

**State of Maine
Regional Greenhouse Gas Initiative
CO₂ Budget Trading Program**



Offset Project Consistency Application

Building Sector Energy Efficiency

Version 1.0

Issued by **Bureau of Air Quality**

Issued on **June 16, 2009**

Contents

1. Overview 3

2. Submission Instructions 3

3. Consistency Application Forms 4

 Part 1. General Information Forms 4

 Part 2. Category-Specific Information and Documentation Forms 12

 Part 3. Independent Verification Form 38

1. Overview

To demonstrate that a building sector end-use energy efficiency offset project qualifies for the award of CO₂ offset allowances, a Project Sponsor must submit to the Maine Department of Environmental Protection (Department) in accordance with these instructions a fully completed *Consistency Application – Building Sector Energy Efficiency Version 1.0* (“*Consistency Application*”), including the coversheet and all forms and related attachments. An incomplete *Consistency Application* will not be reviewed to determine consistency. Following these instructions will ensure that the *Consistency Application* contains all necessary information and is submitted properly.

Each Project Sponsor should review Maine’s *CO₂ Budget Trading Program* regulations, 06-096 CMR Chapter 156, addressing offset projects and the award of CO₂ offset allowances. All offset application materials and other documents are available at www.maine.gov/dep/air/greenhouse/rggi.

Before the *Consistency Application* can be completed, the Project Sponsor must establish a general account and obtain an offset project ID code through the RGGI CO₂ Allowance Tracking System (RGGI COATS). The Project Sponsor identified in the *Consistency Application* must be the same as the Authorized Account Representative for the RGGI COATS general account identified in the *Consistency Application*. For information about establishing a RGGI COATS general account and offset project ID code, consult the RGGI COATS User’s Guide, available at www.rggi-coats.org.

Key eligibility dates and application submittal requirements for offset projects are as follows:

- For offset projects commenced between December 20, 2005, and December 31, 2008, the *Consistency Application* must be submitted by June 30, 2009.
- For offset projects commenced on or after January 1, 2009, the *Consistency Application* must be submitted within six months after the project is commenced.
- For an offset project located in one participating state, the *Consistency Application* must be filed with the appropriate regulatory agency in that state.
- For an offset project located in more than one participating state, the *Consistency Application* must be filed in the participating state where the majority of the CO₂-equivalent emissions reduction or carbon sequestration due to the offset project is expected to occur.

2. Submission Instructions

Submit one (1) complete paper hardcopy original *Consistency Application* to the Department at the location specified below. Also submit the application forms and any attachments electronically to the CO₂ Allowance Tracking System (COATS) at www.rggi-coats.org. Maine’s CO₂ Budget Trading Program rules requires that all offset project documentation for this project category, including the *Consistency Application* shall be signed by a Professional Engineer, identified by license number. Submit hardcopies of forms requiring

signatures as originally-signed copies and scan such signed forms for electronic submission. Facsimiles of the *Consistency Application* are not acceptable under any circumstances.

Department of Environmental Protection
17 State House Station
25 Tyson Drive
Augusta, ME 04333-0017

The *Consistency Application* has three parts, as described below. Each part comprises specified forms and required documentation. The *Consistency Application* has been created as a Microsoft Word document with editable fields. Enter information directly in the fields provided or submit information or documentation as an attachment, as directed. Include headers on all attachments indicating the form to which each is attached, the offset project name, and offset project ID code.

The Project Sponsor should save an electronic copy for his or her file to serve as a reference for any necessary remediation.

3. Consistency Application Forms

The *Consistency Application* includes ten (10) forms divided into three parts, as follows:

Part 1. General Information Forms

- Form 1.1 – Coversheet
- Form 1.2 – General Information
- Form 1.3 – Attestations
- Form 1.4 – Project Sponsor Agreement
- Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Part 2. Category-Specific Information and Documentation Forms

- Form 2.1 – Project Description
- Form 2.2 – Demonstration of Eligibility
- Form 2.3 – Emissions Baseline
- Form 2.4 – Monitoring and Verification Plan

Part 3. Independent Verification Form

- Form 3.1 – Independent Verifier Certification Statement and Report

The following instructions address each of the forms in numerical order. Note that the forms themselves include many embedded instructions.

Part 1. General Information Forms

The five (5) forms in Part 1 of the *Consistency Application* address general requirements applicable to building sector energy efficiency offset projects. Instructions for the Part 1 forms are provided below.

Form 1.1 Coversheet

Enter the requested information in the editable text fields in the form.

Check the boxes to indicate that all forms are being submitted. For information about entering the Project Sponsor, offset project name and offset project ID code, and RGGI COATS account name and number, see instructions below for Form 1.2, General Information.

Submit all forms including the Coversheet. If a required form is not submitted, the *Consistency Application* will not be considered complete for commencement of review by the Department.

Form 1.2 General Information

Enter the requested information in the editable text fields in the form. If a text field is not applicable or is unanswerable, enter “NA.” Note the following:

Offset Project ID Code: Enter the offset project ID code. The offset project ID code is the alphanumeric code generated when the Project Sponsor creates a record of the offset project in the RGGI CO₂ Allowance Tracking System (RGGI COATS). See the RGGI COATS User’s Guide for more information about creating an offset project record in RGGI COATS, available at www.rggi-coats.org.

Project Information: Enter project information. The name of the offset project should be the same name entered by the Project Sponsor when creating a project record in RGGI COATS. The project location entered should be the primary location of the project if the project consists of actions at multiple locations. The summary narrative of the project should indicate all locations where project actions occur or will occur.

Project Sponsor: Identify the Project Sponsor and provide his or her contact information. The Project Sponsor is the natural person who is the Authorized Account Representative for the RGGI COATS general account identified in the *Consistency Application*.

Project Sponsor Organization: Provide the full legal name of the organization the Project Sponsor represents, including any alternative names under which the organization also may be doing business (e.g., John Doe Enterprises, Inc., d/b/a JDE). If the Project Sponsor is representing himself or herself as an individual, enter “NA”.

RGGI COATS General Account Name and Number: Enter the RGGI COATS general account name and number. The RGGI COATS general account identified in the *Consistency Application* is the RGGI COATS account into which any awarded CO₂ offset allowances related to the offset project will be transferred.

Form 1.3 Attestations

Check the boxes that apply and sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*.

If the offset project includes an electric generation component, any and all attribute credits generated by the offset project that may be used for compliance with a renewable portfolio standard (RPS) or other regulatory requirement (other than awarded CO₂ offset allowances), must be transferred to the Department. If applicable, attach a copy of the Attribute Credit Transfer Agreement to Form 1.3. The attached agreement must include a header that indicates it is an attachment to Form 1.3 and includes the offset project name and offset project ID code.

Form 1.4 Project Sponsor Agreement

Sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*.

Form 1.5 Disclosure of Greenhouse Gas Emissions Data Reporting

Check the appropriate box in the form to indicate whether greenhouse gas emissions data related to the offset project have been or will be reported to any voluntary or mandatory programs, other than the CO₂ Budget Trading Program. For each program for which data have been or will be reported, provide the program name, the program type (voluntary or mandatory), program contact information (website or street address), the categories of emissions data reported, the frequency of reporting, when the reporting began or will begin, and reporting status (prior, current, future). The Project Sponsor must disclose future reporting related to current commitments made to voluntary programs as well as future reporting mandated by current statutes, regulations, or judicial or administrative orders.

