also provide an overview of the technologies and/or	*Fulfilled*	Whereas in this context a list of technologies would be inappropriate (because being prescriptive, inflexible, precluding alternatives), an indicative list of technologies is made available by

measures available for improving performance within the sector, though an exhaustive list is not required recognizing that performance methods may be somewhat agnostic with respect to the technologies and/or measures implemented by projects.		ACUPCC as derived from action plans of those campuses performing better than benchmark level. A minimum of two different categories of strategies shall be adopted as well.
4.1.17 The methodology shall discuss and evaluate the tradeoff between false negatives and false positives and shall describe objectively and transparently the evidence used (including reference to primary and secondary data sources), experts consulted, assumptions made, and analysis (including numerical analysis) and process undertaken in determining the selected level(s) of the performance benchmark metric (noting that expert consultation is a key	Fulfilled	By applying the 85% percentile for each identified campus type, false negatives are precluded (i.e., target is realistically achievable) while conservative with respect to not allowing for BAU measures to apply for emission reductions. Stakeholder consultation is documented, covered the performance benchmark metric. Robustness of the module vs. increase/decrease of campus size (square area) also proven. False trade offs were addressed via a) Careful stratification; the module avoided using overly generalized additionality benchmarks by stipulating PBs for each Carnegie code category of campus. Thus, instances of false positives and negatives were

part of this process, as set out below). The selected level(s) shall not systematically overestimate GHG emission reductions or removals.		minimized since there were salient differences in the PB's arising for each Carnegie category. b) Well designed metrics: The module avoided using metrics such as CO_2/sq ft whose outcomes essentially reflected the (regionally arbitrary) performance of the campus' local electric utility's CO_2/kWh in ways that would be introduced a significant false negative/positive problem (see App 5 analysis). c) Adjustments for sq ft variances: Particularly careful attention was paid to potential false positive/negative outcomes relative in situations where campuses square footage was either declining or expanding too rapidly: adjustments to both baseline and additionality metrics must be calculated per Appendix 3 to avoid qualifying false positives (additionality) or over crediting (baseline adjustments required). d) Conservative PE adjustments : attention was paid to the potential for over crediting in (typically rare) situations in which activities reducing one GHG SSR (e.g. stat 1's) could increase SSR's in other domains (e.g. scope 2) via $PE\Delta_y$.

		e) Weather based adjustments: addressed via averaging historical baseline emissions and via more rigorous approaches for additionality testing adjustments than has been applied to earlier VCS methodologies (e.g. 0008) (e.g. Appendix 6) f) Approach to establish PBs: stakeholder discussions reviewed whether PB should be fixed at the 85th percentile of ACUPCC performance or anchored upon the qualified campuses' average performance. The selection of the latter avoids the scenarios in which a campus which was in the top 50% of its peers would either be or not be eligible because, for this particular Carnegie category, the 85th percentile did not match the average qualified campus performance levels. Thus false positives and negatives were again minimized.
4.1.17 The process of determining the level(s) of the performance benchmark metric shall include and be informed by an expert	*Fulfilled*	Several rounds of stakeholder consultations as documented by references /P32/ Relevant stakeholders have been invited to contribute their views. Particularly detailed inputs were provided by Chevrolet Environmental

consultation process, undertaken by the methodology developer		Advisory Board. (see below) Feedback was considered and incorporated in the methodology / module development, as evident from earlier versions and the series of white papers developed during 2011/12.
4.1.17 The methodology developer shall ensure that a representative group of experts participates in the consultation, including, but not limited to, representation from industry, environmental non-governmental organizations, and government or other regulatory bodies.	Fulfilled	Participant lists include i.a. following groups: Industry: GM/Chevrolet, Campuses (as 'operators'), Environmental non-governmental organizations: Climate Group, CECS, Government or other regulatory bodies: EPA staff The number of individuals consulted demonstrates representative consultation across these groups.
4.1.17 A report on the expert consultation process and outcome shall be prepared and submitted to the VCSA when the methodology is submitted under the methodology approval process.	Fulfilled	Reference: Stakeholder Consultation Report (i.e., Appendix 4 of the Module)
4.1.18 Where there is heterogeneity of performance (measured in terms of the performance	Fulfilled	Stratification distinctions constitute multiple benchmarks for each Carnegie class by source of carbon credits sought.

