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

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
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Prepared By	John Gardner and Kate M. Nelson
Contact	University of Wisconsin-Milwaukee, Office of Sustainability 2131 East Hartford Avenue Milwaukee, WI 53211 sustainability.uwm.edu gardne37@uwm.edu, knelson6@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 ..... ERROR! BOOKMARK NOT DEFINED.

1 PROJECT DETAILS

This Monitoring Report has been prepared and submitted by this University/college ("Applicant") using data prepared and compiled by Applicant and reflects 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 Monitoring Report and the excel template (if submitted) 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

By submitting this pdd 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 Implementation Status of the Project

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 make the 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 is 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.

Do any of these activities differ from those already described during validation or during a prior monitoring period? ☐ Yes ☒ No

Credits are sought in:

Stationary 1 combustion reductions	☒ Yes	☐ No
Scope 2 electricity based reductions	☐ Yes	☒ No

First project year implementation date FY2016, beginning July 1, 2015

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

Since CACP periodically updates its calculator and the most applicable, contemporaneous version is to be used to calculate each year's GHG inventory:

Per equations 12 or 23: [BE Per equations 12 or 23 tCO2e/year]

Average baseline emissions =

For years FY 2016 31155 tCO2e using the version of CACP vs 9

As an example for the project emissions/reductions profile for project year 1:

Project emissions for year 1 25945 [PE_1 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 C [Enter applied test name a) – j) from 8.1.3/8.2.3]

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 emission reductions for this monitoring period: 5210 [Summing for FY2016 years ER_y per Eq 29 tCO2e/year]

Consistent with tables in sections 4.4

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

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	knelson@uwm.edu

1.4 Other Entities Involved in the Project

1.5 Project Start Date

Project start date: July 1, 2015

1.6 Project Crediting Period

Project Crediting Period Start Date: July 1, 2015
Project Crediting Period End Date: June 30, 2025
Project crediting period: 10

1.7 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.

1.8 Title and Reference of Methodology

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

1.9 Other Programs

- Emission Trading Programs and Other Binding Limits:
  Is there an applicable carbon cap or binding limit in the campus region?
  ☐ Yes ☒ No

- Other Forms of Environmental Credit:
  Is there an applicable GHG reporting system under which the campus is publicly reporting its emissions? ☒ Yes ☐ No

  Please indicate which one: ☒ ACUPCC (Second Nature)

  ☒ 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

- Participation under Other GHG Programs:
  Is there an applicable GHG program under which the campus is registering its credits?
  ☐ Yes ☒ No

1.10 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.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

For performance methodologies, updates on the overall project performance is required and provided below.

Years for which verification is sought:

Project Year #	Date (yyyy)	Included?	
Project Year 1	FY2016	☒ Yes	☐ No
Project Year 2	FY2017	☐ Yes	☒ No
Project Year 3	FY2018	☐ Yes	☒ No
Project Year 4	FY2019	☐ Yes	☒ No
Project Year 5	FY2020	☐ Yes	☒ No
Project Year 6	FY2021	☐ Yes	☒ No
Project Year 7	FY2022	☐ Yes	☒ No
Project Year 8	FY2023	☐ Yes	☒ No
Project Year 9	FY2024	☐ Yes	☒ No
Project Year 10	FY2025	☐ Yes	☒ No

On an annual reporting basis of: ☒ Fiscal ☐ Calendar

If fiscal, does fiscal year commence July 1? ☒ Yes ☐ *No* ☐ N/A

Campus square footage for years where verification is sought

Project Year 1	FY 2016	7905871 sq feet

Are sq ft figures consistent with ACUPCC/STARS/? ☒ Yes ☐ No

public GHG reporting?

Per equation 8/9 (for stationary 1 credits) and/or 10/11 (for scope 2 electricity credits), which evaluate whether the GHG emissions in project year 1 and y respectively were below the permissible threshold per Test 4a/b-S and/or Test a/b-E:

Equation 8: $$\sum_{i} \frac{F_{b=1,i} - F_{p=1,i}}{F_{p=1,i}} \geq PBS_{c} * SCAP$$

Equation 9: $$\sum_{i} \frac{F_{b=1,i}}{F_{p=y,i}} \geq (PBS_c * SCAP + 1) * \frac{SF_{p=1}}{SF_{p=y}}$$

Equation 10: $$\frac{E_{b=1} - E_{p=1}}{E_{p=1}} \geq PBE_c * E2AP$$

Equation 11: $$\frac{E_{b=1}}{E_{p=y}} \geq (PBE_c * E2AP + 1) * \frac{SF_{p=1}}{SF_{p=y}}$$

For stationary 1 credits:
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?

