

UNIVERSITY OF WISCONSIN MILWAUKEE CAMPUS WIDE CLEAN ENERGY & ENERGY EFFICIENCY PROJECT

PROJECT DESCRIPTION DOCUMENT

Document Prepared By: University of Wisconsin-Milwaukee, Office of Sustainability

Contact Information: John Gardner, gardne37@uwm.edu

Project Title	University of Wisconsin Milwaukee Campus Wide Clean Energy & Energy Efficiency Project
Version	2
Date of Issue	7.24.2017
Prepared By	John Gardner and Kate M. Nelson
Contact	gardne37@uwm.edu , knelson6@uwm.edu , sustainability.uwm.edu

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. Alternatively, 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. These resources and tools were originally created specifically for Chevrolet Campus Clean Energy Campaign universities. Therefore, these resources and tools cannot be relied upon or considered definitive or fit for purpose, given other users' applications. Chevrolet and its partners do not take any responsibility for the consequences of using these tools: the use of these resources and tools and any subsequent decisions or impacts arising are made solely and exclusively at the user's own risk.

Table of Contents

1	PROJECT DETAILS	3
1.1	SUMMARY DESCRIPTION OF THE PROJECT	3
1.2	SECTORAL SCOPE AND PROJECT TYPE	5
1.3	PROJECT PROPONENT	5
1.4	OTHER ENTITIES INVOLVED IN THE PROJECT	5
1.5	PROJECT START DATE	6
1.6	PROJECT CREDITING PERIOD	6
1.7	PROJECT SCALE AND ESTIMATED GHG EMISSION REDUCTIONS OR REMOVALS	6
1.8	DESCRIPTION OF THE PROJECT ACTIVITY	7
1.9	PROJECT LOCATION	8
1.10	CONDITIONS PRIOR TO PROJECT INITIATION	8
1.11	COMPLIANCE WITH LAWS, STATUTES AND OTHER REGULATORY FRAMEWORKS	9
1.12	OWNERSHIP AND OTHER PROGRAMS	9
1.12.1	PROJECT OWNERSHIP	9
1.12.2	EMISSIONS TRADING PROGRAMS AND OTHER BINDING LIMITS	10
1.12.3	OTHER FORMS OF ENVIRONMENTAL CREDIT	10
1.12.4	PARTICIPATION UNDER OTHER GHG PROGRAMS	11
1.12.5	PROJECTS REJECTED BY OTHER GHG PROGRAMS	11
1.13	ADDITIONAL INFORMATION RELEVANT TO THE PROJECT	11
2	APPLICATION OF METHODOLOGY	12
2.1	TITLE AND REFERENCE OF METHODOLOGY	12
2.2	APPLICABILITY OF METHODOLOGY	12
2.3	PROJECT BOUNDARY	13
2.4	BASELINE SCENARIO	16
2.5	ADDITIONALITY	17
2.6	METHODOLOGY DEVIATIONS	19
3	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	20
3.1	BASELINE EMISSIONS	20
3.2	PROJECT EMISSIONS	20
	PE ADJUSTMENTS	21
3.3	LEAKAGE	22
3.4	NET GHG EMISSION REDUCTIONS AND REMOVALS	22
4	MONITORING	24
4.1	DATA AND PARAMETERS AVAILABLE AT VALIDATION	24
4.2	DATA AND PARAMETERS MONITORED	25
4.3	MONITORING PLAN	30
5	SAFEGUARDS	31
5.1	NO NET HARM	31
5.2	ENVIRONMENTAL IMPACT	31
5.3	LOCAL STAKEHOLDER CONSULTATION	31
5.4	PUBLIC COMMENTS	31

APPENDIX A: CAMPUS MAP REFLECTING PROJECT BOUNDARY 32

32

APPENDIX B: WEATHER ADJUSTED EMISSION FACTORS IF REGRESSION APPROACH HAS BEEN APPLIED 34

APPENDIX C: MONITORING PLAN 34

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 may include 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 pdd 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: University of Wisconsin-Milwaukee,
Milwaukee WI, USA

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

1.1 Summary Description of the Project

The campus is located in Milwaukee, Wisconsin. 43.0783° N, 87.8820° W

The campus-wide scope 1 GHG emissions reductions are primarily driven by the program: Energy Matters- Comprehensive Energy Efficiency and Awareness at the University of Wisconsin-Milwaukee (UWM). The UWM Facility Services Department and Office of Sustainability established a partnership with an energy service company in order to begin performance contracting that took an aggressive cellar-to-ceiling phased approach combining long and short-term return on investments that would improve campus space and service, pilot innovative technology and programs, and reduce energy consumption. UWM took a phased approach to performance contracting on campus, which addressed roughly one million square feet at a time (4,046,526 square feet total) and allowed for unique variances based on each building and its occupants.

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 Carnegies 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

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

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

Campus' average percent reduction/year achieved: 11.79%
Based upon the following Project 1 testing year. 2016 FY
First year Additionality Eligibility Period Selected 2014 FY

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) The first phases consisted of the campus's energy intensive buildings. The key to making the energy conservation measures aggressive first resided in establishing a 20-year payback, which was then implemented by "bundling" the long and short-term return on individual energy conservation measures (e.g. lighting improvements, insulation improvements, Pneumatic to DDC VAV conversion, etc.) in order to meet the payback. This allowed for occupancy-based heating and cooling load improvements as well as lighting improvements within the same project.

