

**Sec. 22a-174-31a. Greenhouse gas emission offset projects**

(a) **Definitions and abbreviations.** Except as otherwise provided, for the purposes of this section and section 22a-174-31 of the Regulations of Connecticut State Agencies:

(1) “Anaerobic digester” means a device that promotes the decomposition of organic material to simple organics and gaseous biogas products, usually accomplished by means of controlling temperature and volume, and including a methane recovery system.

(2) “Anaerobic digestion” means the degradation of organic material including manure brought about through the action of microorganisms in the absence of elemental oxygen.

(3) “Anaerobic storage” means the storage of organic material in an oxygen-free environment, or under oxygen-free conditions, including but not limited to, holding tanks, ponds, and lagoons.

(4) “ANSI” means the American National Standards Institute.

(5) “ASHRAE” means the American Society of Heating, Refrigerating and Air-Conditioner Engineers.

(6) “Biogas” means the gas, primarily methane and CO<sub>2</sub>, resulting from the decomposition of organic matter under anaerobic conditions.

(7) “Building envelope” means the elements of a building, including walls, windows, foundation, basement slab, ceiling, roof and insulation, that separate conditioned space from unconditioned space, or that enclose semi-heated space, through which thermal energy may be transferred to or from the exterior, unconditioned space, or conditioned space.

(8) “Certification” means an independent third-party verification that a CO<sub>2</sub> emissions offset project application and all measurement, monitoring or verification associated therewith meets the requirements of this section.

(9) “CH<sub>4</sub>” means methane.

(10) “CO<sub>2</sub> emissions offset project” means a project to reduce or avoid atmospheric loading of CO<sub>2</sub>, CO<sub>2</sub>e or sequestered carbon where such project yields reduced or avoided emissions that are real, additional, verifiable, enforceable and permanent.

(11) “CO<sub>2</sub>e” means “carbon dioxide equivalent” as defined in section 22a-174-31 of the Regulations of Connecticut State Agencies.

(12) “Commercial building” means a non-residential building to which the provisions of ANSI/ASHRAE/IESNA Standard 90.1 apply.

(13) “Conflict of interest” means a situation under which an individual has a relationship with any specific project sponsor, CO<sub>2</sub> emissions offset project or category of offset projects, such that the individual’s other activities or relationships with other persons or organizations render or may render the individual incapable of providing an impartial certification opinion, or otherwise compromise the individual’s objectivity in performing certification functions.

(14) “Condensing mode” means the design and operation of furnaces or boilers in a mode that leads to the production of condensate in flue gases.

(15) “Cooperating regulatory agency” means a regulatory agency in a state or United States jurisdiction that is not a participating state that has entered into a memorandum of understanding with the commissioner and the appropriate regulatory agencies of all participating states to carry out certain obligations relative to CO<sub>2</sub> emissions offset projects in that state or United States jurisdiction, including but not limited to, the obligation to perform audits of offset project sites, and report noncompliance with this section.

(16) “Energy conservation measure” (“ECM”) or “energy efficiency measure” (“EEM”) means an activity or a set of activities designed to increase the energy efficiency of a building or improve the management of energy demand and may include, but not be limited to, physical changes to facility equipment, modifications to a building, revisions to operating and maintenance procedures, software changes, or new means of training or managing users of the building or operations and maintenance staff.

(17) “Energy performance” means a measure of the relative energy efficiency of a building, building equipment, or building components, as measured by the amount of energy required to provide building services and for building equipment and components, means a relative measure of the impact of equipment or components on building energy usage.

(18) “Energy services” means the provision of useful services to building occupants, such as heating and hot water, cooling, and lighting.

(19) “Forested condition” means land that is at least 1.0 acre in size and 120.0 feet wide measured stem-to-stem from the outer-most edge with forested strips that are at least 120.0 feet wide for a continuous length of at least 363.0 feet, and meets one of the following stocking criteria:

(A) The condition is at least 10-percent stocked by trees of any size or has been at least 10-percent stocked in the past, and the condition is not subject to non-forest use that prevent normal tree regeneration and succession such as regular mowing, intensive grazing, or recreation activities; or

(B) In several western woodland species where stocking cannot be determined, the condition has at least 5-percent crown cover by trees of any size, or has had at least 5-percent cover in the past, and the condition is not subject to non-forest use that prevents normal regeneration and succession such as regular mowing, chaining, or recreation activities.

(20) “Furnace” means a self-contained, indirect-fired appliance with a heat input rate of less than 225,000 Btu/hr that supplies heated air to a residential or commercial building through ducts to conditioned spaces.

(21) “HVAC system” means a system or systems that provide, either collectively or individually, heating, ventilation, or air conditioning to a building, including the equipment, distribution network, and terminals.

(22) “IESNA” means the Illuminating Engineering Society of North America.

(23) “Independent verifier” means an individual who has been approved by the commissioner or the commissioner’s designee to conduct verification activities.

(24) “Market penetration rate” means 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, as a 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.

(25) “Non-census water” means streams, sloughs, estuaries, and canals that are more than 120 feet and less than 1/8 of a mile wide and lakes, reservoirs, and ponds that are 1 to 40 acres in size.

(26) “Non-forested condition” means land that does not meet the definition of “forested condition” and any land that includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining rights-of-way, power line

clearings of any width, and non-census water. If intermingled in forested areas, unimproved roads and non-forest strips are more than 120.0 feet wide, and clearings more than one acre in size, to qualify as non-forest land.

(27) “Offset project” means all equipment, materials, items, or actions directly related to the reduction of CO<sub>2</sub> equivalent emissions or the sequestration of carbon specified in a consistency application submitted pursuant to this section.

(28) “On-site combustion” means the combustion of fossil fuel at a building to provide building services, such as heating, hot water, or electricity.

(29) “Passive solar” means a combination of building design features and building components that utilize solar energy to reduce or eliminate the need for mechanical heating and cooling and daytime artificial lighting.

(30) “Permanently retired” means a greenhouse gas allowance or credit has been placed in a retirement account controlled by the jurisdiction that generated the allowance or credit, or has been placed in an allowance retirement account controlled by the commissioner or is otherwise determined by the commissioner to be rendered unusable.

(31) “Project commencement” means the date on which physical construction, installation of equipment or materials or other work at an offset project site began; or the date on which a management activity or protocol is first utilized for an offset project.

(32) “Project sponsor” means any person who owns or operates an eligible CO<sub>2</sub> emission offset project or who owns a CO<sub>2</sub> emissions credit retirement.

(33) “Regional-type anaerobic digester” means an anaerobic digester using feedstock from more than one agricultural operation, or importing feedstock from more than one agricultural operation.

(34) “Renewable portfolio standard” means the statutory requirement that a load-serving entity provide a certain portion of the electricity it supplies to its customers from renewable energy sources pursuant to section 16-245a of the Connecticut General Statute or any other statute or regulation requiring a certain portion of electricity supplied to the electricity grid be generated from renewable energy sources.

(35) “Residential building” means a low-rise structure used as a single family home, a multifamily home of three or fewer stories above grade, or a modular or mobile manufactured home for which the provisions of ANSI/ASHRAE/IESNA Standard 90.1 do not apply.

(36) “RESNET” means the Residential Energy Services Network, a not-for-profit corporation that establishes nationally recognized standards for building energy efficiency rating systems.

(37) “SF<sub>6</sub>” means sulfur hexafluoride.

(38) “SF<sub>6</sub>-containing operating equipment” means any equipment used for the transmission or distribution of electricity that contains SF<sub>6</sub>.

(39) “System benefit fund” means the monies collected directly from retail electricity or natural gas ratepayers pursuant to section 16-245l of the Connecticut General Statutes or the statutes and regulations of other states.

(40) “Total solids” means the total of all solids in a sample, including total suspended solids, total dissolved solids, and volatile suspended solids.

(41) “Transmission or distribution entity” means the assets and equipment used to

transmit and distribute electricity from an electric generator to the electrical load of a customer, including all related assets and equipment located within the service territory of the entity, defined as the service territory of a load-serving entity specified by the Connecticut Department of Public Utility Control.

(42) “Verification” means the determination by an independent verifier that certain parts of a CO<sub>2</sub> emissions offset project consistency application or measurement, monitoring and verification report conform to the requirements of this section.

(43) “Volatile solids” means the fraction of total solids that is comprised primarily of organic matter.

(44) “Whole-building energy performance” means the overall energy performance of a building, taking into account the integrated impact on energy usage of all building components and systems.

(45) “Whole-building retrofit” means any building project that involves the replacement of more than one building system, or set of building components, and also requires a building permit.

(46) “Zero net energy building” means 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.

**(b) Applicability and General Requirements.**

(1) This section applies to the sponsor of any CO<sub>2</sub> emissions offset project undertaken to create CO<sub>2</sub> offset allowances for sale or use in the state of Connecticut in accordance with the requirements of section 22a-174-31 of the Regulations of Connecticut State Agencies or in any other participating state.

(2) Copies of documents incorporated by reference into this section are available by contacting:

Connecticut Department of Environmental Protection  
Bureau of Air Management  
79 Elm Street  
Hartford, Connecticut 06106  
(860) 424-3027

**(c) General Requirements for CO<sub>2</sub> Emissions Offset Projects.**

(1) The commissioner or commissioner’s designee may award CO<sub>2</sub> offset allowances to sponsors of CO<sub>2</sub> emissions offset projects or CO<sub>2</sub> emissions credit retirements that have reduced or avoided atmospheric loading of CO<sub>2</sub> or CO<sub>2</sub> equivalent or sequestered carbon as demonstrated in accordance with the applicable provisions of this section provided that such projects represent CO<sub>2</sub> or CO<sub>2</sub> equivalent reductions or carbon sequestration that are real, additional, verifiable, enforceable, and permanent. The use of such offset allowances for compliance purposes shall be subject to the provisions of section 22a-174-31 of the Regulations of Connecticut State Agencies.

(2) Eligible CO<sub>2</sub> emissions offset projects. Offset projects shall satisfy all the applicable requirements of this section to qualify for the award of CO<sub>2</sub> offset allowances. As identified in subsections (d) to (h), inclusive, of this section, projects that either capture and destroy landfill methane, avoid sulfur hexafluoride emissions, sequester carbon through afforestation, provide end-use energy efficiency, or avoid methane emissions from

agricultural management operations are eligible for the award of CO<sub>2</sub> offset allowances.