benchmark metric) that may be practicably achieved by individual projects, multiple benchmarks or correction factors may be required. • *technologies and/or measures which may be implemented at both greenfield and brownfield sites* • *larger and smaller scale project activities* • *Any other circumstances related to the baseline scenario or project activity, such as plant age, raw material quality and climatic circumstances, that lead to heterogeneity of performance*		Adjustments for changes in size are conservatively incorporated during project and baseline periods. Other adjustments also include weather adjustments (e.g. Appendix 6) and reflect correction factors for BAU EE gains (1.3% discounts to the baseline).
4.3.4 Where the methodology uses a performance method for determining additionality, the applicability conditions shall ensure that the project implements technologies and/or measures that cause substantial performance improvement relative to the crediting baseline and what is	Fulfilled	Applicability conditions include ACUPCC ”leading best practice” measures, at least two of which need to be implemented for passing eligibility test. Update of those technologies after 5 years ensures the module remaining consistent with technical development.

achievable within the sector, and the methodology shall explicitly specify such technologies and/or measures (or examples thereof).		
4.3.5 The applicability conditions shall establish the scope of validity of the methodology, and where multiple benchmarks are established, each performance benchmark, including the geographic scope. In establishing the scope of validity of the methodology or each performance benchmark, the methodology shall clearly demonstrate that there is similarity across the sub-areas of the geographic scope in factors such as socio-economic conditions, climatic conditions, energy prices, raw material availability and electricity grid emission factors, as such factors relate to the baseline scenario and additionality, noting that variation is	Fulfilled	Geographical scope limited to USA, therefore socio-economic conditions considered homogenous. Correlation to climatic conditions is addressed via additionality testing on weather adjusted basis if the additionality eligibility period is only one year long (via test 2S-B and 2E-B and appendix 6). The module also established performance metrics in ways that addressed electricity grid emission factors (see Appendix 5). Furthermore, the segregation by campus type as reporting to ACUPCC meets the requirement since these were the only stratifications that ACUPCC itself established for campuses their GHG emissions and variances between segments (for PB purposes) was nonetheless modest.

permitted where correction factors address such variation as set out in Section 4.1.18. *It may be necessary to stratify and establish multiple performance benchmarks, or to limit the applicability of the methodology, to comply with this requirement*		
4.3.6 The applicability of the methodology or a performance benchmark shall be limited to the geographic area for which data are available, or it shall be demonstrated that data from one geographic area are representative of another or that it is conservative to apply data from one geographic area to another.	Fulfilled	Geographical scope limited to USA where data from campuses reporting to ACUPCC is available.
4.5.4 The methodology shall identify alternative baseline scenarios and determine either the most plausible baseline scenario or an aggregate baseline scenario for the project activity.	Fulfilled	Baseline scenarios is demonstrably the campus' individual historical performance; adjusted for annual improvements as statistically determined, respectively for fast-growing campuses. Historical baselines are the most plausible scenario given the continuous improvements campuses make retrofitting and upgrading their campus

Aggregate baseline scenarios shall be determined by combining likely scenarios on a probabilistisc (ie, likelihood) basis.		energy systems.
4.5.5 The performance benchmark shall be established based upon available technologies and/or current practices, and trends, within the sector. Where the analysis of trends shows a clear trend of improvement in the baseline scenario over time, the performance benchmark shall take account of the trend. This means that where the performance benchmark does not use a dataset that is updated at least annually, an autonomous improvement factor shall be used that provides a performance benchmark that tightens annually.	Fulfilled	Benchmark definition based on 'current practices/trends' as periodically updated (every 5 years) so that current best practice performance is applied. The PB data set will also be updated every 5 years, with interim reviews posted every 2-3 years. Furthermore, as an autonomous improvement factor, the BAU 1.3% energy efficiency gains are nonetheless deducted from the baseline to conservatively adjust for US average energy efficiency gains.
4.5.6 Appropriate data sources for developing performance methods	*Fulfilled*	Performance benchmark based on ACUPCC reporting data (ie, publicly