A full upgrade was implemented to move from pneumatic to digital controls to better accommodate occupancy, as well as provide better remote control of individual classrooms, labs, and offices. Digital controls with variable air volume were implemented, allowing centrally controlled temperature settings in 1,942,976 square feet of campus. Temperature settings were hard and fast (68 degrees in the winter and 76 degrees in the summer). Air handlers were managed in a similar fashion with a "trim & respond" approach with variable frequency drives to properly manage the load based on occupancy.

In addition, lighting system improvements have yielded large energy savings. Incandescent lamps, T12 fluorescent lamps, HID lamps, and existing fluorescent T8 fixtures were replaced or retrofit with newer lamps and fixtures. Incandescent fixtures were replaced with new compact fluorescent lamps, and T12 fluorescent lamps were replaced with high performance 25-watt T8 lamps and low power electronic ballasts.

Measure 2) Laboratory space improvements: Laboratories are a large energy demand on any campus. While adjusting air flow in lab spaces, the Office of Sustainability along with campus Safety and Assurances ran a "Shut the Sash" program to properly adjust fume hoods and communicate the best times to keep the hood sash closed. This worked hand in hand with the proper and safe air flow improvements.

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 = 31155 [BE Per equations 12 or 23 tCO₂e/year]
Project emissions for year 1 25945 [PE₁ For year 1, per Eq 14 or 25 tCO₂e/yr]

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

If yes, PE Adjustment test applied [test name a) – j) from 8.1.3 / 8.2.3]: Project Year 1: Test C
Project Years 2-10: Test D

Resulting PE Adjustment, $PE\Delta_y$: 0 [$PE\Delta_1$ For year 1, per Eq15-22, 26-8 tCO₂e/year]

Thus, year 1 emission reductions: 5210 [ER_1 For year 1, per Eq 29 tCO₂e/year]

Total 10 years emission reductions: 31561 [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	The Board of Regents of the University of Wisconsin System, for the University of Wisconsin Milwaukee (UWM)
Contact person	Kate M. Nelson
Title	Chief Sustainability Officer
Address	PO Box 413
Telephone	414-254-1595
Email	Knelson6@uwm.edu

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

1.4 Other Entities Involved in the Project

Organization name	Second Nature
Contact person	Ruby Woodside
Title	Innovative Services Manager
Address	18 Tremont Street, Boston MA 02108
Telephone	(617) 722-0036

Email	Innovation@secondnature.org
-------	-----------------------------

1.5 Project Start Date

Project start date: July 1 2015

The following is confirmed: ☒ Yes ☐ No

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.

*Note: ACUPCC has been rebranded as the Presidents Climate Leadership Commitments. All mention of ACUPCC refers to these Commitments, as managed by Second Nature.

1.6 Project Crediting Period

Project start date: July 1 2015
Project end date: June 30 2025
Project crediting period: 10

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 300kCO₂e/year)

Project	☒
Large project	☐

Years	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1 (eg, 2011) ER ₁	5210
Year 2, ER ₂	4325
Year 3 ER ₃	3965
Year 4 ER ₄	3609
Year 5 ER ₅	3259
Year 6 ER ₆	2913
Year 7 ER ₇	2571
Year 8 ER ₈	2235

Year 9 ER ₉	1902
Year 10 ER ₁₀	1573
Total estimated ERs	31561
Total number of crediting years	10
Average annual ERs	3156

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) The first phases consisted of the campus's energy intensive buildings. The key to making the energy conservation measures aggressive first resided in establishing a 20-year payback, which was then implemented by "bundling" the long and short-term return on individual energy conservation measures (e.g. lighting improvements, insulation improvements, Pneumatic to DDC VAV conversion, etc.) in order to make the payback. This allowed for occupancy-based heating and cooling load improvements as well as lighting improvements within the same project.

A full upgrade was implemented to move from pneumatic to digital controls to better accommodate occupancy, as well as provide better remote control of individual classrooms, labs, and offices. Digital controls with variable air volume were implemented, allowing centrally controlled temperature settings in 1,942,976 square feet of campus. Temperature settings were hard and fast (68 degrees in the winter and 76 degrees in the summer). Air handlers were managed in a similar fashion with a "trim & respond" approach with variable frequency drives to properly manage the load based on occupancy.

In addition, lighting system improvements have yielded large energy savings. Incandescent lamps, T12 fluorescent lamps, HID lamps, and existing fluorescent T8 fixtures were replaced or retrofit with newer lamps and fixtures. Incandescent can fixtures were replaced with new compact fluorescent lamps, and T12 fluorescent lamps were replaced with high performance 25-watt T8 lamps and low power electronic ballasts.

Measure 2) Laboratory space improvements: Laboratories are a large energy demand on any campus. While adjusting air flow in lab spaces, the Office of Sustainability along with campus Safety and Assurances ran a "Shut the Sash" program to properly adjust fume hoods and communicate the best times to keep the hood sash closed. This worked hand in hand with the proper and safe air flow improvements.

