Greenhouse Gas Emissions

from Educational Facilities and the EPA Greenhouse Gas Reporting Rule

Actions You Need to Take Now

By Mitchell M. Wurmbrand, CCM & Thomas C. Klotz

On September 22, 2009, The United States Environmental Protection Agency (EPA) issued its final rule on greenhouse gas (GHG) emission reporting. The informational literature that EPA has published to support the rule clearly states that EPA believes the vast majority of smaller GHG-emitting facilities, such as educational facilities, will not be required to report. Is EPA's assertion correct? Well, maybe. Before we attempt to answer that question, let's discuss how this rule came to be.

RULE DEVELOPMENT

Hidden away in the fiscal year 2008 Consolidated Appropriations Act, signed on December 26, 2007, was a provision for funding for EPA to develop a rule "to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy of the United States." On April 10, 2009, EPA proposed the mandatory GHG reporting rule. During the official 60-day comment period and beyond, EPA held public hearings, received nearly 17,000 written comments, and met with 4,000 people and 135 groups. A little over five months after publishing the proposed rule, EPA issued its final rule on mandatory GHG reporting on September 22, 2009. The rule was published in the *Federal Register* on October 30, 2009 and went into effect 60 days later. The details of the mandatory GHG reporting rule can be found at 40 CFR 98.

The purpose of the rule is to provide EPA with the data needed to make future policy decisions regarding GHGs and climate change under the Clean Air Act. Accordingly, we expect that there will be a whole host of EPA regulations governing GHG emissions to follow. Some of these likely future regulations and legislative initiatives will be discussed later in this article.

RULE APPLICABILITY

Reporting requirements under the final rule will apply to certain fossil fuel and industrial gas suppliers, manufacturers of vehicles and engines outside of the light-duty sector, and certain downstream facilities that emit greenhouse gases (facilities emitting 25,000 metric tons per year of carbon dioxide equivalent ($mtCO_2e$) of GHG emissions). EPA estimates that at the 25,000 $mtCO_2e$ threshold approximately 10,000 facilities and 85 percent of total U.S. GHG emissions will be covered by the rule.

The rule defines a "facility" as "any physical property, plant, building, structure, source, or stationary equipment located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way and under common ownership or common control, that emits or may emit any greenhouse gas." An educational institution that consists of several structures is considered a single facility if the structures are located on contiguous or adjacent properties and are under common ownership or common control. Note that the buildings do not have to be connected by walkways, tunnels, or pipelines to be considered a single facility. Even if the structures are separated by a public road, they would still be considered to be contiguous. This definition certainly broadens the scope of the reporting rule and differs from how a facility may be defined under other environmental and Clean Air Act regulations.

Nowhere in the rule are educational facilities specifically mentioned as being subject to reporting requirements. So where's the catch? Clearly, educational facilities are not among the source categories listed in Part 98.2(a)(1) or (2) of the rule. It is likely, however, that many educational facilities operate stationary fuel combustion units that are listed in Part 98.2(a)(3) of the rule. And that's the catch! A stationary fuel combustion source is a device that combusts any solid, liquid, or gaseous fuel generally to produce electricity, steam, useful heat, or energy for industrial, commercial, or institutional use or reduces the volume of waste by removing combustible matter. These devices include, but are not limited to, boilers, engines, process heaters, combustion turbines, and incinerators. The rule excludes portable equipment, emergency generators, emergency equipment, agricultural irrigation pumps, hazardous waste combustors (except for co-fired fossil fuels), flares, and research and development activities. EPA has not set a minimum heat input capacity level below which a stationary fuel combustion unit does not have to be included in a facility's calculation of annual GHG emissions. As a result, every piece of non-excluded, fossil fuel-fired stationary equipment, regardless of size, must be accounted for. This includes devices such as space heaters and rooftop units that burn fossil fuel.

