

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

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Project Title	University of Illinois, Urbana-Champaign Campus-Campus Wide Clean Energy & Energy Efficiency	
Version	10	
Date of Issue	06-October-2014	
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The following resources and tools are provided for campuses to use to help them to assess whether they want to pursue certification by VCS. The resources and tools are offered for assistance only and campus' use of the resources and tools is at its sole expense and discretion. Of course, campuses are free to develop their own tools to generate the necessary information to give to VCS for possible certification if they wish to do so. Use of these resources and tools does not guarantee certification by VCS. In addition, neither the use of the tools nor successful certification by VCS will necessarily result in the purchase of credits by BEF or Chevrolet.

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1 PROJECT DETAILS

This PD has been prepared and submitted by this University/College ("Applicant") using data prepared and compiled by Applicant, reflecting its best judgment. It includes the campus excel template sheet, supplied separately to verifiers, which contains all of the information and calculations Applicant believes are needed to support validators/verifiers in performing their evaluation of the campus' project candidacy for certification. It is the Applicant's judgment that this PD and the campus excel template accurately set forth all relevant data and parameters, on a reproducible basis, necessary to establish the project's performance in these regards, indexing clearly to the numbered equations applicable in VMD0038.

Campus name/location
Champaign

University of Illinois at Urbana-

By submitting this PD and accompanying materials, does the above named University/College intend to affirm its agreement with the above statement? ☒ Yes ☐ No

1.1 Summary Description of the Project

This project is submitted following the campus-wide module VMD0038 from VCS methodology framework VM0025, which lays out performance requirements for campuses to achieve scope 1 stationary combustion (stationary 1 combustion) and/or scope 2 electricity reductions, by Carnegie class, which, averaged over a selected Additionality Eligibility Period, exceed the specified PB performance standards. See: <http://www.v-c-s.org/methodologies/campus-clean-energy-and-energy-efficiency-methodology>

For this campus project:

Verified reductions are sought in: ☒ Stationary 1 combustion ☐ Scope 2 Electricity-based (check which one applies; complete a second PD template if both sources are project eligible)

The campus Carnegie class is: ☒ Doctoral ☐ Masters
☐ Baccalaureate ☐ Associates
☐ Specials

The required PBSc/PBEc is therefore: ☒ PBSc ☐ PBEc

Campus' average percent reduction

Enter applicable avg % reduction/yr campus achieved: 16.09 %

Based upon the following Project 1 testing year. FY2012

Enter date for project year 1 (xxxx) including FY if fiscal:

First year Additionality Eligibility Period Selected FY2009

Enter 1st year of Additionality Eligibility Period including FY if fiscal:

Applying weather adjusted testing ☐ Yes ☒ No

Applicability conditions (2.2) are met ☒ Yes ☐ No

Square foot variances apply during baseline period (i.e. Test 2 failed) ☐ Yes ☒ No

No single technology installation is typically relied upon when meeting the performance standard requirements for this methodology but rather a series of energy efficiency/clean energy measures, adopted campus-wide. Since this methodology requires that at least two kinds of EE measures be adopted to meet the PB performance tests (per module section 4), this campus' activities include:

Behavior Change Campaign/Communications	☒ Yes	☐ No
CoGen & Fuelswitch	☒ Yes	☐ No
Lighting Retrofits	☒ Yes	☐ No
On-Site Renewables	☒ Yes	☐ No
Boiler Retrofits/Central Heating/Cooling Upgrades	☒ Yes	☐ No
Building System Retro-Commissioning & Upgrades Including Automation	☒ Yes	☐ No
Weatherization Improvements	☒ Yes	☐ No
LEED Certification/Green Buildings	☒ Yes	☐ No
Innovative Strategies	☒ Yes	☐ No

DESCRIBE specifics of at least two the measures undertaken:

Measure 1) Since signing the Illinois Climate Action Plan in 2010, our campus has embraced a fuel optimization strategy: where feasible, we have elected to utilize lower CO₂ purchased electricity from MISO and to back off on our use of on-site existing coal and gas cogeneration facilities. This strategy, combined with the other measures described here, has led to a significant decrease in our CO₂ emissions, and we have been able to go three summers in a row without burning any coal.

Measure 2) Multi-disciplinary teams work through high energy-use buildings to re-commission the buildings, with an emphasis on HVAC systems and Controls and temperature setbacks (often referred to as "scheduling"). Each year, buildings are selected from the top 100 energy consumption buildings. By the end of FY13, the RCx teams completed 40 buildings, with an average of 26.5% energy reduction since beginning the program in FY08. In total, RCx efforts reduced energy costs by over \$14M.

Additional Measures as applicable A detailed description of all activities is presented in Appendix D.

For stat 1 reduction projects, describe the stationary 1 facilities being backed down Coal and gas boilers at Abbott Power Plant

NOTE: the purchased kwh are the scope 2 electricity resources being backed down for Scope 2 Electricity projects

The baseline scenario as prescribed in VMD0038 is the campus' historical emissions (as further described in sections 2.4 and 3.1).

Thus average baseline emissions = 351263 [BE Per equations 12 or 23 tCO₂e/year]

Project emissions for year 1 250144 [PE₁ For year 1, per Eq 14 or 25 tCO₂e/yr]

Applied EE technologies require PE Emissions Adjustments? ☒ Yes ☐ No

If yes, PE Adjustment test applied F [Enter applied test name a) – j) from 8.1.3 / 8.2.3]

Resulting PE Adjustment, $PE_{\Delta y}$: 36830 [$PE_{\Delta 1}$ For year 1, per Eq15-22, 26-8 tCO₂e/year]

Thus, year 1 emission reductions: 64289 [ER_1 For year 1, per Eq 29 tCO₂e/year]

Total 10 years emission reductions: 338112 [Summing for 10 years ER_y per Eq 29 tCO₂e/year]

Consistent with tables in sections 1.7 and 3.5

Do campus sq footage variances apply during project period such that $SF_{\Delta y}$ is not equal to 1 for some project year y? ☐ Yes ☒ No

1.2 Sectoral Scope and Project Type

Sector scope ☒ 1 Energy industries (renewable / non-renewable sources)
☒ 3 Energy demand

NOTE: "1 Energy industries" includes all renewable and energy efficiency measures; "3 Energy Demand" includes only demand-side management measures

Grouped project: ☐ Yes ☒ No

1.3 Project Proponent

Organization name	University of Illinois at Urbana-Champaign; Institute for Sustainability, Energy, and Environment
Contact person	Ben McCall
Title	Associate Director for Campus Sustainability
Address	1101 W. Peabody, Urbana, IL 61801
Telephone	217-244-0230
Email	Campus-sustainability@illinois.edu

See monitoring plan for further details on the role/responsibilities for this person

1.4 Other Entities Involved in the Project

Organization name	University of Illinois at Urbana-Champaign; Facilities & Services, Energy Services
Role in the project	(see monitoring plan)
Contact person	Mike Marquissee
Title	Director of Budget Planning and Resources
Address	1501 S. Oak St., Champaign, IL 61820
Telephone	217-333-4909
Email	mlmarqui@illinois.edu

See monitoring plan for further details on the role/responsibilities for this person

1.5 Project Start Date

Project start date: July 1, 2011 [Month/Day/Year]

NOTE: The project start date should comply with the VCS grandfathering procedures permitted for new methodologies, which currently, as of February 2014, allows campus clean energy efficiency projects to come forward for validation within two years beyond the new methodology's approval date (February 12 2014) provided that the project start date is no more than 4 years prior to the date of project validation.

The following is confirmed: ☒ Yes ☐ No
Amend text as needed

The project start date has been selected to be consistent with the timing through which the GHG reductions are delivered, cumulatively, from the activities undertaken. It is also linked to the campus' fiscal/calendar year reporting of its GHG emissions to ACUPCC/STARS or another third party GHG reporting program. While there is no single date at which each individual EE measure were all simultaneously initiated, the project start date nonetheless represents a sensible juncture from which the GHG reductions arising cumulatively from the suite of EE measures referenced above should begin to be credited: the project start date reflects the fact that sufficient measures have been implemented to allow the project's performance to meet the additionality performance benchmarks.