Offset Project Name

Offset Project ID Code

Form 1.1 – Coversheet

Project Sponsor

Project Sponsor Organization

RGGI COATS General Account Name

RGGI COATS General Account Number

Each of the following forms must be submitted. Check the boxes below to indicate that the submitted *Consistency Application* includes each of the required forms:

- Form 1.2 – General Information
- Form 1.3 – Attestations
- Form 1.4 – Project Sponsor Agreement
- Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting
- Form 2.1 – Project Description
- Form 2.2 – Demonstration of Eligibility
- Form 2.3 – Determination of Emissions Baseline
- Form 2.4 – Monitoring and Verification Plan
- Form 3.1 – Independent Verifier Certification Statement and Report

Offset Project Name Offset Project ID Code

Form 1.2 – General Information

Project Sponsor (RGGI COATS Authorized Account Representative)

Telephone Number **Fax Number** **Email Address**
Street Address
City **State/Province** **Postal Code** **Country**

RGGI COATS General Account Name

RGGI COATS General Account Number

Name of Offset Project

Application Date

Summary Description of Offset Project

Project City

Project County

Project State

Project Commencement Date

Project Sponsor Organization

Primary Street Address

City

State/Province

Postal Code

Country

Brief Description of Project Sponsor Organization

Telephone Number

Website URL

Independent Verifier (Company/Organization)

States Where Verifier Accredited

Primary Street Address

Website URL

City

State/Province

Postal Code

Country

Point of Contact for Project

Contact Telephone Number

Contact Fax Number

Contact Email Address

Contact Street Address

City

State/Province

Postal Code

Country

Offset Project Name

Offset Project ID Code

Form 1.3 – Attestations

The undersigned Project Sponsor certifies the truth of the following statements:

1. The offset project referenced in this *Consistency Application* is not required pursuant to any local, state, or federal law, regulation, or administrative or judicial order.
2. The offset project referenced in this *Consistency Application* has not and will not be awarded credits or allowances under any other greenhouse gas program.
3. Check the boxes that apply:
 - The offset project referenced in this *Consistency Application* does not include an electric generation component.
 - The offset project referenced in this *Consistency Application* does include an electric generation component. Any and all attribute credits generated by the offset project that may be used for compliance with a renewable portfolio standard (RPS) or other regulatory requirement, with the exception of CO₂ allowances awarded under the CO₂ Budget Trading Program, will be transferred to the Department.
 - An Attribute Credit Transfer Agreement is attached.
4. The offset project referenced in this *Consistency Application* has not and will not receive any funding or other incentives from the Energy and Carbon Savings Trust.
5. A *Consistency Application* for the offset project or any portion of the offset project referenced in this *Consistency Application* has not been filed in any other participating state.
6. All offset projects for which the Project Sponsor or project sponsor organization has received CO₂ offset allowances, if any, under the Project Sponsor's or project sponsor organization's ownership or control (or under the ownership or control of any entity which controls, is controlled by, or has common control with the Project Sponsor or project sponsor organization) are in compliance with all applicable requirements of the CO₂ Budget Trading Program in all participating states.
7. I am authorized to make this submission on behalf of the project sponsor organization. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this *Consistency Application* and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Project Sponsor signature

date

printed name

title

organization

notary

signature of licensed professional engineer

name of licensed professional engineer

license number(s)

license state(s)

Offset Project Name

Offset Project ID Code

Form 1.4 – Project Sponsor Agreement

The undersigned Project Sponsor recognizes and accepts that the application for, and the receipt of, CO₂ offset allowances under the CO₂ Budget Trading Program is predicated on the Project Sponsor following all the requirements of Maine’s CO₂ Budget Trading Program. The undersigned Project Sponsor holds the legal rights to the offset project, or has been granted the right to act on behalf of a party that holds the legal rights to the offset project. The Project Sponsor understands that eligibility for the award of CO₂ offset allowances is contingent on meeting the requirements of Maine’s CO₂ Budget Trading Program. The Project Sponsor authorizes the Department or its agent to audit this offset project for purposes of verifying that the offset project, including the monitoring and verification plan, has been implemented as described in this application. The Project Sponsor understands that this right to audit shall include the right to enter the physical location of the offset project. The Project Sponsor submits to the legal jurisdiction of the State of Maine.

Project Sponsor signature

date

printed name

title

organization

notary

Offset Project Name

Offset Project ID Code

Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Check the box below that applies:

- No greenhouse gas emissions data related to the offset project referenced in this *Consistency Application* have been or will be reported to a voluntary or mandatory program other than the CO₂ Budget Trading Program.
- Greenhouse gas emissions data related to the offset project referenced in this *Consistency Application* have been or will be reported to a voluntary or mandatory program other than the CO₂ Budget Trading Program. Information for all such programs to which greenhouse gas emissions data have been or will be reported is provided below.

Name of Program to which GHG Emissions Data Reported

Check all that apply:

- Reporting is currently ongoing
- Reporting was conducted in the past
- Reporting will be conducted in the future
- Reporting is mandatory
- Reporting is voluntary

Enter Frequency of Reporting

Enter Reporting Start Date

Program Contact Information – Address

Program Website

Categories of Emissions Data Reported

Name of Program to which GHG Emissions Data Reported

Check all that apply:

- Reporting is currently ongoing
- Reporting was conducted in the past
- Reporting will be conducted in the future
- Reporting is mandatory
- Reporting is voluntary

Enter Frequency of Reporting

Enter Reporting Start Date

Program Contact Information – Address

Program Website

Categories of Emissions Data Reported

Add extra pages as needed.

Part 2. Category-Specific Information and Documentation Forms

The four (4) forms in Part 2 of the *Consistency Application* address category-specific requirements and documentation for building sector end-use energy efficiency offset projects.

Form 2.1 Project Description

Enter information describing the offset project directly in Form 2.1 where requested. Attach a detailed narrative of the actions to be taken by the offset project. The attached narrative must include a header that indicates it is an attachment to Form 2.1 and identifies the offset project name and offset project ID code.

The narrative must include the following information:

1. Summary Description of Project. Provide a narrative summary of the actions to be taken as part of the offset project.

2. Building Location(s) and Specifications. Enter the following information in the Project Summary Table in Form 2.1:

- Unique ID number (e.g., 1,2,3) for each building included in the offset project
- Address of each building
- Type of each building (existing building, whole-building retrofit, or new construction)
- Use of each building (commercial or residential)
- Square footage of each building
- Total number of buildings included in the offset project
- Total square footage for all buildings included in the offset project

An example of the Project Summary Table is provided below. Add additional pages of Form 2.1 as necessary to include information for all buildings included in the offset project.

[Sample] Project Summary Table

Building ID	Building Address/Location	Building Type	Building Use	Building Sq Ft
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
Total # of Buildings: _____		Total Sq Ft: _____		

Note: Multifamily residential buildings more than three stories above grade should be classified as “commercial,” in accordance with ASHRAE Standard 90.1-2004.

3. Owners and Operators of Buildings. For each building included in the offset project, provide the company name, contact name, address, phone number, and website (if available) of the building owner and the building operator (if different from the owner). Provide the name, address, phone number, and e-mail of the facility manager for each building.

Provide organization legal name, contact information, and physical address for the parent company if the building owner or operator is a subsidiary.

4. Parties Implementing Offset Project. Provide the company name, contact name, phone number, and e-mail of all general or prime contractors, subcontractors, consultants, and vendors providing significant goods and services to the offset project. Provide the company name, contact name, address, phone number, license number, and e-mail of the professional engineer (PE) that has reviewed all project documentation included in and attached to the *Consistency Application* and signed Form 1.3.

5. Equipment and Materials Specifications. Enter information in the Equipment and Materials Specifications Table in Form 2.1 or attach the table to summarize specifications for each planned or installed eligible energy conservation measure (ECM). Include the following information:

- a. Identify the category of each applicable ECM, using the corresponding identification letter from the Categories of Eligible Energy Conservation Measures key in the Table (include only eligible ECMs).
- b. Assign each ECM a unique ID number (e.g., 1,2,3).
- c. Describe the specific measure taken or to be taken, including the manufacturer, model, capacity, and energy efficiency or energy performance of both original and new equipment or materials.
- d. Specify the building ID numbers, consistent with those specified in the Project Summary Table in Form 2.1, for all buildings affected by the ECM.
- e. For each ECM, enter the quantity of equipment or material installed and the unit of measure for the equipment or material installed (e.g., for a furnace, one unit or one piece of equipment; for ceiling insulation upgrades, ceiling square footage; etc.).
- f. Specify the type(s) of fuel impacted using the letter codes provided in the Types of Fuel key in the table. Include both pre-installation and post-installation fuel type(s), even if there will be no fuel change.

An example of the Equipment and Materials Specifications Table is provided below. If the table is attached, it must conform with this format. If the table is attached, enter "Table is Attached" directly in the table in Form 2.1.