For project year 1:

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

☒ Yes ☐ No

Such that the principle % reduction threshold for project eligibility has been met in year 1:

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

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 project year y stationary 1 emissions whose compliance is assessed in equation 9

Such that the maximum threshold has not been exceeded for stat 1 emissions in subsequent years – since emissions may not exceed this threshold if credits are to be issued in that specific year

(CHECK ONLY THOSE YEARS WHICH HAVE PASSED BASED ON ACTUAL GHG REPORTED DATA FOR YEARS INCLUDED IN THIS MONITORING PERIOD)

☐ 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)

Were the campus-wide energy efficiency and clean energy measures undertaken as described in section 1.1 prior to or during this period? ☒ Yes ☐ No

Were there any unexpected events that impacted GHG emission reductions removals or monitoring? ☐ Yes ☒ No

Leakage is set at zero per the VMD0038 module.

Are there any other changes to report? ☐ Yes ☒ No

Are there any further activities/measures EE/clean energy undertaken beyond those described in 1.1?

☐ Yes ☒ No

2.2 Deviations

Methodology Deviations

Were any deviations from the methodology applied? ☐ Yes ☒ No

Project Description Deviations

Are any project description deviations sought? ☐ Yes ☒ No

2.3 Grouped Project

Grouped project: ☐ Yes ☒ No .

2.4 Safeguards

No Net Harm

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

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.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

As described in sections 9.1 and 9.2 of the Campus-wide Clean Energy & Energy Efficiency Module:

Have all parameters for validation (as now applied for project monitoring/verification purposes) been adopted from and applied as described in these sections. ☒ *Yes* ☐ *No*

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

At validation		
	Confirm	
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 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	5.68%
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	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 program.
Value applied	5
Justification of choice of data or description of measurement methods and procedures applied	The baseline period must meet the following conditions: I. The baseline period must include project year 0 and three to five consecutive years prior to the project start date. II. 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	SCAP
Data unit	Number
Description	Stationary combustion additionality eligibility period
Equations	8 and 9, VMD00038
Source of data	
Value applied	2
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.

3.2 Data and Parameters Monitored

As described in 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

Which applicable public GHG reporting system has the campus used for this applicable monitoring period (including baseline and current project years)?

Please indicate which one:

☒ ACUPCC (Second Nature)
☒ STARS

Are the GHG emissions and square foot data applied to this project in this monitoring period consistent with these public reports?

☒ Yes ☐ No

Has the CACP calculator been used to develop these GHG emissions?

☒ Yes ☐ No

If not, explain how the GHG calculation approach used is consistent with the CACP calculator

Check all applicable parameters used in this monitoring report 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
$\Delta F_{y,i}$	☐ 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 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). Primary data from internal financial and facilities operational reviews.
Description of measurement methods and	Measured according to the reporting framework of the relevant third-party GHG reporting program.

procedures to be applied	
Frequency of monitoring/recording	Annual
QA/QC procedures to be applied	The primary data is checked during internal financial and facilities operational reviews. The primary data is used to calculate the project and ACUPCC reports and is checked during the calculation review and report preparations.
Purpose of data	Determination of additionality Calculation of baseline emissions Calculation of project emissions
Comment	Campus square footage data is typically reported to ACUPCC
Value monitored:	The values for each year are provided in section 2.1 above
Calculation method	Follows the protocols set out in the relevant third party reporting program
Monitoring Equipment	The data is calculated using common area calculations

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. Primary data from internal financial and facilities operational reviews.
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	The primary data is checked during internal financial and facilities operational reviews. The primary data is used to calculate the project and ACUPCC reports and is checked during the calculation review and report preparations.
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.
Value monitored:	The values for each year are provided in section 4 below

Calculation method	Follows the protocols set out in the relevant third party reporting program
Monitoring Equipment	The underlying primary data for fuel consumption is measured using standard industrial measures and equipment. The natural gas, for example, is measured using an industrial standardized dry gas meter provided by the utility.