1.6 Project Crediting Period

Project start date: July 1, 2011 [Month/Day/Year]

Project end date: June 30, 2020 [Month/Day/Year]

Project crediting period: 10 [Number of Years]

NOTE: project crediting periods are typically 10 years for VCS

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Campus-wide projects typically fall into the project category, which represent reductions of 300,000 tons CO₂e or less per year rather than large projects (which comprise more than 300k tCO₂e/year)

Project	☒
Large project	☐

Years	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1 (eg, 2011) ER ₁	64289
Year 2, ER ₂	47917
Year 3 ER ₃	43410
Year 4 ER ₄	38961

Year 5 ER ₅	34570
Year 6 ER ₆	30237
Year 7 ER ₇	25960
Year 8 ER ₈	21738
Year 9 ER ₉	17571
Year 10 ER ₁₀	13459
Total estimated ERs	338112
Total number of crediting years	10
Average annual ERs	33811

1.8 Description of the Project Activity

No single technology installation is typically relied upon when meeting the performance standard requirements for this methodology but rather a series of energy efficiency/clean energy measures, adopted campus-wide. Since this methodology requires that the campus has achieved the required substantial reductions in GHG emissions by implementing at least two of the specified activities, the EE measures which this campus has adopted to meet the PB performance tests (per module 4 applicability conditions) include:

DESCRIBE specifics of at least two of the measures:

Measure 1) *Since signing the Illinois Climate Action Plan in 2010, our campus has embraced a fuel optimization strategy: where feasible, we have elected to utilize lower CO₂ purchased electricity from MISO and to back off on our use of on-site existing coal and gas cogeneration facilities. This strategy, combined with the other measures described here, has led to a significant decrease in our CO₂ emissions, and we have been able to go three summers in a row without burning any coal.*

Measure 2) *Multi-disciplinary teams work through high energy-use buildings to re-commission the buildings, with an emphasis on HVAC systems and Controls and temperature setbacks (often referred to as "scheduling"). Each year, buildings are selected from the top 100 energy consumption buildings. By the end of FY13, the RCx teams completed 40 buildings, with an average of 26.5% energy reduction since beginning the program in FY08. In total, RCx efforts reduced energy costs by over \$14M.*

Additional Measures See Appendix D.

Evidence that these measures have been taken/are underway can be recognized through the review of the following web pages (as applicable):

*<http://icap.sustainability.illinois.edu/project/master-plan-energy-production-and-distribution>
<http://icap.sustainability.illinois.edu/project/stop-burning-coal-abbott-power-plant>
<http://icap.sustainability.illinois.edu/project/retrocommissioning-rcx>*

For a performance methodology, the project activity lifetimes persist through the project crediting period.

1.9 Project Location

Project location: 601 E. John St., Champaign, IL 61820
(Campus physical address)

Geodetic coordinates 40.108927 N, -88.2300837 E (GPS WGS84)

1.10 Conditions Prior to Project Initiation

For VMD0038 campus wide projects, the baseline is the conditions existing prior to project year 1. We note that, for a performance methodology this baseline scenario is expressly mandated (there are no scenarios to consider). The campus-wide projects are all prepared using the historical campus emissions that existed prior to project year 1 consistent with the methodology's specifications. Details for this baseline are provided in section 2.4.

Reference to the stationary 1 emissions being reduced is given in section 1.1: for scope 2 projects, the purchased kwh will be the resulting effect.

Prior to the first year of the project Additionality Eligibility Period:

Was the campus achieving the PB GHG reduction performance rates required by this methodology? ☒ Yes ☐ No

Were the campus GHG emissions increasing? ☐ Yes ☒ No
If "yes", what accounts for these increases?

Were the increases incurred in order to earn credits through more aggressive subsequent reductions under this methodology? ☐ Yes ☐ No ☒ N/A

NOTE: if the GHG emissions were declining prior to the first year of the Additionality Eligibility period, then there was no increase in emissions that took place from which destruction could inappropriately earn carbon reductions. If there were GHG increases during this period, their intent needs to be clarified to similarly determine the appropriateness of the carbon reductions.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

Given that, for additionality purposes, a carbon credit project must not have been undertaken as a result of a regulatory mandate, whilst nonetheless comprising EE measures which are still in compliance with applicable laws, permits etc:

Per Module Section 7.1 Test 1:

Were the project's GHG reductions mandated or required by local, state or federal law or regulation? ☐ Yes ☒ No

Are the campus' EE measures nonetheless in compliance with prevailing local regional and national laws relating to the clean energy/EE activities comprising the project? ☒ Yes ☐ No

Such compliance may be reviewed relative to the following, as applicable including:

Title V Yes
Other (please describe)

Provide the name of the relevant law under which these compliance files were issued:
 Title V "Clean Air Act," 42 U.S.C. §7401 et
 seq. (1970)
 Other (please describe)

Provide a web link to these same relevant laws:
 Title V http://www2.epa.gov/laws-
 regulations/summary-clean-air-act
 Other (please describe)

1.12 Ownership and Other Programs

1.12.1 Right of Use

Note: inter alia, VCS defines the right of use in its Standard 3.11.1(3) as:
 A right of use arising by virtue of a statutory, property or contractual right in the plant, equipment or process that generates GHG emission reductions and/or removals (where such right includes the right of use of such reductions or removals and the project proponent has not been divested of such right of use).

Per Module Section 5 and Methodology Framework requirements:

For stationary 1 combustion reductions:

Did the college implement actions that reduced emissions through its own investments/technologies/activities? ☒ Yes ☐ No

Are the stationary 1 combustion energy generation technologies owned/operated by the campus itself? ☒ Yes ☐ No

If yes, describe basis for campus ownership of on-site energy generation facilities:

No contracts with other parties for generation purposes ☒ Yes

All generation facilities located on campus-owned land ☒ Yes

Beyond these facilities no energy sources included in stationary 1 combustion generation figures ☒ Yes

If a third party entity is involved in owning/operating/using the Campus' on-site stationary 1 combustion energy generation facilities, has the campus secured written agreements regarding its ownership of the GHG reductions from such entity/ies? ☐ Yes ☐ No
☒ N/A

Does any third party entity owning/operating/using the campus' stationary 1 combustion energy generation facilities intend to include the relevant GHG reductions in its own GHG reporting? ☐ Yes ☐ No
☒ N/A

Have energy services have been delivered to other off campus parties? [Yes, to the research park.] ☒ Yes ☐ No

If yes, have the GHG associated with these services been excluded from the stationary 1 combustion GHG inventory? ☒ Yes ☐ No
☐ N/A

[The research park GHG emissions are excluded from our campus GHG boundary.]

For scope 2 electricity based reductions(N/A)

Which utility/ies supply campus electricity?

Did the college implement actions that reduced emissions through its investments/technologies/activities?

☐ Yes

☐ No

Has the campus secured written agreements regarding its ownership of the GHG reductions from each utility supplier?

☐ Yes

☐ No

Does the utility supplier intend to include the relevant GHG reductions in its own GHG reporting?

☐ Yes

☐ No

Note: VCS has stated that "there is nothing here [in its current VCS Standard] stating that, in order to claim the emission reductions, the college would need to get a written approval or agreement of some sort from all the other plants on the electricity grid. The concept under the VCS, as with other programs including the CDM, is that the college implemented the action that reduced emissions [and] therefore it is the one that can claim the reduction". (Personal communication from VCS)

1.12.2 Emissions Trading Programs and Other Binding Limits

Is there an applicable carbon cap or binding limit in the campus region?

☐ Yes

☒ No

1.12.3 Other Forms of Environmental Credit

NOTE: in this context, campuses' participation in the GHG Reporting Programs such as ACUPCC and STARS would be included.

In order to ensure both integrity of GHG emissions data and that there is no double counting of reported campus' project reductions, consistency with ACUPCC/STARS or other third party GHG reporting programs (such as the Climate Registry) is required (see monitoring section 4 below).

Is there an applicable GHG reporting system under which the campus is publicly reporting its emissions?

☒ Yes

☐ No

Please indicate which one:

☒ ACUPCC

☒ STARS

Other (please name)

Has or will the campus ensure that project reductions have not been double reported to this entity for project years in which reductions have been sold?

☒ Yes

☐ No

See also 2.3 below, project boundaries, where other responsive items are covered (per Module section 5)

NOTE: the methodology requires public reporting of data for project year 1 and one baseline year to one such GHG reporting system (see section 2.2 below).

All responses pertaining to campus' purchase/sale of RECs are found in project boundary section, 2.3, given VMD0038's express focus on REC requirements in that section. They are incorporated here by reference.

Evidence of REC purchase/sale can be found on campus' ACUPCC and/or STARS reports.

Applicable ACUPCC/STARS web site: <http://rs.acupcc.org/ghg/3004/>

1.12.4 Participation under Other GHG Programs

NOTE: in referencing a "GHG Program", VCS is seeking here to clarify whether the project's verified ER_y reductions are to be registered with another GHG credit certification system and thus potentially double sold/traded as credits. It is not referencing "GHG reporting programs" such as ACUPCC or STARS where a campus may be reporting its annual GHG emissions.

Is there an applicable GHG program under which the campus is ☐ Yes ☒ No registering its credits?

Please indicate which one: [Name]

Registration number: [Number]

Details: [Describe the impacts of credit registration]

1.12.5 Projects Rejected by Other GHG Programs

The following is confirmed: ☒ Yes ☐ No
The project has not been rejected by other GHG Programs for crediting purposes.