(3) Eligible offset project locations. Eligible offset projects may be located in any participating state or in any state or other U.S. jurisdiction that has entered into a memorandum of understanding with the commissioner and the appropriate regulatory agencies of all participating states to carry out certain obligations relative to CO<sub>2</sub> emissions offset projects in such state or U.S. jurisdiction, including but not limited to the obligation to perform audits of offset project sites, and report violations of this section to the commissioner or the commissioner's designee.

(4) Eligible CO<sub>2</sub> emissions credit retirements. A CO<sub>2</sub> emissions credit retirement shall satisfy all the applicable requirements of this section, to qualify for the award of CO<sub>2</sub> offset allowances. CO<sub>2</sub> emissions credit retirements include the permanent retirement of greenhouse gas allowances or credits issued pursuant to any governmental mandatory carbon constraining program outside the United States that places a specific tonnage limit on greenhouse gas emissions, provided the allowances or credits are acceptable and valid for use in that program at the time the consistency application is filed pursuant to this subsection, or certified greenhouse gas emissions reductions credits issued pursuant to the United Nations Framework Convention on Climate Change (UNFCCC) or protocols adopted through the UNFCCC process. The commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances for CO<sub>2</sub> emissions credit retirements only after the occurrence of a Stage Two Trigger Event.

(5) General Requirements. In addition to the requirements set forth in subsections (d) to (h), inclusive, of this section, the following general requirements shall apply to each offset project:

(A) CO<sub>2</sub> offset allowances shall not be awarded for an offset project or CO<sub>2</sub> emissions credit retirement that is required pursuant to any local, state or federal law, regulation, or administrative or judicial order. If an offset project receives a consistency determination under this subsection and is later required by local, state or federal law, regulation, or administrative or judicial order, then the offset project shall only remain eligible for the award of CO<sub>2</sub> offset allowances until the end of its current allocation period;

(B) If an offset project includes an electric generation component, the project sponsor shall transfer to the commissioner or the commissioner's designee the legal rights to all attribute credits generated from the operation of the offset project, other than CO<sub>2</sub> offset allowances issued under this subsection, that may be used for compliance with a renewable portfolio standard or other regulatory requirement;

(C) Offset projects may not receive funding or other incentives from any systems benefit fund, or funds or other incentives provided through the auction reserves described in section 22a-174-31(f)(5)(B) to (D), inclusive, of the Regulations of Connecticut State Agencies; and

(D) CO<sub>2</sub> offset allowances shall not be awarded to an offset project or CO<sub>2</sub> emissions credit retirement that is awarded credits or allowances under any other mandatory or voluntary greenhouse gas program, by another participating state, or by any other carbon market.

(6) Maximum allocation periods for CO<sub>2</sub> emissions offset projects. The commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances under this section as

follows:

(A) Maximum allocation periods. Except as provided in subparagraph (B) of this subdivision, the commissioner or the commissioner's designee shall award CO<sub>2</sub> offset allowances under this section for any offset project for an allocation period not to exceed ten years. At the end of the initial 10-year allocation period and upon a demonstration by the project sponsor that the offset project continues to meet all applicable requirements of this section, the commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances for a second 10-year allocation period. Prior to the expiration of the initial allocation period, the offset project sponsor shall submit a consistency application pursuant to this section and receive a consistency determination from the commissioner or the commissioner's designee; and

(B) Maximum afforestation allocation period. The commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances under this subsection for any afforestation offset project for an initial 20-year allocation period. At the end of the initial 20-year allocation period the commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances for a second 20-year allocation period, provided the offset sponsor has submitted a consistency application for the afforestation offset project prior to the expiration of the initial allocation period, and the commissioner or the commissioner's designee has issued a consistency determination pursuant to this subsection. At the end of the second 20-year allocation period, the commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances for a third 20-year allocation period, provided the offset sponsor has submitted a consistency application for the afforestation offset project prior to the expiration of the second allocation period, and the commissioner or the commissioner's designee has issued a consistency determination pursuant to this subsection. In no event shall an afforestation offset project be awarded CO<sub>2</sub> offset allowances for more than a total of 60 allocation years.

(7) Timing of offset projects. The commissioner or the commissioner's designee may award CO<sub>2</sub> offset allowances under this section only for offset projects that commenced on or after December 20, 2005.

(8) Offset project audit. Project sponsors shall provide the commissioner or the commissioner's designee access to the physical location of the offset project in order to determine compliance with this section.

(9) Ineligibility due to noncompliance. If at any time the commissioner or the commissioner's designee determines that a project sponsor has not complied with the requirements of this section, the commissioner or the commissioner's designee may revoke and retire any and all offset allowances in the project sponsor's general account. If at any time the commissioner or the commissioner's designee determines that an offset project does not comply with the requirements of this section, the commissioner or the commissioner's designee may revoke any prior approvals issued in relation to an offset project.

(10) Application Process. Any person may act as the sponsor of an eligible CO<sub>2</sub> emissions offset project or CO<sub>2</sub> emissions credit retirement, provided that such person meets the requirements of this subdivision as follows:

(A) Establishment of general account. The sponsor of an offset project or CO<sub>2</sub> emissions credit retirement shall establish a general account under section 22a-174-31(g)(2)(B) of the

Regulations of Connecticut State Agencies. All submissions to the commissioner required for the award of CO<sub>2</sub> offset allowances under this subsection shall be from the CO<sub>2</sub> authorized account representative for the general account of the sponsor of the relevant offset project or CO<sub>2</sub> emissions credit retirement;

(B) Consistency application time frames.

(i) For offset projects commenced prior to January 1, 2009, the project sponsor shall submit the consistency application no later than June 30, 2009;

(ii) For offset projects commenced on or after January 1, 2009, the project sponsor shall submit the consistency application no later than the date that is six months after the offset project is commenced; and

(iii) The commissioner or the commissioner's designee shall deny any application that fails to meet the time frames specified in this subparagraph;

(C) Consistency application contents. The sponsor of an offset project shall provide the following information to the commissioner or the commissioner's designee:

(i) The offset project sponsor's name, address, e-mail address, telephone number, facsimile transmission number, and account number;

(ii) The offset project description as required by the relevant provisions of subsection (d) to (h), inclusive, of this section;

(iii) The emissions baseline determination as required by relevant provisions of subsection (d) to (h), inclusive, of this section;

(iv) An explanation of how the projected reduction or avoidance of atmospheric loading of CO<sub>2</sub> or CO<sub>2</sub> equivalent or the sequestration of carbon is to be quantified, monitored and verified as required by the relevant provisions of subsection (d) to (h), inclusive, of this section;

(v) A completed application agreement that reads as follows: "The undersigned project sponsor recognizes and accepts that the application for, and the receipt of, CO<sub>2</sub> offset allowances under the CO<sub>2</sub> Budget Trading Program is predicated on the project sponsor following all the requirements of section 22a-174-31a of the Regulations of Connecticut State Agencies. The 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. I understand that eligibility for the award of offset allowances under section 22a-174-31a of the Regulations of Connecticut State Agencies is contingent on meeting the requirements of said section. I authorize the commissioner or the commissioner's designee to audit this offset project for purposes of verifying that the project, including the monitoring and verification plan, has been implemented as described in this application. I understand that this right to audit shall include the right to enter the physical location of the offset project. I submit to the legal jurisdiction of the State of Connecticut.";

(vi) A statement and certification report signed by the offset project sponsor certifying that all offset projects for which the sponsor has received offset allowances under this section or similar provisions in the rules of other participating states, under the sponsor's ownership or control or under the ownership or control of any entity which controls, is controlled by, or has common control with the sponsor are in compliance with all applicable requirements of the CO<sub>2</sub> Budget Trading Program in all participating states;

(vii) A statement and certification report drafted and signed by an independent verifier,

accredited pursuant to this section, indicating that the independent verifier has reviewed the entire application and evaluated the adequacy and validity of the following information in relation to the applicable requirements of this section: the demonstration that the offset project meets the applicable eligibility requirements of this section; baseline emissions in accordance with this section; the monitoring and verification plan submitted in accordance with this section; and such other statements as may be required by commissioner or the commissioner's designee;

(viii) Disclosure of any voluntary or mandatory programs, other than the CO<sub>2</sub> Budget Trading Program, to which greenhouse gas emissions data related to the offset project has been, or will be, reported;

(ix) For offset projects located in a state or United States jurisdiction that is not a participating state, a demonstration that the project sponsor has complied with all requirements of the cooperating regulatory agency in the state where the offset project is located; and

(x) Any other information the commissioner or the commissioner's designee may require in order to evaluate the proposed offset project; and

(D) CO<sub>2</sub> emissions offset credit retirements. For a CO<sub>2</sub> emissions credit retirement, the consistency application shall include sufficient information to demonstrate that the CO<sub>2</sub> emissions credit is eligible pursuant to this section, was lawfully held by the project sponsor, and has been permanently and irrevocably retired.

(11) Place for filing.

(A) For an offset project located in one participating state in whole or in part, the consistency application shall be filed with the appropriate commissioner in such State;

(B) For an offset project located wholly outside all participating states, the consistency application may be filed with the appropriate commissioner in any one participating state. In addition, a copy of the consistency application shall be filed with the cooperating regulatory agency in the state or United States jurisdiction where the offset project is located;

(C) For an offset project located in more than one participating state, the consistency application shall be filed in the participating state where the larger part of the emissions reduction or carbon sequestration due to the offset project activity is projected to occur; and

(D) For CO<sub>2</sub> emissions credit retirements, the consistency application may be filed with the appropriate commissioner in any one participating state.

(12) Commissioner action on consistency applications.

(A) Completeness determination. Not later than 30 days following receipt of the application filed pursuant to subdivision (9)(B) of this subsection, the commissioner or the commissioner's designee shall notify the project sponsor whether the consistency application is complete. A complete consistency application is one that is in an approved form and is determined by the commissioner or the commissioner's designee to be complete for the purpose of commencing review of the application. In no event shall a completeness determination prevent the commissioner or the commissioner's designee from requesting additional information in order to fully evaluate the proposed project in accordance with subparagraph (B) of this subdivision; and

(B) Consistency determination. Not later than 150 days of making the completeness determination under subparagraph (A) of this subdivision, the commissioner or the



commissioner's designee shall issue a determination as to whether the offset project has met the requirements of this section and the requirements of the applicable offset project standard of subsection (d), (e), (f), (g) or (h) of this section. For any application found to lack consistency with these requirements, the commissioner or the commissioner's designee shall inform the project sponsor of the offset project's deficiencies.