include economic and engineering analyses and models, peer-reviewed scientific literature, case studies, empirical data, and common practice data.		available, peer reviewed empirical data) covering geographical scope (US) extensively and allowing adequate stratification. Transparency and periodic updating are given with the selected approach. Data sources are primary, peer-reviewed, public and (for LEED) third party certified. Representing the largest and longest data bases available in the US for campus wide and individual building performance, they are robust data sources. Furthermore, this data, which informs the PB levels established, will be updated continuously by LEED and ACUPCC via further member reporting, while every 5 years it will be accessed again to refine PB performance requirements. The resulting PB analyses have been made public in Appendix 5 under custody arrangements that comply with VCS requirements.

B) Campus Clean Energy Efficiency LEED Certified Buildings Module

VCS methodology requirement	Compliance status	Evaluation
4.1.14 In case the level of the performance benchmark metric for determining additionality and for the crediting baseline are different, how is this difference justified?	**Not applicable**	Performance benchmark for determining additionality and crediting baseline are identical for each EB-A and EB-B/NC, resp.: For EB-A, historical (project) baselines are used so the question of comparability between performance benchmarks for baselines and additionality assessment does not arise. . Therefore the requirement is not applicable. For LEED NC and EB-B, the performance benchmark determining additionality and crediting baseline are identical, both referencing the 50th percentile performance levels: • for additionality, based on LEED's 50th percentile performance level (to determine beyond business as usual performance levels) • for the baseline, EPA's national 50th percentile performance level. This approach captures the substantial improvement delivered by the buildings while keeping the baseline and additionality metrics comparable.
4.1.17 The methodology shall provide a description and analysis of the current distribution of performance within the sector as such	Fulfilled	Statistical data provided by USGBC and EPA Energy Star, resp. Analyzed in terms of normal distribution for each EB-A,EB-B and NC, resp. Performance Benchmarks selected are conservatively establishing a performance level (at LEED average

performance relates to the applicability of the methodology or each performance benchmark.		levels) comparable to the top 14% of buildings on national basis.
4.1.17 The methodology shall also provide an overview of the technologies and/or measures available for improving performance within the sector, though an exhaustive list is not required recognizing that performance methods may be somewhat agnostic with respect to the technologies and/or measures implemented by projects.	Fulfilled	USGBC has provided an overview of technologies and measures relative to each building's certification status outlining the achievements to which the certified building can attest. These measures are consistent with the relevant LEED certification building measures for energy and GHG's. Description of these measures is contained in section 4.2 and Appendix 2B in the module. Application of min. 2 different measures required;
4.1.17 The methodology shall discuss and evaluate the tradeoff between false negatives and false positives and shall describe objectively and transparently the evidence used (including reference to primary and secondary data sources), experts consulted, assumptions made,	Fulfilled	By applying the 85% percentile for each identified campus type, false negatives are precluded (i.e., target is realistically achievable) while conservative with respect to not allowing for BAU measures to apply for emission reductions. Stakeholder consultation is documented, covered the performance benchmark metric. Robustness of the module vs. increase/decrease of campus size (square area) also proven.

and analysis (including numerical analysis) and process undertaken in determining the selected level(s) of the performance benchmark metric (noting that expert consultation is a key part of this process, as set out below). The selected level(s) shall not systematically overestimate GHG emission reductions or removals.		False trade offs were addressed via a) Careful stratification; the module avoided using overly generalized additionality benchmarks by stipulating PBs for each distinct LEED certification and sector. Thus, instances of false positives and negatives were minimized since there were salient differences in the PB's arising for each category. b) Adjustments for sq ft, weather, occupancy and other variances achieved via the application of the EPA TF tool c) Sound stakeholder consultation process to establish PBs d) Pilot project pressure testing to provide further input and refinements to the module's parameters
4.1.17 The process of determining the level(s) of the performance benchmark metric shall include and be informed by an expert consultation process, undertaken by the methodology	Fulfilled	Several rounds of stakeholder consultations as documented by references /P32/ Relevant stakeholders have been invited to contribute their views. Particularly detailed inputs were provided by Chevrolet Environmental Advisory Board and USGBC. (see below) Feedback was considered and incorporated in the methodology /