[Sample] Equipment and Materials Specifications Table

ECM Category [†]	ECM ID	Description of Specific Energy Conservation Measure	List the ID Numbers of Buildings Affected by the ECM	Total Equipment/Material Installed		Fuel Type [‡]	
				Quantity Installed	Unit	Original	New
(a)	1.	Upgrade boiler: original Acme XYZ3 250 BTU boiler, AFUE = 75. Replace with ACME ZZZ90 250 BTU boiler, AFUE = 80.	Building 1, Building 5, Building 7	10	Boiler units	NG	NG
Add additional rows as necessary							

[†] **Categories of Eligible Energy Conservation Measures**

- (a) improvements in the energy efficiency of combustion equipment that provides space heating and hot water, including a reduction in fossil fuel consumption through the use of solar and geothermal energy
- (b) improvements in the efficiency of heating distribution systems, including proper sizing and commissioning of heating systems
- (c) installation or improvement of energy management systems
- (d) improvement in the efficiency of hot water distribution systems and reduction in demand for hot water
- (e) measures that improve the thermal performance of the building envelope and/or reduce building envelope air leakage
- (f) measures that improve the passive solar performance of buildings and utilization of active heating systems using renewable energy
- (g) fuel switching to a less carbon-intensive fuel for use in combustion systems, including the use of liquid or gaseous eligible biomass, provided that conversions to electricity are not eligible

[‡] **Types of Fuels**

NG = natural gas P = propane O = heating oil K = kerosene

6. Documentation of Equipment and Materials Specifications. Provide the following documentation of equipment and materials identified in the Equipment and Materials Specifications Table:

- a. For equipment, building components, and building materials installed or to be installed *as part of the offset project*, copies of relevant sections of the manufacturer specifications that verify all information provided in the Equipment and Materials Specifications Table. Include ENERGY STAR specifications if applicable. For building envelope components and materials, also provide documentation of R-value or U-value.
- b. For *original* equipment, building components, and building materials being replaced, photos of *original* equipment and building components/materials, equipment nameplates, energy performance or ENERGY STAR labels (as applicable, showing manufacturer, model number, and energy efficiency or energy performance), and locations of installations. For building envelope components and materials, provide documentation of R-value or U-value (if available) and photos showing wall condition and wall layers.

If equipment or building component/building material documentation is not available (e.g., due to missing labels or manuals, or discontinued equipment), provide documentation of average or generic specifications for equipment or components/materials of equivalent age and features. Documentation may include, for example, market studies from the time period of original installation or state building codes for the time period of original installation.

Note: The Equipment and Materials Specification Table and accompanying documentation will be used by the Department to establish ECM eligibility pursuant to Maine's CO₂ Budget Trading Program. If the offset project described in the *Consistency Application* is in progress, documentation of actual post-installation equipment and materials specifications will be required as part of the first annual *Monitoring and Verification Report* submitted for the project to confirm as-installed ECM eligibility.

7. Building Plans and Project Technical Schematics. For building systems to be affected by the offset project, attach the following for each building included in the offset project:

- a. Pre-Installation Plans and Schematics. Pre-installation building plans and technical schematics of the whole building (for new buildings or whole-building retrofits) or of the affected building areas or building systems (for existing buildings with localized retrofits). Plans and schematics provided should include only sections relevant to the offset project and the following information:
 - i. Building footprint
 - ii. Design specifications, technical schematics, and drawings
 - iii. Elevations, plans, and sections
 - iv. Location, configuration, and size of all equipment, building components and building materials, and distribution systems
 - v. Copies of any calculations performed, including methodology and references (e.g., flow rates, solar heating-specific calculations)
- b. Post-Installation Plans and Schematics. Post-installation building plans and technical schematics of the whole building (for new buildings or whole-building retrofits) or of the affected building areas or building systems (for existing buildings with localized retrofits). Plans and schematics provided should include only sections relevant to the offset project and the following information:
 - i. Building footprint and demolition plan, if applicable (e.g., for changes in building footprint)
 - ii. Design specifications, technical schematics, and drawings
 - iii. Elevations, plans, and sections
 - iv. Location, configuration, and size of all equipment, building components and building materials, and distribution systems
 - v. Copies of any calculations performed, including methodology and references (e.g., flow rates, solar heating-specific calculations)
- c. Additional Measure-Specific Documentation. Provide the following additional documentation (both pre- and post-installation) for the following ECMs if included in the offset project:

- i. *Heating Distribution Systems (category (b))*¹: Duct plan, system insulation and air sealing specifications, duct tightness specifications, terminal air and water flow rate measurements, and system leakage measurements
- ii. *Hot Water Distribution Systems/Demand Reduction (category (d))*: Pipe layout, riser diagram (for commercial buildings), fixture schedule, fixture flow rates, system insulation and sealing, terminal flow rate measurements, and system leakage measurements
- iii. *Building Envelope Measures (category (e))*: Window schedule, sectional diagram of wall layers, insulation specifications, and thermal bridging details
- iv. *Passive/Active Solar Heating Systems (category (f))*: For passive solar ECMs only, include design intent narrative highlighting passive solar features

Note: The documentation outlined above will be used by the Department to establish ECM eligibility pursuant to Maine’s CO₂ Budget Trading Program. If the offset project specified in the *Consistency Application* is in progress, final post-installation building plans and technical schematics representing the as-installed offset project must be submitted with the first annual *Monitoring and Verification Report* submitted for the project to confirm as-installed ECM eligibility.

Form 2.2 Demonstration of Eligibility

Provide documentation of project eligibility as an attachment to Form 2.2. The attachment must include a header that indicates it is an attachment to Form 2.2 and includes the offset project name and offset project ID code.

A summary of eligibility requirements is provided in Table 1. below.

Table 1. Summary of Eligibility Requirements

All Commercial and Residential Projects	
<ul style="list-style-type: none"> • Demonstrate eligibility of the ECMs (addressed in Form 2.1) • Demonstrate eligibility of the fuel types affected (addressed in Form 2.1) • Demonstrate adherence to installation best practices • Document that whole building energy performance complies with referenced standards (applicable to whole-building retrofits and new buildings) 	
Projects Commencing Prior to Jan. 1, 2009	Projects Commencing on or After Jan. 1, 2009
<ul style="list-style-type: none"> • Document combustion equipment complies with performance standards • Document other ECMs comply with performance standards 	<ul style="list-style-type: none"> • Document that the market penetration rate for each ECM is less than five (5) percent

¹ Category letter refers to the ECM category identified in the Equipment and Materials Specifications Table, Categories of Eligible Energy Conservation Measures key.

Note that categorical ECM eligibility is addressed in Form 2.1. The Equipment and Materials Specification Table included in Form 2.1 must link each offset project ECM to one or more of the following eligible ECM categories that addresses an eligible fuel type²:

- (a) improvements in the energy efficiency of combustion equipment that provides space heating and hot water, including a reduction in fossil fuel consumption through the use of solar and geothermal energy
- (b) improvements in the efficiency of heating distribution systems, including proper sizing and commissioning of heating systems
- (c) installation or improvement of energy management systems (EMS)
- (d) improvement in the efficiency of hot water distribution systems and reduction in demand for hot water
- (e) measures that improve the thermal performance of the building envelope and/or reduce building envelope air leakage
- (f) measures that improve the passive solar performance of buildings and utilization of active heating systems using renewable energy
- (g) fuel switching to a less carbon-intensive fuel for use in combustion systems, including the use of liquid or gaseous eligible biomass, provided that conversions to electricity are not eligible

Note: Equipment, materials, or actions required under state building codes or required pursuant to any local, state, or federal law, regulation, or administrative or judicial order are not eligible for the award of CO₂ offset allowances. This includes instances where initiation of the offset project itself triggers certain requirements pursuant to state building codes or other legal requirements.

Pay careful attention to the specific documentation that must be submitted for each type of ECM and for each of the eligibility requirements described in this section applicable to the offset project. When references are required, cite the reference standard's name and publication year, applicable section number and title, and specific page number. Note that in cases where documentation for an offset project that has not yet been completed reflects the intent of the project, further documentation of the as-completed offset project must be submitted with the first annual *Monitoring and Verification Report* submitted for the project to confirm that the design intent specified in the *Consistency Application* was actually implemented.

Documentation of project eligibility must include the following information:

1. Documentation of ECM Installation. For all ECMs included in the offset project, attach the following documentation of ECM installation, as applicable:
 - a. For all categories of ECMs, provide invoices or completed work orders for *completed offset projects* that show purchases of materials, equipment, and design and installation services that detail the date of installation, what was installed, and what services were provided. Note, for offset projects *in progress*, this information must be submitted as part of the first annual *Monitoring and Verification Report* submitted for the project.

² Eligible fuel types include natural gas, distillate fuel oil, propane, and kerosene.