Additional Measures:

Behaviour Change Campaign/ Communications: Along with the communications focusing on laboratory space and properly using fume hoods, UWM has implemented behaviour communications for on-campus energy use, and student energy use competitions. The Office of Sustainability has run energy and water use competitions between residence halls as well as between academic buildings as part of in-house competitions and through Campus Conservation Nationals. In addition, the Office of Sustainability has conducted staff trainings for 23 departments within Student Affairs and 15 departments within Finance & Administrative Affairs on energy efficiency and conservation as part of UWM's Green Office Certification program.

Lighting retrofits: UWM replaced lighting with high efficiency fixtures, and occupancy sensors. Lamps and ballasts were standardized across campus with 5,000K 25-watt bulbs.

On-site renewables: Energy savings coupled with outside grants enabled UWM to build a large green roof lined with solar photovoltaic panels on the Golda Meir Library. The 50,000-square-foot green roof features a 29.4kW

solar pv system (a ballasted system tilted at a 35° angle consisting of 120, 245-watt modules). The PV system is designed to overlay with the green roof to optimize the green roofs cooling effect.

Building System Retro-Commissioning & Upgrades Including Automation: Investment-grade audits were conducted for campus buildings before solutions were proposed. Improvements to the energy management system and controls were coordinated with improvements to variable speed drives/ventilation control, steam trap replacements, lighting system improvements, plumbing improvements, and building envelope improvements for optimal performance.

Weatherization Improvements: Building envelope improvements: Buildings were inspected visually and a smoke puffer was used to identify the location and severity of leakage paths within individual buildings. Doors and windows received weather-stripping.

LEED Certification/Green Buildings: UW-Milwaukee built three LEED certified buildings between 2011-2016. The Zilber School of Public Health is a five-story LEED-Gold facility within the LEED-ND Platinum Brewery development in downtown Milwaukee. The building features historic reuse as well as new building construction and over 95% of construction waste was diverted from landfill. The UWM Innovation Accelerator facility achieved LEED silver certification in 2015. The building features a 25W PV solar array, a green roof, exterior sunshades, and foam-in-place wall insulation. Building labs and offices were positioned for even lighting and controlled solar gain. The Kenwood Interdisciplinary Research Center, on UWM's Kenwood campus, was completed in 2016 and achieved LEED Gold certification as well. The building features water efficient landscaping, enhanced commissioning, exterior sunshades, and a high-reflective white (cool roof) adhered membrane.

Innovative Strategies: UV lighting was installed on several heating and cooling coils in order to kill the bacteria that cling to them. This not only makes the air handlers run more efficiency but it also in turn improves the indoor air quality, a sustainability factor not as easily quantified in a bottom line payback.

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

- AASHE STARS Report:
<https://stars.aashe.org/institutions/university-of-wisconsin-milwaukee-wi/report/>
- Second Nature Reporting Platform:
<http://reporting.secondnature.org/institution/detail!4242##4242>
- University of Wisconsin-Milwaukee Office of Sustainability Website
<http://uwm.edu/sustainability/>

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

1.9 Project Location

Project location: University of Wisconsin-Milwaukee
Milwaukee, Wisconsin 53201

Geodetic coordinates 43.0783° N, 87.8820° W

See Appendix A for campus map with project boundary.

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.

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

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

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 Wisconsin Department of Natural Resources in compliance with the provisions of Chapter 285, Wis. Stats., and Chapters NR 400 to 499, Wis. Adm. Code

Provide a web link to these same relevant laws:

Title V http://docs.legis.wisconsin.gov/code/admin_code/nr/400 (Natural Resources)
<http://docs.legis.wisconsin.gov/statutes/statutes/285> (Air Pollution)

1.12 Ownership and Other Programs

1.12.1 Project Ownership

Note: inter alia, VCS defines the project ownership in its Standard 3.11.1 (3) as: Project ownership 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 the project proponent has not been divested of such project ownership).

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 ☒ No

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

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

Has or will the campus ensured that project reductions have not been double reported to this entity for project years in which reductions have been sold? ☒ Yes ☐ No

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).

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

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.

Applicable ACUPCC/STARS web site: NA

If other forms of environmental credit have arisen and need to be cancelled to ensure project integrity, please describe how this has been achieved: NA

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?

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: NA

1.13 Additional Information Relevant to the Project

Eligibility Criteria

Relevant information, as applicable: NA

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

Sustainable Development

This project contributes to the sustainable development of the United States and specifically to the UN Sustainable Development Goals 7) Affordable and Clean Energy, 9) Industry, Innovation, and Infrastructure, 11) Sustainable Cities and Communities, and 13) Climate Action.

Through investments in energy efficiency and renewable energy on campus, this project drives progress towards affordable and clean energy for the students, faculty, and staff at the University of Wisconsin Milwaukee. The VM0025 methodology approach of comparing performance with peers drives innovative solutions to reducing emissions and financing carbon reduction projects. Student engagement on campus also drives innovation, and the University's leadership creates a model for clean energy infrastructure.

The University of Wisconsin Milwaukee is a signatory of the Presidents Climate Commitment, which commits the school to increasing climate resilience with the local community and achieving carbon

neutrality on campus. In this way the University is driving action on climate change, both in terms of mitigation and preparedness with its community.

The United States has also indicated in its Intended Nationally Determined Contribution to the Paris Agreement that it aims to reduce economy-wide emissions by 26-28% below 2005 levels by 2025. Through its GHG emissions reductions and investment in efficiency and clean energy, this project supports the U.S. intended contribution.