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. Primary data from internal financial and facilities operational reviews.
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	The primary data is checked during internal financial and facilities operational reviews. The primary data is used to calculate the project and ACUPCC reports and is checked during the calculation review and report preparations.
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 8 VMD0038 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.

Value monitored:	The values for each year are provided in section 4 below
Calculation method	Follows the protocols set out in the relevant third party reporting program
Monitoring Equipment	The underlying primary data for fuel consumption is measured using standard industrial measures and equipment. Electricity, for example, is measured using a standard electric meter measuring current (kWh) provided by the utility.

Data Unit / Parameter	y
Data unit	number
Description	Project year
Equations	13 and 24, VMD00038
Source of data	Primary data from internal financial and facilities operational reviews.
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	Project year y takes values 1 in this verification. Consistency between ACUPCC annual reporting periods and project annual reports periods were assured (e.g. fiscal or calendar years applied consistently throughout)
Purpose of data	Calculation of baseline emissions
Comments	
Value monitored:	FY2016
Calculation method	Follows the protocols set out in the relevant third party reporting program
Monitoring Equipment	Calendar

Data Unit / Parameter	ΔE_y
Data unit	tCO_2e
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. Primary data from internal financial and facilities operational reviews, from which this parameter is calculated .
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	The primary data is checked during internal financial and facilities operational reviews. The primary data is used to calculate the project and ACUPCC reports and is checked during the calculation review and report preparations.
Purpose of data	Calculation of project emissions
Comment	
Value monitored:	The values for each year are provided in the calculations of $PE\Delta_y$ found in section 4.2 below and whose calculation basis is detailed in the excel project template
Calculation method	Follows the protocols set out in VMD0038
Monitoring Equipment	Calculated value derived from E_y consistent with estimations and sub-metering allowed under VMD0038. See excel template.

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. Primary data from financial and facilities operational reviews.
Description of	$PSH_{b=x}$ or $PSH_{p=y}$ must be calculated by multiplying scope 2

measurement methods and procedures to be applied	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	The primary data is checked during financial and facilities operational reviews. The primary data is used to calculate the project and ACUPCC reports and is checked during the calculation review and report preparations.
Purpose of data	Calculation of project emissions
Comment	
Value monitored:	The values for each year are provided in the calculations of $PE\Delta y$ found in section 4.2 below and whose calculation basis is detailed in the excel project template
Calculation method	Follows the protocols set out in the relevant third party reporting program
Monitoring Equipment	The underlying primary data for purchased heat and/or steam consumption is measured using standard industrial measures and equipment applied at the source of generation (offsite) consistent with supplied and invoiced energy services.

3.3 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 a complete for energy use data across campus.

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

4 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, based on its best judgment, are needed for section 4 and 2.1 above to demonstrate whether and how the additionality performance tests are satisfied and how the baseline, project emissions 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.

For stationary 1 and scope 2 electricity GHG calculations, specify the version of CACP calculator which has consistently been used to generate BEy, PEy, LEy and ERy (tCO2e)

9	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

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

☐ Yes ☒ No

4.1 Baseline Emissions

Using the appropriate FY or CY designations, for project years (e.g. 1,2,3,4 where applicable) using the version of CACP calculator consistently described above:

For stationary 1 reductions, BE

For years FY2016 using CACP 9		31155	tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e
For years	using CACP		tCO2e

For scope 2 electricity reductions, BE NA

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

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

For stationary 1, BEy (tCO2e)

31155	Project year 1 using CACP vs 9
	Project year 2 using CACP vs
	Project year 3 using CACP vs
	Project year 4 using CACP vs

Project year 5 using CACP vs

Project year 6 using CACP vs

Project year 7 using CACP vs

Project year 8 using CACP vs

Project year 9 using CACP vs

Project year 10 using CACP vs

For scope 2 electricity, BEy (tCO2e) NA

4.2 Project Emissions

Using the appropriate FY or CY designations, for project years (e.g. 1,2,3,4 as applicable) using the version of CACP calculator consistently described above:

For stationary 1, PEy (tCO2e)

25945 Project year 1 using CACP vs 9

Project year 2 using CACP vs

Project year 3 using CACP vs

Project year 4 using CACP vs

Project year 5 using CACP vs

Project year 6 using CACP vs

Project year 7 using CACP vs

Project year 8 using CACP vs

Project year 9 using CACP vs

Project year 10 using CACP vs

For scope 2 electricity, PEy (tCO2e) NA

Using the appropriate FY or CY designations, for all years, using the appropriately generated GHG figures as above with CACP (e.g. v 6.9 for 2012/13 and CACP v 7.0 for 2014/15) as applicable:

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

If yes, resulting $PE\Delta_y$ for project year y (tCO_2e) 0 [$PE\Delta_1$ for project year 1]

[$PE\Delta_2$ for project year 2]

[$PE\Delta_3$ for project year 3]

[$PE\Delta_4$ for project year 4]

[$PE\Delta_5$ for project year 5]

[$PE\Delta_6$ for project year 6]

[$PE\Delta_7$ for project year 7]

[$PE\Delta_8$ for project year 8]

[$PE\Delta_9$ for project year 9]

[$PE\Delta_{10}$ for project year 10]

4.3 Leakage

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

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

4.4 Net GHG Emission Reductions and Removals

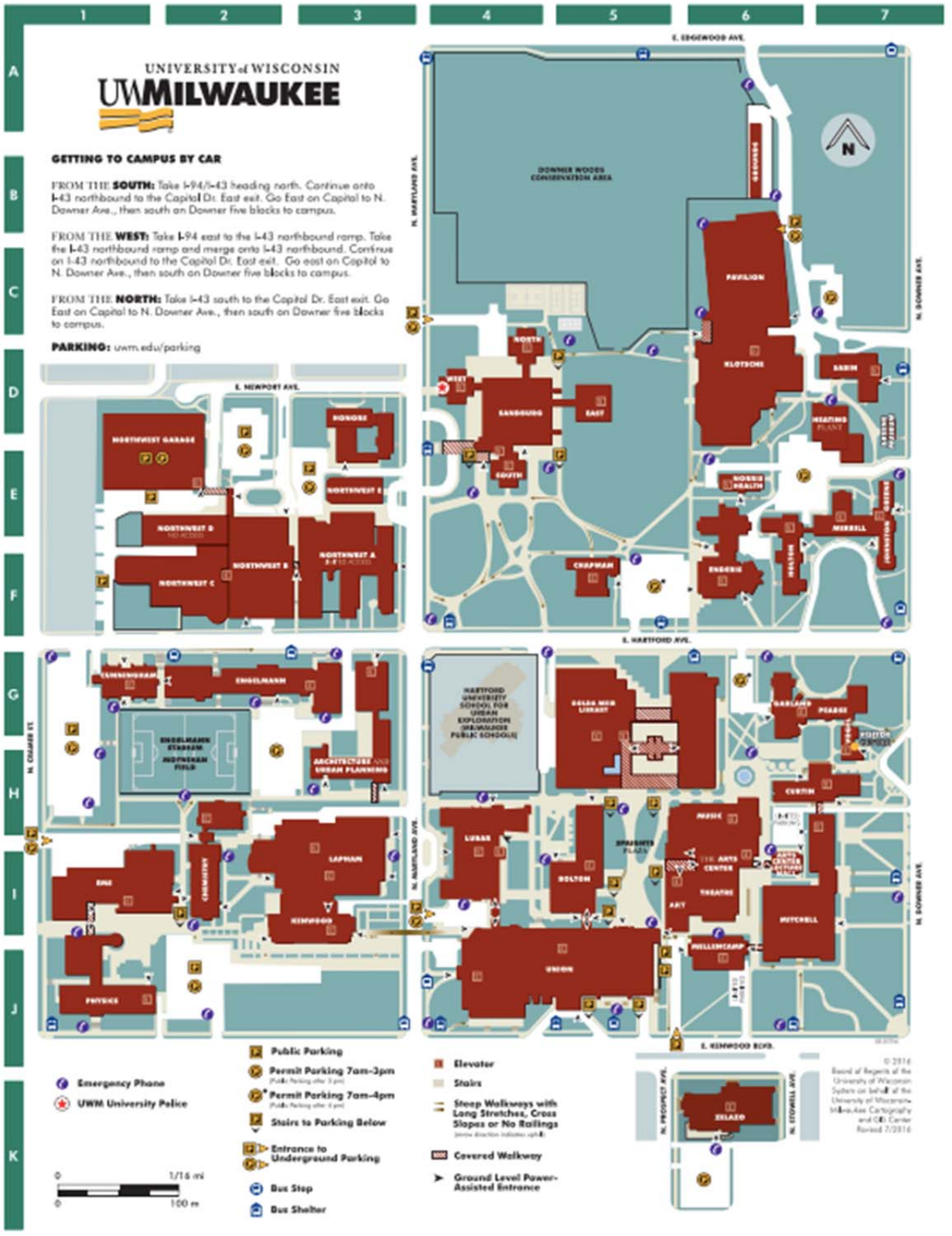
Using the appropriate FY or CY designations:
For Project Years (e.g.1, 2, 3, 4) as applicable using the relevant CAPC generated results as described above:

For stationary 1 reductions:

Years	Baseline emissions or removals (tCO_2e) BE_y	Project emissions or removals (tCO_2e) PE_y	PE Adjustment emissions (tCO_2e) $PE\Delta_y$	Sq ft adjustment factor $SF\Delta_y$	Actual net GHG emission reductions or removals (tCO_2e) ER_y
Project Year 1	31155	25945	0	0	5210
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 for this Monitoring Period (only)	31155	25945	0	0	5210

APPENDIX A: CAMPUS MAP REFLECTING PROJECT BOUNDARY


UNIVERSITY of WISCONSIN
UWMILWAUKEE
GETTING TO CAMPUS BY CAR
FROM THE SOUTH: Take I-94/I-43 heading north. Continue onto I-43 northbound to the Capitol Dr. East exit. Go East on Capitol to N. Downer Ave., then south on Downer five blocks to campus.
FROM THE WEST: Take I-94 east to the I-43 northbound ramp. Take the I-43 northbound ramp and merge onto I-43 northbound. Continue on I-43 northbound to the Capitol Dr. East exit. Go east on Capitol to N. Downer Ave., then south on Downer five blocks to campus.
FROM THE NORTH: Take I-43 south to the Capitol Dr. East exit. Go East on Capitol to N. Downer Ave., then south on Downer five blocks to campus.
PARKING: uwm.edu/parking
E. EDGEWOOD AVE.
E. NEWPORT AVE.
E. HARTFORD AVE.
E. KENWOOD BLVD.
N. MARYLAND AVE.
N. DOWNER AVE.
N. CRAMER ST.
N. HACKETT AVE.
DOWNER WOODS CONSERVATION AREA
PAVILION
KLOTSCHE
SANDBURG
NORTHWEST GARAGE
NORTHWEST A
NORTHWEST B
NORTHWEST C
NORTHWEST D
CHAPMAN
ENGERTH
MERRILL
HEATING PLANT
CUNNINGHAM
ENGELMANN
ENGELMANN STADIUM
ARCHITECTURE AND URBAN PLANNING
LAPHAM
KENWOOD
ENG
CHEMISTRY
PHYSICS
HARTFORD UNIVERSITY SCHOOL FOR URBAN EXPLORATION (FORMERLY PUBLIC SCHOOLS)
GOLDA MEIR LIBRARY
LUBAR
BOLTON
MUSIC
ART
THEATRE
PHILLIPS HALL
MITCHELL
CURTIN
GARLAND
PEARCE
UNION
ZELAZO
Emergency Phone
UWM University Police
Public Parking
Permit Parking 7am-3pm
Permit Parking 7am-4pm
Stairs to Parking Below
Entrance to Underground Parking
Bus Stop
Bus Shelter
Elevator
Stairs
Steep Walkways with Long Stretches, Cross Slopes or No Railings
Covered Walkway
Ground Level Power-Assisted Entrance
1/16 mi
100 m

UNIVERSITY of WISCONSIN
UWMILWAUKEE
BUILDING AND FACILITY DIRECTORY

AH **ALUMNI** HOUSE (E2)
1901 3230 E. Kenwood Blvd.