**(d) Landfill Methane (CH<sub>4</sub>) Capture and Destruction**

(1) Eligibility. An offset project that captures and destroys methane from landfills shall meet the requirements of this subsection and all applicable requirements of this section, to qualify for the award of CO<sub>2</sub> offset allowances. In addition, eligible offset projects shall meet the following requirements:

(A) The offset project may only occur at a landfill that is not subject to the New Source Performance Standards for municipal solid waste landfills pursuant to 40 CFR 60, Subpart CC and Subpart WWW; and

(B) Offset project description. The project sponsor shall provide a detailed narrative of the offset project action or actions to be taken, including supporting materials as appropriate. The project narrative shall include the following:

- (i) The name or names and addresses of the owner and operator of the offset project;
- (ii) Location and specifications of the landfill where the offset project is proposed to occur, including waste in place;
- (iii) The name or names and addresses of the owner and operator of the landfill where the offset project is proposed to occur; and
- (iv) Specifications of the equipment to be installed and a technical schematic of the offset project.

(2) Emissions baseline determination. The emissions baseline shall represent the potential fugitive landfill emissions, in tons of CO<sub>2</sub>e, of the methane (CH<sub>4</sub>) collected and metered for thermal destruction as part of the offset project. Baseline CH<sub>4</sub> fugitive emissions shall be calculated as follows:

$$\text{Emissions (tons CO}_2\text{e)} = (V \times M \times (1 - \text{OX}) \times \text{GWP}) / 2000$$

Where:

V = Volume of CH<sub>4</sub> collected (ft<sup>3</sup>);

M = Mass of CH<sub>4</sub> per cubic foot (0.04246 lbs/ft<sup>3</sup> default value at 1 atmosphere and 20°C);

OX = Oxidation factor (0.10), representing estimated portion of collected CH<sub>4</sub> that would have eventually oxidized to CO<sub>2</sub> if not collected; and

GWP = CO<sub>2</sub>e global warming potential of CH<sub>4</sub> (23).

(3) Calculating emissions reductions. Emissions reductions shall be determined based on the difference between potential fugitive CH<sub>4</sub> emissions that would have occurred if metered CH<sub>4</sub> collected from the landfill for thermal destruction as part of the offset project was not collected and destroyed. CO<sub>2</sub>e emissions reductions shall be calculated as follows:

$$\text{Emissions Reductions (tons CO}_2\text{e)} = (V \times M \times (1 - \text{OX}) \times C_{\text{cf}} \times \text{GWP}) / 2000$$

Where:

V = Volume of CH<sub>4</sub> collected (ft<sup>3</sup>);

M = Mass of CH<sub>4</sub> per cubic foot (0.04246 lbs/ft<sup>3</sup> default value at 1 atmosphere and 20°C);

OX = Oxidation factor (0.10), representing estimated portion of collected CH<sub>4</sub> that would

have eventually oxidized to CO<sub>2</sub> if not collected;

C<sub>ef</sub> = Combustion efficiency of methane control technology (0.98); and

GWP = CO<sub>2</sub>e global warming potential of CH<sub>4</sub> (23).

(4) Monitoring and verification requirements. Offset projects shall employ a landfill gas collection system that provides continuous metering and data computation of landfill gas volumetric flow rate and CH<sub>4</sub> concentration. Annual monitoring and verification reports required pursuant to subsection (j) of this section shall include monthly volumetric flow rate and CH<sub>4</sub> concentration data, including documentation that the CH<sub>4</sub> was actually supplied to the combustion source. The project sponsor shall also:

(A) Submit a monitoring and verification plan as part of the consistency application that includes a quality assurance and quality control program associated with equipment used to determine landfill gas volumetric flow rate and CH<sub>4</sub> composition. The monitoring and verification plan shall include provisions for ensuring that measuring and monitoring equipment is maintained, operated and calibrated based on manufacturer recommendations, as well as provisions for the retention of maintenance records for audit purposes. The monitoring and verification plan shall be certified by an independent verifier accredited pursuant to subsection (i) of this section; and

(B) Annually verify landfill gas CH<sub>4</sub> composition through landfill gas sampling and third party laboratory analysis using applicable U.S. Environmental Protection Agency laboratory test methods.

(e) **Reduction in emissions of sulfur hexafluoride (SF<sub>6</sub>).**

(1) Eligibility. Offset projects that prevent emissions of sulfur hexafluoride to the atmosphere from equipment in the electricity transmission and distribution sector, through capture and storage, recycling, or destruction, shall meet the requirements of this subsection and all applicable requirements of this section, to qualify for the award of CO<sub>2</sub> offset allowances.

(A) Eligible offset projects shall consist of the incremental actions to be taken, beyond current actions, to achieve a reduction in emissions of SF<sub>6</sub> beyond the transmission and distribution entity's emissions in the baseline reporting year. The identified actions to be taken shall be consistent with the guidance provided in International Electrotechnical Commission (IEC) 1634, and "High-voltage switchgear and control gear – Use and handling of sulfur hexafluoride (SF<sub>6</sub>) in high-voltage switchgear and control gear," (CEI/IEC 1634, 1995-04);

(B) Except as provided in subparagraph (C) of this subdivision, eligible offset projects shall take place where the SF<sub>6</sub> entity-wide emissions rate for the baseline year is less than the applicable emissions rate in Table 31a-1B. The entity-wide SF<sub>6</sub> emissions rate shall be calculated as follows:

SF<sub>6</sub> Emissions Rate (%) = (Total SF<sub>6</sub> Emissions for Reporting Year) / (Total SF<sub>6</sub> Nameplate Capacity at End of Reporting Year)

Where:

SF<sub>6</sub> Nameplate Capacity refers to all SF<sub>6</sub>-containing operating equipment owned or operated by the entity, at full and proper SF<sub>6</sub> charge of the equipment rather than the actual charge of the equipment, which may reflect leakage.

**Table 31a-1A and B SF<sub>6</sub> Emissions Rate Performance Standards**

Table 31a-1A. Emission Regions

Region A	Region B	Region C	Region D	Region E
Connecticut	Alabama	Colorado	Arkansas	Alaska
Delaware	District of Columbia	Illinois	Iowa	Arizona
Maine	Florida	Indiana	Kansas	California
Massachusetts	Georgia	Michigan	Louisiana	Hawaii
New Jersey	Kentucky	Minnesota	Missouri	Idaho
New York	Maryland	Montana	Nebraska	Nevada
New Hampshire	Mississippi	North Dakota	New Mexico	Oregon
Pennsylvania	North Carolina	Ohio	Oklahoma	Washington
Rhode Island	South Carolina	South Dakota	Texas	
Vermont	Tennessee	Utah		
	Virginia	Wisconsin		
	West Virginia	Wyoming		

**Table 31a-1B. Emissions Rate Performance Standards**

Region	Emission Rate <sup>a</sup>
Region A	9.68%
Region B	5.22%
Region C	9.68%
Region D	5.77%
Region E	3.65%
U.S. (National)	9.68%
<sup>a</sup> Based on weighted average 2004 emissions rates for U.S. EPA SF <sub>6</sub> Partnership utilities in each region. If the weighted average emissions rate in a region is higher than the national weighted average, the default performance standard is the national weighted average emissions rate;	

(C) An SF<sub>6</sub> offset project located at a transmission or distribution entity serving a predominantly urban service territory shall be eligible even if the entity does not meet the emissions rate requirement of subparagraph (B) Table 31a-1B of this subdivision, provided the project sponsor demonstrates and the commissioner or the commissioner's designee determines that two or more of the following factors functionally impede management of SF<sub>6</sub> and prevent such entities from meeting the entity-wide emissions rate requirement:

- (i) The entity is comprised of older than average installed transmission and distribution equipment in relation to the national average age of equipment;
- (ii) A majority of the entity's electricity load is served by equipment that is located underground, and poor accessibility of such underground equipment precludes management

of SF<sub>6</sub> emissions through regular ongoing maintenance;

(iii) The inability of the entity to take a substantial portion of equipment out of service, as such activity would jeopardize system reliability as set forth in applicable regulatory criteria documents; and

(iv) Required equipment purpose or design for a substantial portion of entity transmission and distribution equipment results in inherently leak-prone equipment.

(2) Offset project description. The offset project sponsor shall provide a detailed narrative of the offset project actions to be taken, including supporting materials as appropriate. The offset project narrative shall include the following:

(A) A description of the transmission or distribution entity specifying the service territory served by the entity; and

(B) The owner and operator of the transmission or distribution entity.

(3) Emissions baseline determination. Baseline SF<sub>6</sub> emissions shall be determined based on annual entity-wide reporting of SF<sub>6</sub> emissions for the calendar year immediately preceding the calendar year in which the consistency application is filed and such calendar year shall be designated as the baseline year. If the consistency application is filed prior to 2009, the baseline year may be 2005, but no earlier. The reporting entity shall systematically track and account for all entity-wide uses of SF<sub>6</sub> in order to determine entity-wide emissions of SF<sub>6</sub>. The scope of such tracking and accounting shall include all electric transmission and distribution assets and all SF<sub>6</sub>-containing and SF<sub>6</sub>-handling equipment owned or operated by the reporting entity.