Table 1. Annual GHG Emissions by Fuel Type and Quantity

Fuel Type	Annual Fuel Consumption	Annual GHG Emissions
Natural Gas	459,000,000 scf	25,018 $mtCO_2e$
No. 2 Fuel Oil	2,450,000 gallons	25,027 $mtCO_2e$
No. 6 Fuel Oil	2,220,000 gallons	25,029 $mtCO_2e$

For educational facilities that operate stationary fuel combustion sources, the rule requires the facility to determine if it emits 25,000 $mtCO_2e$ or more from stationary combustion in any calendar year starting in 2010. If so, the facility must report emissions from stationary fuel combustion devices only. However, if the maximum rated heat input capacity for all stationary fuel combustion equipment combined is less than 30 million British thermal units per hour (Btu/hr), then the facility is presumed to emit less than 25,000 $mtCO_2e$, and the facility does not have to calculate or report emissions. If a facility has an aggregate maximum rated heat input capacity equal to or greater than 30 million Btu/hr, then the facility will need to complete further calculations to determine if it meets the threshold for reporting. It is likely that many educational facilities operate stationary fuel combustion equipment that have a combined maximum rated heat input capacity that is greater than 30 million Btu/hr. This

means that those facilities will, at a minimum, have to calculate their historical annual CO_2e emissions to see if the facility can be expected to exceed the GHG threshold.

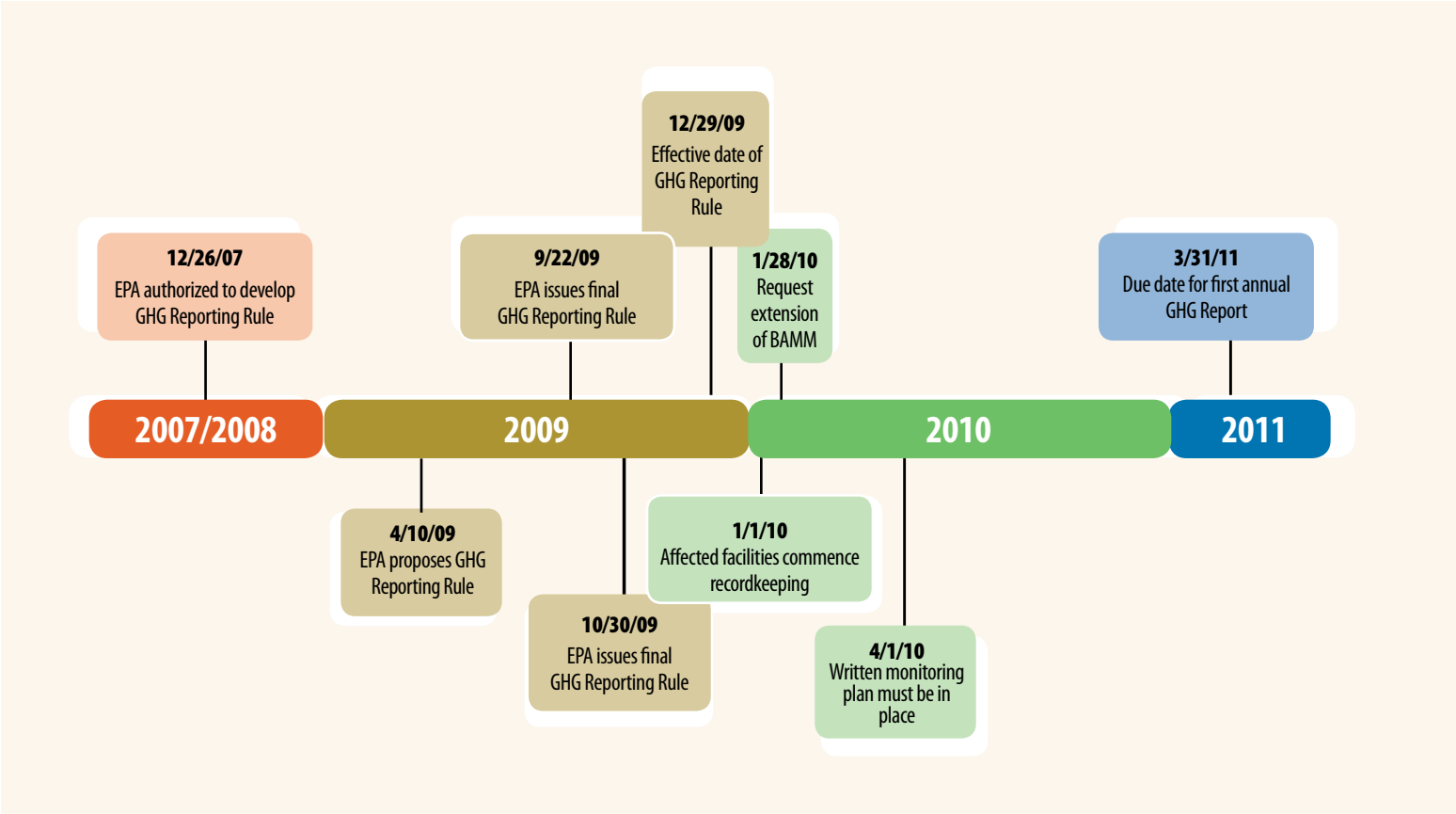
Let's assume you know that your facility operates stationary fuel combustion sources that, in the aggregate, exceed 30 million Btu/hr heat input capacity. How much fuel must a facility consume on an annual basis to exceed 25,000 $mtCO_2e$? Table 1 provides "rule of thumb" guidance for certain fuels.

