Contact information

1.Company/Institution Name: American Gas Association
2.Company/Institution Contact Name: Michael L. Murray
3.Email Address: mmurray@aga.org
4. Contact mailing address: 400 N. Capitol St., NW, Washington, DC 20001

Section A Overall

5. Are the draft criteria clear and appropriate for the definition of a zero emissions building? Should any other criteria be considered for Part 1? Please provide specific feedback about this draft definition.

AGA Response:

The American Gas Association is committed to reducing greenhouse gas emissions through smart innovation, new and modernized infrastructure, and advanced technologies that maintain reliable, resilient, and affordable energy service choices for consumers. Policy should recognize that improving energy efficiency in residential, commercial, industrial, transportation, and other natural gas applications is a cornerstone strategy in reducing greenhouse gas emissions. Any zero-emissions building definition must be fuel-neutral and based on the total emissions of a building, not merely the building envelope. A fuel-neutral approach maximizes the electric and gas systems to achieve efficient, cost-effective, and reliable GHG reductions for the building sector.

As our nation pursues ambitious decarbonization goals, the U.S. gas utility industry is committed to providing the solutions required to achieve a sustainable energy future. AGA supports policies and regulatory changes at the state and federal level, identifies the investments necessary to deploy and scale advanced technologies, and supports actions essential to help companies and communities successfully develop and implement effective and feasible decarbonization strategies. The use of gas decarbonization strategies can accelerate the deployment of emission reduction technologies, keep energy delivery systems resilient and reliable, and deliver the affordable energy that Americans need.

The Department's zero emissions building definition must be fuel neutral and based on the total emissions of a building, not merely the building envelope. As illustrated in the section above, a fuel-neutral approach maximizes the electric and gas systems to achieve efficiency, cost-effectiveness, and reliable GHG reductions for the building sector.

A fuel-neutral approach would permit flexibility and allow the inclusion of different energy sources, such as renewable energy gas, and hydrogen. In addition, a fuel-neutral approach permits the use of existing infrastructure while minimizing the impacts created by a fuel-neutral approach. There are many circumstances in which the use of on-site natural gas can help reduce a building's energy consumption.

A building can be designed to reduce overall energy consumption through a variety of techniques. For instance, a building can add more insulation or more efficient windows to increase the overall efficiency of the building and, therefore, reduce consumption (regardless of the energy source). Under the current proposal, building designers are essentially required to cut all gas appliances and energy reflexively used to meet the definition. The proposal would result in a decrease only in on-site consumption, even at the expense of a building consuming more energy overall.

The decision to disregard off-site energy consumption produced with conventional fuels is contrary to the definition's environmental goals. It fails to consider an important aspect of the problem it is trying to solve. Decreasing only on-site conventional fuel-generated energy consumption of buildings would not increase the overall energy efficiency of the buildings. It would not result in a reduction of harmful environmental emissions. Exchanging conventional fuel-generated energy for reliance on the electric grid, which may still be generating energy with conventional fuels, doesn't necessarily lead to a reduction in GHG emissions.
To argue otherwise, the Department must assume that the nation will have a zero-emissions electric grid in the future. However, the Department needs to explain the basis for this assumption, when or how it assumes that the transition will take place.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

Section B: Energy efficiency criteria.
6.Should energy efficiency be considered a criteria for the definition of a zero emissions building? If the efficiency of an existing building should be considered, do you agree that requiring energy performance in the top 25% of similar buildings is an appropriate measure of energy efficiency for this definition? (ENERGY STAR® score of 75 or above.) Should it be higher or lower? Are there other benchmarks or approaches that should be considered? For an existing building, is one year of measured energy performance an appropriate requirement for demonstrating efficiency or is another approach appropriate?

AGA Response:

EPA is on record for its Energy Star building program that "EPA has determined that source energy is the most equitable unit of evaluation for comparing different buildings to each other.[1] Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses. By taking all energy use into account, the score provides a complete assessment of energy efficiency in a building.