AUP **ARCHITECTURE** AND **URBAN PLANNING** BUILDING (H3)
1913 2131 E. Hartford Ave.

ART **ART** BUILDING (H4)
1981A 2400 E. Kenwood Blvd.

AC THE **ARTS CENTER** (I6)
1981 2400 E. Kenwood Blvd.

ACL **ARTS CENTER** LECTURE HALL (I6)
1981L 2400 E. Kenwood Blvd.

ASMC **AURORA** SINAI MEDICAL CENTER
(Not Displayed on Map)
1951 1020 N. 12th St.

BOL **BOLTON** HALL (E5)
1963 3210 N. Maryland Ave.

CAMB **CAMBRIDGE** COMMONS (F1)
1916 2525 N. Cambridge Ave.

CHA **CHAPMAN** HALL (F5)
1950 2310 E. Hartford Ave.

CHM **CHEMISTRY** BUILDING (I2)
1974 3210 N. Cramer Ave.

CEP **CONTINUING EDUCATION PLANKINTON** BUILDING (G2)
1995 161 W. Wisconsin Ave.

CCRC **COZZENS** & **CUDAHY** RESEARCH CENTER (A1)
1950 9100 N. Swan Rd.

CUN **CUNNINGHAM** HALL (G1)
1973 1921 E. Hartford Ave.

CRT **CURTIN** HALL (H7)
1957 3243 N. Downer Ave.

ELTR **EASTLAKE** TOWERS
(North Shore Area Fact Map)
1964 4425 N. Port Washington Rd.

EMS **EMS** BUILDING
ENGINEERING AND MATHEMATICAL SCIENCES BUILDING (I1)
1985 3200 N. Cramer St.

END **ENDERIS** HALL (F6)
1919 2400 E. Hartford Ave.

ENG **ENGELMANN** HALL (G2)
1951 2033 E. Hartford Ave.

ENS **ENGELMANN STADIUM** (H2)
1955 2033 E. Hartford Ave.

GAR **GARLAND** HALL (G6)
1959 2441 E. Hartford Ave.

GLWC **GLOBAL** WATER CENTER
(Milwaukee Area Fact Map)
1995 223 W. Pittsburgh Ave.

GLRF **GREAT LAKES** RESEARCH FACILITY
(Milwaukee Area Fact Map)
1901 600 E. Greenfield Ave.

GML **GOLDA MEIR** LIBRARY (G3)
1970 2311 E. Hartford Ave.

GRH **GREENE** HALL (E7)
1920 3347 N. Downer Ave.

GRM **GREENE** *MUSEUM* (E7)
1918 3367 N. Downer Ave.

GRD **GROUNDS** BUILDING (B6)
1946 2411 E. Edgewood Ave.

HP **HEATING** PLANT (D7)
1913 3339 N. Downer Ave.

HCC **HEFTER** CONFERENCE CENTER *(UWM Area Inset Map)*
1990 3271 N. Lake Dr.

HLT **HOLTON** HALL (F4)
1956 2442 E. Hartford Ave.

HON **HONORS** HOUSE (D3)
1932F 3363 N. Maryland Ave.

HSOP **HOUSE** OF PEACE
(Not Displayed on Map)
1979A 1702 W. Walnut St.

IUHP **INDEPENDENT** UNITED HEALTH PARTNERS
(Not Displayed on Map)
1979E

ICAB **INNOVATION** CAMPUS **ACCELERATOR** BUILDING
(Milwaukee Area Fact Map)
1997 1225 Discovery Pkwy.

JOH **JOHNSTON** HALL (E7)
1921 2322 E. Hartford Ave.

KSQA **KENILWORTH** SQUARE **APARTMENTS**
(UWM Area Inset Map)
1914A 1915 E. Kenilworth Pl.

KSQE **KENILWORTH** SQUARE **EAST**
(UWM Area Inset Map)
1914E 1925 E. Kenilworth Pl.