Further Information

Add details, if any: NA

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://uwm.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
<http://uwm.edu/graduateschool/>

As corroborated by the following Carnegie web link:
<http://carnegieclassifications.iu.edu/index.php>

The Carnegie classification for this campus:
http://carnegieclassifications.iu.edu/lookup/srp.php?limit=0%2C50&clq=&start_page=lookup.php&backurl=lookup.php&search_string=wisconsin+milwaukee&submit=FIN

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

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

STARS Submission 8/1/13 --- <https://stars.aashe.org/institutions/university-of-wisconsin-milwaukee-wi/report/2013-08-01/>

STARS Submission 5/31/16 --- <https://stars.aashe.org/institutions/university-of-wisconsin-milwaukee-wi/report/2016-05-31/>

Second Nature Dashboard --- <http://reporting.secdnature.org/dashboard/dashboard/?next=###4242>

GHG inventory prepared via CACP calculator? ☒ Yes ☐ No
(optional but if checked CACP 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
		CH ₄	Optional	

			Included? Check if yes ☒	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. Where included, they must be included in both baseline and project case.
		N ₂ O	Optional Included? Check if yes ☒	
	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		

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

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 Wisconsin-Milwaukee
(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

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

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:
(e.g. one of the reporting year's detail summary page)

STARS Submission 8/1/13 --- <https://stars.aashe.org/institutions/university-of-wisconsin-milwaukee-wi/report/2013-08-01/>

STARS Submission 5/31/16 --- <https://stars.aashe.org/institutions/university-of-wisconsin-milwaukee-wi/report/2016-05-31/>

Second Nature Dashboard --- <http://reporting.secondnature.org/dashboard/dashboard/?next=##4242>

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

If yes, (so that new site areas are to be excluded) please provide supporting data to justify growth rates, exclusion and demonstrate that there is no transfer of activities from the existing campus area to the new site areas (whether based on people, function or energy systems). NA

2.4 Baseline Scenario

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

Project year 1 selected: 2016 FY

Last baseline year (project year 0): 2015 FY

First baseline year selected: 2011 FY

Baseline period, B, resulting: 5

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 ☒ NA

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: NA

2.5 Additionality

The accompanying campus excel template sheet, as 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

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 than 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.

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

Additionality Eligibility Period:

For projects seeking:

Stationary Combustion
Reductions

Scope 2 Electricity
Reductions

First year of Additionality Eligibility
period selected:

2014 FY

NA

July 1 2013

NA

Project year 1 selected:

2016 FY

NA

Additionality Eligibility Period resulting: 2

NA

Did this eligibility period pass both
Test 3 and Test 4?

☒ Yes

☐ No

NA

Are weather adjusted tests required?

☐ Yes

☒ No

NA

(that only Tests 3b and 4b were passed requiring an additionality eligibility period equal to 1)

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:

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

☒ Yes

☐ No

Were simple weather adjusted factors applied in Eq 5?

☐ Yes

☒ No

(using weather adjusted emissions from 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 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

11.79% % 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

(Only Project Year 1 emissions data available at time of validation)

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

2.6 Methodology Deviations

Were any deviations from the methodology applied?

☐ Yes

☒ No

If yes, please describe and justify:

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

The accompanying campus excel template sheet, as 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

31155 tCO₂e

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

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

For stationary 1, BEy (tCO₂e)

31155 Project year 1
30750 Project year 2
30350 Project year 3
29955 Project year 4
29566 Project year 5
29182 Project year 6
28802 Project year 7
28428 Project year 8
28058 Project year 9
27693 Project year 10

3.2 Project Emissions

The calculations for the baseline terms PEy 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, PEy (tCO₂e)

25945	Project year 1
25945	Project year 2
25945	Project year 3
25945	Project year 4
25945	Project year 5
25945	Project year 6
25945	Project year 7
25945	Project year 8
25945	Project year 9
25945	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:

In Fiscal Year 15, UWM completed construction of a 92,000-square-foot addition to the School of Freshwater Sciences. The building was previously heated solely with natural gas boilers in the building. As part of the renovation, a switch was made to heat the building predominantly with district steam purchased from the We Energies Downtown Steam Plant.

Please indicate which PE Adjustment approach used for calculations:

Project Year 1: Test C
Project Years 2-10: Test D

Provide justification for approach selected:

(including whether CHP/geothermal technologies are included)
(referencing logic included in methodology/excel template)

No CHP or geothermal technologies are included in this project. For the first year, this project passes Test C. In subsequent years, the project does not pass Test C. Thus, Test D will be applied. Per the methodology, if CHP or geothermal are not included, the school may choose Test D to account for potential project emissions adjustments.

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)	0	[$PE\Delta_1$ for project year 1]
	480	[$PE\Delta_2$ for project year 2]
	440	[$PE\Delta_3$ for project year 3]
	401	[$PE\Delta_4$ for project year 4]
	362	[$PE\Delta_5$ for project year 5]
	324	[$PE\Delta_6$ for project year 6]
	286	[$PE\Delta_7$ for project year 7]

248 [PE_{Δ8} for project year 8]
211 [PE_{Δ9} for project year 9]
175 [PE_{Δ10} for project year 10]

Calculation Details for PE_{Δy}: (please see accompanying excel template sheet)

SF_{Δy} Square Foot Adjustment Factor for Declines in Square Footage During Project Period.