(A) Emissions shall be determined based on the following mass balance method: SF<sub>6</sub> Emissions (lbs.) = (SF<sub>6</sub> Change in Inventory) + (SF<sub>6</sub> Purchases and Acquisitions) – (SF<sub>6</sub> Sales and Disbursements) – (Change in Total SF<sub>6</sub> Nameplate Capacity of Equipment)

Where:

*Change in Inventory* means the difference between the quantity of SF<sub>6</sub> gas in storage at the beginning of the reporting year and the quantity in storage at the end of the reporting year. The change in inventory will be negative if the quantity of SF<sub>6</sub> gas in storage increases over the course of the year;

*Quantity in Storage* means all SF<sub>6</sub> gas contained in cylinders, including 115-pound storage cylinders, gas carts, and other storage containers. This term does not refer to SF<sub>6</sub> gas held in SF<sub>6</sub>-containing operating equipment;

*Purchases and Acquisitions of SF<sub>6</sub>* means the sum of all the SF<sub>6</sub> gas acquired from other parties during the reporting year, as contained in storage containers or SF<sub>6</sub>-containing operating equipment;

*Sales and Disbursements of SF<sub>6</sub>* means the sum of all the SF<sub>6</sub> gas sold or otherwise disbursed to other parties during the reporting year, as contained in storage containers and SF<sub>6</sub>-containing operating equipment; and

*Change in Total SF<sub>6</sub> Nameplate Capacity of Equipment* means the net change in the total volume of SF<sub>6</sub>-containing operating equipment during the reporting year. The net change in nameplate capacity is equal to new equipment nameplate capacity, minus retired nameplate capacity. This quantity will be negative if the retired equipment has a total nameplate capacity larger than the total nameplate capacity of the new equipment. “Total nameplate capacity” refers to the full and proper SF<sub>6</sub> charge of the equipment rather than to

the actual charge, which may reflect leakage;

(B) Emissions shall be calculated as follows:

$$\text{Emissions (tons CO}_2\text{e)} = [(V_{\text{iby}} - V_{\text{icy}}) + (PA_{\text{psd}} + PA_{\text{e}} + PA_{\text{rre}}) - (SD_{\text{op}} + SD_{\text{rs}} + SD_{\text{df}} + SD_{\text{sor}}) - (\text{CNP}_{\text{nc}} - \text{CNP}_{\text{rse}})] \times \text{GWP}/2000$$

Where (all SF<sub>6</sub> values in lbs):

V<sub>iby</sub> = SF<sub>6</sub> inventory in cylinders, gas carts, and other storage containers (not SF<sub>6</sub>-containing operating equipment) at the beginning of the reporting year;

V<sub>icy</sub> = SF<sub>6</sub> inventory in cylinders, gas carts, and other storage containers (not SF<sub>6</sub>-containing operating equipment) at the end of the reporting year;

PA<sub>psd</sub> = SF<sub>6</sub> purchased from suppliers or distributors in cylinders;

PA<sub>e</sub> = SF<sub>6</sub> provided by equipment manufacturers with or inside equipment;

PA<sub>rre</sub> = SF<sub>6</sub> returned to the reporting entity after off-site recycling;

SD<sub>op</sub> = Sales of SF<sub>6</sub> to other parties, including gas left in equipment that is sold;

SD<sub>rs</sub> = Returns of SF<sub>6</sub> to supplier, producer or distributor;

SD<sub>df</sub> = SF<sub>6</sub> sent to destruction facilities;

SD<sub>sor</sub> = SF<sub>6</sub> sent off-site for recycling;

CNP<sub>nc</sub> = Total SF<sub>6</sub> nameplate capacity of new equipment at proper full charge;

CNP<sub>rse</sub> = Total SF<sub>6</sub> nameplate capacity of retired or sold equipment at proper full charge;

and

GWP = CO<sub>2</sub>e global warming potential of SF<sub>6</sub> (22,200); and

(C) As part of the project consistency application required pursuant to subsection (c) of this section and in annual monitoring and verification reports required pursuant to subsection (j) of this section, the project sponsor shall provide the documentation required at subdivision (5)(A) to (C), inclusive, of this subsection to support emissions calculations.

(4) Calculating emissions reductions. Emissions reductions shall represent the annual entity-wide avoided fugitive emissions of SF<sub>6</sub> for the reporting entity. Emissions reductions shall be determined as follows using the quantification method outlined in subdivision (3)(B) of this subsection to determine emissions in both the baseline year and reporting years:

Emissions Reduction (short tons CO<sub>2</sub>e) = (Total Pounds of SF<sub>6</sub> Emissions in Baseline Reporting Year) – (Total Pounds of SF<sub>6</sub> Emissions in Reporting Year) x GWP/2000

Where:

GWP = CO<sub>2</sub>e global warming potential of SF<sub>6</sub> (22,200).

(5) Annual monitoring and verification requirements. The annual monitoring and verification report shall include supporting material detailing the calculations and data used to determine SF<sub>6</sub> emissions reductions and the project sponsor shall also provide the following documentation:

(A) An identification of all facilities managed by the entity from which all SF<sub>6</sub> gas is procured and disbursed and maintain an entity-wide log of all SF<sub>6</sub> gas procurements and disbursals. The entity-wide log shall include the weight of each cylinder transported before shipment from the facilities and the weight of each cylinder after return to the facilities. A specific cylinder log shall also be maintained for each cylinder that is used to fill equipment with SF<sub>6</sub> or reclaim SF<sub>6</sub> from equipment. The cylinder log shall be retained with the cylinder and indicate the location and specific identifying information of the equipment being filled,

or from which SF<sub>6</sub> is reclaimed, and the weight of the cylinder before and after this activity. The cylinder log shall be returned with the cylinder to the facility when the activity is complete or the cylinder is empty;

(B) A current entity-wide inventory of all SF<sub>6</sub>-containing operating equipment and all other SF<sub>6</sub>-related items, including cylinders, gas carts, and other storage containers used by the entity. The inventory shall be certified by an independent verifier accredited pursuant to subsection (i) of this section; and

(C) A monitoring and verification plan as part of the consistency application, which shall include an SF<sub>6</sub> inventory management and auditing protocol and a process for quality assurance and quality control of inventory data. The monitoring and verification plan shall be certified by an independent verifier accredited pursuant to subsection (i) of this section.

**(f) Sequestration of Carbon Due To Afforestation.**

(1) Eligibility. Offset projects that result in the conversion of land from a non-forested to forested state shall meet the requirements in this subsection and all applicable requirements of this section, to qualify for the award of CO<sub>2</sub> offset allowances.

(A) Eligible offset projects have been in a non-forested state for at least the ten (10) years preceding the commencement of the offset project; and

(B) Eligible offset projects shall be managed in accordance with widely accepted environmentally sustainable forestry practices and designed to promote the restoration of native forests by using mainly native species and avoiding the introduction of invasive non-native species. If commercial timber harvest activities are to occur, certification shall be obtained, prior to any harvest activities at the site, through the Forest Stewardship Council (FSC), Sustainable Forestry Institute (SFI), American Tree Farm System (ATFS), or such other similar organizations as may be approved by the commissioner or the commissioner's designee.

(2) Offset project description. The project sponsor shall provide a detailed narrative of the offset project actions to be taken, including supporting materials as appropriate. The offset project narrative shall include the following:

(A) The name or names and addresses of the owner of the land within the offset project boundary;

(B) A detailed map of the land within the offset project boundary and areas adjacent to the offset project boundary;

(C) A copy of the permanent conservation easement required pursuant to subdivision (6) of this subsection;

(D) A written legal opinion from an attorney licensed to practice in the state where the offset project is located, or from the cooperating regulatory agency, confirming the enforceability of the permanent conservation easement for those offset projects located in a state or United States jurisdiction that is not a participating state; and

(E) Plant species to be planted or established via natural regeneration, and a forest management plan consistent with the requirements of subdivision (3) of this subsection.

(3) Carbon sequestration baseline determination. The existing sequestered carbon within the project boundary shall be calculated prior to commencement of the offset project. The carbon sequestration baseline shall be determined based on a sum of measurements, made no more than 12 months prior to offset project commencement, of the carbon content of the

following carbon pools:

(A) Carbon content shall be calculated for the following required carbon pools:

(i) Live above-ground tree biomass;

(ii) Live below-ground tree biomass;

(iii) Soil carbon; and

(iv) Dead organic matter, and coarse woody debris, unless the baseline measurement for this carbon pool is at or near zero, in which case measurement of this carbon pool during the allocation period is optional;

(B) Carbon content may be calculated for the following optional carbon pools:

(i) Live above-ground non-tree biomass; and

(ii) Dead organic matter, and forest floor;

(C) Carbon content shall be calculated individually for each carbon pool within the offset project boundary;

(D) To increase the accuracy of measurement and verification, the area within the offset project boundary shall be divided into sub-populations that form relatively homogenous units. When defining sub-populations, the project sponsor shall consider vegetation and tree species, including existing vegetation and trees and those to be utilized as part of the offset project activity, and site factors such as soil type, elevation, slope and other factors as warranted;

(E) Calculation of sequestered carbon for each carbon pool in each reporting stratum shall be based on the following:

$$\text{CO}_2 \text{ tons} = [(A \times C/\text{ha})(44/12)] / 0.9072$$

Where:

A = Area in hectares within each reporting stratum;

C = Carbon content (metric tons of carbon for each carbon pool);

C/ha = Mean carbon content per hectare for each carbon pool;

(F) Total carbon contained within the offset project boundary represented in tons of carbon shall be calculated as follows:

$TC_{pb} = TC_{latb} + TC_{lbtb} + TC_s [+ TC_{lantb} + TC_{doff} + TC_{docwd}]$  Where:

$TC_{pb}$  = Total carbon content within the offset project boundary ( $TC_{pb}$ ) (sum of carbon content of all carbon pools in all reporting sub-populations);

$TC_{latb}$  = Sum of carbon content of live above-ground tree biomass in all reporting sub-populations;

$TC_{lbtb}$  = Sum of carbon content of live below-ground tree biomass in all reporting sub-populations;

$TC_s$  = Sum of carbon content of soil carbon in all reporting sub-populations;

$TC_{lantb}$  [option] = Sum of carbon content of live above-ground non-tree biomass in each reporting sub-populations;

$TC_{doff}$  [option] = Sum of carbon content of dead organic matter, forest floor in all reporting sub-populations; and

$TC_{docwd}$ [mandatory/option] = Sum of carbon content of dead organic matter, coarse woody debris in all reporting sub-populations pursuant to subdivision (3)(A)(iv) of this subsection;

(G) Each individual carbon pool to be measured shall be directly measured using a measurement protocol and sample size that achieves a demonstrated quantified accuracy

such that there is at least 95% confidence that the resulting reported value is within 10% of the true mean. Measurement and sampling practices shall meet the following requirements:

(i) An adequate sample size that meets the requirements of subparagraph (ii) of this subparagraph shall be determined for each stratum;

(ii) The minimum number of required sampling plots for each reporting stratum shall be determined based on the following:

$$n = (s \times 1.960) / (\text{mean} \times \text{re})^2$$

Where:

n = required number of sample plots for each reporting sub-populations;

s = standard deviation;

mean = mean reported carbon content for the sample population; and

re = level of sampling error (0.08) to assure a total maximum error of 10% for the 95% confidence interval, that assumes total error due to measurement error of 0.02; and

(H) Direct measurement procedures shall be consistent with current forestry good practice and the guidance contained in U.S. Department of Energy, *Technical Guidelines for Voluntary Reporting of Greenhouse Gases (1605(b)) Program; Chapter 1, Emissions Inventories; Part I Appendix: Forestry; Section 3: Measurement Protocols for Forest Carbon Sequestration* (March 2006).