KEN **KENWOOD** INTERDISCIPLINARY RESEARCH COMPLEX (I3)
1972A 3135 N. Maryland Ave.

KC **KLOTSCHE** CENTER (D6)
1917 3499 N. Downer Ave.

LAP **LAPHAM** HALL (I3)
1962 3209 N. Maryland Ave.

LUB **LUBAR** HALL (I4)
1978 3202 N. Maryland Ave.

MCOW **MEDICAL** COLLEGE OF WISCONSIN *(Not Displayed on Map)*
1979C 8701 W. Watertown Plank Rd.

MEL **MELLENCAMP** HALL (I6)
1976 2442 E. Kenwood Blvd.

MER **MERRILL** HALL (F3)
1922 2512 E. Hartford Ave.

MIDT MILWAUKEE **MIDTA** OFFICE
(Not Displayed on Map)
1979B 901 W. Michigan Ave.

MIT **MITCHELL** HALL (I7)
1961 3203 N. Downer Ave.

MOY **MOYNIHAN** FIELD (H2)
1968 2033 E. Hartford Ave.

MUS **MUSIC** BUILDING (I4G)
1981M 2400 E. Kenwood Blvd.

NWQ A **NORTHWEST** QUADRANT **A** (F3)
1932A 3321 N. Maryland Ave.

NWQ B **NORTHWEST** QUADRANT **B** (F2)
1932B 2925 E. Newport Ave.

NWQ C **NORTHWEST** QUADRANT **C** (F2)
1932C 3130 E. Hartford Ave.

NWQ D **NORTHWEST** QUADRANT **D** (E2)
1932D 2915 E. Newport Ave.

NWQ E **NORTHWEST** QUADRANT **E** (E3)
1932E 3355 N. Maryland Ave.

NWQ G **NORTHWEST** QUADRANT **GARAGE** (E2)
1932G 2901 E. Newport Ave.

NHC **NORRIS HEALTH** CENTER (E8)
1926 3331 N. Downer Ave.

PAV **PAVILION** (O3)
1917A 3499 N. Downer Ave.

PEA **PEARSE** HALL (G7)
1959 2513 E. Hartford Ave.

PHY **PHYSICS** BUILDING (J1)
1964 1900 E. Kenwood Blvd.

PUR **PURIN** HALL
(UWM Area Inset Map)
1967 2000 E. Kenwood Blvd.

RVW **RIVERVIEW** RESIDENCE HALL *(UWM Area Inset Map)*
1949 2340 N. Commerce St.

SAB **SABIN** HALL (D7)
1923 3413 N. Downer Ave.

SAN **SANDBURG** RESIDENCE HALL (D4)
1957 3400 N. Maryland Ave.

SFS SAUKVILLE **FIELD STATION**
(Milwaukee Area Fact Map)
1913 3995 Blue Goose Rd, Saukville

SSNC **SILVER SPRING** NURSING CENTER
(Not Displayed on Map)
1954 5400 N. 60th St.

SP **SPAIGHTS** PLAZA (I5)
1962B 2380 E. Kenwood Blvd.

THE **THEATRE** BUILDING (I6)
1981T 2400 E. Kenwood Blvd.

USRB UNIVERSITY **SERVICES** AND **RESEARCH** BUILDING
(North Shore Area Fact Map)
1948 115 E. Reindl Way

FRVM UWM **AUDIOLOGY** GROUP
(Not Displayed on Map)
7001 10425 N. North Ave.

UN UWM STUDENT **UNION** (J5)
1960 2200 E. Kenwood Blvd.

VISITOR CENTER
(At Sigrid Hall)

VOG **VOGEL** HALL (G7)
1963 3253 N. Downer Ave.

MASS **WEST ALLIS** 70TH STREET
(Not Displayed on Map)
1952 1205 S. 70th St.

WUWM **WUWM** CHASE TOWER
(Milwaukee Area Fact Map)
1951 111 E. Wisconsin Ave.

ZEL **ZELAZO** CENTER FOR THE PERFORMING ARTS (K6)
1989 2419 E. Kenwood Blvd.

ZSPH **ZILBER** SCHOOL OF **PUBLIC HEALTH** BUILDING
(Milwaukee Area Fact Map)
1992 1240 N. 10th St.