Relevant information, as applicable:

1.13 Additional Information Relevant to the Project

Eligibility Criteria

Leakage Management

In version 1.0 of VMD0038, leakage has been set at zero

Commercially Sensitive Information

Does this document contain confidential information? ☐ Yes ☒ No

Further Information

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

Campus Clean Energy and Energy Efficiency Methodology VM0025: vs 1.0
 Campus Clean Energy and Energy Efficiency Module VMD0038: vs 1.0
 (For current version, see <http://www.v-c-s.org/methodologies/campus-clean-energy-and-energy-efficiency-methodology>)

2.2 Applicability of Methodology

This project is applicable because it meets all the methodology's applicability conditions:

Is this an existing campus located in the US? ☒ Yes ☐ No

Is this a K-12 school? ☐ Yes ☒ No

Provide web reference for campus type/US location: <http://illinois.edu>

Verified reductions are sought in: ☒ Stationary 1 combustion ☐ Scope 2 Electricity-based
 (check which scope applies)

The campus Carnegie class is: ☒ Doctoral ☐ Masters
☐ Baccalaureate ☐ Associates
☐ Specials

Provide web reference to confirm campus' highest form of degrees (PhD, MA, BA), 2 year Associate College or ACUPCC Special College status

AND/OR

As corroborated by the following Carnegie web link:

http://classifications.carnegiefoundation.org/lookup_listings/institution.php

The Carnegie classification for this campus:

http://classifications.carnegiefoundation.org/lookup_listings/view_institution.php?unit_id=145637

Have campus-wide GHG emissions been reported to ACUPCC/STARS/credible third party for project year 1 and at least one baseline year? ☒ Yes ☐ No

Please indicate which one: ☒ ACUPCC

☒ STARS

☐ Climate Registry

Other (please name)

If "other", please justify why the program provides public, transparent and credible GHG reporting

Provide web references to confirm campus has
reported to ACUPCC, STARS, Climate Registry
or other GHG reporting program

<http://rs.acupcc.org/ghg/3123/>
<http://rs.acupcc.org/ghg/758/>
<http://rs.acupcc.org/ghg/2070/>
<http://rs.acupcc.org/ghg/1753/>
<http://rs.acupcc.org/ghg/2071/>
<http://rs.acupcc.org/ghg/2868/>
<http://rs.acupcc.org/ghg/3004/>

GHG inventory prepared via GACP calculator?
☒ Yes ☐ No
(optional but if checked GACP calculator will be provided to validator)

2.3 Project Boundary

Emissions (Baseline and Project)	Source	Gas	Included / Excluded	Justification	
Scope 1	Stationary Combustion	CO ₂	Included	This is the only scope 1 source of emissions relating to renewable energy and energy efficiency targeted by this module. CO ₂ emissions constitute the most significant source of emissions. CH ₄ and N ₂ O are included in ACUPCC reporting but differentials are small. Where included, they must be included in both baseline and project case.	
		CH ₄	Optional Included? Check if yes ☒		
		N ₂ O	Optional Included? Check if yes ☒		
	Mobile Combustion	CO ₂	Excluded	Transportation fleet improvements are not eligible project activities.	
		CH ₄			
		N ₂ O			
	Fugitive	CO ₂	Excluded	Not relevant to energy-based GHG emissions	
		CH ₄			
		N ₂ O			
	Process	CO ₂	Excluded	Not relevant to energy-based GHG emissions	
		CH ₄			
		N ₂ O			
Scope 2	Purchased Electricity	CO ₂	Included	93 to 97 percent of campus scope 2 emissions are from purchased electricity based on GHG emissions data reported to ACUPCC. ¹ CO ₂ emissions constitute the most significant source of emissions. CH ₄ and N ₂ O are included in ACUPCC reporting but differentials are small.	
		CH ₄	Optional Included? Check if yes ☒		

¹ ACUPCC, 2013: <http://rs.acupcc.org/stats/ghg-source-stats/>

	N ₂ O	Optional Included? Check if yes ☒	Where included, they must be included in both baseline and project case.
Purchased Heat	CO ₂	Conditional Included? Check if yes ☐ Check N/A if non purchased N/A ☒	This source has a relatively small contribution to a campus' energy performance. This source is conservatively excluded from the quantification of baseline and project emissions except where adjustment technologies may impact this source of emission as described in the project emissions adjustment section.
	CH ₄		
	N ₂ O		
Purchased Cooling	CO ₂	Conditional Included? Check if yes ☐ Check N/A if non purchased N/A ☒	This source has a relatively small contribution to a campus' energy performance. This source is conservatively excluded from the quantification of baseline and project emissions except where adjustment technologies may impact this source of emission as described in the project emissions adjustment section.
	CH ₄		
	N ₂ O		
Purchased Steam	CO ₂	Conditional Included? Check if yes ☐ Check N/A if non purchased N/A ☒	This source has a relatively small contribution to a campus' energy performance. This source is conservatively excluded from the quantification of baseline and project emissions except where adjustment technologies may impact this source of emission as described in the project emissions adjustment section.
	CH ₄		
	N ₂ O		

The project boundary for the project is confirmed as follows:

Project boundary (choose one)

☒ Entire campus – all facilities sites – as reported to ACUPCC, STARS
or Third party GHG program

- ☐ Sub-campus boundary, reported as separate standalone entity to ACUPCC/STARS/Third party GHG program
- ☐ Other – if so please give details below

Named reporting entity: University of Illinois at Urbana-Champaign
(Name of entity reporting to ACUPCC/STARS/Third party GHG)

See Appendix A for map of campus reflecting project boundary.

Verified reductions are sought in: ☒ Stationary 1 Combustion ☐ Scope 2 Electricity-based
(check which scope applies; complete a second pdd if both sources are project eligible)

The following activities are/aren't included in the project boundary:

Energy services delivered beyond campus itself ☐ Yes ☒ No
e.g. energy services to local hospital?

Imports of energy services e.g. from industrial suppliers
with exception of electricity utility/suppliers
Included in stationary 1 GHG emissions? ☐ Yes ☒ No
Included in scope 2 purchased heat/steam/cooling? ☐ Yes ☒ No

On site project technologies whose carbon credits have already been sold/retired arising from application of other methodologies ☐ Yes ☒ No

On site renewable technologies whose RECs or renewable attributes have already been sold ☐ Yes ☒ No

RECs purchased from off-site renewable installations ☐ Yes ☒ No
(Intend to possibly purchase RECs in 2015 – not part of the Chevy project through 2014 – and ACUPCC GHG's would be reported separately from REC purchase.)

If yes (RECs have been purchased or sold):
Please provide copies of the REC certificates to validator

Have REC purchase/sales been entered using CACP such that they are reported (to ACUPCC/STARS) separately consistent with best CACP/ACUPCC reporting practices (rather than as ad-hoc adjustments to the campus' gross stat 1 and scope 2 electricity GHG emissions)? ☐ Yes ☒ N/A ☐ No

Provide web link to one of the ACUPCC/PCC reports where the campus sq ft has been publicly reported on peer reviewed basis: <http://rs.acupcc.org/ghg/3004/>
(e.g. one of the reporting year's detail summary page)

If project is prepared on a square foot adjusted basis, also provide further documentation to validators to support the calculations of the ACUPCC reported square footage for each year.

Are new site areas to be excluded from project boundary during project crediting period (permitted based on >5% sq ft annual growth)? ☐ Yes ☒ No

2.4 Baseline Scenario

NOTE: If credits are sought in BOTH stationary combustion and scope 2 electricity based reductions, please provide responses to these same questions for each set of credits separately since the baseline periods do not need to be identical. Separate copies of the PD template should be completed for each scope.

The performance methodology VMD0038 specifies the baseline required, requiring the selection of a historical baseline (as appropriate in stationary 1 combustion and/or scope 2 electricity-based emissions for PBS_c and PBE_c based credits respectively) of between 3 and 5 years prior to project year 1, provided that the last baseline year (project year 0, one year prior to project year 1) is included.

Reporting period is based upon ☒ Fiscal ☐ Calendar ☐ Other

Is this the same period as used for public reporting to ACUPCC/STARs etc? ☒ Yes ☐ No ☐ N/A

If not, is it consistently linked to the public reporting periods used? ☐ Yes ☐ No ☒ N/A

Has the same reporting period been used consistently throughout the project baseline and crediting periods? ☒ Yes ☐ No

Each year's reporting period: begins July 1 ends June 30 [Dates: month/day]

Project year 1 selected: 2012 [Enter Year zzzz]

Last baseline year (project year 0): 2011 [Year mmmm]

First baseline year selected: 2007 [Year nnnn]

Baseline period, B, resulting: 5 [Number of years]

Do the following baseline/project years correspond to publicly reported data?

Project year 1 ☒ Yes ☐ No

Last baseline year, project year 0: ☒ Yes ☐ No

Prior baseline year: ☒ Yes ☐ No

Prior baseline year (optional): ☒ Yes ☐ No

Prior baseline year (optional): ☒ Yes ☐ No

First baseline year: ☒ Yes ☐ No

For any years where data has not been publicly reported, has the same method/reporting framework been used to prepare the GHG emissions data as for the publicly reported data (e.g. use of CACP calculator)?