[1] https://www.energystar.gov/buildings/benchmark/understand_metrics/source_site_difference

In 2011, the U.S. Department of Energy (DOE) issued a "Statement of Policy for Adopting Full-Fuel-Cycle Analysis into Energy Conservation Standards Program" states that DOE will use full-fuel cycle measures of energy use and emissions when evaluating energy conservation standards for appliances, following the recommendation of the National Academy of Sciences.[2] By the same logic, full-fuel-cycle analysis should be applied to the zero emissions building definition.

Full-fuel-cycle metrics should be used in any definition for net-zero emissions building, which may be applied to building codes and appliance standards or to evaluate the energy and environmental impact of building fuels and appliances. Policies that require evaluation of technology and fuel options must incorporate a comprehensive methodology, such as full-fuel-cycle metrics, to maximize energy efficiency and greenhouse gas (GHG) emission reductions and to ensure that users of the DOE's building definition have access to the full range of options to reduce emissions.

Full-fuel-cycle energy is the energy consumed by an appliance, system, or building.. It includes energy consumed in the extraction, processing, and transport of primary fuels such as coal, oil, natural gas; energy losses in thermal combustion in power-generation plants and the energy associated with electric generation from hydroelectric power plants, wind, solar, and other sources; and energy losses in transmission and distribution to the building site. Full-fuel-cycle, therefore, includes the total energy consumption and environmental impacts of end-use energy decisions. A full-fuel-cycle-based emissions analysis should be used when the focus is on environmental objectives.

Site measurement methods – a calculation of the energy consumed at the end-use point (in the building) – do not adequately or equitably account for the total energy consumed nor emissions when more than one energy source is used in an appliance (such as a gas furnace or boiler) or when comparing the consumption and emissions 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 GHG emissions created throughout the extraction, processing, transportation, conversion, and distribution of energy to the building. Site energy alone cannot serve as the basis for a zero-emissions building definition if the goal is to reduce the consumption of primary energy resources attributable to the design and operation of the building and to lower GHG emissions.

The current site-based energy emissions analysis for buildings in the draft definition only accounts for energy used and emissions at the point of consumption or site and, therefore, only measures the emissions of the building envelope. Site energy measurement alone cannot define a zero-emission building nor affect the definition's environmental goals.

[2] 76 Fed. Reg. 51281 (Aug. 18, 2011)

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

7. For existing buildings, are the draft criteria appropriate for single-family homes? Are there other benchmarks that should be considered for single-family homes?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

8.For new construction, are the draft criteria appropriate? The modeled building performance is at least 10% lower than the energy use according to the latest version of IECC or ASHRAE 90.1 (*e.g.* model energy code) and the building is designed to achieve an ENERGY STAR design score of at least 90 (for eligible buildings). Are there other benchmarks that should be considered?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

9.For new construction, are the draft criteria appropriate for single family homes? Are there other benchmarks that should be considered for single family homes?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

Section C: On-site emissions from energy use.

10.Should there be an exemption allowed for emission producing emergency generation? Are there any other exemptions needed?

AGA Response:

A zero-emissions building definition that accounts for full-fuel-cycle energy and emissions and incorporates a fuel-neutral approach that allows for on-site energy use would, therefore, permit emergency generation equipment.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

11.Should biofuels consumed on-site be allowed? If so, how?

AGA Response:

The Department should revise the proposal to ensure that it supports the current and future use of renewable gases and hydrogen in buildings. The Department should provide the greatest amount of flexibility possible for achieving emission reductions. AGA strongly supports expanding access to renewable gases in an effort to accelerate widespread accessibility and adoption of renewable and low-carbon energy sources. The natural gas system can store and deliver renewable energy derived from various sources and is a critical tool for reaching GHG reduction goals.