(4) Calculating carbon sequestered. Carbon sequestration shall be determined using a base year approach, where the amount of carbon sequestered is measured as a net increase in carbon relative to the base year measurement. Carbon sequestration, represented in tons of carbon, shall be the amount of net additional carbon sequestered during each calculation period, based upon aggregate carbon uptake and carbon emissions for the sum of carbon pools, relative to the baseline carbon content or the carbon content as of the previous calculation period, if above the baseline carbon content, as applicable. CO<sub>2</sub> offset allowances shall be issued based on the amount of net additional carbon sequestered within the offset project boundary during each reporting period, and represented in tons of CO<sub>2</sub> equivalent. Sequestered carbon shall be calculated using a stock-change approach as follows:

$$\text{NCS}_t = I_t - I_{t-1}$$

Where:

NCS<sub>t</sub> = Net carbon sequestered in reporting period t;

I<sub>t</sub> = Inventory of carbon stock for all carbon pools in all reporting sub-populations within the offset project boundary in reporting period t; and

I<sub>t-1</sub> = Inventory of carbon stock for all carbon pools in all reporting sub-populations within the offset project boundary in the reporting period immediately preceding reporting period t;

(A) Except as provided in subdivision (3)(A)(iv) of this subsection, each of the carbon pools that were measured as part of the baseline determination shall be remeasured using the same methodology, and to the same or better quantified accuracy consistent with the requirements of subdivisions (3)(G) and (H) of this subsection;

(B) The net change in each pool's carbon stock in each reporting stratum is calculated by subtracting the baseline carbon stock (or stock at the previous monitoring) from the carbon stock at the time of the current monitoring. Determination of carbon stock shall be in accordance with the formulas and procedures in subdivision (3) of this subsection;



(C) Net carbon stock change for the offset project is the sum of the net changes in the carbon stock of all applicable pools in all reporting sub-populations within the offset project boundary, less ten percent (10%) to account for potential losses of sequestered carbon. This 10% discount shall not be required, provided the project sponsor retains long-term insurance, approved by the commissioner or their designee, that guarantees replacement of any lost sequestered carbon for which CO<sub>2</sub> allowances were issued pursuant to subsection (j) of this section;

(5) Monitoring and verification requirements. Total carbon stock shall be calculated not less than every five years.

(A) A project sponsor shall submit monitoring and verification reports. Such reports shall include data from direct measurement of carbon content for all plots used to determine baseline and reporting period carbon content;

(B) The consistency application shall include a monitoring and verification plan certified by the commissioner or the commissioner's designee or an independent verifier accredited pursuant to subsection (i) of this section. The monitoring and verification plan shall include the following:

(i) Direct carbon measurement procedures consistent with the requirements at subdivision (3)(H) of this subsection;

(ii) The designation of sub-populations pursuant to subdivision (3)(D) of this subsection. The determination of the minimum number of sampling plots pursuant to subdivision (3)(G) of this subsection; and

(iii) If commercial timber harvest activities have occurred or will occur, an assessment of management practices to ensure that the offset project has been managed in accordance with environmentally sustainable forestry practices consistent with the Forest Stewardship Council (FSC), Sustainable Forestry Institute (SFI), American Tree Farm System (ATFS), or such other similar organizations as may be approved by the commissioner or their designee; and

(C) The applicant shall allow access to the project site and the reserve set-aside site to the accredited independent verifier, or as requested by the commissioner or the commissioner's designee.

(6) Carbon sequestration permanence. The offset project shall meet the following requirements to address permanence of sequestered carbon:

(A) The project sponsor shall place the land within the offset project boundary under a legally binding permanent conservation easement, approved by the commissioner or the commissioner's designee, which requires the land to be maintained in a forested state in perpetuity;

(B) The conservation easement shall include a requirement that the carbon density within the offset project boundary be maintained at long-term levels at or above that achieved as of the end of the CO<sub>2</sub> offset crediting period pursuant to subsection (c)(5) of this section; and

(C) The conservation easement shall require that the land be managed in accordance with environmentally sustainable forestry practices.

(g) **Reduced or Avoided CO<sub>2</sub> Emissions Due to End-Use Energy Efficiency**

(1) Eligibility. An offset project that reduces CO<sub>2</sub> emissions by reducing on-site

combustion of natural gas, oil, or propane for end-use in an existing or new commercial or residential building by improving the energy efficiency of fuel usage and the energy-efficient delivery of energy services shall meet the requirements of this subsection and all other applicable requirements of this section, to qualify for the award of CO<sub>2</sub> offset allowances. Eligible new buildings are limited to new buildings that are designed to replace an existing building on the offset project site, or new buildings designed to be zero net energy buildings. Eligible offset projects may include the following energy conservation measures (ECMs):

(A) Improvements in the energy efficiency of combustion equipment that provide 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 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; and

(G) Switching to a less carbon-intensive fuel for use in combustion systems, including the use of liquid or gaseous renewable fuels, provided that conversions to electricity are not eligible.

(2) Offset project description. The project sponsor shall provide a detailed narrative of the offset project actions to be taken, including supporting materials as appropriate. The offset project narrative shall include the following:

(A) Location and specifications of the building or buildings where the offset project actions are proposed to occur;

(B) The name or names and address of the owner and operator of the building or buildings;

(C) The parties implementing the offset project, including the lead contractor or contractors, subcontractors, and consulting firms;

(D) Specifications of equipment and materials to be installed as part of the offset project; and

(E) Building plans and offset project technical schematics, as applicable.

(3) Performance standards. For offset projects initiated on or after January 1, 2009, the project sponsor shall demonstrate, to the satisfaction of the commissioner or the commissioner's designee, that energy conservation measures implemented as part of eligible offset projects listed in subdivision (1) of this subsection have a market penetration rate of less than 5%. Offset projects initiated on or after January 1, 2009 shall also meet the applicable requirements set forth in subparagraphs (A)(iii) and (C) of this subdivision. For offset projects initiated prior to 2009, energy conservation measures implemented as part of eligible offset projects listed in subdivision (1) of this subsection shall meet the following performance or prescriptive criteria, as applicable:

(A) Combustion equipment. Combustion equipment shall meet the following energy

efficiency performance and other requirements, as applicable:

(i) Commercial boilers. Commercial boilers shall meet the following energy efficiency criteria set forth in Table 31a-2:

Table 31a-2

Minimum Commercial Boiler Energy Efficiency

<u>Technology</u>	<u>Size (Btu/hr)</u>	<u>Rating Method</u>	<u>Min. Efficiency</u>
Gas-fired <sup>b</sup>	125,000-3000,000	AFUE	≥ 88.0%
	300,00-12,500,00	Thermal Efficiency <sup>a</sup>	≥ 90.0%
Oil-fired	> 300,000	Thermal Efficiency	≥ 84.0%

<sup>a</sup> For purposes of Table 31a-2, “Thermal Efficiency” means the useful energy output (Btu) divided by energy input (Btu) and presented as a percentage measured under steady state conditions, at full rated useful thermal output, 140°F supply from and 120°F return water temperature to the boiler.

<sup>b</sup> 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.

(ii) Residential combustion equipment. Residential combustion equipment, furnaces, boilers and water heaters, shall meet or exceed the following energy efficiency criteria set forth in Table 31a-3:

Table 31a-3

Minimum Residential Combustion Equipment<sup>a</sup>Energy Efficiency

<u>Technology</u>	<u>Rating Method</u>	<u>Min. Efficiency</u>
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

<sup>a</sup> For purposes of Table 31a-3, “furnace” means equipment with a heat input rate of less than 225,000 Btu/hr; “boiler” means equipment with a heat input rate of less than 300,000 Btu/hr; and “water heater” means equipment subject to 10 CFR 430.

(iii) Installation best practice for commercial HVAC systems. Combustion equipment and related air handling equipment (HVAC systems) shall be sized and installed in accordance with ANSI/ASHRAE/IESNA Standard 90.1-2004: Energy Standard for Buildings Except Low-Rise Residential Buildings and ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality; and

(iv) Installation best practice for residential HVAC systems. Residential HVAC systems shall meet the applicable sizing and installation specifications of “Specification of Energy-Efficient Installation and Maintenance Practices for Residential HVAC Systems,” Consortium for Energy Efficiency, 2000;

(B) Non-combustion energy conservation measures. Energy conservation measures implemented as part of an offset project or actions pursuant to subdivision (1)(B) to (G),

inclusive, of this subsection shall meet the applicable requirements, as specified, in *Energy Benchmark for High Performance Buildings, Version 1.1*, New Buildings Institute, 2005 (referred to as EBHPB in this section), or state building energy codes, whichever are more stringent as demonstrated by the offset project sponsor. Energy conservation measures without specified performance criteria in the referenced EBHPB shall meet the requirements of Federal Energy Management Program (FEMP) Product Energy Efficiency Recommendations, issued pursuant to Executive Orders 13123 and 13221, or Energy Star criteria issued jointly by the U.S. Environmental Protection Agency and U.S. Department of Energy, whichever result in better energy performance as demonstrated by the offset project sponsor; and

(C) Whole-building energy performance. New buildings or whole building retrofits that incorporate offsets projects or actions shall also meet the following requirements:

(i) Commercial buildings. Commercial buildings shall exceed the energy performance requirements of ANSI/ASHRAE/IESNA Standard 90.1-2004: Energy Standard for Buildings Except Low-Rise Residential Buildings by 30%, with the exception of multi-family residential buildings classified as commercial by ANSI/ASHRAE/IESNA Standard 90.1-2004, which shall exceed these energy performance requirements by 20%; and

(ii) Residential buildings. Residential buildings shall exceed the energy performance requirements of the 2004 International Energy Conservation Code Supplement by 30%.