- b. For certain categories of ECMs, provide additional documentation, as follows:
 - i. *Building Envelope Measures (category (e))*: Provide a pre-implementation infiltration report, along with the citation of the reference standard that defines the blower door test or other measurement procedure that was used for baseline measurement and will be used to measure post-installation infiltration. For *completed projects*, also include the post-implementation infiltration report. Note that for *in-progress projects*, the post-implementation infiltration report must be submitted as part of the first annual *Monitoring and Verification Report* submitted for the project.
 - ii. *Energy Management Systems (EMS) (category (c))*: Provide either a design intent statement indicating that there was/is no EMS installed prior to the offset project, *or* a short narrative about the pre-existing control strategy, including documentation of the model and manufacturer of the EMS, the settings, the control mechanisms (e.g., schedule/sensors), and evidence of EMS installation. For *completed projects*, provide a short narrative about the new control strategy, including documentation of the model and manufacturer of the EMS, the settings, the control mechanisms (e.g., schedule/sensors), and evidence of EMS installation. Include computer screenshots to illustrate system settings. For *in-progress projects*, provide a narrative of the proposed EMS control strategy, including the model and manufacturer of the EMS, the settings, and the control mechanisms (e.g., schedule/sensors). Note that for *in-progress projects*, a post-implementation narrative about the new control strategy, including documentation of the model and manufacturer of the EMS, the settings, the control mechanisms (e.g., schedule/sensors), and evidence of EMS installation, including computer screenshots, must be provided with the first annual *Monitoring and Verification Report* submitted for the project.

For all documentation, indicate the ECM ID number specified in the Equipment and Materials Specification Table in Form 2.1 to which the documentation applies.

2. HVAC Installation Best Practice. Attach documentation demonstrating that all combustion equipment and related air-handling equipment (HVAC systems) installed or to be installed as part of the offset project have been sized and installed or will be sized and installed according to industry best practices for the applicable type of building. Documentation must demonstrate that the following requirements are or will be met:

- a. Commercial Buildings. Provide documentation of the following (see subsection c. below for specific documentation requirements):
 - i. Sizing calculations were or will be performed according to accepted manufacturer or engineering standards.
 - ii. Installation requirements, which vary by type of equipment and are listed within specific sections of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 90.1-2004 and ASHRAE Standard 62.1-2004, were met or will be met.
 - iii. HVAC systems have been balanced or will be balanced. Cite the reference standard that defines the system balancing procedure.

- iv. The building has been commissioned or will be commissioned according to appropriate standards. Cite applicable commissioning standards of ASHRAE 90.1-2004 Appendix E.
 - b. Residential Buildings. Provide documentation of the following (see subsection c. below for specific documentation requirements):
 - i. Sizing calculations were performed or will be performed according to the Air Conditioning Contractors of America (ACCA) Manual J, Eighth Edition.
 - ii. Installation requirements, equipment-specific tests, and verifications, which vary by type of equipment and are listed within specific sections of the Consortium for Energy Efficiency (CEE) “Specification of Energy-Efficient Installation and Maintenance Practices for Residential HVAC Systems” (2000) were met or will be met.
 - c. Documentation Requirements. To demonstrate conformance with the documentation requirements at subsections a. and b. above, provide the following:
 - i. For both Completed and In-Progress Projects:
 - (A) Copies of HVAC system sizing calculations. Reference the standard that was used to define calculation methodologies. Include all worksheets in accordance with the following standards, as applicable:
 - Commercial Buildings: ASHRAE 90.1-2004 and ASHRAE 62.1-2004
 - Residential Buildings: ACCA Manual J, Eighth Edition
 - (B) For projects in commercial buildings, location, performance, and general configuration of installed equipment and duct and pipe distribution systems, including sizes, and the terminal air or water design flow rates.
 - ii. For Completed Projects:
 - (A) Copies of the installation instructions that accompany all HVAC equipment to be installed.
 - (B) Invoices or completed work orders that show purchases of materials, equipment, and design and installation services that detail what was installed.
 - (C) A statement that HVAC installation was completed in accordance manufacturer instructions and the applicable reference standards:
 - Commercial Buildings: ASHRAE 90.1-2004 and ASHRAE 62.1-2004
 - Residential Buildings: Consortium for Energy Efficiency (CEE) “Specification of Energy-Efficient Installation and Maintenance Practices for Residential HVAC Systems,” 2000
- Include documentation showing which tests/verifications were performed in accordance with the guidance given by the reference standards listed above, along with evidence of completion.
- (D) Memo signed by a representative of the building owner indicating receipt of all equipment operations and maintenance manuals and other O&M information, and identifying the specific documentation received.
 - (E) Copy of HVAC system balance report.

(F) Copy of HVAC system commissioning report.

iii. For In-Progress Projects:

(A) A design intent statement that HVAC installation will be completed in accordance with manufacturer instructions and the following reference standards:

- Commercial Buildings: ASHRAE 90.1-2004 and ASHRAE 62.1-2004
- Residential Buildings: Consortium for Energy Efficiency (CEE) “Specification of Energy-Efficient Installation and Maintenance Practices for Residential HVAC Systems,” 2000

For each type of equipment installed, cite the applicable standard that will be used to define the installation, testing, and verification requirements for the equipment in accordance with the guidance given by the reference standards listed above.

(B) A design intent statement that all operations and maintenance information for new equipment will be provided to the building owner at completion of the project, including a template of the form acknowledging receipt of the information.

(C) A design intent statement that HVAC systems will be balanced, citing the reference standard that will define the system balancing procedure.

(D) A design intent statement certifying that the building will be commissioned, citing of the reference standard that will define the commissioning procedure in accordance with ASHRAE 90.1-2004 Appendix E.

Note that documentation confirming application of the design intent in the as-completed offset project for the items listed at (A) through (D) above must be submitted with the first annual *Monitoring and Verification Report* submitted for the project.

3. Building Eligibility. Attach documentation of building eligibility under one of the following provisions for each building included in the offset project (status of all buildings referenced in Form 2.1 must be identified under one of the following):

- a. Existing Buildings. For existing buildings, provide documentation of the date of completion of building construction.
- b. Whole-Building Retrofit. For whole-building retrofits, describe the building system(s) and/or building components to be replaced as part of the offset project and reference the applicable provisions in State or local building codes that require a building permit for such actions.
- c. New Buildings. For new buildings, provide documentation that the building meets eligibility requirements under one of the two following scenarios for new building eligibility:
 - i. *New buildings replacing existing buildings at the same site*: For each new building included in the offset project, provide a design intent statement and building specifications indicating that the new building is designed to replace an existing building on the same property where the existing building is or was located. Provide plans for each new building indicating that the building

footprint is located on the same property as the existing building is or was located.

- ii. *New buildings designed to be “zero-net-energy” buildings:* For each new building included in the offset project, provide documentation that the new building will be a zero-net-energy building. A zero-net-energy building is defined as a building designed to produce as much energy, using renewable energy sources, as the building is projected to use, as measured on an annual basis.

Provide the following documentation to demonstrate that the building is designed to be a zero-net-energy building:

- Narrative of the design approach taken to achieve zero-net-energy performance
- Building simulation software input file, output file, and assumptions for the design building documenting estimated annual energy use and estimated annual energy production for the as-designed building, on CD-ROM
- Copy of software manufacturer literature showing the modeling program name and version number
- Document demonstrating that software is certified by the BESTEST method (commercial building software) or is RESNET certified (residential building software)

4. Whole-Building Energy Performance. For each building included in the offset project that is identified at section 3. above as a new building or whole-building retrofit, attach documentation that the building meets the applicable energy performance standard below. A whole-building retrofit is defined as a building project that involves replacement of more than one building system or set of building components, and also requires a State or local building permit. Note that demonstration of whole-building energy performance may be met through a combination of non-eligible ECMs (e.g., ECMs targeting electricity usage and other common measures) and eligible ECMs, but CO₂ offset allowances will be awarded only for CO₂ emissions reductions achieved through eligible ECMs. Documentation must include the following:

- a. Commercial Buildings. Provide documentation that the building exceeds by 30 percent the energy performance of a simulated baseline building with similar configuration, orientation, and location that meets the ASHRAE 90.1-2004 standard (Energy Cost Budget Method compliance path, Section 11)³, including the following:
 - Building simulation software input file, output file, and assumptions for a reference building that meets the ASHRAE 90.1-2004 standard, on CD-ROM
 - Building simulation software input file, output file, and assumptions for the new building or whole-building retrofit, on CD-ROM

³ Currently, building energy simulation is the only way to demonstrate above-standard whole-building energy performance. If, in the future, prescriptive paths are created by ASHRAE or IECC that describe energy performance 20 percent or 30 percent better than the reference standard, following such a prescriptive path may be an additional option to prove eligibility under the whole-building energy performance requirement.