☐ Yes ☐ No ☒ N/A

If, based on Test 2 section 2.5, square foot adjustments are required, have the baseline emissions been developed using square foot adjusted emission figures?

☐ Yes ☐ No ☒ N/A

Justify your baseline selection:

- fits with permissible baselines selected ☒ Yes ☐ No
- consistent with a preference for a longer baseline, where the project is eligible (i.e. 5 year baseline selected preferably, then 4, then 3) ☒ Yes ☐ No
- other considerations: Long baseline appropriate to time sequencing for fuel optimization strategy

2.5 Additionality

The accompanying campus excel template sheet, supplied separately to verifiers, contains all the required calculations Applicant believes are needed to demonstrate whether and how the additionality performance tests are satisfied. This excel template, in the best judgment of the campus, provides all relevant data, parameters on a reproducible basis to establish the project's performance against the performance benchmarks, indexing clearly to the numbered equations applicable in VMD0038.

Is the campus GHG input data for the excel template derived from

- the CACP calculator results ☒ Yes ☐ No
- other source (specify)

Per the methodology, there are four main additionality performance tests (1,2,3,4) which, summarized, respectively ensure that the project:

1. Was not mandated by law
2. Avoided square foot declines (2c) and/or grew at less than 5% annually during the baseline period (2b); or, failing this Test 2, put forward the project for certification on a square foot adjusted basis as specified in the methodology.
3. Achieved absolute declines in the combined total of stationary 1 plus scope 2 electricity based GHG emissions between the first year of the selected additionality eligibility period and project year 1
4. Achieved or exceeded the annual average percentage reduction rate specified in the methodology as the performance benchmark (PBS/PBE) appropriate to the campus' Carnegie classification given the scope of GHG's (for stationary 1 (PBS) and/or for scope 2 electricity based (PBE)) for which credits are sought

NOTE: Tests 3 and 4 need to be conducted on a weather adjusted basis if the additionality eligibility period selected is a single year.

Results for these tests are detailed below for this project.

The summary conclusions are as follows:

Test 1

Was the project mandated or required by local, state or federal law or regulation?

☐ Yes ☒ No

Test 2:

Are square foot figures consistent with those reported to ACUPCC, STARS or third party GHG reporting program?

☒ Yes

☐ No

Are the following equations satisfied?

i.e., Did the project grow at less 5% annually during the baseline period (2b)? Did the project avoid square foot declines during the baseline period (2c)?

Per Step 2b, Equation 2:

$$\frac{SF_{p=1} - SF_{b=1}}{SF_{p=1} * B} \leq 5\%$$

☒ Yes

☐ No

Per Step 2c, Equation 1:

$$SF_{p=1} - SF_{b=1} \geq 0$$

☒ Yes

☐ No

If Step 2c is not satisfied:

Student enrolment and per capita CO₂ emissions are evaluated over the same period as used for additionality eligibility and baseline periods, using total energy emissions (Test 3); and stationary combustion (Test 4a/b-S) and/or scope 2 electricity (Test 4a/b-E) emissions depending upon the scope of reductions sought.

Thus, if Step 2c is not satisfied, across all relevant scopes and testing periods:

1) Are student enrolment figures steady/rising

☐ Yes

☐ No

2) Is CO₂ per capita declining?

☐ Yes

☐ No

If both these sub-conditions 1) and 2) are met, then no square foot adjustments need to be made for the campus total square footage declines and Test 2c will have been met.

If either Steps 2b and 2c (per equations 1 and 2) are ultimately not satisfied, the CO₂ emissions for the baseline period, from which baselines and PE Adjustments are calculated and the additionality tests performed, will be conducted on a square foot adjusted basis.

Is this PDD now completed on a sq ft adjusted basis?
(that is did the project fail Test 2b or 2c?)

☐ Yes

☒ No

If yes, have the sq ft adjusted emissions been applied to:

Additionality testing?

☒ N/A

☐ Yes

☐ No

Baseline emission calculations?

☐ Yes

☐ No

PE Adjustment calculations (if applicable)?

☐ Yes

☐ No

If yes, then from this point forward all PD responses will be based on the revised CO₂e adjusted emissions schedule found in section 7.3.2 using equations 3 and 4, consistent with the excel template for square footage adjustments. The relevant formulae will therefore be taken to reference adjusted emission figures with all subsequent calculations performed substituting $F_{b=x,i} \text{ adj}_{sf}$ for $F_{b=x,i}$ and $E_{b=x} \text{ adj}_{sf}$ for $E_{b=x}$. Note that, under such square foot adjustment circumstances, if weather based adjustments are also needed (for additionality testing only), they will be applied to these sq ft adjusted emission figures.

Additionality Eligibility Period:

For projects seeking:	Stationary Combustion Reductions	Scope 2 Electricity Reductions
First year of Additionality Eligibility period selected:	FY2009 July 1, 2008	[Year mmm] [month/day xx/yy]
Project year 1 selected:	FY2012	[Year qqqq]
Additionality Eligibility Period resulting:	3	# yrs E2AP
Did this eligibility period pass both Test 3 and Test 4?	☒ Yes ☐ No	☐ Yes ☐ No
Are weather adjusted tests required? (that only Tests 3b and 4b were passed requiring an additionality eligibility period equal to 1)	☐ Yes ☒ No	☐ Yes ☐ No

If weather adjusted tests are required, (assuming the Additionality Eligibility Period = 1), the remaining additionality tests, (that is Tests 3b and 4b-S/E) will have been completed, and answers provided, using weather adjusted factors, per equations 6 and 7 (see Module Sections 7.3.4, 7.3.6, 7.3.8)

Performance Tests:

Are the following equations satisfied in the relevant performance Test?

Performance Tests 3a (no sq ft variance) and 3b (w/sq ft variance):

Has Test 3a/b been met?

i.e., Did the project achieve absolute declines in the combined total of stationary 1 plus scope 2 electricity based GHG emissions between the first year of the selected additionality eligibility period and project year 1?

Per Equation 5:

$$\sum_{\text{Over_Fuel_Types}_i} (F_{p=1,i} - F_{b=1,i}) + (E_{p=1} - E_{b=1}) \leq 0$$

☒ Yes ☐ No

Were simple weather adjusted factors applied in Eq 5?

(using weather adjusted emissions from equations 6 and 7)

If so, see excel template for relevant calculations under HDD/CDD parameters

☐ Yes ☒ No

Was a weather regression analysis performed?

☐ Yes ☒ No

For Stationary 1 based reductions:

Performance Test 4a-S (no sq ft variance) and 4b-S (w/sq ft variance):

Have responses to these questions only been provided
using eligibility periods which passed Test 3a/b?

☒ Yes ☐ No

Has Test 4a/b-S been met:

i.e., Did the project achieve or exceed the annual average percentage reduction rate specified in the methodology as the performance benchmark (PBS) appropriate to the campus' Carnegie classification given the scope of GHG's (for stationary 1) for which credits are here sought?

Indicate the PBS required reduction rate 5.68 % per annum

Indicate the campus project's actual annual average percentage reduction rate achieved in stationary 1 emissions between the first year of the additionality eligibility period and project year 1 16.09 % per annum

Thus, for project year 1:

Indicate whether the principle PBS % reduction threshold for project eligibility has been therefore met (that is the campus reduction rate exceed the PBS required minimum):

Per Equation 8:

$$\sum_i \frac{F_{b=1,i} - F_{p=1,i}}{F_{p=1,i}} \geq PBS_c * SCAP$$

☒ Yes ☐ No

For project year y, the stationary 1 emissions may not exceed the threshold value of GHG emissions from project year 1 required to pass test 4 in equation 8 above (once adjusted, on a square foot adjusted basis, to reflect the new size of the campus). This value of adjusted GHG emissions each year serves as the applicable maximum threshold for the project year y stationary 1 emissions whose compliance is assessed in equation 9 below.

For project year y:

The maximum threshold for stat 1 emissions in subsequent years – which emissions may not exceed if credits are to be issued in that specific year

Per Equation 9:

$$\sum_i \frac{F_{b=1,i}}{F_{p=y,i}} \geq (PBS_c * SCAP + 1) * \frac{SF_{p=1}}{SF_{p=y}}$$

☒ Yes ☐ No

Equation 9 is satisfied in year: (CHECK ONLY THOSE WHICH HAVE PASSED TO DATE)

☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Were simple weather adjusted factors applied in Eq 8 and 9? ☐ Yes ☒ No
(using weather adjusted emissions per equations 6 and 7)

If so, see excel template for relevant calculations under HDD/CDD parameters

Was a weather regression analysis performed? ☐ Yes ☒ No

For scope 2 electricity based reductions:

Performance Test 4a-E (no sq ft variance) and 4b-E (w/sq ft variance):

Have responses to these questions only been provided using eligibility periods which passed Test 3a/b? ☐ Yes ☐ No

Has Test 4a/b-E been met:

i.e. Did the project achieve or exceed the annual average percentage reduction rate specified in the methodology as the performance benchmark (PBE) appropriate to the campus' Carnegie classification given the scope of GHG's (for scope 2 electricity based emissions) for which credits are here sought?