To assist facilities determining whether the reporting rule is applicable, EPA has provided an "Applicability Tool." The Web-based tool may be used by facilities as an initial review to determine the reportable source categories present at the facility and emissions from some of these sources. While a more thorough analysis may be necessary for many entities, this particular tool can help many others with a simplified, straightforward approach. The tool can be located at the following website: *www.epa.gov/climatechange/emissions/GHG-calculator/index.html*.

Assuming that you've determined that your facility is subject to the GHG reporting rule, the rule contains specific reporting dates, monitoring, recordkeeping and reporting requirements, and calculation methodologies that must be followed.

ESTIMATING AND REPORTING EMISSIONS FROM FUEL COMBUSTION SOURCES

At educational facilities, the most prevalent sources of GHG emissions are stationary fuel combustion sources. For these emission sources, facilities must report annual emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) for each fuel combusted. EPA has prescribed specific calculation methodologies within the reporting rule for estimating emissions. To address the proper level of reporting rigor, EPA developed four calculation tiers that may be selected based on combustion unit size, type of fuel burned, and other factors. Tier 1, for example, represents a simplified calculation methodology where company records may be used to determine fuel use and default emissions factors and fuel high heating values may be used to estimate emissions. Tier 4 methodology presents the opposite end of the spectrum and requires the use of a continuous emission monitoring system (CEMS) for estimating emissions from certain units. Tiers 2 and 3 entail a combination of simplified and complex approaches to estimating GHG emissions. These particular calculation methodologies may require a facility to periodically measure fuel heating value and carbon content.



Generally, all units rated at a heat input capacity of 250 million Btu per hour (mmBtu/hr) or less are allowed to use the simpler Tier 1 or Tier 2 calculation methodologies. Certain units rated over 250 mmBtu/hr that combust pipeline quality natural gas and distillate oil are also allowed to use Tier 2. However, units rated above 250 mmBtu/hr that combust residual oil, other gaseous fuels, and solid fossil fuels will need to apply the Tier 3 or Tier 4 methodologies.

As can be seen, an affected facility must closely evaluate the appropriate calculation methodology based on the combustion equipment characteristics to ensure that additional requirements do not apply. Affected facilities also need to consider the requirements for conducting fuel sampling and analysis, installing monitoring devices, as well as calibrating monitoring devices (e.g., fuel flow meters). These considerations should be addressed well in advance of April 1, 2010 when EPA begins to enforce the use of required monitoring methods rather than "best available monitoring methods" (BAMM) allowed during the first quarter of 2010 (discussed later in this article).

EPA did anticipate the difficulty of reporting emissions from individual stationary combustion units. As an option, EPA will allow many facilities to aggregate emissions reporting from individual units with maximum rated heat input capacities less than 250 mmBtu/hr. Units may also be aggregated based on the use of a common fuel supply line or pipe or a common stack or duct configuration where CEMS are used. Additionally, EPA has exempted fuel billing meters from the calibration requirements which should allow some affected facilities to avoid the calibration accuracy requirements.

While aggregated reporting will likely provide some relief for many reporters, there are a few particularly burdensome requirements that remain. These requirements include the obligation to report an identification number for each combustion unit reported in a group and the cumulative maximum rated heat input capacity of the group (mmBtu/hr). As a result, regardless of whether a facility elects to report by individual unit or multiple units aggregated by group, the facility will likely need to prepare a comprehensive stationary fuel combustion equipment inventory for all non-excluded combustion units. The development of a combustion equipment inventory could be complicated for certain facilities that may employ the use of many smaller combustion units that have been traditionally excluded from other regulatory initiatives (e.g., air permitting).