- Copy of software manufacturer literature showing the program name and version number
 - Document demonstrating that software is certified by the BESTEST method
- b. Commercial-Scale Multi-Family Residential Buildings. For a multi-family residential buildings defined as commercial under ASHRAE 90.1-2004, provide documentation that the building exceeds by 20 percent the energy performance of a simulated baseline building with similar configuration, orientation, and location that meets the ASHRAE 90.1-2004 standard (Energy Cost Budget Method compliance path, Section 11)⁴, including the following:
- Building simulation software input file, output file, and assumptions for a reference building that meets the ASHRAE 90.1-2004 standard, on CD-ROM
 - Building simulation software input file, output file, and assumptions for the new building or whole-building retrofit, on CD-ROM
 - Copy of software manufacturer literature showing the program name and version number
 - Document demonstrating that software is certified by the BESTEST method
- c. Low-Rise Residential Buildings. For a building defined as low-rise residential under ASHRAE 90.1-2004, provide documentation that the building exceeds by 30 percent the energy performance of a simulated baseline building with similar configuration, orientation, and location that meets the International Energy Conservation Code (IECC) 2003 with 2004 Supplement standard (documented in accordance with RESNET National Home Energy Rating Technical Guidelines, 2006), including the following:
- Building simulation software input file, output file, and assumptions for a reference building that meets the IECC 2003 with 2004 Supplement standard, on CD-ROM
 - Building simulation software input file, output file, and assumptions for the new building or whole-building retrofit, on CD-ROM
 - Copy of software manufacturer literature showing the program name and version number
 - Document demonstrating that software is RESNET certified

5. Combustion Equipment Performance Standards. For offset projects commencing *prior to* January 1, 2009, provide documentation that combustion equipment installed or to be installed as part of the offset project meets or exceeds the following minimum energy efficiency criteria:

- a. Commercial Boilers. Provide documentation that commercial boilers meet the following minimum energy efficiency criteria in Table 2 (see specific documentation requirements at subsection c. below):

Table 2. Minimum Commercial Boiler Energy Efficiency

Technology	Size (Btu/hr)	Rating Method	Minimum Efficiency
Gas-fired ^a	125,000 - 300,000	AFUE	≥ 88.0%
	300,000 - 12,500,000	Thermal Efficiency ^b	≥ 90.0%

⁴ See footnote 3.

Table 2. Minimum Commercial Boiler Energy Efficiency (cont'd)

Technology	Size (Btu/hr)	Rating Method	Minimum Efficiency
Oil-fired	> 300,000	Thermal Efficiency	≥ 88.0%

^a Gas-fired boilers shall be installed with controls that allow the boiler to operate in condensing mode and installed with vents designed for positive vent static pressure and vent gas temperature that leads to condensate production in the vent.

^b Thermal Efficiency is defined as useful energy output (Btu) divided by energy input (Btu), and presented as a percentage. This shall be measured under steady-state conditions, at full rated useful thermal output, 140°F supply from, and 120°F return water temperature to, the boiler.

- b. Residential Boilers, Furnaces, and Water Heaters. Provide documentation that residential combustion equipment meets the minimum energy efficiency criteria in Table 3 (see specific documentation requirements at subsection c. below):

Table 3. Minimum Residential Combustion Equipment^a Energy Efficiency

Technology	Rating Method	Minimum Efficiency
Gas-fired furnace	AFUE	≥ 94%
Oil-fired furnace	AFUE	≥ 92%
Gas/oil-fired boiler	AFUE	≥ 90%
Gas/oil-fired water heater	Energy Factor	≥ 0.62

^a For furnaces, defined as equipment with a heat input rate of less than 225,000 Btu/hr; for boilers, defined as equipment with a heat input rate of less than 300,000 Btu/hr; for water heaters, defined as equipment subject to 10 CFR 430.

- c. Documentation Requirements. Provide the following documentation to demonstrate that each piece of combustion equipment installed or to be installed as part of the offset project meets the energy efficiency criteria specified at subsections a. and b. above:

- New equipment nameplate information, including model name of the equipment, manufacturer, model number, capacity, energy efficiency, efficiency rating system used, and fuel type used
- A copy of the product specification sheet and, if applicable, Energy Star label
- Indication of the ECM ID number specified in the Equipment and Materials Specification Table of Form 2.1 to which the documentation for each piece of equipment applies

6. Other ECM Performance Standards. For offset projects commencing *prior to* January 1, 2009, provide documentation in table or narrative form indicating that all other ECMs (all non-combustion equipment ECMs) installed or to be installed as part of the offset project meet the more stringent of the minimum energy performance standards specified in the Energy Benchmark for High Performance Buildings (EBHPB) Version 1.1 (New Buildings Institute, 2005) *or* the State energy code, whichever results in better energy performance. If the ECM is not included in either of these reference standards, then provide documentation in table or narrative form indicating that the ECM meets the more stringent of the minimum energy performance standards specified by Federal Energy Management Program (FEMP) Product Energy Efficiency Recommendations *or* Energy Star criteria. Documentation must include the following information:

- A copy of the relevant section of the applicable standard that clearly shows the required energy performance criteria for the specific ECM

- Equipment or material information and specifications (e.g. R-value, U-factor) that identify energy performance
- A copy of the product specification sheet and, if applicable, Energy Star label
- The ECM ID number specified in the Equipment and Materials Specification Table of Form 2.1 to which the documentation for each ECM applies

7. Market Penetration Rate. For offset projects commencing *on or after* January 1, 2009, attach documentation that the eligible ECMs included in the offset project have a market penetration rate of less than five (5) percent. For new building or whole-building retrofit offset projects, documentation that the energy performance of the project building(s) falls within the top five (5) percent of energy performance for a similar class of buildings may be used to demonstrate conformance with this requirement. Market penetration rate is defined as a measure of the diffusion of a technology, product, or practice in a defined market, as represented by the percentage of annual sales for a product or practice, or as the percentage of the existing installed stock for a product or category of products, or as the percentage of existing installed stock that utilizes a practice. Note that the Department will determine the sufficiency of the market penetration rate documentation provided, including the appropriateness of the market definition and market penetration metric used. Documentation must include the following information:

- Documentation of the defined market
- Market penetration or market saturation studies, market assessments, building stock performance data, sales data, or other data that indicate market penetration of the ECMs included in the offset project

Form 2.3 Emissions Baseline

Provide documentation of baseline year energy use and CO₂ emissions in the editable text fields in Form 2.3 or as an attachment, as directed. Enter the baseline year where requested in the form. The baseline year is the most recent calendar year prior to commencement of the offset project for which historic fuel use data is available for 12 consecutive months. If the offset project involves a new building, the baseline year is the calendar year preceding the submission of the *Consistency Application*. Where requested in the form, for each fuel type enter energy baseline usage (in MMBTUs) and associated CO₂ emissions (in lbs CO₂).

Attach documentation supporting calculations of baseline energy use and baseline CO₂ emissions. Each attachment must include a header that indicates it is an attachment to Form 2.3 and includes the offset project name and offset project ID code. Documentation must include the following:

1. Documentation of Baseline Energy Monitoring Approach. Provide narrative documentation of the energy monitoring or modeling procedures used to determine baseline energy use, including demonstration of conformance with the appropriate guidelines and standards applicable to the building types included in the offset project, as follows:

- Commercial Buildings:
 - IPMVP Volume I, Option B or D, as applicable
 - ASHRAE Guideline 14-2002

- Commercial Buildings, where the only change to the building as part of the energy efficiency project will involve eligible ECMs included in the offset project:
 - IPMVP Volume I, Option C
 - ASHRAE Guideline 14-2002
- New Commercial Buildings:
 - IPMVP Volume III, Option D
 - ASHRAE Guideline 14-2002
- New *and* Existing Residential Buildings:
 - RESNET National Home Energy Rating Technical Guidelines, 2006

Documentation of conformance with the above-listed references must include the following:

- Clear identification of any data gaps and estimated or modeled data
- Documentation of all conditions that affect baseline measurement (e.g., measurement process and equipment, weather, building occupancy, time of day)

Note, for projects implementing similar measures in multiple residential buildings, a representative sampling of buildings may be used to determine baseline energy use, rather than measurement of each building. If sampling is employed, attach a copy of the sampling protocol that provides demonstration at the 95 percent confidence interval that the reported value is within 10 percent of the true value. The sampling protocol and statistical method must include uncertainty and confidence interval calculations.