developer		module development, as evident from earlier versions and the series of white papers developed during 2011/12.
4.1.17 The methodology developer shall ensure that a representative group of experts participates in the consultation, including, but not limited to, representation from industry, environmental non-governmental organizations, and government or other regulatory bodies.	Fulfilled	Participant lists include i.a. following groups: Industry: GM/Chevrolet, Campuses (as 'operators'), Environmental non-governmental organizations: Climate Group, CECS, Government or other regulatory bodies: EPA staff The number of individuals consulted demonstrates representative consultation across these groups.
4.1.17 A report on the expert consultation process and outcome shall be prepared and submitted to the VCSA when the methodology is submitted under the methodology approval process.	Fulfilled	Reference: Stakeholder Consultation Report (i.e., Appendix 4 of the Module)
4.1.18 Where there is heterogeneity of performance (measured in terms of the performance benchmark metric) that may be practicably achieved	Fulfilled	Stratification distinctions constitute multiple benchmarks for each LEED category (NC/EB-A/EB-B) and sector (higher ed, higher ed lab, k-12 school). Main distinctions: New-Built vs. Existing Building, reasonable since existing buildings leaving less choice for design and improvement potentials.

by individual projects, multiple benchmarks or correction factors may be required. • *technologies and/or measures which may be implemented at both greenfield and brownfield sites* • *larger and smaller scale project activities* • *Any other circumstances related to the baseline scenario or project activity, such as plant age, raw material quality and climatic circumstances, that lead to heterogeneity of performance*		Further stratification by type of school (school / campus / campus lab building) as having according metrics. Further distinctions demonstrated to be negligible within USGBC's own stakeholder consultation. Adjustments for changes in size are conservatively incorporated during project and baseline periods. Other adjustments also include weather adjustments (e.g. Appendix 6) and reflect correction factors for BAU EE gains (1.3% discounts to the baseline). *Well stratified, tailored results addressing specific circumstances material to the baseline and crediting are therefore ensured.*
4.3.4 Where the methodology uses a performance method for determining additionality, the applicability conditions shall ensure that the project implements technologies and/or measures that cause substantial performance improvement relative to the crediting baseline and what is achievable within the sector, and the	Fulfilled	Applicability conditions include application of at least 2 "best practice" measures as having been implemented and proven in LEED-certified buildings. Application of this criterion is transparent and best practice repertoire will remain periodically updated (5-year interval). Further explicit specification of eligible technologies within the module itself would be counterproductive (prescriptive, inflexible).

methodology shall explicitly specify such technologies and/or measures (or examples thereof).		
4.3.5 The applicability conditions shall establish the scope of validity of the methodology, and where multiple benchmarks are established, each performance benchmark, including the geographic scope. In establishing the scope of validity of the methodology or each performance benchmark, the methodology shall clearly demonstrate that there is similarity across the sub-areas of the geographic scope in factors such as socio-economic conditions, climatic conditions, energy prices, raw material availability and electricity grid emission factors, as such factors relate to the baseline scenario and additionality, noting that variation is permitted where correction factors	Fulfilled	Geographical scope limited to USA, therefore socio-economic conditions considered homogenous. Correlation to climatic conditions is addressed via EPA TF tool, alongside any changes in square footage or occupancy shifts. The module also established performance metrics in ways that addressed electricity grid emission factors (see Appendix 5). Furthermore, the segregation by buildings type based on LEED certification scheme and according performance data meets the requirement since each has separate distinct performance benchmarks. Whereas USGBC concluded that a further stratification would be not required to refine the statistical data, it is for the methodology module adequate to follow a consistent approach.

