AMERICAN PUBLIC GAS ASSOCIATION

September 5, 2013

Ms. Kym Carey
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Program
1000 Independence Avenue SW
Washington, DC 20585

RE: Request for Information for Methodology for Energy Code Compliance Evaluation, Docket No. EERE-2013-BT-BC-0036

Dear Ms. Carey:

The American Public Gas Association (APGA) is pleased to submit comments to the U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE) in response to DOE's request for information (RFI) on the methodology developed by DOE to assist in assessing compliance with building energy codes at the local, state, and national levels in the Federal Register on August 6, 2013.[1]

APGA is the national association for publicly-owned natural gas distribution systems. There are approximately 1,000 public gas systems in 36 states and over 700 of these systems are APGA members. Publicly-owned gas systems are not-for-profit, retail distribution entities owned by, and accountable to, the citizens they serve. They include municipal gas distribution systems, public utility districts, county districts, and other public agencies that have natural gas distribution facilities. For more information, please visit www.apga.org.

APGA believes any methodology used to assess compliance with building energy codes should reflect primary energy performance methodology. Site measurement methods calculate the energy consumed by an appliance at the end-use point and do not properly account for the total energy consumed when more than one energy source is used in an appliance (such as a gas furnace) or when comparing the consumption of different fuels that can be used for the same application (such as water heating or combined heat and power). In addition, site measurement does not account for the energy lost and emissions created throughout the extraction, processing, transportation, conversion, and distribution of energy. Source measurement (also known "full-fuel-cycle") measures energy consumption from the point of extraction to the point of use and does account for the energy losses that occur (e.g., in the production of natural gas or in the generation of electricity).

[1] *Request for Information for Methodology for Energy Code Compliance Evaluation*, 78 FR 47677 (August 6, 2013).

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A unit of primary and a unit of secondary energy consumed at the site are not directly comparable because one represents a raw fuel while the other represents a converted fuel. When primary energy is consumed on site, the conversion to source energy must account for losses that are incurred in the storage, transport, and delivery of fuel to the building. When secondary energy is consumed on site, the conversion must account for losses incurred in the production, transmission, and delivery to the site. Therefore, in order to assess the relative efficiencies of buildings with varying proportions of primary and secondary energy consumption, it is necessary to convert these two types of energy into equivalent units of raw fuel consumed to generate that one unit of energy consumed on-site. To achieve this equivalency, a full fuel cycle methodology should be used.

The overall natural gas delivery system, from extraction and production, through processing, transportation, and delivery to end use is relatively efficient – approximately 92% of the energy produced reaches the consumer as usable energy, where electricity is only about 32% efficient, with about 64% lost in generation.[2] Natural gas is the cleanest, safest, and most useful of all fossil fuels. The inherent cleanliness of natural gas compared to other fossil fuels, as well as strong domestic supply projections and superior efficiency of natural gas equipment, means that substituting gas for the other fuels will reduce the emissions of the air pollutants that produce smog, acid rain and exacerbate the "greenhouse" effect. Natural gas also has the lowest CO2 emission source per BTU delivered of any fossil fuel.

Focusing on site energy efficiency alone without consideration of upstream energy consumption and emissions perversely incentivizes the decision maker to choose the less expensive “efficient” technology. The consequence of using a site-based metric is to promote fuel switching in the design decision away from more full-fuel-cycle energy efficient and lower greenhouse gas emitting technologies toward more site energy efficient technologies. Codes, standards, regulations, voluntary initiatives, and incentive programs that focus on site energy create and maintain an unfair and unearned market advantage to qualifying technologies such as electric resistance heating and water heating that are lower initial cost, but that have higher operating cost, lower full-fuel-cycle efficiency and higher greenhouse gas emissions. To promote energy efficiency and lower greenhouse gas emissions, a full fuel cycle metric should be used. This is a key reason source energy-based criteria are used by several private and public sector stakeholders.

Moreover, the DOE issued a Statement of Policy on August 18, 2011, announcing its plans to adopt full-fuel-cycle analyses into their Energy Conservation Standards Program, based on recommendations to that effect by The National Academies (of Science, of Engineering, Institute of Medicine, and the National Research Council). DOE stated its intention to use source-based measures of energy use and emissions, rather than site energy measures. This more accurate full-fuel-cycle measurement will provide consumers with more complete information on energy use and environmental impacts. For this reason, the Environmental Protection Agency (EPA) uses source energy in calculating the ENERGY STAR performance rating for buildings, designed to improve building efficiency and reduce carbon emissions nationally.

[2] U.S. Energy Information Administration, *Annual Energy Review 2011*, Table 2.1b.

Many existing and developing codes reject site-based energy metrics in favor of full-fuel-cycle energy metrics. Current rating systems including the U.S. Green Building Council's (USGBC) LEED O&M, the International Green Construction Code (IgCC), DOE's stated policy, and even ASHRAE's Building Energy Quotient (bEQ) support the use of primary energy performance methodology. At present, the IgCC represents the more comprehensive implementation of full fuel-cycle analyses. However, LEED O&M and bEQ, which incorporate EPA's Portfolio Manager, are also moving in the right direction.

Primary energy performance methodology provides equitable treatment of all energy consuming technologies based on their primary energy impact, not their site energy impact (or normalized modified site energy load impact). It does not prohibit any technology, but equitably rewards and penalizes technologies in the home rating based on their primary energy performance. It uses single national primary energy factors to avoid rewarding or penalizing a home simply based on its location (similar to the EPA Energy Star Buildings methodology). Primary energy methodologies are easily implemented and are now widely recognized and used both in the United States and internationally.

It is the position of APGA that DOE should follow-through on its commitment to incorporate a meaningful use of full-fuel-cycle measures of energy use and emissions. To overcome the site-based shortcomings identified by the National Academies, APGA strongly urges DOE to incorporate primary energy performance methodology into any approach to measuring compliance with building energy codes.

APGA thanks the Office of Energy Efficiency and Renewable Energy for its consideration of these comments.

Respectfully submitted,

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