Indicate the PBE required reduction rate % per annum

Indicate the campus project's actual annual average percentage reduction rate achieved in scope 2 electricity based emissions between % per annum

the first year of the additionality eligibility period and project year 1

Thus, for project year 1:

Per Equation 10:

Indicate whether the principle PBE % reduction threshold for project eligibility has therefore been met (that is the campus reduction rate exceed the PBS required minimum):

$$\frac{E_{b=1} - E_{p=1}}{E_{p=1}} \geq PBE_c * E2AP$$

☐ Yes

☐ No

For project year y:

For project year y, the scope 2 electricity based emissions may not exceed the threshold value of GHG emissions from project year 1 required to pass test 4 in equation 10 above (once adjusted, on a square foot adjusted basis, to reflect the new size of the campus). This value of adjusted GHG emissions each year serves as the applicable maximum threshold for project year y scope 2 electricity based emissions whose compliances is assessed in equation 11 below.

Per Equation 11:

The maximum threshold for scope 2 electricity-based emissions in subsequent years -- which emissions may not exceed if credits are to be issued in that specific year

$$\frac{E_{b=y}}{E_{p=y}} \geq (PBE_c * E2AP + 1) * \frac{SF_{p=1}}{SF_{p=y}}$$

☐ Yes

☐ No

Equation 11 is satisfied in year: (CHECK ONLY THOSE WHICH HAVE PASSED TO DATE)

☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Were simple weather adjusted factors applied in Eq 10 and 11?
(per equations 6 and 7)

☐ Yes

☐ No

If so, see excel template for relevant calculations under HDD/CDD parameters

Was a weather regression analysis performed?

☐ Yes

☐ No

2.6 Methodology Deviations

Were any deviations from the methodology applied?

☐ Yes

☒ No

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

The accompanying campus excel template sheet, supplied separately to verifiers, contains all the required calculations Applicant believes are needed for sections 3.1 3.2 3.3 and 3.5 to demonstrate whether and how the additionality performance tests are satisfied and how the baseline, project emissions, PE Adjustments and project Emission Reductions are established. In the best judgment of the campus, this excel template accurately provides all relevant data and parameters on a reproducible basis

to establish the project's performance in these regards, indexing clearly to the numbered equations applicable in VMD0038.

3.1 Baseline Emissions

The calculations for the baseline terms BE and BEy per the methodology requirements are found in the accompanying campus excel template sheet.

In summary the following values are given:

Based on equations 12 (stat 1) and/or 23 (scope 2):

$$BE = \frac{\sum_x \sum_i F_{b-x,i}}{B}$$

$$BE = \frac{\sum_x E_{b-x}}{B}$$

For stationary 1 reductions, BE 351263 tCO2e

For scope 2 electricity reductions, BE tCO2e

Based on equations 13/24 (stat 1/scope 2):

$$BE_y = BE * (1 - 0.013)^{(y-1)}$$

For stationary 1, BEy (tCO2e)	351263	Project year 1
	346697	Project year 2
	342190	Project year 3
	337741	Project year 4
	333350	Project year 5
	329017	Project year 6
	324740	Project year 7
	320518	Project year 8
	316351	Project year 9
	312239	Project year 10

For scope 2 electricity, BEy (tCO2e)

Project year 1

Project year 2

Project year 3

Project year 4

Project year 5

Project year 6

Project year 7

Project year 8

Project year 9

Project year 10

3.2 Project Emissions

The calculations for the baseline terms PE_y per the methodology requirements are found in the accompanying excel template sheet.

In summary the following values are given:

Based on equation 14 (stat 1) and/or 25 (scope 2):

$$PE_y = \sum_i F_{p-y,i}$$

$$PE_y = E_{p-y}$$

For stationary 1, PE_y (tCO₂e)

250144	Project year 1
279634	Project year 2
279634	Project year 3
279634	Project year 4
279634	Project year 5
279634	Project year 6
279634	Project year 7
279634	Project year 8
279634	Project year 9
279634	Project year 10

For scope 2 electricity, PE_y (tCO₂e)

Project year 1

Project year 2

Project year 3

Project year 4

Project year 5

Project year 6

Project year 7

Project year 8

Project year 9

Project year 10

PE Adjustments

PE Adjustments for campus-wide projects are required if stationary 1 reduction technologies increase scope 2 electricity/steam/heat/cooling consumption; or if scope 2 electricity reduction technologies increase stationary 1 and/or scope 2 steam/heat/cooling consumption. These are addressed by subtracting $PE\Delta_y$ in the ER_y calculations (in 3.5, equation 29 below) using one of the approaches a) through j) permitted options in the Module Section 8.1.3 and 8.2.3. This project's PE adjustments are addressed as follows:

Re 8.1.3 and 8.2.3:

Do any of the EE measures require PE adjustments? ☒ Yes ☐ No

Please briefly explain why/how the EE measures create emissions that require PE Adjustments:

Fuel optimization strategy was employed, leading to a shift from on-site generation to imported electricity.

Please indicate which PE Adjustment approach used for calculations:

f [Name a) through j) selected]

Provide justification for approach selected:

CHP applies to existing and new facilities; pathway F is most accurate and conservative as a result and must be applied if CHP is employed. NOTE: kwh for 2013 installed supercomputer facility have been excluded since they were orthogonal to the fuel optimization strategy.
(including whether CHP/geothermal technologies are included)
(referencing logic included in methodology/excel template)

Using calculations from Module Sections 8.1.3 and 8.2.3, including equations 15 through 22 for approaches a) through f) for stationary 1 reductions and equations and/or 26-28 for approaches g) through j) for scope 2 electricity based reductions respectively:

Resulting $PE\Delta_y$ for project year y (tCO ₂ e)	36830	[$PE\Delta_1$ for project year 1]
	19146	[$PE\Delta_2$ for project year 2]
	19146	[$PE\Delta_3$ for project year 3]
	19146	[$PE\Delta_4$ for project year 4]
	19146	[$PE\Delta_5$ for project year 5]
	19146	[$PE\Delta_6$ for project year 6]
	19146	[$PE\Delta_7$ for project year 7]
	19146	[$PE\Delta_8$ for project year 8]
	19146	[$PE\Delta_9$ for project year 9]
	19146	[$PE\Delta_{10}$ for project year 10]

Calculation Details for $PE\Delta_y$: (please see accompanying excel template sheet)

$SF\Delta_y$ Square Foot Adjustment Factor for Declines in Square Footage During Project Period.

Is square footage declining during project period? ☐ Yes ☒ No

Project year y in which sq ft decline first arises: Project year y

Previous project year y-1 Project year y-1

Project year in which sq ft is at least as large as Project year y + n
project year y-1 such that $SF_{p=y+n} \geq SF_{p=y-1}$

Calculations for $SF\Delta_y$ which correspond to square foot changes during the project period are found in the accompanying excel sheet, using Module Section 8.3 equations 30 and 31. If there are no square foot declines, the values are 1.

Resulting values for $SF\Delta_y$ (number)	$SF\Delta_y$
	$SF\Delta_{y+1}$
	$SF\Delta_{y+2}$
	$SF\Delta_{y+etc}$
	
	$SF\Delta_{y+n}$

3.3 Leakage

Project leakage is set at zero for all project years y:

Resulting LE_y for project year y (tCO ₂ e)	0	LE_y for all project years y
--	---	--------------------------------

3.4 Net GHG Emission Reductions and Removals

The calculations for ERY are detailed in the accompanying excel sheet following Module Section 8.3, equation 29 per the methodology requirements. They are also given here in summary format:

Per equation 29:



For stationary 1 reductions:

Years	Estimated baseline emissions or removals (tCO ₂ e) BE _y	Estimated project emissions or removals (tCO ₂ e) PE _y	Estimated PE Adjustment emissions (tCO ₂ e) PEΔ _y	Sq ft adjustment factor SFΔ _y	Estimated net GHG emission reductions or removals (tCO ₂ e) ER _y
Project Year 1	351263	250144	36830	1.0	64289
Project Year 2	346697	279634	19146	1.0	47917
Project Year 3	342190	279634	19146	1.0	43410
Project Year 4	337741	279634	19146	1.0	38961
Project Year 5	333350	279634	19146	1.0	34570
Project Year 6	329017	279634	19146	1.0	30237
Project Year 7	324740	279634	19146	1.0	25960
Project Year 8	320518	279634	19146	1.0	21738
Project Year 9	316351	279634	19146	1.0	17571
Project Year 10	312239	279634	19146	1.0	13459
Total	3314105	2766850	209144		338112

v3.2 If any tool (PDD, Excel Templates etc) or consultations have been supplied directly or indirectly by Chevrolet or CNBN, project proponents assume responsibility for all responses and hold all other parties harmless.