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

Calculations for SF_{Δy} 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_{Δy} (number)

1	SF _{Δy}
1	SF _{Δy+1}
1	SF _{Δy+2}
1	SF _{Δy+etc}
....	
1	SF _{Δy+n}

3.3 Leakage

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

Resulting LE_y for project year y (tCO₂e) 0 LE_y for all project years y

3.4 Net GHG Emission Reductions and Removals

The calculations for ER_y 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:

$$ER_y = (BE_y - PE_y - LE_y) * SF_{\Delta y}$$

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) PE _{Δy}	Sq ft adjustment factor SF _{Δy}	Estimated net GHG emission reductions or removals (tCO ₂ e) ER _y
Project Year 1	31155	25945	0	1	5210

Project Year 2	30750	25945	480	1	4325
Project Year 3	30350	25945	440	1	3965
Project Year 4	29955	25945	401	1	3609
Project Year 5	29566	25945	362	1	3259
Project Year 6	29182	25945	324	1	2913
Project Year 7	28802	25945	286	1	2571
Project Year 8	28428	25945	248	1	2235
Project Year 9	28058	25945	211	1	1902
Project Year 10	27693	25945	175	1	1573
Total	293938	259450	2927	1	31561

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 ☒ Yes ☐ No
been adopted from and applied as described in these sections.

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://database.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 (Second Nature Reporting Platform)
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 of VMD00038
Purpose of data	Determination of additionality

Data Unit/Parameter	B
Data Unit	Number
Description	Baseline period
Equations	2, 12, and 23 VMD00038
Source of Data	Determined based on emissions data reported to third party GHG reporting platform.
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: 1. The baseline period must include project year 0 and three to five consecutive years prior to the project start date. 2. For at least one of the baseline years, data must be publicly available through the ACUPCC (Second Nature Reporting Platform) 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 (e.g. 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.

Data Unit/Parameter	SCAP
Data Unit	Number
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
ΔE _y	☒ Yes	☐ No
AT _{y, i}	☐ Yes	☒ No
PSH _{b=x}	☒ Yes	☐ No
PSH _{p=y}	☒ Yes	☐ No

PC _{b=x}	☐ Yes	☒ No
PC _{p=y}	☐ Yes	☒ No
$\Delta F_{y,i}$	☐ Yes	☒ No

For source of parameter definitions, see:

<http://database.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 monitoring/recording	Annual
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 ₂ e
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 ₂ e
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 Sectio Error! Reference source not found, 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 measurement methods and procedures to be applied	y is the project year determined by counting the number of years since the project start date (ie, the first project year = 1, the second project year = 2, etc.)
Frequency of monitoring/recording	Annually
QA/QC procedures to be applied	
Purpose of data	Calculation of baseline emissions
Comments	

Data Unit / Parameter	ΔE_y
Data unit	tCO ₂ e
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	Annually
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Comment	

Data Unit / Parameter	$PSH_{b=x}$, $PSH_{p=y}$
Data unit	tCO ₂ e
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 CACP calculator.
Frequency of monitoring/recording	Once per project crediting period
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions

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 for complete plan.

Source of GHG emissions data: ACUPCC
(ACUPCC, STARS etc)
Frequency of collection: Yearly

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

Describe internal or external auditing or processes:
Internal comparisons of billed energy to the Office of Sustainability spreadsheet entries is carried out yearly as an internal control.

People responsible for data:

Activity	Person	Role	Competencies
Generation	John Gardner	Program & Policy Analyst, UWM	
Collection/recording	John Gardner	Program & Policy Analyst, UWM	
Management (storage, aggregating, collating) Presentation/reporting	John Gardner	Program & Policy Analyst, UWM	

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 ☒ N/A ☐ No

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

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 ☐ N/A

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 SAFEGUARDS

5.1 No Net Harm

This project does not generate any potential negative environmental or socio-economic impacts.

5.2 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.