(4) Emissions baseline determination. The emissions baseline shall be determined based on energy usage (MMBtu) by fuel type for each energy conservation measure, derived using historic fuel use data from the most recent calendar year for which data is available, multiplied by an emission factor and oxidation factor for each respective fuel set forth in Table 31a-4:

Table 31a-4

<u>Fuel</u>	<u>Emission Factor (lbs. CO<sub>2</sub>/MMBtu)</u>	<u>Oxidation Factor</u>
Natural Gas	116.98	0.995
Propane	139.04	0.995
Distillate Fuel Oil	161.27	0.99
Kerosene	159.41	0.99

(A) Isolation of applicable energy conservation measure baseline. The project sponsor shall isolate the baseline energy usage of the application to be targeted by the energy conservation measure, in a manner consistent with the requirements set forth in subdivision (6) of this subsection;

(B) Annual baseline energy usage shall be determined as follows:

$$\text{Energy Usage (MMBtu)} = \text{BEU}_{\text{AECM}} \times A$$

Where:

BEU<sub>AECM</sub> = Annual pre-installation baseline energy use by fuel type (MMBtu) attributable to the application to be targeted by the energy conservation measure or measures. If

applicable building codes or equipment standards require that equipment or materials installed as part of the offset project meet certain minimum energy performance requirements, baseline energy usage for the application shall assume that equipment or materials are installed that meet such minimum requirements. For offset projects that replace existing combustion equipment, the assumed minimum energy performance required by applicable building codes or equipment standards shall be that which applies to new equipment that uses the same fuel type as the equipment being replaced. Baseline energy usage shall be determined in accordance with the applicable requirements set forth in subdivision (6) of this subsection; and

A = Adjustments to account for differing conditions during the two time periods, pre-installation and post-installation, such as weather and building occupancy. Adjustments shall be determined in accordance with the applicable requirements in subdivision (6) of this subsection; and

(C) Annual baseline emissions shall be determined as follows:

$$\text{Emissions (lbs. CO}_2\text{)} = \sum_{i=1}^n \text{BEU}_i \times \text{EF}_i \times \text{OF}_i$$

Where:

BEU<sub>i</sub> = Annual baseline energy usage for fuel type i (MMBtu) demonstrated pursuant to the requirements at subdivision (6)(A) to (D), inclusive, of this subsection;

EF<sub>i</sub> = Emissions factor (lbs. CO<sub>2</sub>/MMBtu) for fuel type i listed at subdivision (4), Table 31a-4 of this subsection; and

OF<sub>i</sub> = Oxidation factor for fuel type i listed at subdivision (4), Table 31a-4 of this subsection.

(5) Calculating emissions reductions. Emissions reductions shall be determined based upon annual energy savings by fuel type (MMBtu) for each energy conservation measure, multiplied by the emission factor and oxidation factor for the respective fuel type in subdivision (4), Table 31a-4 of this subsection.

(A) Annual energy savings shall be determined as follows:

$$\text{Energy Savings (MMBtu)} = (\text{BEU}_{\text{AECM}} \times A) - (\text{PIEU}_{\text{ECM}} \times A)$$

Where:

BEU<sub>AECM</sub> = Annual pre-installation baseline energy use by fuel type (MMBtu) calculated pursuant to subdivision (6)(A) to (D), inclusive, of this subsection;

PIEU<sub>ECM</sub> = Annual post-installation energy use by fuel type (MMBtu) attributable to the energy conservation measure. Post-installation energy usage shall be determined in accordance with the applicable requirements in subdivision (6) of this subsection; and

A = Adjustments to account for any differing conditions during the two time periods, pre-installation and post-installation, including but not limited to weather, building occupancy, and changes in building use or function. Adjustments shall be determined in accordance with the applicable requirements at subdivision (6) of this subsection; and

(B) Annual emissions reductions shall be determined as follows:

$$\text{Emissions Reduction (lbs. CO}_2\text{)} = \sum_{i=1}^n \text{ES}_i \times \text{EF}_i \times \text{OF}_i$$

Where:

ES<sub>i</sub> = Energy savings for fuel type i (MMBtu) demonstrated pursuant to the requirements at subdivision (6) of this subsection;

EF<sub>i</sub> = Emissions factor (lbs. CO<sub>2</sub>/MMBtu) for fuel type i listed at subdivision (4), Table 31a-4 of this subsection; and

OF<sub>i</sub> = Oxidation factor for fuel type i listed in subdivision (4), Table 31a-4 of this subsection.

(6) Monitoring and verification requirements. As part of the consistency application, the project sponsor shall provide a monitoring and verification plan certified by an independent verifier accredited pursuant to subsection (i) of this section.

Annual monitoring and verification reports shall be certified by an independent verifier accredited pursuant to subsection (i) of this section. Independent verifiers shall conduct a site audit when reviewing the first monitoring and verification report submitted by the project sponsor, except for offset projects that save less than 1,500 MMBtu per year. For offset projects that save less than 1,500 MMBtu per year, the project sponsor shall provide the independent verifier with equipment specifications and copies of equipment invoices and other relevant offset project-related invoices. All offset project documentation, including the consistency application and monitoring and verification reports, shall be signed by a Professional Engineer, identified by license number. Monitoring and verification shall also meet the following requirements:

(A) General energy measurement and verification requirements. Monitoring and verification of energy usage shall be demonstrated through a documented process consistent with the following protocols and procedures, as applicable:

(i) For existing commercial buildings, the determination of baseline energy usage shall be consistent with the International Performance Measurement & Verification Protocol, Volume I: Concepts and Options for Determining Energy and Water Savings (IPMVP), “Option B. Retrofit Isolation” and “Option D. Calibrated Simulation.” If a building project involves only energy conservation measures implemented as part of a CO<sub>2</sub> emissions offset project, a process consistent with IPMVP “Option C. Whole Facility” may be used, as applicable. Any application of the IPMVP general guidance shall be consistent with the applicable detailed specifications in ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings;

(ii) For new commercial buildings, the determination of baseline energy usage shall be consistent with the International Performance Measurement & Verification Protocol, Volume III: Concepts and Options for Determining Energy Savings in New Construction (IPMVP), “Option D. Calibrated Simulation.” Any application of the IPMVP general guidance shall be consistent with the applicable detailed specifications in ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings; and

(iii) For existing and new residential buildings, the determination of baseline energy usage shall be consistent with the requirements of the RESNET National Home Energy Rating Technical Guidelines, 2006 (Chapter 3 and Appendix A of the 2006 Mortgage Industry National Home Energy Rating System Standards);

(B) Isolation of applicable energy conservation measure. In calculating both baseline energy usage and energy savings, the applicant shall isolate the impact of each eligible energy conservation measure (ECM), either through direct metering or energy simulation modeling. For offset projects with multiple ECMs, and where individual ECMs can affect the performance of others, the sum of energy savings due to individual ECMs shall be adjusted to account for the interaction of ECMs. For commercial buildings, this process shall be consistent with the requirements of ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings, and ANSI/ASHRAE/IESNA Standard 90.1-2004: Energy Standard for Buildings Except Low-Rise Residential Buildings. For residential buildings, this process shall be consistent with the requirements of RESNET National Home Energy Rating Technical Guidelines, 2006, Chapter 3 and Appendix A of 2006 Mortgage Industry National Home Energy Rating System Standards. Reductions in energy usage due to the energy conservation measure shall be based upon actual energy usage data. Energy simulation modeling shall only be used to determine the relative percentage contribution to total fuel usage, for each respective fuel type, of the application targeted by the energy conservation measure;

(C) Calculation of energy savings. Annual energy savings are to be determined based on the following:

$$\text{Energy Savings (MMBtu)} = (\text{BEU}_{\text{AECM}} \times A) - (\text{PIEU}_{\text{ECM}} \times A)$$

Where:

$\text{BEU}_{\text{AECM}}$  = Annual pre-installation baseline energy use by fuel type (MMBtu) attributable to the application to be targeted by the energy conservation measure or measures, based upon annual fuel usage data for the most recent calendar year for which data is available. For new buildings, baseline energy use for a reference building equivalent in basic configuration, orientation, and location to the building in which the eligible energy conservation measure or measures is implemented shall be determined according to ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings and ANSI/ASHRAE/IESNA Standard 90.1-2004, Section 11 and Appendix G. Where energy simulation modeling is used to evaluate an existing building, modeling shall be conducted in accordance with ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings, and ANSI/ASHRAE/IESNA Standard 90.1-2004, Section 11 and Appendix G. For existing and new residential buildings, energy simulation modeling shall be conducted in accordance with the requirements of RESNET National Home Energy Rating Technical Guidelines, 2006, Chapter 3 and Appendix A of 2006 Mortgage Industry National Home Energy Rating System Standards;

$\text{PIEU}_{\text{ECM}}$  = Annual post-installation energy use by fuel type (MMBtu) attributable to the energy conservation measure, to be verified based on annual energy use after installation of the energy conservation measure or measures, consistent with the requirements of ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings. Where energy simulation modeling is used to evaluate a new or existing building, modeling shall be

conducted in accordance with ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings, and ANSI/ASHRAE/IESNA Standard 90.1-2004, Section 11 and Appendix G. For existing and new residential buildings, energy simulation modeling shall be consistent with the requirements of RESNET National Home Energy Rating Technical Guidelines, 2006, Chapter 3 and Appendix A of 2006 Mortgage Industry National Home Energy Rating System Standards; and

A = Adjustments to account for any differing conditions during the two time periods (pre-installation and post-installation), such as weather (weather normalized energy usage based on heating and cooling degree days), building occupancy, and changes in building use or function. For commercial buildings, adjustments shall be consistent with the specifications of ASHRAE Guideline 14-2002, Measurement of Energy and Demand Savings, and ANSI/ASHRAE/IESNA Standard 90.1-2004, Section 11 and Appendix G. For residential buildings, adjustments shall be consistent with the specifications of RESNET National Home Energy Rating Technical Guidelines, 2006, Chapter 3 and Appendix A of 2006 Mortgage Industry National Home Energy Rating System Standards; and

(D) Provision for sampling of multiple like offset projects in residential buildings. Offset projects that implement similar measures in multiple residential buildings may employ representative sampling of buildings to determine aggregate baseline energy usage and energy savings. The commissioner or their designee shall approve sampling protocols. All sampling plans shall be certified by an independent verifier, accredited pursuant to subsection (i) of this section.