address such variation as set out in Section 4.1.18. *It may be necessary to stratify and establish multiple performance benchmarks, or to limit the applicability of the methodology, to comply with this requirement*		
4.3.6 The applicability of the methodology or a performance benchmark shall be limited to the geographic area for which data are available, or it shall be demonstrated that data from one geographic area are representative of another or that it is conservative to apply data from one geographic area to another.	Fulfilled	Geographical scope limited to USA where data from USGBC / LEED is available. Further consideration of regional differences is given in terms of regional fuel mix for electricity generation. Consistent with information from USGBC a further regional stratification would not be justified.
4.5.4 The methodology shall identify alternative baseline scenarios and determine either the most plausible baseline scenario or an aggregate baseline scenario for the project activity. Aggregate baseline	Fulfilled	Baseline scenarios distinguished by project type: EB-A: Historical baseline is the most plausible scenario given the continuous improvements and retrofitting efforts; this is also consistent with USGBC approach. NC/EB-B: all potential alternative 'baseline scenarios' are covered within the statistical approach and datasets.

scenarios shall be determined by combining likely scenarios on a probabilistic (ie, likelihood) basis.		Application of 50th percentile criterion characterizes the more stringent ones. The reductions will thus reflect the substantial improvements made to reach the PB performance levels since the same percentile level (50th) has been applied in the baseline scenario (ES50) and the minimum project performance requirements (>LEED 50th percentile).
4.5.5 The performance benchmark shall be established based upon available technologies and/or current practices, and trends, within the sector. Where the analysis of trends shows a clear trend of improvement in the baseline scenario over time, the performance benchmark shall take account of the trend. This means that where the performance benchmark does not use a dataset that is updated at least annually, an autonomous improvement factor	Fulfilled	Benchmark definition based on 'current practices/trends' as updated annually based upon published certification requirements by USGBC, so that current best practice performance can applied. Publication of updated datasets for this module will take place every 2-3 years (beyond VCS requirements) is thus ensured alongside VCS's PB updates every 5 years.

shall be used that provides a performance benchmark that tightens annually.		
4.5.6 Appropriate data sources for developing performance methods include economic and engineering analyses and models, peer-reviewed scientific literature, case studies, empirical data, and common practice data.	Fulfilled	Performance benchmark based on EPAs Energy Star program statistics and USGBC reporting data (i.e., publicly available, empirical data confirmed by independent 3rd party assessment) respectively, covering geographical scope (US) extensively and allowing adequate stratification. Transparency and periodic updating are given with the selected approach. Data sources are primary, peer-reviewed, public and (for LEED) third party certified. Representing the largest and longest data bases available in the US for campus wide and individual building performance, they are robust data sources. Furthermore, this data, which informs the PB levels established, will be updated continuously by LEED and ACUPCC via further member reporting, while every 5 years it will be accessed again to refine PB performance requirements. The resulting PB analyses have been made public in Appendix 5 under custody arrangements that comply with VCS requirements.

Appendix-C

This addendum validates how the CCEE Campus-wide module meets requirements of the VCS Standard 4.5.6.

The CCEE Campus-wide module refers to data collected and published under the ACUPCC reporting scheme. This data is used to create the performance benchmarks (not the baselines which are historical). Since the ACUPCC data comprises reports submitted by campuses, it constitutes by definition a *secondary source.* ACUPCC is an independent non profit organizations, recognized for the integrity of its reporting systems by the US EPA. Furthermore, as outlined below, the ACUPCC data is also subject to a series of group peer-review processes based on reporting systems well aligned towards accurate reporting, Consequently the requirements of VCS Standard Section 4.5.6(2) apply:

> *2) Data collected from secondary sources shall be available from a recognized, credible source and must be reviewed for publication by an appropriately qualified, independent organization or appropriate peer review group, or be published by a government agency.*

General:

The ACUPCC reporting requirements are clearly specified under its reporting guidelines http://rs.acupcc.org/instructions/ghg/

These requirements

- reference the use of the CACP calculator or custom tool, which if used must a) be justified and b) variances to the CACP tool be referenced;
- emission coefficients must be described, esp. if not using the CACP tool defaults which are considered as satisfactory;
- GWP, *de minimis* thresholds and other elements are clearly included in the instructions as requiring references and justification; CACP defaults are acceptable;
- The stationary combustion and scope 2 electricity emissions have specific separate reporting instructions which define them and reference both CAR and the CACP reporting system (and where they are found in the CACP tool) -- both of which are acceptable;
- Note that square footage is also an ACUPCC reporting parameter with supporting instructions as are HDD and CDD.