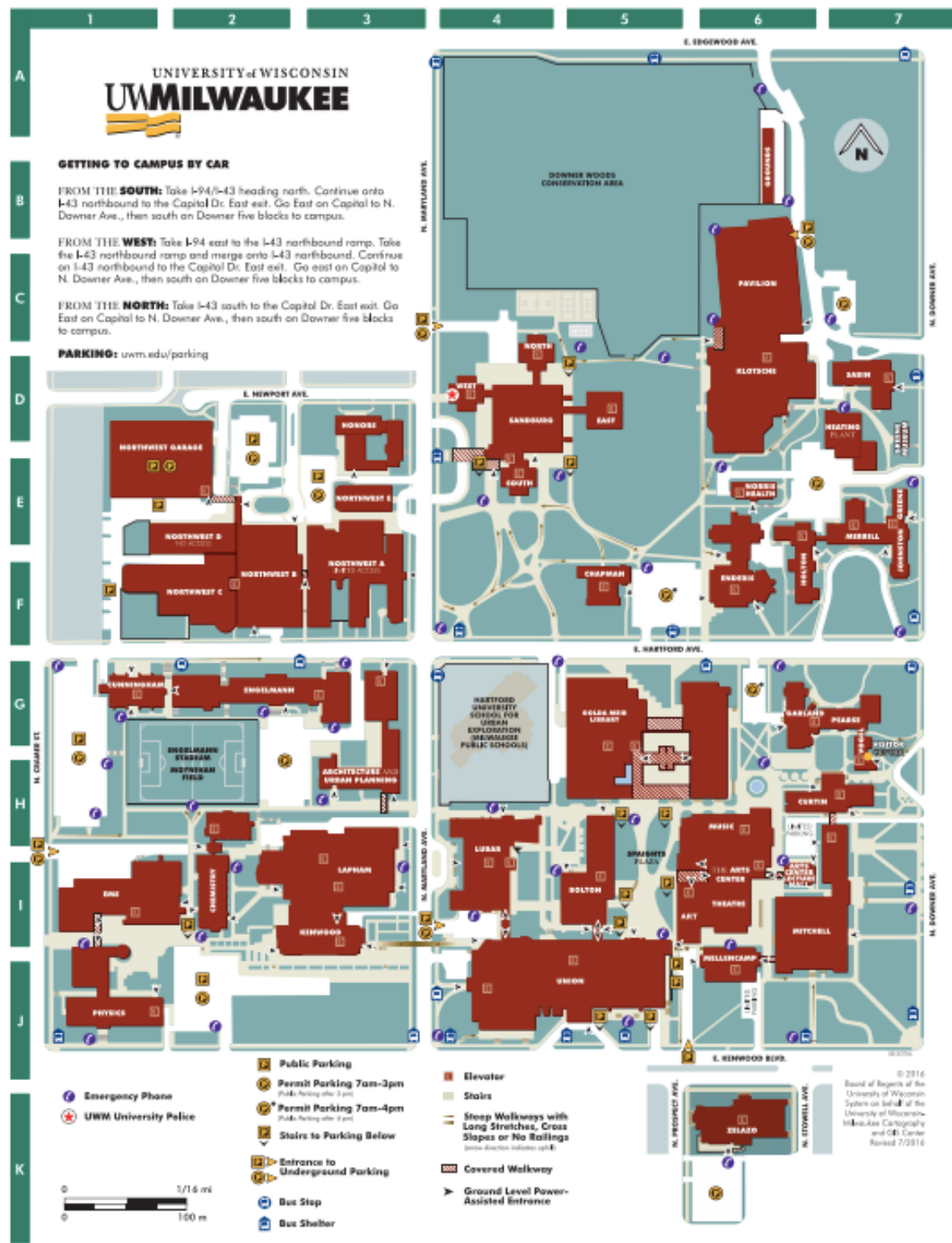
5.3 Local Stakeholder Consultation

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.

5.4 Public Comments

There have been no public comments made on this project.