**(h) Avoided Methane (CH<sub>4</sub>) Emissions from Agricultural Manure Management Operations**

(1) Eligibility. Offset projects that capture and destroy methane from animal manure and organic food waste using anaerobic digesters shall meet the requirements of this subsection and all other applicable requirements of this section, to qualify for the award of CO<sub>2</sub> offset allowances. In addition, eligible offset projects shall meet the following requirements:

(A) CO<sub>2</sub> offset allowances may be awarded for the destruction of that portion of methane generated by the anaerobic digester that would have been generated in the absence of the offset project through the uncontrolled anaerobic storage of manure or organic food wastes;

(B) Eligible offset projects shall employ only manure-based anaerobic digester systems using livestock manure as the majority of digester feedstock, defined as 50% or more of the mass input into the digester on an annual basis. Organic food waste used by an anaerobic digester shall only be that which would have been stored in anaerobic conditions in the absence of the offset project;

(C) The provisions of subsection (c)(5)(B) and (C) of this section shall not apply to agricultural manure methane offset projects provided either:

(i) The offset project is located in a state that has a market penetration rate for anaerobic digester projects of 5% or less. The market penetration determination shall utilize the most recent market data available at the time of submission of the consistency application and shall be determined as follows:

$$MP (\%) = MG_{AD} / MG_{STATE}$$

Where:

MG<sub>AD</sub> = Average annual manure generation for the number of dairy cows and swine



serving all anaerobic digester projects in the applicable U.S. state at the time of submission of a consistency application pursuant to subsection (c)(10) of this section; and

$MG_{STATE}$  = Average annual manure production of all dairy cows and swine in that U.S. state at the time of submission of a consistency application pursuant to subsection (c)(10) of this section;

or

(ii) The offset project is located at a farm with 4,000 or less head of dairy cows, or a farm with equivalent animal units, assuming an average live weight for dairy cows (lbs./cow) of 1,400 lbs., or, if the project is a regional-type digester, total annual manure input to the digester is designed to be less than the average annual manure produced by a farm with 4,000 or less head of dairy cows, or a farm with equivalent animal units, assuming an average live weight for dairy cows (lbs./cow) of 1,400 lbs.

(2) Offset project description. The project sponsor shall provide a detailed narrative of the offset project, including supporting materials as appropriate. The offset project narrative shall include the following:

(A) The name or names and addresses of the owner and operator of the offset project;

(B) Location and specifications of the facility where the offset project is proposed to occur;

(C) The name or names and addresses of the owner and operator of the facility where the offset project is proposed to occur;

(D) Specifications of the equipment to be installed and a technical schematic of the offset project; and

(E) Location and specifications of the facilities from which anaerobic digester influent will be received, if different from the facility where the offset project is proposed to occur.

(3) Emissions baseline determination. The emissions baseline shall represent the potential emissions of the CH<sub>4</sub> that would have been produced in a baseline scenario under uncontrolled anaerobic storage conditions and released directly to the atmosphere in the absence of the offset project.

(A) Baseline CH<sub>4</sub> emissions shall be calculated as follows:

$$CO_2e \text{ (tons)} = (V_m \times M) / 2000 \times GWP$$

Where:

$CO_2e$  = Potential CO<sub>2</sub>e emissions due to calculated CH<sub>4</sub> production under site-specific anaerobic storage and weather conditions;

$V_m$  = Volume of CH<sub>4</sub> produced each month from degradation of volatile solids in a baseline uncontrolled anaerobic storage scenario under site-specific storage and weather conditions for the facility at which the manure is generated (ft<sup>3</sup>);

$M$  = Mass of CH<sub>4</sub> per cubic foot (0.04246 lb/ft<sup>3</sup> default value at one atmosphere and 20°C); and

$GWP$  = Global warming potential of CH<sub>4</sub> (23);

(B) The estimated amount of volatile solids degraded each month under the uncontrolled anaerobic storage baseline scenario (kg) shall be calculated as follows:

$$VS_{deg} = VS_{avail} \times f$$

Where:

$VS$  = volatile solids as determined from the equation:

$$VS = M_m \times TS_{\%} \times VS_{\%}$$

Where:

$M_m$  = mass of manure or organic good waste produced per month (kg);

$TS_{\%}$  = Concentration (percent) of total solids in manure or organic food waste as determined through EPA 160.3 testing method (U.S.EPA Method Number 160.3, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020));

$VS_{\%}$  = Concentration (percent) of volatile solids in total solids as determined through EPA 160.4 testing method (USEPA Method Number 160.4, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020)); and

$VS_{avail}$  = Volatile solids available for degradation in manure or organic food waste storage each month as determined from the equation:

$$VS_{avail} = VS_p + \frac{1}{2} VS_{in} - VS_{out}$$

Where:

$VS_p$  = Volatile solids present in manure or organic food waste storage at beginning of month (left over from previous month) (kg);

$VS_{in}$  = Volatile solids added to manure or organic food waste storage during the course of the month (kg). The factor of  $\frac{1}{2}$  is multiplied by this number to represent the average mass of volatile solids available for degradation for the entire duration of the month;

$VS_{out}$  = Volatile solids removed from the manure or organic food waste storage for land application or export (assumed value based on standard farm practice); and

$f$  = Van't Hoff-Arrhenius factor for the specific month as determined using the equation below. Using a base temperature of 30°C, the equation is as follows:

$$f = \exp[E \times (T_2 - T)] / [(GC \times T_1 \times T_2)]$$

Where:

$f$  = conversion efficiency of VS to  $CH_4$  per month;

$E$  = Activation energy constant (15,175 cal/mol);

$T_2$  = Average monthly ambient temperature for farm (converted from °Celsius to °Kelvin) as determined from the nearest National Weather Service certified weather station (if reported temperature °C > 5°C; if reported temperature °C < 5°C, then  $F = 0.104$ );

$T_1 = 303.16$  (30° C converted to °K); and

$GC$  = Ideal gas constant (1.987 cal/K mol); and

(C) The volume of  $CH_4$  produced ( $ft^3$ ) from degradation of volatile solids shall be calculated as follows:

$$V_m = (VS_{deg} \times B_o) \times 35.3147$$

Where:

$V_m$  = Volume of  $CH_4$  ( $ft^3$ );

$VS_{deg}$  = Volatile solids degraded (kg); and

$B_o$  = Manure or organic food waste type-specific maximum methane generation constant ( $m^3 CH_4/kg$  VS degraded). For dairy cow manure,  $B_o = 0.24 m^3 CH_4/kg$  VS degraded. The methane generation constant for other types of manure shall be those cited at U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2001*, Annex 3, Table A-162 (U.S. EPA, April 2007), unless the project sponsor proposes an alternate methane generation constant. If the project sponsor proposes to use a methane generation constant other than that provided in said Table A-162, the project sponsor shall provide justification

and documentation to the commissioner or the commissioner's designee.

(4) Calculating emissions reductions. Emissions reductions shall be determined based on the potential emissions (in tons of CO<sub>2</sub>e) of the CH<sub>4</sub> that would have been produced in the absence of the offset project under a baseline scenario that represents uncontrolled anaerobic storage conditions, as calculated pursuant to subdivision (3) of this subsection, and released directly to the atmosphere. Emissions reductions may not exceed the potential emissions of the digester, as represented by the annual volume of CH<sub>4</sub> produced by the anaerobic digester, as monitored pursuant to subdivision (5) of this subsection. If the project is a regional-type digester, CO<sub>2</sub> emissions due to transportation from the site where the manure or organic food waste was generated to the anaerobic digester shall be subtracted from the emissions reduction calculated pursuant to subdivision (3) of this subsection. Transportation related CO<sub>2</sub> emissions shall be determined through one of the following methods:

(A) Documentation of transportation fuel use for all shipments of manure or organic food waste to the anaerobic digester during each reporting year and a log of transport miles for each shipment. CO<sub>2</sub> emissions shall be determined through the application of an emissions factor for the fuel type used. If this option is chosen, the following emission factors shall be applied as appropriate:

(i) Diesel fuel: 22.912 lbs. CO<sub>2</sub>/gallon;

(ii) Gasoline: 19.878 lbs. CO<sub>2</sub>/gallon; or

(iii) Other fuel: submitted emission factor approved by the commissioner or the commissioner's designee; and

(B) Documentation of total tons of manure or organic food waste transported from off-site for input into the anaerobic digester during each reporting year, as monitored pursuant to subdivision (5)(A) of this subsection, and a log of transport miles and fuel type used for each shipment. CO<sub>2</sub> emissions shall be determined through the application of a ton-mile transport emission factor for the fuel type used. If this option is chosen, the following emission factors shall be applied as appropriate for each ton of manure delivered, and multiplied by the number of miles transported:

(i) Diesel fuel: 0.131 lbs. CO<sub>2</sub> per ton-mile;

(ii) Gasoline: 0.133 lbs. CO<sub>2</sub> per ton-mile; or

(iii) Other fuel: submitted emission factor approved by the commissioner or the commissioner's designee.

(5) Monitoring and verification requirements. Offset projects shall employ a system that provides metering of biogas volumetric flow rate and determination of CH<sub>4</sub> concentration. Annual monitoring and verification reports shall include monthly biogas volumetric flow rate and CH<sub>4</sub> concentration determination. Monitoring and verification shall also meet the following requirements:

(A) If the offset project is a regional-type digester, manure and organic food waste from each distinct supply source supplying to the anaerobic digester shall be sampled monthly to determine the amount of volatile solids present. Any emissions reduction shall be calculated according to mass of manure and organic food waste (kg) being digested and percentage of volatile solids present before digestion, consistent with the requirements at subdivisions (3) and (5)(C) of this subsection, and apportioned accordingly. The project

sponsor shall provide supporting material and receipts tracking the monthly receipt of manure and organic food waste (kg) used to supply the anaerobic digester from each manure supplier;

(B) If the offset project includes the digestion of organic food wastes eligible pursuant to subdivision (1)(A) of this subsection, organic food wastes shall be sampled monthly to determine the amount of volatile solids present before digestion, consistent with the requirements of subdivision (3) of this subsection, and apportioned accordingly;

(C) The project sponsor shall submit a monitoring and verification plan as part of the consistency application that includes a quality assurance and quality control program associated with equipment used to determine biogas volumetric flow rate and CH<sub>4</sub> composition. The monitoring and verification plan shall be specified in accordance with the monitoring requirements listed in Table 31a-5, Input Monitoring Requirements, as applicable. The monitoring and verification plan shall also include provisions for ensuring that measuring and monitoring equipment is maintained, operated, and calibrated based on manufacturer's recommendations, as well as provisions for the retention of maintenance records for audit purposes. The monitoring and verification plan shall be certified by an independent verifier accredited pursuant to subsection (i) of this section; and

(D) The project sponsor shall quarterly verify biogas CH<sub>4</sub> composition through gas sampling and third party laboratory analysis using applicable U.S. EPA test methods.