2. Baseline Energy Use Data. Provide documentation of baseline energy use for each building included in the offset project, as outlined below:

- a. Existing Commercial Buildings. For each building included in the offset project, provide total building fuel consumption data for the baseline year, by fuel type (MMBtu). For each building, provide records of whole-building metered energy use by fuel type for the baseline year and records of metered energy use, if available, for individual end-uses or building systems to be targeted by eligible ECMs.
- b. Eligible New Commercial Buildings. For each new building included in the offset project, provide energy simulation modeling of baseline energy use for a reference building with similar configuration, orientation, and location using BESTEST certified software. The reference building must meet the ASHRAE 90.1-2004 energy performance standard. Provide the following documentation of energy simulation modeling:
 - Building simulation software input file, output file, and assumptions for a reference building that meets the ASHRAE 90.1-2004 standard, on CD-ROM
 - Copy of software manufacturer literature showing the modeling program name and version number
 - Document demonstrating that software is certified by the BESTEST method
- c. Existing Low-Rise Residential Buildings. For each building included in the offset project, provide total building fuel consumption data for the baseline year, by fuel type (MMBtu). For each building, provide records of whole-building metered energy use by fuel type for the baseline year and records of metered energy use,

if available, for individual end-uses or building systems to be targeted by eligible ECMs.

- d. Eligible New Low-Rise Residential Buildings. For each new building included in the offset project, provide energy simulation modeling of baseline energy use for a reference building with similar configuration, orientation, and location using RESNET certified software. The reference building must meet the IECC 2003 with 2004 Supplement energy performance standard. Provide the following documentation of energy simulation modeling:
 - Building simulation software input file, output file, and assumptions for a reference building that meets the IECC 2003 with 2004 Supplement standard, on CD-ROM
 - Copy of software manufacturer literature showing the modeling program name and version number
 - Document demonstrating that software is RESNET certified

3. Isolation of Energy Use. Provide documentation of the isolation of energy use for each end-use or building system to be targeted by eligible ECMs as part of the offset project. Such isolation must ensure that each eligible ECM, once implemented, will be able to be isolated from all other eligible and non-eligible ECMs, as well as from overall building energy use. There are two options for isolation of energy use for end-uses or building systems to be targeted by eligible ECMs:

- Direct metering of end-use or building system to be affected by eligible ECMs (note that if the only change to the building as part of the energy efficiency project will involve eligible ECMs included in the offset project, metering of whole-building energy use is sufficient under this approach)
- Use of energy simulation modeling to apportion building energy use to each end-use or building system affected by eligible ECMs

For both of these options, ECMs must be isolated from whole-building or whole-system energy use and also adjusted for areas where multiple ECMs interact with one another (required to avoid double-counting of ECM energy use) or where one ECM utilizes more than one eligible fuel type. Provide a narrative identifying the procedures used to isolate energy use for end-uses or building systems to be targeted by eligible ECMs in conformance with the following guidelines and/or standards applicable to the building types included in the offset project:

- Commercial Buildings:
 - ASHRAE Guideline 14-2002
 - ASHRAE 90.1-2004, Section 11 and Appendix G
- Residential Buildings:
 - RESNET National Home Energy Rating Technical Guidelines, 2006

If energy simulation modeling is used to isolate energy use, provide the following documentation:

- Building simulation software input file, output file, and assumptions, on CD-ROM
- Copy of software manufacturer literature showing the modeling program name and version number

- Document demonstrating that software is BESTEST or RESNET certified, as applicable
4. Adjustments to Baseline Energy Use. Provide documentation of adjustments that were made to baseline energy use as follows:
- a. Equipment and Materials Adjustments. Provide documentation of adjustments to account for minimum equipment energy efficiency standards or minimum building component energy performance standards. If applicable building codes or equipment standards require that equipment or materials installed as part of the offset project meet certain minimum energy efficiency or energy performance requirements, baseline energy use must assume the existence of such equipment or materials during the baseline period. If such requirements apply, the baseline must assume – for all building equipment and building components to be targeted by ECMs as part of the offset project – that equipment and materials were present during the baseline period that meet current minimum energy efficiency or energy performance requirements (e.g., State and local building codes or federal equipment standards). If the ECM involves the replacement of combustion equipment, baseline energy use must assume the existence during the baseline period of new equipment that meets minimum energy efficiency requirements and that burns the same fuel as the ECM replacement equipment.
 - b. Operating and Weather Condition Adjustments. Provide documentation of measurement conditions during the baseline period that are unusual or measurement conditions that are expected to change between the baseline period and reporting period, and adjustment factors applied to baseline energy use to account for such measurement conditions. Adjustments may address issues such as weather, building occupancy, and changes in building use or function. Provide documentation of adjustments applied to baseline energy use in accordance with the following equation:

$$\text{Energy Use (MMBtu)} = BEU_{AECM} \times A_b$$

where:

- BEU_{AECM} = Annual baseline energy use by fuel type (MMBtu) attributable to the application(s) to be targeted by the energy conservation measure(s).
- A_b = An adjustment factor that corrects for changes to the system of interest between when the baseline data were collected and when the ECM will be implemented. Separate adjustment factors may be used for the baseline and for post-implementation energy use, or a single factor that includes all adjustments may be applied to post-implementation energy use.

Provide documentation demonstrating that the application of any adjustments are consistent with the following guidelines and standards applicable to the building types included in the offset project:

- Commercial Buildings:
 - ASHRAE Guideline 14-2002

- ASHRAE 90.1-2004, Section 11 and Appendix G
- Residential Buildings:
 - RESNET National Home Energy Rating Technical Guidelines, 2006

If any of the adjustments applied under subsections a. and b. above required energy simulation modeling, provide the following documentation:

- Building simulation software input file, output file, and assumptions, on CD-ROM
- Copy of software manufacturer literature showing the modeling program name and version number
- Document demonstrating that software is BESTEST or RESNET certified, as applicable

5. Total Baseline Energy Use. Provide a spreadsheet documenting the calculation of total baseline energy use. Baseline energy use is the sum of energy use, by fuel type, for all the isolated end uses or building systems that will be affected by eligible ECMs included in the offset project. Baseline energy use includes the application of any adjustment factors in accordance with section 3. above.

6. Baseline Emissions. Provide a spreadsheet documenting the calculation of baseline emissions derived from baseline energy use and associated fuel-specific emissions and oxidation factors. Use the following formula to calculate total (summed over all combustion fuel types) baseline emissions in lbs of CO₂ (calculate each combustion fuel's emissions contribution separately):

$$Emissions \text{ (lbs. CO}_2\text{)} = \sum_{i=1}^n (BEU_i \times EF_i \times OF_i)$$

where:

BEU_i = Annual baseline energy use for fuel type i (MMBtu)

EF_i = Emissions factor (lbs. CO₂/MMBtu) for fuel type i as shown below in Table 4

OF_i = Oxidation factor for fuel type i as shown below in Table 4

Table 4. Emissions and Oxidation Factors

Fuel	Emissions Factor (lbs CO ₂ /MMBtu)	Oxidation Factor
Natural Gas	116.98	0.995
Propane	139.04	0.995
Distillate Fuel Oil	161.27	0.99
Kerosene	159.41	0.99

Form 2.4 Monitoring and Verification Plan

Provide the Monitoring and Verification Plan (M&V Plan) as an attachment to Form 2.4. The attachment must include a header that indicates it is an attachment to Form 2.4 and includes the offset project name and offset project ID code.