APPENDIX A: CAMPUS MAP REFLECTING PROJECT BOUNDARY



UNIVERSITY of WISCONSIN
UWMILWAUKEE
BUILDING AND FACILITY DIRECTORY

ALH ALUMNI HOUSE (E2) 1991 3250 E. Kenwood Blvd.	GRD GROUNDS BUILDING (B6) 1946 2411 E. Edgewood Ave.	NWQ D NORTHWEST QUADRANT D (E2) 1992D 2015 E. Newport Ave.
AUP ARCHITECTURE AND URBAN PLANNING BUILDING (H3) 1993 2131 E. Hartford Ave.	HIF HEATING PLANT (D7) 1915 3359 N. Downer Ave.	NWQ E NORTHWEST QUADRANT E (E3) 1932E 3355 N. Maryland Ave.
ART ART BUILDING (B6) 1981A 2400 E. Kenwood Blvd.	HCC HEPPEL CONFERENCE CENTER (OFFICE Area East Map) 1060 3271 N. Lake Dr.	NWQ G NORTHWEST QUADRANT GARAGE (E2) 1992G 2001 E. Newport Ave.
AC THE ARTS CENTER (B6) 1983 2400 E. Kenwood Blvd.	HET HOLTON HALL (F6) 1936 2442 E. Hartford Ave.	NHC NORRIS HEALTH CENTER (E8) 1926 3351 N. Downer Ave.
ACL ARTS CENTER LECTURE HALL (B6) 1981L 2400 E. Kenwood Blvd.	HON HONORS HOUSE (B6) 1932F 3363 N. Maryland Ave.	PW PAVILION (D6) 1917A 3409 N. Downer Ave.
ASMC AURORA SINAI MEDICAL CENTER (Not Displayed on Map) 1951 1020 N. 15th St.	HOPF HOUSE OF PEACE (Not Displayed on Map) 1979A 1702 W. Walnut St.	PER PEARSE HALL (G7) 1958 2513 E. Hartford Ave.
BOL BOLTON HALL (B5) 1983 3210 N. Maryland Ave.	IHP INDEPENDENT UNITED HEALTH PARTNERS (Not Displayed on Map) 1979E (Not Displayed on Map)	PHY PHYSICS BUILDING (J1) 1984 2000 E. Kenwood Blvd.
CAMB CAMBRIDGE COMMONS (F3) 1916 2325 N. Cambridge Ave.	ICAR INNOVATION CAMPUS ACCELERATOR BUILDING (Midland Area East Map) 1067 1225 Discovery Place.	PUR PURIN HALL (OFFICE Area East Map) 1987 2000 E. Kenwood Blvd.
CHA CHAPMAN HALL (F5) 1930 2310 E. Hartford Ave.	JOH JOHNSTON HALL (E7) 1921 2522 E. Hartford Ave.	RVM RIVERVIEW RESIDENCE HALL (OFFICE Area East Map) 1919 2340 N. Commerce St.
CHM CHEMISTRY BUILDING (E2) 1954 3210 N. Cramer Ave.	RSQA KENILWORTH SQUARE APARTMENTS (OFFICE Area East Map) 1914A 1915 E. Kenilworth Pl.	SAB SABIN HALL (D7) 1923 3413 N. Downer Ave.
CEP CONTINUING EDUCATION PLANKINTON BUILDING (C2) 1993 381 W. Wisconsin Ave.	RSQE KENILWORTH SQUARE EAST (OFFICE Area East Map) 1914E 1925 E. Kenilworth Pl.	SAN SANDBORO RESIDENCE HALL (D4) 1957 3400 N. Maryland Ave.
CCRC COZZENS & CUDAHY RESEARCH CENTER (A1) 1950 9000 N. Susan Rd.	KEN KENWOOD INTERDISCIPLINARY RESEARCH COMPLEX (I3) 1972A 3135 N. Maryland Ave.	SFS SAUKVILLE FIELD STATION (Midland Area East Map) 1913 3095 Blue Goose Rd, Saukville
CUN CUNNINGHAM HALL (G1) 1973 1921 E. Hartford Ave.	IC KLOTSCHKE CENTER (D6) 1917 3409 N. Downer Ave.	SSNC SILVER SPRING NURSING CENTER (Not Displayed on Map) 1954 3400 N. 64th St.
CRT CURTIN HALL (H7) 1957 3245 N. Downer Ave.	LAF LAPHAM HALL (I3) 1982 3209 N. Maryland Ave.	SF SPAIGHTS PLAZA (E5) 1983B 2380 E. Kenwood Blvd.
ELTR EASTLAKE TOWERS (South Shore Area East Map) 1994 4425 N. Dan Washington Rd.	LUB LUBAR HALL (B6) 1978 3202 N. Maryland Ave.	THE THEATRE BUILDING (B6) 1987 2400 E. Kenwood Blvd.
EMS EMS BUILDING ENGINEERING AND MATHEMATICAL SCIENCES BUILDING (E1) 1983 3200 N. Cramer St.	MCOV MEDICAL COLLEGE OF WISCONSIN (Not Displayed on Map) 1979C 8701 W. Watertown Plank Rd.	USRB UNIVERSITY SERVICES AND RESEARCH BUILDING (South Shore Area East Map) 1948 115 E. Railroad Way
END ENDERIS HALL (F6) 1919 2400 E. Hartford Ave.	MEL MELLENCAMP HALL (B6) 1956 2442 E. Kenwood Blvd.	FRYM UWM AUDIOLOGY GROUP (Not Displayed on Map) 7000 10425 N. North Ave.
ENG ENGELMANN HALL (G2) 1993 2033 E. Hartford Ave.	MER MERRILL HALL (F7) 1922 2512 E. Hartford Ave.	UN UWM STUDENT UNION (J5) 1980 2200 E. Kenwood Blvd.
ENS ENGELMANN STADIUM (H2) 1995 2033 E. Hartford Ave.	HIDT MILWAUKEE HIDTA OFFICE (Not Displayed on Map) 1979B 801 W. Michigan Ave.	VC VISITOR CENTER (Not Displayed on Map)
GAR GARLAND HALL (F8) 1959 2441 E. Hartford Ave.	MIT MITCHELL HALL (F7) 1961 3205 N. Downer Ave.	VOG VOGEL HALL (G7) 1963 3253 N. Downer Ave.
GLWC GLOBAL WATER CENTER (Midland Area East Map) 1965 223 W. Pittsburgh Ave.	MOY MOYNIHAN FIELD (H2) 1968 2035 E. Hartford Ave.	WASS WEST ALLIS 70TH STREET (Not Displayed on Map) 1952 1205 S. 70th St.
GLRF GREAT LAKES RESEARCH FACILITY (Midland Area East Map) 1980 600 E. Greenfield Ave.	MUS MUSIC BUILDING (B6) 1981M 2400 E. Kenwood Blvd.	WUWM WUWM CHASE TOWER (Midland Area East Map) 1951 111 E. Wisconsin Ave.
GML GOLDA MIDEV LIBRARY (G5) 1970 2311 E. Hartford Ave.	NWQ A NORTHWEST QUADRANT A (F3) 1982A 3321 N. Maryland Ave.	ZEL ZELAZO CENTER FOR THE PERFORMING ARTS (B6) 1989 2419 E. Kenwood Blvd.
GRH GREENE HALL (E7) 1920 3347 N. Downer Ave.	NWQ B NORTHWEST QUADRANT B (F2) 1932B 2025 E. Newport Ave.	ZSH ZILBER SCHOOL OF PUBLIC HEALTH BUILDING (Midland Area East Map) 1989 1240 N. 10th St.
GRM GREENE MUSEUM (E7) 1918 3367 N. Downer Ave.	NWQ C NORTHWEST QUADRANT C (F2) 1932C 1990 E. Hartford Ave.	