**Table 31a-5 Input Monitoring Requirements**

<b>Input Parameter</b>	<b>Measurement Unit</b>	<b>Frequency of Sampling</b>	<b>Sampling Method or Methods</b>
Influent flow (mass) into the digester	Kilograms (kg) per month (wet weight)	Monthly total into the digester	a) Average herd population and American Society of Agricultural and Biological Engineers (ASABE) standard (ASAE D384.2, March 2005) b) Digester influent pump flow c) Recorded weight
Influent total solids concentration (TS)	Percent (of sample)	Monthly, depending upon recorded variations	U.S. EPA Method Number 160.3, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020)
Influent volatile solids (VS) concentration	Percent (of TS)	Monthly, depending upon recorded variations	USEPA Method Number 160.4, Methods for the Chemical Analysis of Water and Wastes

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			(MCAWW) (EPA/600/4-79/020)
Average monthly ambient temperature	Temperature °C	Monthly (based on farm averages)	Closest National Weather Service-certified weather station

**(i) Accreditation of Independent Verifiers**

(1) Standards for accreditation. Independent verifiers may be accredited by the commissioner or the commissioner’s designee to provide verification services as required of project sponsors under this section, provided that independent verifiers meet all of the requirements of this subsection.

(A) Persons selected to perform verification services shall:

(i) Demonstrate knowledge of utilizing engineering, accounting and auditing principles sufficient to quantify greenhouse gas emissions, and develop and evaluate air emissions inventories;

(ii) Demonstrate knowledge of information management systems;

(iii) Demonstrate knowledge of the requirements of this section and section 22a-174-31 of the Regulations of Connecticut State Agencies;

(iv) Demonstrate that no direct or indirect financial relationship, beyond a contract for provision of verification services, exists with any offset project developer or sponsor;

(v) Employ staff with, knowledge, experience, and where appropriate, professional licenses appropriate to the specific category(ies) of offset projects specified in subsections (d) to (h), inclusive, of this section that they seek to verify;

(vi) Certify that such person holds a minimum of one million U.S. dollars of professional liability insurance. If the insurance is in the name of a related entity, the verifier shall disclose the financial relationship between the verifier and the related entity, and provide documentation supporting the description of the relationship; and

(vii) Demonstrate that adequate protocols are established to avoid conflicts of interest with regard to an offset project, offset project developer, or project sponsor, or any other party with a direct or indirect financial interest in an offset project that is seeking or has been granted an approval under subsection (c) of this section; and

(B) Applicants shall possess such other qualifications as may be required by the commissioner to provide competent verification services for individual CO<sub>2</sub> emissions offset categories specified in subsections (d) to (h), inclusive, of this section.

(2) Pre-qualification of verifiers. The commissioner or the commissioner’s designee may require prospective independent verifiers to successfully complete a training course, workshop or test developed by the commissioner or the commissioner’s designee prior to submitting an application for accreditation.

(3) Application for accreditation. An independent verifier shall submit an application for accreditation to the commissioner. The application shall include sufficient information to demonstrate that the applicant meets all accreditation standards required at subdivisions (1)(A)(i) to (vii), inclusive, of this subsection. The independent verifier’s application for accreditation shall:

(A) Provide the applicant’s name, address, e-mail address, telephone number, and

facsimile transmission number;

(B) Demonstrate that the applicant has at least two years of experience in each of the knowledge areas specified in subdivisions (1)(A)(i) and (ii) of this subsection, and as may be required pursuant to subdivision (1)(B) of this subsection;

(C) Verify that the applicant has successfully completed the requirements of subdivision (2) of this subsection, as applicable;

(D) Include a sample of at least one non-proprietary work product that provides supporting evidence that the applicant meets the requirements, as applicable, in subdivision (1)(A) of this subsection. The work product shall have been produced, in whole or part, by the applicant and shall consist of a final report or other material provided to a client under contract in previous work. For a work product that was jointly produced by the applicant and another entity, the role of the applicant in the work product shall be clearly explained;

(E) Provide documentation that the applicant holds professional liability insurance as required pursuant to subdivision (1)(A)(vi) of this subsection; and

(F) Provide documentation that the applicant has implemented an adequate management protocol required pursuant to subdivision (1)(A)(vii) of this subsection to address and remedy any conflict of interest issues that may arise.

(4) The commissioner shall approve or deny a complete application for accreditation not later than 90 days after submission. Upon approval of an application for accreditation, the independent verifier shall be accredited for a period of three years from the date of application approval.

(5) Independent verifiers that have been accredited in other participating states shall be deemed accredited in Connecticut.

(6) Conduct of accredited verifiers.

(A) Prior to engaging in verification services for an offset project sponsor, the accredited verifier shall disclose all relevant information to the commissioner or the commissioner's designee to allow for an evaluation of potential conflict of interest with respect to an offset project, offset project developer, or project sponsor. The accredited verifier shall disclose information concerning its ownership, past and current clients, related entities, as well as any other facts or circumstances that have the potential to create a conflict of interest;

(B) Accredited verifiers shall have an ongoing obligation to disclose to the commissioner or the commissioner's designee any facts or circumstances that may give rise to a conflict of interest with respect to an offset project, offset project developer, or project sponsor;

(C) Rejection of verification reports. The commissioner or the commissioner's designee may reject a verification report and certification statement from an accredited verifier, that is submitted as part of a consistency application required pursuant to subsection (c) of this section or submitted as part of a monitoring and verification report submitted pursuant to subsection (j) of this section, if the commissioner or the commissioner's designee determines that the accredited verifier has a conflict of interest related to the offset project, offset project developer, or project sponsor; and

(D) Revocation of accreditation. The commissioner or the commissioner's designee may revoke the accreditation of a verifier at any time given cause, for any of the following:

(i) Failure to fully disclose any issues that may lead to a conflict of interest situation with respect to an offset project, offset project developer, or project sponsor;

(ii) Lack of qualification due to changes in staffing or other criteria;  
(iii) Negligence or neglect of responsibilities pursuant to the requirements of this section;  
and

(iv) Intentional misrepresentation of data or other intentional fraud.

(j) **Award and Recordation of CO<sub>2</sub> Offset Allowances**

(1) Quantities of CO<sub>2</sub> offset allowances awarded. Following the issuance of a consistency determination under subsection (c)(12) of this section and the approval of a monitoring and verification report under the provisions of subdivision (5) of this subsection, the commissioner or their designee shall award one CO<sub>2</sub> offset allowance for each ton of demonstrated reduction in CO<sub>2</sub> or CO<sub>2</sub> equivalent emissions or sequestration of CO<sub>2</sub>.

(2) CO<sub>2</sub> emissions credit retirement. If a project sponsor received a consistency determination pursuant to subsection (c)(12) of this section, one CO<sub>2</sub> offset allowance shall be awarded for each ton of reduction of CO<sub>2</sub> or CO<sub>2</sub> equivalent or sequestration of CO<sub>2</sub>, represented by the relevant credits or allowances retired. If a credit or allowance is represented in metric tons, 1.1023 tons shall be awarded for every metric ton, provided that total CO<sub>2</sub> offset allowances awarded shall be rounded down to the nearest whole ton.

(3) Recordation of CO<sub>2</sub> offset allowances. After CO<sub>2</sub> offset allowances are awarded under this subsection the commissioner or the commissioner's designee shall record such CO<sub>2</sub> offset allowances in the project sponsor's general account.

(4) Place for filing monitoring and verification reports. The monitoring and verification report shall be filed with the same participating state that issued the consistency determination for the offset project pursuant to subsection (c)(12) of this section.

(5) Deadlines for submittal of monitoring and verification reports.

(A) For CO<sub>2</sub> emissions offset projects undertaken prior to January 1, 2009, the project sponsor shall submit the monitoring and verification report covering the pre-2009 period no later than June 30, 2009; and

(B) For CO<sub>2</sub> emissions offset projects undertaken on or after January 1, 2009, the monitoring and verification report shall be submitted not later than 6 months following the completion of the last calendar year during which the offset project achieved CO<sub>2</sub> equivalent reductions or sequestration of CO<sub>2</sub> for which the project sponsor seeks the award of CO<sub>2</sub> offset allowances.

(6) Contents of monitoring and verification reports. For an offset project, the monitoring and verification report shall include the following information:

(A) The project's sponsor's name, address, e-mail address, telephone number, facsimile transmission number, and account number;

(B) The CO<sub>2</sub> emissions reduction or CO<sub>2</sub> sequestration determination as required by the relevant provisions of this section, including a demonstration that the project sponsor complied with the required quantification, monitoring, and verification procedures under this section, as well as those outlined in the consistency application approved pursuant to subsection (c)(12) of this section;

(C) The following statement signed by the offset project sponsor:

"The undersigned project sponsor hereby confirms and attests that the offset project upon which this monitoring and verification report is based is in full compliance with all of the requirements of Section 22a-174-31a of the Regulations of Connecticut State Agencies. The

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. I understand that eligibility for the award of CO<sub>2</sub> offset allowances under Section 22a-174-31a of the Regulations of Connecticut State Agencies is contingent on meeting the requirements of said section. I authorize the commissioner or the commissioner's designee 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 the consistency application that was the subject of a consistency determination by the commissioner or the commissioner's designee. I understand that this right to audit shall include the right to enter the physical location of the offset project. I submit to the legal jurisdiction of the State of Connecticut.”; and

(D) A verification report and certification statement signed by an independent verifier accredited pursuant to subsection (i) of this section documenting that the independent verifier has reviewed the monitoring and verification report and evaluated the following in relation to the applicable requirements of this section, and any applicable guidance issued by the commissioner or the commissioner's designee. Such verification report and certification statement shall also include:

(i) A statement of the adequacy and validity of information supplied by the project sponsor to determine CO<sub>2</sub> emissions reductions or CO<sub>2</sub> sequestration pursuant to the applicable requirements of this section;

(ii) A statement of the adequacy and consistency of methods used to quantify, monitor, and verify CO<sub>2</sub> emissions reductions and CO<sub>2</sub> sequestration in accordance with the applicable requirements of this section and as outlined in the consistency application approved pursuant to subsection (c)(12) of this section; and

(iii) Such other evaluations and verification reviews as may be required by the commissioner or the commissioner's designee to determine the adequacy and validity of information supplied by the project sponsor and to demonstrate that the offset project meets the applicable eligibility requirements of this section;

(E) Disclosure of any voluntary or mandatory programs, other than the CO<sub>2</sub> Budget Trading Program, to which greenhouse gas emissions data related to the offset project has been, or will be reported; and

(F) For offset projects located in a state or United States jurisdiction that is not a participating state, a demonstration that the project sponsor has complied with all requirements of the cooperating regulatory agency in the state or United States jurisdiction where the offset project is located.

(7) Commissioner action on monitoring and verification reports. The commissioner or the commissioner's designee shall approve or deny, with or without conditions, a complete monitoring and verification report not later than 90 days following receipt of a complete report.

(Adopted effective July 23, 2008)