The attached M&V Plan must include the following information:

1. Documentation of Energy Monitoring Approach. For each building included in the offset project, provide narrative documentation of the energy monitoring procedures to be used during the reporting period to determine energy use. Specify the data sources and calculations to be used to determine annual post-installation energy use by fuel type. Actual energy usage must be measured, with simulation modeling used only to isolate energy use related to end-uses or building systems targeted by eligible ECMs included in the offset project. Documentation must include demonstration of conformance with the appropriate guidelines and standard applicable to the building types included in the offset project:

- Commercial Buildings:
 - IPMVP Volume 1, Option B or D, as applicable
 - ASHRAE Guideline 14-2002
- Commercial Buildings, where the only change to the building as part of the energy efficiency project will involve eligible ECMs included in the offset project:
 - IPMVP Volume 1, Option C
 - ASHRAE Guideline 14-2002
- New Commercial Buildings:
 - IPMVP Volume III, Option D
 - ASHRAE Guideline 14-2002
- New *and* existing residential buildings:
 - RESNET National Home Energy Rating Technical Guidelines, 2006

Documentation of conformance with the above-listed references must include the following:

- Clear identification of any data gaps and estimated or modeled data
- Documentation of all conditions that affect reporting period measurement (e.g., measurement process and equipment, weather, building occupancy, time of day)

Note, for projects implementing similar measures in multiple residential buildings, a representative sampling of buildings may be used to determine reporting period energy use, rather than measurement of each building. If sampling is to be employed, attach a copy of the sampling protocol to be used that provides demonstration at a 95 percent confidence interval that the reported value will be within 10 percent of the true value. The sampling protocol and statistical method must include uncertainty and confidence interval calculations.

2. Procedures for Collection of Reporting Period Energy Use Data. Provide documentation of the procedures to be used during the reporting period to collect actual metered energy use data by fuel type for each building included in the offset project. Specify the metered energy use data to be collected for each building.

3. Isolation of Energy Use. Provide documentation of the procedures to be used for isolation of energy use during the reporting period for each end-use or building system to be targeted by eligible ECMs as part of the offset project. Such isolation must ensure that each eligible ECM will be isolated from all other eligible and non-eligible ECMs, as well as from overall building energy use. There are two options for isolation of energy use for end-uses or building systems to be targeted by eligible ECMs:

- Direct metering of end-use or building system affected by eligible ECMs (note that if the only change to the building as part of the energy efficiency project will involve eligible ECMs included in the offset project, metering of whole-building energy use is sufficient under this approach)
- Use of energy simulation modeling to apportion building energy use to each end-use or building system affected by eligible ECMs

For both of these options, ECMs must be isolated from whole-building or whole-system energy use and also adjusted for areas where multiple ECMs interact with one another (required to avoid double-counting of ECM energy use) or where one ECM utilizes more than one eligible fuel type. Provide a narrative identifying the procedures to be used during the reporting period to isolate energy use in conformance with the following guidelines and/or standards applicable to the building types included in the offset project:

- Commercial Buildings:
 - ASHRAE Guideline 14-2002
 - ASHRAE 90.1-2004, Section 11 and Appendix G
- Residential Buildings:
 - RESNET National Home Energy Rating Technical Guidelines, 2006

If energy simulation modeling is to be used to isolate energy use, provide the following documentation:

- Building simulation software input file, output file, and assumptions, on CD-ROM
- Copy of software manufacturer literature showing the modeling program name and version number
- Document demonstrating that software is BESTEST or RESNET certified, as applicable

4. Procedures for Adjustments in Energy Use to Account for Differing Conditions. Provide documentation of measurement conditions during the reporting period that may be unusual or measurement conditions that are expected to change between the baseline period and reporting period, and adjustment factors that may be applied to reporting period energy use to account for such measurement conditions. Specify the data sources and calculations to be used to account for differing conditions, and the procedures for collecting data. Adjustments may address issues such as weather, building occupancy, and changes in building use or function. Provide documentation of adjustments to be applied to reporting period energy use in accordance with the following equation:

$$\text{Energy Use (MMBtu)} = \text{PIEU}_{\text{AECM}} \times A_b$$

where:

- $PIEU_{AECM}$ = Annual energy use by fuel type (MMBtu) attributable to the application(s) targeted by the energy conservation measure(s).
- A_b = An adjustment factor that corrects for changes to the system of interest between when the baseline data were collected and the reporting period.

Provide documentation demonstrating that the application of any adjustments is consistent with the following guidelines and standards applicable to the building types included in the offset project:

- Commercial Buildings:
 - ASHRAE Guideline 14-2002
 - ASHRAE 90.1-2004, Section 11 and Appendix G
- Residential Buildings:
 - RESNET National Home Energy Rating Technical Guidelines, 2006

If any of the adjustments to be applied require energy simulation modeling, provide the following documentation:

- Building simulation software input file, output file, and assumptions, on CD-ROM
- Copy of software manufacturer literature showing the modeling program name and version number
- Document demonstrating that software is BESTEST or RESNET certified, as applicable

5. Procedures to Determine Reduction in Energy Use by Fuel Type. Provide a spreadsheet that specifies the building-specific data sources, methods, and calculations to be used for each building included in the offset project to determine reporting period energy savings by fuel type relative to baseline energy use. Energy use for all end-uses and building systems included in the energy use baseline must be addressed during the reporting period.

6. Documentation of Project Implementation. For offset projects that were not completed when the *Consistency Application* was submitted, document the procedures that will be followed to ensure that the offset project will be implemented as specified in the *Consistency Application*. Specify the procedures for conducting a site audit of the buildings included in the offset project, or if a site audit is not required pursuant to Maine's CO₂ Budget Trading Program, specify procedures for the collection and provision of specifications of equipment and materials installed and copies of equipment invoices and other project-related invoices documenting installation of the offset project.

7. Quality Assurance/Quality Control (QA/QC) Procedures. Document the procedures for recording names and contact information for the personnel responsible for project monitoring and documentation and the personnel responsible for QA/QC of project monitoring data and documentation. Document the procedures that will be taken for QA/QC of project monitoring data and documentation, including but not limited to the following:

- Energy use metering and collection of energy use data

- Adjustments to energy use to account for differing conditions during the reporting period relative to the baseline year
- Building energy simulation modeling, if used
- Calculation of energy use reductions and emissions reductions
- Compilation of an annual QA/QC report summarizing findings of QA/QC activities conducted and any remedial actions taken

8. Record Keeping and Records Retention Protocol. Document the record keeping and records retention protocol that will be used to maintain offset project documentation throughout the duration of the offset project, including maintenance of an electronic index and/or hardcopy of all project documentation.

Offset Project Name

Offset Project ID Code

Form 2.1 – Project Description

Attach a detailed narrative of the actions to be taken by the offset project. The attached narrative must include a header that indicates it is an attachment to Form 2.1 and includes the offset project name and offset project ID code.

Provide the building location and building specifications for each building included in the offset project in the Project Summary Table below:

Project Summary Table

Building ID	Building Location	Building Type	Building Use	Building Sq Ft
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
		<input type="checkbox"/> Existing <input type="checkbox"/> Whole-building retrofit <input type="checkbox"/> New construction	<input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
Total # of Buildings: _____		Total Sq Ft: _____		

Check the boxes below to indicate that the following required information is included in the detailed project narrative or is attached:

- 1. Summary Description of Project. Narrative summary of the actions taken or to be taken as part of the offset project.
- 2. Owners and Operators of Buildings. Contact information for the owners and operators of each building included in the offset project; contact information for the facility manager for each building.
- 3. Parties Implementing Offset Project. Contact information for the parties implementing the offset project; contact information for professional engineer that reviewed all project documentation.
- 4. Documentation of Equipment and Materials Specifications. Documentation of equipment and materials for each ECM identified in the Equipment and Materials Specification Table below.
- 5. Building Plans and Project Technical Schematics. Pre-installation and post-installation building plans and technical schematics; additional measure-specific documentation as applicable to specific ECMs.

Offset Project Name

Offset Project ID

Enter information for each ECM in the Equipment and Materials Specifications table below:

Equipment and Materials Specifications Table

ECM [†]	ID	Description of ECM	List the ID Numbers of Buildings Affected by the ECM	Total Equipment/Material Installed		Fuel Type [‡]	
				Quantity Installed	Unit	Original	New
	1.						
	2.						
	3.						
	4.						
	5.						
	6.						
	7.						
	8.						
	9.						
	10.						
	11.						
	12.						
	13.						
	14.						
	15.						
	16.						
	17.						
	18.						
	19.						
	20.						

Add additional rows as necessary. If table is attached to Form 2.1, enter "Table is Attached" in the table.