A Monitoring Plan is expected to identify individuals responsible for the collection of emissions data, explanation of the processes and methods used to collect data and perform GHG emission calculations, and a description of the procedures and methods used for quality assurance, maintenance, and repair of monitors and other instrumentation.

MONITORING PLAN PROVISIONS

One particularly time-sensitive requirement within the reporting rule entails the development of a written GHG Monitoring

Plan. Affected facilities are required to have a Monitoring Plan in place by April 1, 2010. Among other features, a Monitoring Plan is expected to identify individuals responsible for the collection of emissions data, explanation of the processes and methods used to collect data and perform GHG emission calculations, and a description of the procedures and methods used for quality assurance, maintenance, and repair of monitors and other instrumentation.

The Plan may rely on references to existing company documents (e.g., standard operating procedures, quality assurance programs, etc.). As such, EPA has not prescribed a specific format for the Monitoring Plan in order to allow facilities flexibility to rely on existing documents. Facilities are not required to submit the Monitoring Plan to EPA for approval, but must retain the Plan in accordance with the recordkeeping requirements.

OTHER KEY ASPECTS OF THE REPORTING RULE

Upon determining that your facility is subject to the GHG reporting rule, there are a number of general provisions and other key aspects of the rule that apply. The following key aspects should be carefully considered by affected facilities:

- Records must be retained for at least three years in an electronic or hard-copy format. Records must be made available to EPA for review upon request.
- Affected facilities must establish a single designated representative who will be responsible for certifying, signing, and submitting GHG emission reports.
- Revisions to a report submitted to EPA must be submitted within 45 days of discovery or notification by EPA.

Facilities must continue to report each subsequent year once a facility is subject to the reporting rule even if the facility is not subject to the rule during future reporting years. EPA allows facilities to cease reporting after five consecutive years if reported emissions are less than 25,000 mtCO_2e or after three consecutive years if reported emissions are less than 15,000 mtCO_2e.

EPA reserves the ability to verify the completeness and accuracy of the GHG emissions report and may take enforcement action for any violation of a reporting rule requirement. It is expected that GHG regulatory enforcement will be a high priority at EPA in the short term.

DRITHERM
UNDERGROUND PIPE INSULATION

DRITHERM POUR-IN-PLACE
UNDERGROUND PIPE INSULATION

- EXTREMELY COST EFFECTIVE
- NON-TOXIC/ENVIRONMENTALLY SAFE
- SELF-COMPACTING
- CERTIFIED HYDROPHOBIC
- TYPICALLY SHIPS IN 24HRS
- 5 NATIONWIDE FACTORIES
- OVER 4.5 MILLION CUBIC FEET INSTALLED WORLDWIDE

1-800-343-4188
www.dritherm.com

SPECIAL PROVISIONS FOR 2010 REPORTING

Due to the relatively swift finalization of the GHG reporting rule, EPA has provided flexibility for compliance with certain provisions for the 2010 reporting year. A brief summary of the 2010 reporting special provisions is provided below.

- Abbreviated report content for facilities only subject to the stationary fuel combustion source category. Provision also allows for the use of simplified emission calculation methods.
- Use of BAMM through March 31, 2010.
- Option to request an extension to use BAMM through December 31, 2010. The extension request was due by January 28, 2010.
- Delay of equipment calibrations beyond April 1, 2010 in some cases.
- Monitoring plan completion by April 1, 2010.

REPORTING SCHEDULE

Facilities expected to be subject to the GHG reporting rule should have initiated data collection and recordkeeping activities on January 1, 2010. The first annual GHG report is not due until March 31, 2011. The following timeline shows the history of the development of the GHG Reporting Rule and the important milestones that facilities must achieve to comply with the rule.