Regarding ACUPCC and reporting campuses being "a recognized, credible source":

ACUPCC is

- an independent organization, separate from the reporting campuses;
- professionally staffed; publishing public accountable reports
- is subject to oversight of an independent board representing diverse
- http://www.presidentsclimatecommitment.org/about/governance

The US EPA, a government agency also expressly endorsed ACUPCC as a credible secondary source and supports ACUPCC:

- ACUPCC received the EPA Environmental Merit and Lifetime Achievement awards in 2013: this provides a government agency endorsement of the ACUPCC reporting program.
- http://www.presidentsclimatecommitment.org/

A broad range of other partners also endorse ACUPCC spanning the nation's leading independent NGO's and higher education associations
(see http://www.presidentsclimatecommitment.org/resources/partners-endorsers).

The credibility of the ACUPCC data as the foundation for the performance metrics is further supported as the stakeholder consultation process which did not object to use the reported data or suggest to include additional verification mechanisms. The stakeholder consultation process' purpose is centrally focused on ensuring that credible levels of performance are set for the performance benchmarks, obviously set in the context of the data from which they are derived.

Integrity of reported data

The data set used to develop the ACUPCC metrics is substantial (>150 campuses per category), such that any unspotted variances would be statistically immaterial. The development of the performance benchmark metrics nonetheless excludes the very few potential outliers to be conservative. The reporting required by campuses is not complex or subject to likely error: it's based on kwh and fuel inputs with emission factors. The calculations are undertaken automatically with the CACP tool based on these inputs based on credible default emission factors; all inputs and factors can be double-checked by VVBs using the CACP calculator (and thus are easily verifiable). Custom reporting tools are permitted by ACUPCC but, as part of their reporting requirements, must describe and justify variances to the CACP tool; transparency is thus assured for VVB's.

The integrity of the reporting is also seen via the performance curves themselves which
a) form performance curves across narrow comparable bands;
b) have PBs which do not exhibit widely different figures;

c) have performance curves that are completely consistent with the historical behavior for GHG reductions for each sector (e.g. BACC colleges have are larger portion of campuses achieving stat 1 + scope 2 total absolute reductions -- and as a group they pioneered the GHG reduction goals the earliest).

Some campuses have voluntarily undertaken third party audits and their data are not outliers; other reporting campuses have results which are well aligned along the same performance curve.

Incentives to report in a credible, accurate fashion are also very strong: campuses review their ACUPCC reports with sustainability committees before publication which involves review from senior expert faculty; University Presidents sign onto AUCPCC personally AND ARE THUS ACCOUNTABLE PROFESSIONALLY (in financial markets this would trigger accountability under the Sarbanes Oxley regulations); the university's reputation is on the line and a GHG report will not be made in ways that put such valuable reputational (and revenue) equity at risk

Finally, there is no incentive towards overstatement of emissions (to inflate baselines) since ACUPCC reporting is designed to drive towards campuses' GHG *reduction* goals.

Correct reporting is essential for ACUPCC and its signatories as errors or misleading statements would directly affect the institutions' reputation:
"accountability for meeting the terms of the Commitment comes through the public reporting. If an ACUPCC institution is "not in good standing" because they miss a reporting deadline this will be highlighted in the ACUPCC Reporting System, and that institution's stakeholders – the students, faculty, staff, alumni, administrators, trustees, etc. – will take the necessary steps to get the institution back on track and in good standing. Institutions of higher education take commitments – even voluntary ones – very seriously, and because so their credibility and reputation rely on their integrity on following through on such promises, this mechanism of accountability through public reporting is more powerful than the self-imposed threat of fines or regulation."
(Source: http://www.presidentsclimatecommitment.org/about/faqs)

Data review and Peer review processes

ACUPCC undertakes its own analysis of the data reported each year to promote peer-to-peer review through annual reports, case study reviews, synthesis of sector-wide data, benchmark setting averages through for campuses' individual comparison, etc.