[†] **Categories of Energy Conservation Measures**

- (a) improvements in the energy efficiency of combustion equipment that provides space heating and hot water, including a reduction in fossil fuel consumption through the use of solar and geothermal energy
- (b) improvements in the efficiency of heating distribution systems, including proper sizing and commissioning of heating systems
- (c) installation or improvement of energy management systems
- (d) improvement in the efficiency of hot water distribution systems and reduction in demand for hot water
- (e) measures that improve the thermal performance of the building envelope and/or reduce building envelope air leakage
- (f) measures that improve the passive solar performance of buildings and utilization of active heating systems using renewable energy
- (g) fuel switching to a less carbon-intensive fuel for use in combustion systems, including the use of liquid or gaseous eligible biomass, provided that conversions to electricity are not eligible

[‡] NG = natural gas P = propane O = heating oil K = kerosene

Offset Project Name

Offset Project ID Code

Form 2.2 – Demonstration of Eligibility

Attach documentation to demonstrate offset project eligibility. Each attachment must include a header that indicates it is an attachment to Form 2.2 and includes the offset project name and offset project ID code.

Check the boxes below to indicate that the following required documentation is attached:

- 1. Documentation of ECM Installation. (not applicable to *in-progress* projects)
- 2. HVAC Installation Best Practice. Documentation demonstrating combustion equipment and air handling equipment sized and installed according to industry best practice (only required if project includes applicable ECMs).
- 3. Building Eligibility. Documentation of eligibility, as applicable to project types included in the offset project (existing building, whole-building retrofit, new building).
- 4. Whole-Building Energy Performance. Documentation that each building included in offset project meets applicable energy performance standards (only applicable to projects that include a new building or whole-building retrofit).
- 5. Combustion Equipment Performance Standards. Documentation that combustion equipment ECMs included in offset project meet applicable minimum energy efficiency standards (only applicable to offset projects commenced prior to January 1, 2009 that include applicable ECMs).
- 6. Other ECM Performance Standards. Documentation that all non-combustion equipment ECMs included in offset project meet applicable minimum energy performance standards (only applicable to offset projects commenced prior to January 1, 2009 that include applicable ECMs).
- 7. Market Penetration Rate. Documentation that ECMs included in offset project have a market penetration rate of less than five (5) percent (only applicable to offset projects commenced on or after January 1, 2009).

Offset Project Name

Offset Project ID Code

Form 2.3 – Emissions Baseline

Provide documentation of the emissions baseline where indicated in the form or as an attachment, as directed below. Each attachment must include a header that indicates it is an attachment to Form 2.3 and includes the offset project name and offset project ID code.

Baseline Period (Calendar Year)

Enter Baseline Annual Energy Use (MMBtu) by Fuel Type

Natural Gas

Propane

Distillate Fuel Oil

Kerosene

Enter Baseline Annual Emissions (lbs. CO₂/MMBtu) by Fuel Type

Natural Gas

Propane

Distillate Fuel Oil

Kerosene

Total

Check the boxes below to indicate that the following required documentation is attached:

- 1. Documentation of Baseline Energy Calculation Approach. Documentation of energy monitoring or modeling procedures used to determine baseline energy use, including demonstration of conformance with appropriate guidelines and standard for applicable building types included in offset project.
- 2. Baseline Energy Use Data. Documentation of baseline energy use for each building included in offset project.
- 3. Isolation of Energy Use. Documentation of isolation of energy use for each end-use or building system targeted by eligible ECMs.
- 4. Adjustments to Baseline Energy Use. Documentation of adjustments, as applicable, to account for minimum equipment or building component energy efficiency or energy performance standards; adjustments for operating or weather conditions.
- 5. Total Baseline Energy Use. Spreadsheet documenting calculation of total baseline energy use.
- 6. Baseline Emissions. Spreadsheet documenting calculation of baseline CO₂ emissions.

Offset Project Name

Offset Project ID Code

Form 2.4 – Monitoring and Verification Plan

Provide the Monitoring and Verification Plan (M&V Plan) as an attachment. The attachment must include a header that indicates it is an attachment to Form 2.4 and includes the offset project name and offset project ID code.

Check the boxes below to indicate that the M&V Plan includes the following required information:

- 1. Documentation of Energy Monitoring Approach. Narrative documentation of energy monitoring procedures to be used during reporting period to determine energy use for each building included in offset project. If project eligible for use of representative sampling, copy of sampling protocol (for projects implementing similar ECMs in multiple residential buildings).
- 2. Procedures for Collection of Reporting Period Energy Use Data. Documentation of procedures for each building included in offset project.
- 3. Isolation of Energy Use. Documentation of procedures to be used during the reporting period for isolation of energy use for each end-use or building system targeted by eligible ECMs.
- 4. Procedures for Adjustments in Energy Use to Account for Differing Conditions. Documentation of measurement conditions during the reporting period that may be unusual or are expected to change; documentation of adjustment factors that may be applied to account for such measurement conditions.
- 5. Procedures to Determine Reduction in Energy Use by Fuel Type. Spreadsheet specifying building-specific data sources, methods, and calculations to be used for each building included in offset project to determine reporting period energy savings relative to baseline energy use.
- 6. Documentation of Project Implementation. Documentation of procedures to be used to ensure offset project will be implemented as specified in *Consistency Application* (only applicable to *in-progress* offset projects not completed as of submission of *Consistency Application*).
- 7. Quality Assurance/Quality Control (QA/QC) Procedures. Documentation of procedures for recording information for personnel responsible for project monitoring, documentation, and QA/QC; documentation of procedures to be used for QA/QC of project monitoring data and documentation.
- 8. Record Keeping and Records Retention Protocol. Documentation of record keeping and records retention protocol that will be used to maintain offset project documentation throughout duration of the offset project.

Part 3. Independent Verification Form

The form in Part 3 of the *Consistency Application* addresses requirements and documentation related to the independent verifier certification statement and report. Instructions for the form in Part 3 are provided below.

Form 3.1 Independent Verifier Certification Statement and Report

An accredited verifier and licensed professional engineer must sign and date the form. Submit the originally signed form as part of the paper hardcopy of the *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*.

Provide the independent verifier report as an attachment to Form 3.1.

The verifier report must include a header that indicates it as an attachment to Form 3.1 and includes the offset project name and offset project ID code.

The verifier report must document the following:

1. The verifier has reviewed the entire *Consistency Application* and evaluated the contents of the application in relation to the applicable requirements of Maine's CO₂ Budget Trading Program.
2. The verifier has evaluated the adequacy and validity of information supplied by the Project Sponsor to demonstrate that the offset project meets the applicable eligibility requirements of Maine's CO₂ Budget Trading Program.
3. The verifier has evaluated the adequacy and validity of information supplied by the Project Sponsor to demonstrate baseline emissions pursuant to the applicable requirements of Maine's CO₂ Budget Trading Program.
4. The verifier has evaluated the adequacy of the monitoring and verification plan submitted pursuant to Maine's CO₂ Budget Trading Program.

The verifier report must include the following contents, in the order listed below:

- Cover page with report title and date
- Table of contents
- List of acronyms and abbreviations
- Executive summary
- Description of objective of report
- Identification of the client, including name, address, and other contact information
- Identification of the offset project
- Description of evaluation criteria (applicable regulatory provisions and documentation required in the *Consistency Application*)
- Description of the review and evaluation process, including any site visits and interviews

- Identification of individuals performing the verification work, including the verification team leader and key personnel, and contact information for the team leader
- Description of the materials provided to the verifier by the Project Sponsor
- Evaluation conclusions and findings, including level of assurance provided

Offset Project Name

Offset Project ID Code

Form 3.1 – Independent Verifier Certification Statement and Report

An accredited verifier and licensed professional engineer must sign and date the form. Attach the accredited verifier report. The attached verifier report must include a header that indicates it is an attachment to Form 3.1 and includes the offset project name and offset project ID code.

Name of Accredited Independent Verifier

I certify that the accredited independent verifier identified above reviewed the *Consistency Application*, including all forms and attachments, in its entirety, including a review of the following:

- (a) The adequacy and validity of information supplied by the Project Sponsor to demonstrate that the offset project meets the applicable eligibility requirements of Maine’s CO₂ Budget Trading Program, including the required documentation that must be provided in the *Consistency Application*.
- (b) The adequacy and validity of information supplied by the Project Sponsor to demonstrate baseline emissions pursuant to the applicable requirements of Maine’s CO₂ Budget Trading Program, including the required documentation that must be provided in the *Consistency Application*.
- (c) The adequacy of the Monitoring and Verification Plan in accordance with the applicable requirements of Maine’s CO₂ Budget Trading Program, including the required documentation that must be provided in the *Consistency Application*.

A verification report is attached that documents the verifier’s review of the items listed above and includes evaluation conclusions and findings.

Verifier Representative signature

date

printed name

title

notary



signature of licensed professional engineer

name of licensed professional engineer

license number(s)

license state(s)