For scope 2 electricity-based reductions:

Years	Estimated baseline emissions or removals (tCO ₂ e) BE _y	Estimated project emissions or removals (tCO ₂ e) PE _y	Estimated PE Adjustment emissions (tCO ₂ e) PEΔ _y	Sq ft adjustment factor SFΔ _y	Estimated net GHG emission reductions or removals (tCO ₂ e) ER _y
Project Year 1					
Project Year 2					
Project Year 3					
Project Year 4					
Project Year 5					
Project Year 6					
Project Year 7					
Project Year 8					
Project Year 9					
Project Year 10					
Total					

If both stationary 1 and scope 2 electricity reductions are sought, total project ER_y (their sum) following this same chart format, comprises:

Total					
--------------	--	--	--	--	--

4 MONITORING

4.1 Data and Parameters Available at Validation

Please see sections 9.1 and 9.2 of the Campus-wide Clean Energy & Energy Efficiency Module.

Have all parameters for validation been adopted from and applied as described in these sections. ☒ Yes ☐ No

Check all applicable parameters used in this pdd for validation purposes (see methodology for definitions):

At validation	
	<i>Confirm</i>
PBS _c	☒ Yes ☐ No
PBE _c	☐ Yes ☒ No
B	☒ Yes ☐ No
HDD _{p=y}	☐ Yes ☒ No
CDD _{p=y}	☐ Yes ☒ No
SCAP	☒ Yes ☐ No
E2AP	☐ Yes ☒ No

For source of parameter definitions, see:

<http://www.v-c-s.org/methodologies/campus-clean-energy-and-energy-efficiency>

For completeness sake, all the methodology definitions for the parameters applicable to this project validation are found copied below:

Data Unit / Parameter	PBS _c
Data unit	Percent
Description	Stationary combustion additionality performance benchmark for Carnegie class c. The level of the additionality benchmark is set at the annual percent reduction in campus-wide stationary combustion emissions achieved by campuses of equivalent Carnegie class which also achieve annual average reductions in total energy-based emissions.
Equations	8 and 9, VMD00038
Source of data	ACUPCC
Value applied	The levels of the additionality benchmarks are set out in Table 2, VMD00038
Justification of choice of data or description of measurement methods and procedures applied	Justification for the benchmark is provided in Appendix 1 VMD00038

Purpose of data	Determination of additionality
Comment	

Data Unit / Parameter	<i>B</i>
Data unit	<i>Number</i>
Description	<i>Baseline period</i>
Equations	2, 12 and 23, VMD00038
Source of data	Determined based on emissions data reported to third party GHG reporting program.
Value applied	3, 4 or 5
Justification of choice of data or description of measurement methods and procedures applied	The baseline period must meet the following conditions: - The baseline period must include project year 0 and three to five consecutive years prior to the project start date. - For at least one of the baseline years, data must be publicly-available through ACUPCC or a third-party GHG reporting program. The baseline period must be justified relative to the data that most accurately reflects historical emissions that are comparable to the campus conditions during project crediting period (eg, similar square footage and attendance). The baseline period must be calculated by subtracting the calendar year for the first year of the baseline period from the calendar year of project year 1.
Purpose of data	Calculation of baseline emissions
Any comment	

Data Unit / Parameter	<i>SCAP</i>
Data unit	<i>Number</i>
Description	Stationary combustion additionality eligibility period
Equations	8 and 9, VMD00038
Source of data	
Value applied	1, 2, 3, 4 or 5
Justification of choice of data or description of measurement methods and procedures applied	This period must include project year 0 and one to five consecutive years prior to the project start date. This period must be calculated by subtracting the calendar year for the additionality testing year, used for stationary combustion additionality benchmark testing, from the calendar year for project year 1.
Purpose of data	Determination of additionality

Comment	In some cases, the additionality eligibility period is not the same as the baseline period or the scope 2 electricity additionality eligibility period.
---------	---

4.2 Data and Parameters Monitored

Please see section 9.1 and 9.2 of the Campus-wide Clean Energy and Energy Efficiency Module.

Have all parameters for verification/monitoring been adopted from and applied as described in these sections? ☒ Yes ☐ No

Check all applicable parameters used in this pdd for verification purposes (see methodology for definitions):

Monitored	Confirm Y or N	
SF _{b=x}	☒ Yes	☐ No
SF _{p=y}	☒ Yes	☐ No
F _{b=x, i}	☒ Yes	☐ No
F _{p=y, i}	☒ Yes	☐ No
E _{b=x}	☒ Yes	☐ No
E _{p=y}	☒ Yes	☐ No
y	☒ Yes	☐ No
ΔEy	☒ Yes	☐ No
AT _{y,i}	☐ Yes	☒ No
PSH _{b=x}	☒ Yes	☐ No
PSH _{p=y}	☒ Yes	☐ No
PC _{b=x}	☒ Yes	☐ No
PC _{p=y}	☒ Yes	☐ No
ΔF _{y,i}	☐ Yes	☒ No

For source of parameter definitions, see:

<http://www.v-c-s.org/methodologies/campus-clean-energy-and-energy-efficiency>

For completeness sake, all the methodology definitions for the parameters applicable to this project verification are found copied below:

Data Unit / Parameter	SF _{b=x} , SF _{p=y}
Data unit	ft ²
Description	Total campus-wide square footage in the applicable year
Equations	1, 2, 3, 4, 9, 11, 30 and 31, VD00038
Source of data	The campus' historical GHG inventory reporting to relevant third-party GHG reporting program (eg, ACUPCC).
Description of measurement methods and procedures to be applied	Measured according to the reporting framework of the relevant third-party GHG reporting program.
Frequency of	Annual

monitoring/recording	
QA/QC procedures to be applied	
Purpose of data	Determination of additionality Calculation of baseline emissions Calculation of project emissions
Comment	Campus square footage data is typically reported to ACUPCC

Data Unit / Parameter	$F_{b=x,i}$, $F_{p=y,i}$
Data unit	tCO_2e
Description	Stationary combustion emissions in the applicable year from fuel type i, in the applicable year
Equations	3, 5, 6, 8, 9, 12, 14 and 28, VMD00038
Source of data	GHG reports submitted to third-party GHG reporting programs such as ACUPCC, as generated through credible GHG reporting tools such as the CAPC calculator or The Climate Registry reporting protocols.
Description of measurement methods and procedures to be applied	GHG emissions must be calculated by multiplying the quantity of fuel type i used campus-wide by the appropriate emissions factor for fuel type i, for the applicable year. Emissions factors for fuels must be consistent with those permitted under the third-party GHG reporting program.
Frequency of monitoring/recording	Annual
QA/QC procedures to be applied	
Purpose of data	Determination of additionality Calculation of baseline emissions Calculation of project emissions
Comment	The parameter $F_{b=1,i}$ is referenced in both Section section 7, VMD00038 where it applies to the additionality testing year and Section 8, VMD00038, where it applies to the first year of the baseline period. In some cases, the additionality testing year is not the same as the first year of the baseline period.

Data Unit / Parameter	$E_{b=x}$ or $E_{p=y}$
Data unit	tCO_2e

Description	Scope 2 electricity emissions in the applicable year
Equations	4, 5, 7, 19, 11, 29, 23 and 25, VMD00038
Source of data	GHG reports submitted to third-party GHG reporting programs such as ACUPCC, or generated through credible GHG reporting tools such as the CAPC calculator or The Climate Registry reporting protocols.
Description of measurement methods and procedures to be applied	$E_{b=1}$ must be calculated by multiplying the total electricity consumed campus-wide by the appropriate grid emissions factor, for the applicable baseline year. Emission factors must be consistent with those permitted under the third-party GHG reporting program, preferably consistent with those permitted under the CACP calculator. The default emissions factor is the regional eGRID combined margin. Other GHG emission factors should only be used if justification is provided that they are reasonable and conservative (eg, factors tailored to the specific utilities from which campuses' electricity is sourced). In such cases, the factors must have been published by the utilities in year y or, if published previously, must be used for no more than three years of emission reductions (ie, years y, $y+1$ and $y+2$, where y can be either a project year or a baseline year).
Frequency of monitoring/recording	Annual
QA/QC procedures to be applied	
Purpose of data	Determination of additionality Calculation of baseline emissions Calculation of project emissions
Comment	The parameter $E_{b=1}$ is referenced in both Section 7 VMD00038 where it applies to the additionality testing year and Section 7 VMD00038 where it applies to the first year of the baseline period. In some cases, the additionality testing year is not the same as the first year of the baseline period.