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

NA

APPENDIX C: MONITORING PLAN

- Organizational Structure and Responsible Personnel

The Office of Sustainability at the University of Wisconsin-Milwaukee operates under Facilities, Planning, and Management. The Office is headed by Chief Sustainability Officer Kate Nelson. The Office of Sustainability also has a Program and Policy Analyst; a position dedicated to energy and emissions reporting. This position is filled by John Gardner. The Program and Policy Analyst works in conjunction with all utility accounting representatives as well as facility and space reporting. Data is collected from utility bills received from Facility Services Accounting.

The UWM Office of Sustainability compiles all relevant campus data for the GHG inventory, and the Program and Policy Analyst manages and executes completion of the yearly GHG inventory

- Methods used for measuring, recording, storing, and reporting the data on monitored parameters.

Monitoring data will be drawn from yearly the GHG inventory reporting publicly and housed by Second Nature in the Second Nature Reporting Platform as well as through the AASHE STARS Reporting Tool. UW-Milwaukee has and will continue to use the Clean Air Cool Planet Carbon Calculator to develop the GHG inventory. As mentioned above, the UWM Office of Sustainability, headed by Chief Sustainability Officer Kate Nelson, compiles all relevant campus data for the GHG Inventory. John Gardner, Program & Policy Analyst for the Office of Sustainability manages and executes completion of the yearly GHG inventory.

Measurement and verification reports to demonstrate and monitor performance across campus are supplied by the energy service company originally responsible for the performance contracting for three years following the close-out of each phase. Quarterly and annual reports are supplied to the university based on the scale of each phase of the project. These reports track all savings and performance based on individual energy conservation measures. They provide insight into corrective measures. The Office of Sustainability receives these reports from the ESCO's M&V Specialist of the Americas M&V Services Team at their scheduled time and are reviewed as a collective.

Institutional Data such as campus student, faculty, and staff population is compiled by the University's Office of Assessment and Institutional Research (OAIR). Data is available from the OAIR website at: <http://uwm.edu/institutional-research/reports/>. Campus square footage as well as space usage (lab, research, energy-intensive square feet) is compiled by UWM Campus Planning and data is procured yearly from the Institutional Planning Specialist (Mike Priem).

On-campus stationary emissions are derived monthly from several sources. Data is primarily derived from natural gas consumption as billed by We Energies (smaller natural gas account purchases) and Constellation New Energy (large natural gas purchases). Data is entered by the Office of Sustainability Program & Policy Analyst into a spreadsheet which is housed by the Office of Sustainability within campus servers. Any distillate oil used by the main campus Central Heat Plant is documented by heat plant employees in monthly reports and stored in files at the Heat Plant. This data is sought from the Heat Plant Director (Robert Martinez) yearly and entered into a spreadsheet which the Office of Sustainability keeps on campus servers.

Scope II electricity data is derived from We Energies (electric provider) bills. Data is entered by the Office of Sustainability Program & Policy Analyst into a spreadsheet which is housed by the Office of Sustainability within campus servers. Scope II steam data is derived from We Energies bills as well. Data is entered by the

Office of Sustainability Program & Policy Analyst into a spreadsheet which is housed by the Office of Sustainability.

All additional inputs for the CACP carbon calculator are collected by the UWM Office of Sustainability from various campus staff or crafted through in-house work carried out by the Office of Sustainability (e.g. a Transportation Survey conducted every 3 years).

Project proponent will ensure that project documents and records are secure and retrievable for at least 2 years post crediting period:

Official Project Documents and any supporting documentation (including primary documents such as monthly heat plant reports, summary of monthly/annual data of utility accounts, yearly Clean Air Cool Planet GHG emissions inventory) will be kept and maintained on UWM servers accessible by the Division of Finance and Administrative Affairs at UWM, of which the UWM Office of Sustainability is a part. Duplicate files will exist on both external hard drive media as well as University shared folders. Files will seek to meet the following criteria under Wisconsin Administrative Policy ADM 12:

Accessible: The records can be retrieved for reference or access within a reasonable period of time.

Accurate: The retrieved file correctly reflects the original record.

Legible: The letters, numbers, and symbols in the document are uniquely identifiable.

Readable: The records can be opened on an accessible program and easily read by any and all users.

Reliable: The electronic record reflects the initial record each and every time it is accessed.

Authentic: The electronic record correctly reflects the input of creators and editors and can be substantiated.

In addition, UWM publicly houses GHG emissions data on the Second Nature reporting website for each year of the project crediting period as well as on the AASHE STARS website. This creates accountability and a peer review process. All public data will remain public after each yearly submission.

- Procedure used for internal auditing, QA/QC, and non-conformities identified

No external auditing is conducted. Internal review of billed energy compared to Office of Sustainability spreadsheet entries is carried out yearly as an internal control. Entries into the Clean Air Cool Planet Carbon Calculator are cross-checked for accuracy and completeness.

All GHG inventory data is publicly reported year through the Second Nature Reporting Platform. This creates accountability and a peer review process. UWM must respond to any challenges or comments about emissions data reported by the campus.

Utility data will be shared with verifiers for each year to ensure that it corresponds to the monthly/annually reported energy inputs into the Clean Air Cool Planet Carbon Calculator.

- Sampling Approaches

This project does not involve any sampling. The data that is collected is complete for energy use data across campus.

UWM will provide all supporting documentation and utility invoices requested by the validator/verifiers.