(for details see e.g.

http://www.presidentsclimatecommitment.org/reporting/annual-report

http://rs.acupcc.org/stats/

Support in reporting and review of data is granted by involvement of an expert organization "Second Nature", serving as supporting organization to ACUPCC. http://www.presidentsclimatecommitment.org/about/contact

All reports are publicly available and subject to peer review by all university peers, NGO's, experts, public and ACUPCC itself. Every single one of the public reports from over 600 universities is public; most campuses have multiple reports registered, not only for emissions annually but for their CAP also (see: http://rs.acupcc.org/).

The purpose of publication is clearly stated, i.e., to hold campuses "accountable by publicly reporting on their progress."

Also, "(ACUPCC) Signatories are part of a learning community, where they share best-practices, resources and success stories, and have a meaningful voice in improving standards and protocols in the space."

ACUPCC operates a system by which questions regarding campuses' GHG reports can be logged and sent directly to ACUPCC. According to interview information, a dedicated staff member reviews any inquiries and forwards them to the campus concerned. The campus' responses to these questions are then returned to ACUPCC and sent back to the person asking the question. Leading universities have themselves received several questions through this system. Thus there is an active peer-to-peer review process which ACUPCC facilitates on a campus-to-campus basis.

ACUPCC has also convened a 20 person peer-to-peer council to actively support this peer review process for ACUPCC members' GHG accounting and climate reporting (see http://www.presidentsclimatecommitment.org/il-support-committee). The Implementation Liaison (IL) Support Committee has been convened to provide peer-to-peer support to individuals responsible for implementing the ACUPCC at signatory institutions. Members serving have required experience, including specifically (listed first) GHG accounting and CAPs, such that they:

- "Have demonstrated successful implementation efforts toward fulfilling the ACUPCC, including but not limited to the following areas:
    - o GHG Accounting
    - o Climate Action Planning
    - o Sustainability Action Planning

o Developing Institutional Capacity

o Developing Climate and Sustainability Curriculum

o Transportation Planning

o Green Building

 Are dedicated to building the ACUPCC network's capacity through the sharing of experience, information, and expertise.

- Their role is to actively "Develop relationships with individuals responsible for implementing the ACUPCC."
- http://www.presidentsclimatecommitment.org/files/documents/acupcc-il-support-committee.pdf
- ACUPCC"s Presidential Fellows (a second separate group) also share a similar role providing expert faculty consultation
- Presidential Fellows work directly with ACUPCC signatory presidents and their teams to assist them in fulfilling their commitments.
- http://www.presidentsclimatecommitment.org/presidentialfellows

The fact that ACUPCC has set up a committee to liaise in this way demonstates its institutional commitment to the peer-review process.

ACUPCC also organizes, facilitates and affiliates with regional networks of campuses (e.g. BIG 10, IVY LEAGUE, PAC 10, PAC 12, SE Conference) where peer-to-peer reviews take place during in person meetings held on an annual or more frequent basis.

(e.g., Midwestern campus group meeting set up by ACUPCC at AASHE conference this year)

It should be noted that Universities are strongly committed to such peer review processes. The AASHE 2013 conference, for example, was just held in Nashville brought together more than 1700 attendees. The major focus of the organization is its STARS reporting tool: workshops on this topic, particularly with the recent 2.0 updates, were a strong focus. University institutions do not make any reporting commitment lightly; their cultures are ones that prize excellence, intellectual integrity and peer-to-peer exchange (the basis of all academic endeavor with published papers). ACUPCC reporting is no different.

Any university GHG report will itself have undergone peer scrutiny via the university's sustainability committee before publication. These committees comprise the nation's leading faculty and academics in this domain, alongside sustainability, senior administration and expert personnel.

ACUPCC and its signatories recognize the power of the public reporting and its peer review transparency:

- "accountability for meeting the terms of the Commitment comes through the public reporting. If an ACUPCC institution is "not in good standing" because they miss a reporting deadline this will be highlighted in the ACUPCC Reporting System, and that institution's stakeholders – the students, faculty, staff, alumni, administrators, trustees, etc. – will take the necessary steps to get the institution back on track and in good standing. Institutions of higher education take commitments – even voluntary ones – very seriously, and because so their credibility and reputation rely on their integrity on following through on such promises, this mechanism of accountability through public reporting is more powerful than the self-imposed threat of fines or regulation."

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