Data Unit / Parameter	y
Data unit	number
Description	Project year
Equations	13 and 24, VMD00038
Source of data	
Description of	y is the project year determined by counting the number of years

measurement methods and procedures to be applied	since the project start date (ie, the first project year = 1, the second project year = 2, etc.)
Frequency of monitoring/recording	<i>Annually</i>
QA/QC procedures to be applied	
Purpose of data	<i>Calculation of baseline emissions</i>
Comments	

Data Unit / Parameter	ΔE_y
Data unit	<i>tCO₂e</i>
Description	Incremental scope 2 electricity emissions and scope 2 heat emissions, scope 2 cooling emissions and/or scope 2 steam emissions in project year y due to stationary combustion adjustment technologies
Equations	15, 16, and 22, VMD00038
Source of data	GHG reports submitted to third-party GHG reporting programs such as ACUPCC, or generated through credible GHG reporting tools such as the CAPC calculator or The Climate Registry reporting protocols.
Description of measurement methods and procedures to be applied	Credible estimation approaches are allowed and sub-metering is not required. ΔE_y must be calculated consistent with calculations above for $E_{p=y}$ ΔE_y must be calculated by multiplying the incremental electricity consumed due to stationary combustion adjustment technologies in project year y by the appropriate grid emissions factor in project year y, then adding the incremental units of purchased heat, cooling and/or steam consumed due to stationary combustion adjustment technologies in project year y multiplied by an appropriate emissions factor. Emission factors must be consistent with those permitted under the third-party GHG reporting program, preferably consistent with those permitted under the CACP calculator. The default emissions factor is the regional eGRID combined margin. Other GHG emission factors should only be used if justification is provided that they are reasonable and conservative (eg, factors tailored to the specific utilities from which campuses' electricity is sourced). In such cases, the factors must have been published by the utilities in year y or, if published previously, must be used for no more than three years of emission reductions (ie, years y, y+1 and y+2, where y can be either a

	project year or a baseline year). Emissions factors for fuels must be consistent with those permitted under the third-party GHG reporting program.
Frequency of monitoring/recording	<i>Annually</i>
QA/QC procedures to be applied	
Purpose of data	<i>Calculation of project emissions</i>
Comment	

Data Unit / Parameter	$PSH_{b=x}, PSH_{p=y}$
Data unit	tCO_2e
Description	Scope 2 emissions from purchased steam and/or heat emissions in the applicable year
Equations	16, 17 and 27, VMD00038
Source of data	GHG reports submitted to third-party GHG reporting programs such as ACUPCC, or generated through credible GHG reporting tools such as the CAPC calculator or The Climate Registry reporting protocols.
Description of measurement methods and procedures to be applied	$PSH_{b=x}$ or $PSH_{p=y}$ must be calculated by multiplying scope 2 emissions from purchased steam and/or heat in the relevant year by an appropriate grid emissions factor or emission factor for fuels used. Emission factors must be consistent with those permitted under the third-party GHG reporting program, preferably consistent with those permitted under the CAPC calculator.
Frequency of monitoring/recording	<i>Once per project crediting period</i>
QA/QC procedures to be applied	
Purpose of data	<i>Calculation of project emissions</i>
Comment	

Data Unit / Parameter	$PC_{b=x}, PC_{p=y}$
Data unit	tCO_2e
Description	Scope 2 emissions from purchased cooling in the applicable

	year
Equations	16, 18 and 27, VMD00038
Source of data	GHG reports submitted to third-party GHG reporting programs such as ACUPCC, or generated through credible GHG reporting tools such as the CACP calculator or The Climate Registry reporting protocols.
Description of measurement methods and procedures to be applied	$PC_{b=x}$, or $PC_{p=y}$ must be calculated by multiplying scope 2 emissions from purchased cooling in the relevant year by an appropriate grid emissions factor. Emission factors must be consistent with those permitted under the third-party GHG reporting program, preferably consistent with those permitted under the CACP calculator.
Frequency of monitoring/recording	<i>Once per project crediting period</i>
QA/QC procedures to be applied	
Purpose of data	<i>Calculation of project emissions</i>
Comment	

4.3 Monitoring Plan

Has a monitoring plan been developed for this project: ☒ Yes ☐ No
(which includes criteria and procedures for obtaining, recording, compiling and analyzing data, parameters and other information important for quantifying and reporting GHG emissions)

Describe the monitoring plan: See Appendix C.
Appendix C will include a monitoring plan covering each of the bulleted requirements, per VCS instructions if not inserted in the box above

Source of GHG emissions data: ACUPCC
(ACUPCC, STARs etc)
Frequency of collection: annual or more frequent for underlying data

Is the data used in project testing Yes
consistent with this source of GHG reporting:

Describe internal or external auditing or processes Facilities & Services staff maintain detailed records of all energy sources. For purchased electricity and natural gas, supplier statements are retained. For coal, receipts for deliveries are maintained, in parallel with detailed records of the amount of coal burned. Mike Marquissee maintains an Excel spreadsheet with a summary of all energy sources for each month, along with fiscal year totals. These data are traceable back to the original documents, and are also used as the input data for the CACP calculator, which is used by iSEE staff for ACUPCC reporting. For more details, see Appendix C.

People responsible for data:

Activity	Person	Role	Competencies
Generation	see below		
Collection/recording	see below		
Management (storage, aggregating, collating)	see below		
Presentation/reporting	see below		

Source data on energy usage are generated by campus Facilities & Services staff, in a group headed by Mike Marquissee. His group stores, aggregates, and collates these original data into an Excel spreadsheet with monthly and fiscal year summaries of all energy sources. Stephanie Lage, in the Institute for Sustainability, Energy, and Environment (iSEE), uses those data as inputs into the CACP calculator for all GHG presentation and reporting purposes (including ACUPCC). Ben McCall, the Associate Director for Campus Sustainability at iSEE, coordinates with Stephanie and Mike for reporting data. For additional details, see Appendix C.

Monitoring data has drawn upon the underlying publicly reported ACUPCC/STARS data wherever possible in order to maximize quality. ☒ Yes ☐ No

Where data for GHG inventories have not be reported publicly, has the same reporting framework/calculation approach been used as was used for publically reported ACUPCC/STARS etc data? ☐ Yes ☐ No ☒ N/A

Comparable data quality management procedures been applied in this PDD as this campus uses for its reporting to ACUPCC/STARS/third parties. ☒ Yes ☐ No have

Any discrepancies between project data and reported ACUPCC/STARS/third party GHG reported data has been accompanied by explanations for project validators/verifiers. ☒ Yes ☐ No

Trivial exclusion from project and ACUPCC reported data for propane gas has been discussed: approx 0,02% or less variance in stat 1 emissions

Since preference is given for campus-wide to reports made through an established reporting calculators such as CACP's, this campus' response was incorporated in section 2.2

All data collected as part of monitoring will be archived electronically and be kept at least for 2 years after the end of the last crediting period. ☒ Yes ☐ No

Primary data used to calculate GHG emissions is available for validation review and is consistent with data entered for ACUPCC/STAR calculations etc ☒ Yes ☐ No

Is this part of a grouped project submission? ☐ Yes ☒ No

5 ENVIRONMENTAL IMPACT

There were no environmental impact assessments required by the methodology.

Note: In the US, environmental impact reports are not typically required for the size of projects that campuses present to VCS.

Summarize any environmental impact inputs (optional):

6 STAKEHOLDER COMMENTS

Extensive stakeholder comments were incorporated into the development of this performance methodology, including the performance tests for additionality. This campus project's reliance on the methodology's stakeholder consultation process is incorporated by reference.

Summarize any other stakeholder input has been provided to the project (optional):

APPENDIX A: CAMPUS MAP REFLECTING PROJECT BOUNDARY

The appended map of our campus was assembled by campus Facilities & Services staff to show the buildings that are included in our GHG reporting

APPENDIX B: WEATHER ADJUSTED EMISSION FACTORS IF REGRESSION APPROACH HAS BEEN APPLIED

NA

APPENDIX C: MONITORING PLAN

- The organizational structure, responsibilities and competencies of the personnel that carried out the monitoring activities.

Monitoring activities will be performed by the three personnel described below. Oversight and accountability of monitoring activities is achieved both through normal reporting channels as described below, and also through cross-checks between these personnel.

(1) Mike Marquissee, Director of Budget and Resource Planning, Energy Services Administration, Facilities and Services. Marquissee is the chief financial and accounting officer for the division of campus Facilities and Services which handles the import of electricity as well as the operation of the Abbott Power Plant (including purchase of coal and natural gas). Marquissee reports to the Director of Utilities and Energy Services (Kent Reifsteck), who in turn reports to the Executive Director of Facilities and Services (Allan Stratman), who is a direct report to the Chancellor. Marquissee is a financial executive and certified management accountant with 25 years of experience including nearly 14 years at the University of Illinois.