FUTURE GHG POLICY DECISIONS

EPA's mandatory GHG reporting rule will likely be the first of several GHG rules that EPA will issue in the months ahead. In addition to EPA rulemaking, there are many regional and state GHG programs already in existence. Some of these programs are voluntary (e.g., The Climate Registry), while others are mandatory (e.g., Regional Greenhouse Gas Initiative (RGGI)). Some states have mandatory GHG reporting rules that are more stringent than the EPA rule. For example, Massachusetts's mandatory GHG reporting rule (310 CMR 7.71) requires facilities to report if their CO_2e annual emissions exceed 5,000 short tons. Furthermore, Massachusetts requires that the reporting facility's GHG emissions report be verified by an approved verification body (accredited by the American National Standards Institute) on a triennial basis. The EPA mandatory GHG reporting rule does not preempt the rules contained in existing regional and state programs.

It appears that the EPA mandatory GHG reporting rule is just a precursor for a suite of future policies and programs that will address climate change and GHG emissions. On the Congressional side of the ledger, the House has passed (June 26, 2009) H.R. 2454: American Clean Energy and Security Act of 2009 (aka Waxman-Markey climate and energy bill). Incorporated in this bill is a cap-and-trade program for GHG emissions. On September 29, 2009, Senators Kerry and Boxer introduced the Clean Energy Jobs and American Power Act (S. 1733). The Kerry-Boxer bill does not contain a cap-and-trade program; however, it does have a greater GHG emission reduction goal than the Waxman-Markey bill (20 percent vs. 17 percent by 2020 based on 2005 emissions).

The floodgates to EPA GHG rulemaking were opened when the Supreme Court (in Massachusetts v. EPA, 549 U.S. 497 (2007)) ruled that the current provisions of the CAA provided EPA ample authority to regulate GHG emissions. If EPA elected not to regulate GHG emissions, the Court required EPA to demonstrate that GHG emissions would not "endanger" the public health and the environment. On April 29, 2009, EPA proposed its

VHB *Vanasse Hangen Brustlin, Inc.*
Transportation | Infrastructure | Environmental Services

For more than 30 years, VHB has incorporated an interdisciplinary, sustainable design approach in support of growth and development initiatives for educational institutions nationwide. Our engineers, planners, and scientists promote excellence in educational facilities management by providing our clients with solutions that conserve both natural and financial resources.

Design with the future in mind.

www.vhb.com
Offices located throughout the east coast

VHB has collaborated with the U.S. Green Building Council on its latest resource for the higher education sector, Roadmap to a Green Campus.

Coming soon to www.usgbc.org.

"endangerment finding" for public comment. The proposal stated that GHGs posed an endangerment to public health and the environment. Based upon this finding, it was now abundantly clear that EPA was intent on regulating GHGs. EPA went final with its endangerment finding on December 15, 2009 (74 FR 66496-66546).

On September 15, 2009, EPA proposed for public comment new GHG standards in the form of fuel efficiency standards for automobiles and light duty trucks. This was the first time EPA proposed a rule that would require control of GHG emissions. When the fuel efficiency standards ultimately go into effect (March 2010), GHGs will then be treated as pollutants regulated under the CAA. This means that GHG emissions may be subject to existing EPA CAA programs such as New Source Review (NSR)-Prevention of Significant Deterioration, the Title V Operating Permit program and New Source Performance Standards.

Faced with a dilemma of how to regulate GHG emissions using the stringent applicability thresholds that are inherent with these existing programs, on October 27, 2009, EPA proposed its "tailoring" rule (74 FR 55292-55365). Under this rule, EPA is proposing to apply much higher applicability thresholds for GHG emissions in its existing regulatory air permitting programs (for some unknown reason, EPA proposed 25,000 short tons as opposed to 25,000 metric tons of CO_2e annual emissions). If the tailoring rule does not become effective by the time GHG emissions are regulated under the CAA, permitting activity under federal and state NSR programs and Title V programs could come to a grinding halt. Thousands of relatively minor emission sources will instantly be faced with permitting obligations and compliance issues. It is not difficult to imagine that legal suits against EPA on these GHG issues will abound in the very near future.

Stay tuned. The landscape of GHG regulation is subject to change.

Thomas Klotz is a project engineer in the Livonia, MI office of GZA GeoEnvironmental, Inc.; he can be reached at *thomas.klotz@gza.com*. Mitchell Wurmbrand is an associate principal and Certified Consulting Meteorologist in GZA's Bloomfield, CT office; he can be reached at *mitchell.wurmbrand@gza.com*. This is their first article for *Facilities Manager*.