(2) Stephanie Lage, Assistant Director of the Institute for Sustainability, Energy, and Environment (iSEE). Lage is responsible for taking input data from Marquissee (for energy) and other entities on campus (e.g., Animal Sciences for numbers of cattle on our South Farms), and computing our campus greenhouse gas emissions using the Clean Air Cool Planet calculator. She is further responsible for submitting our official reports to ACUPCC and STARS. She reports to the Director of iSEE (Prof. Evan DeLucia), who reports to the Vice Chancellor of Research (Prof. Peter Schiffer), who is a direct report to the Chancellor. Lage has a background in business administration and has 14 years of experience with environmental programs, and 6 years of experience in tracking campus greenhouse gas emissions and other sustainability metrics.

(3) Prof. Ben McCall, Associate Director for Campus Sustainability at iSEE. Prof. McCall is responsible for coordinating with Marquissee and Lage to ensure that appropriate and accurate data are available for entry into the VCS Project Template to facilitate verification of VCUs for the campus. Prof. McCall reports to the Director of iSEE (Prof. Evan DeLucia), who reports to the Vice Chancellor of Research (Prof. Peter Schiffer), who is a direct report to the Chancellor. Prof. McCall has a Ph.D. in Chemistry and Astronomy & Astrophysics, and roughly 20 years of research experience in the physical sciences.

- The methods used for generating/measuring, recording, storing, aggregating, collating and reporting the data on monitored parameters.

Drawing on information from original invoices, monthly data on import of electricity and combustion of coal and natural gas are collected by Marquissee's team and collated into a spreadsheet that contains all monthly data back to before Fiscal 2007 (the beginning of the baseline period for this project). This spreadsheet (called Utility_FY) sums the monthly data to yield a fiscal year total for electricity imported for the campus boundary (Column IA), coal burned at Abbott Power Plant (Column F), and natural gas burned (Column IF). This process is undertaken independently of this project and has been performed routinely for several years in order to inform management decisions about the utilization of energy on our campus. For project verification purposes, the team will provide annotations to selected entries in this spreadsheet to indicate relevant invoices.

These fiscal year totals are then entered into the Clean Air Cool Planet calculator, which is preferred and approved by the VCS methodology. Specifically, the totals are entered into the Input tab of the CACP calculator, in Column BX for purchased electricity in kWh, Column R for coal in short tons, and Column P for natural gas in MBTU. The appropriate eGRID subregion (SRMW) is used in the CACP calculator to facilitate the conversion of kWh to eCO₂.

The CACP calculator then generates greenhouse gas emissions outputs; these are directly entered into the VCS project template to enable the calculation of the amount of carbon credits. The CACP outputs are also reported publicly to ACUPCC and STARS. Because the same input data (the output of the CACP calculator) is used for both ACUPCC/STARS reporting and the VCS project template, we can ensure that the public data correspond to VCS project data. Credits sold to third parties such as Chevrolet will be referenced in these public reports. In the case of ACUPCC, this will be entered as negative offsets purchased, which will appropriately adjust the net greenhouse gas emissions total.

The Project Emission Adjustment is calculated in the VCS project template by subtracting the five-year average baseline of purchased electricity (FY07-11) from the inferred electricity that would have been purchased in a given fiscal year in the absence of the National Petascale Computing Facility (NPCF). The contribution of NPCF is excluded because the startup of this national facility in FY13 was completely independent from the fuel optimization strategy that necessitates the project emission adjustment, and it would be inappropriate to count the increased purchased electricity due to NPCF as being a result of the fuel optimization.

The inferred fiscal year electricity purchase in the absence of NPCF (row 145 of the PE ADJS SIMPLE tab of the project template) is calculated by taking the actual purchased electricity for that fiscal year and subtracting an "NPCF Adjustment." The NPCF Adjustment represents how much lower the

campus's purchased electricity would have been if NPCF had not been switched on. We calculate this NPCF Adjustment by taking the actual electricity usage of NPCF (which is tracked in our campus energy billing system) and subtracting the increase in total electricity consumed on campus between the baseline year (FY2012) and the fiscal year in question. Note that the FY2012 baseline year will be fixed throughout the duration of the project, as it represents the period before NPCF was commissioned.

This procedure is best explained using FY2013 as an example. In FY2013, the total campus purchased electricity was roughly 192 GWh. In that year, the campus as a whole used 46 GWh more electricity than in the baseline year (FY2012), but NPCF consumed 76 GWh. Thus, if NPCF had not been switched on, the campus purchased electricity would have gone down by 30 GWh (this is the NPCF Adjustment) instead of going up by 46 GWh, so that the purchased electricity would have been 162 GWh instead of the actual 192 GWh. The inferred purchased electricity without NPCF (162 GWh) is the figure used in the Project Emission Adjustment. Note that the anchoring of the NPCF Adjustment to the purchased electricity (instead of onsite generation) is based on the fact that our onsite generation is driven by our steam load, not by electricity demand.

All records for the project will be retained for a minimum of ten years; that is, for a period to exceed the project duration.

Transactions of VCU's will be executed in FY12-14 with BEF on behalf of Chevrolet (and possibly in future years with brokers on behalf of other buyers) in such a way that the credit sale would be registered in a credible carbon registry.

- The procedures used for handling any internal auditing (and QA/QC) performed and any non-conformities identified.

The following quality assurance and internal auditing processes will be performed on an annual basis:

- 1) Our greenhouse gas emission figures are publicly reported to ACUPCC, which has a stakeholder peer review process managed by Second Nature; any challenges to or comments about figures reported to ACUPCC must be responded to by the campus.
- 2) Informal consultation process with Chevrolet (and, in future years, other potential buyers) to discuss project parameters.
- 3) Two months will be randomly chosen by McCall (iSEE), and Marquissee (Facilities & Services) will provide detailed utility statements and documentation of coal and gas consumption to validate the entries in the Utility_FY spreadsheet for those months.
- 4) McCall and Lage will cross-check entries in the Clean Air Cool Planet calculator and resulting greenhouse gas emission results.
- 5) Figures for coal combustion are reported as part of the campus's obligations under Title V of the Clean Air Act.

6) The campus conducts regular financial audits, and our energy accounting systems are subject to that audit process.

- The implementation of sampling approaches, including target precision levels, sample sizes, sample site locations, stratification, frequency of measurement and QA/QC procedures. Where applicable, demonstrate whether the required confidence level or precision has been met.

The project itself does not involve sampling, as all necessary input data (purchased electricity and coal/gas combustion) represents a complete set.

The campus will provide all supporting documentation requested by validator/verifiers, including the supporting purchase/invoice data, consistent with their selected sampling procedures.

APPENDIX D: DETAILED DESCRIPTION OF PROJECT ACTIVITIES

Behavior Change Campaign/Communications

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

CoGen & Fuel Switch/Optimization

o Since signing the Illinois Climate Action Plan in 2010, our campus has embraced a fuel optimization strategy: where feasible, we have elected to utilize lower CO₂ purchased electricity from MISO and to back off on our use of on-site existing coal and gas cogeneration facilities. This strategy, combined with the other measures described here, has led to a significant decrease in our CO₂ emissions, and we have been able to go three summers in a row without burning any coal.

Lighting Retrofits

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

On-Site Renewables

- o The first rooftop solar was installed on the Business Instructional Facility (2009 LEED Platinum building). This 33kw system was the first large solar project on campus. Since then, solar pv panels have also been installed at the Building Research Council building and solar thermal panels have been installed on the Activities and Recreation Center.

- *Boiler Retrofits/Central Heating/Cooling Upgrades*

- o Central heating through an extensive system of steam tunnels is used for heating the vast majority of campus buildings. The older buildings use steam radiators to heat individual rooms, and the more modern buildings convert the steam to either hot water heating or forced air systems. Campus also has worked on a central cooling system, using Chilled Water. The chilled water system is still under expansion.

- *Building System Retro-Commissioning & Upgrades Including Automation*

- o Multi-disciplinary teams work through high energy-use buildings to re-commission the buildings, with an emphasis on HVAC systems and Controls and temperature setbacks (often referred to as "scheduling"). Each year, buildings are selected from the top 100 energy consumption buildings. By the end of FY13, the RCx teams completed 40 buildings, with an average of 26.5% energy reduction since beginning the program in FY08. In total, RCx efforts reduced energy costs by over \$14M. RCx leaders are now reaching out to auxiliaries, such as McKinley Health Center, to identify funding.

- *Weatherization Improvements*

- o From 2010 to 2013, major deferred maintenance projects prioritized weatherization improvements of campus buildings. Specifically, these projects focused on envelope improvements, such as brick tuck-pointing. A list of completed projects is online at <http://www.fs.illinois.edu/services/capital-programs/deferred-maintenance/project-list>.

- *LEED Certification/GreenBuildings*

- o There are currently 12 University of Illinois buildings/capital projects which have received LEED certification. Six are LEED Silver, three are LEED Gold, and three are LEED Platinum.

- *Innovative Strategies*

- o Illinois has received innovation points through STARS for various innovative strategies that have decreased our greenhouse gas emissions. One such innovation of note in the energy domain is the web-based Illini Energy Dashboard, which provides clearly understandable data describing the energy consumption rate of selected campus buildings so that users can make educated choices about their energy-use habits.