Many AGA members have already begun demonstrating their commitment to integrating renewable gases into their existing pipeline networks. To date, at least fifteen AGA member companies in the United States have established or are in the process of developing voluntary renewable natural gas ("RNG") program offerings for their customers, also referred to as "green tariffs" for retail service. Many gas utilities have begun investing in RNG to lower their gas throughput emissions and to offer customers a low-carbon and renewable energy option. AGA closely tracks all state legislative and regulatory actions nationwide related to the use of RNG in the building sector, and activity has increased significantly over the last several years. Over twenty-eight states across the United States have taken some form of action to promote the use of renewable gas in the residential or commercial sector. Moreover, dozens of gas utilities now have experience blending RNG into their pipelines, and many are working to deliver RNG to their customers. Furthermore, utility investment in hydrogen is increasing, from piloting hydrogen production technologies to evaluating the impacts on direct-use gas equipment. Beyond technical engagement, many gas utility companies have begun to incorporate hydrogen into their emission reduction strategies while educating policymakers, regulators, and customers on their plans for a hydrogen-enabled gas system. The development of these program offerings is a direct reflection of growing customer demand for renewable energy sources and gas utilities' continued commitment to reducing GHG emissions.

Due to the environmental benefits of renewable gases, the Department should ensure that such gases are fully leveraged to achieve decarbonization goals for buildings. Moreover, using RNG and hydrogen in the existing gas distribution system could mitigate the need to site, permit, and build electric infrastructure near federal buildings. RNG use can also increase the

resilience of the energy system by providing a locally sourced supply of clean energy. As the Department is aware, permitting, approving, and building energy infrastructure projects is a complex task. The Department should seek ways to utilize existing natural gas infrastructure and not assume that the siting and permitting of an expanded electric transmission grid needed to replace the gas system would be any more straightforward than the current approval process for natural gas facilities. An efficient alternative is to maximize existing pipeline infrastructure and permit the expansion of RNG and hydrogen over time to achieve carbon emissions reduction goals.

Gas infrastructure and RNG can be a force multiplier for decarbonization. The use of renewable natural gas can accelerate emissions reductions and achieve greater overall emissions reductions beyond what simply volumetric measures of RNG adoption might suggest. For example, the use of dairy manure as a feedstock for renewable natural gas can achieve negative lifecycle (full-fuel-cycle) greenhouse gas emissions when accounting for feedstock collection and processing, transmission, and combustion. Because of the net-negative lifecycle greenhouse gas emissions, blending by volume 20% of renewable natural gas from a dairy manure feedstock into a natural gas pipeline can achieve 69% greenhouse gas emissions reductions.

As part of its analysis, the Department should contemplate future scenarios where the gas system incorporates lower-carbon fuels, such as RNG and hydrogen.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

Section D: Clean energy generation and procurement.

12.Are the clean energy criteria provided appropriate for this definition? Are there other clean energy criteria that should be considered? Should community solar qualify for the requirement? If so, how?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

13.Should there be a proximity requirement for off-site power used to meet the clean power criterion? If so, how should a proximity requirement be implemented (*e.g.*, regional definition, phase-in, etc.)?

AGA Response:

Regionality for renewable natural gas is prohibitive and not needed. The industry already accounts for RNG across the country to comply with existing Federal (RFS) and State (LCFS) programs.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

Section E: Documentation is important for effective implementation.

14.Should organizations leveraging the definition be able to determine whether buildings have to meet it annually, one time, or on a different frequency?

AGA Response:

Book and Claim accounting for RNG is an efficient and cost-effective way to account for emissions reductions achievable through the use of RNG. Hourly matching for RNG is prohibitive and not needed, since molecules can be stored easily in the gas system and annual (or at the most monthly) accounting would be the most efficient way

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

15.If the definition is extended to single family homes, what documentation should be required?

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

16.Are licensed professional and third-party certification bodies the appropriate parties to independently verify the documentation that a building has met the definition? Beyond existing government resources such as EPA's ENERGY STAR Portfolio Manager, are there other methods to verify meeting the zero emissions building definition?

AGA Response:

Book and Claim accounting for RNG is an efficient and cost-effective way to account for emissions reductions achievable through the use of RNG.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

17.What time frame should be used for GHG calculations (i.e. hourly, monthly by year, annually)? Explain how this would be implemented effectively across the market.

AGA Response:

Hourly matching for RNG is prohibitive and not needed, since molecules can be stored easily in the gas system and annual (or at the most monthly) accounting would be the most efficient way.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

18.What other verification criteria are necessary to make this definition useful for the marketplace?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

19. Are there any issues regarding conflict or synergy with regional, state or local energy and climate programs that ought to be addressed?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

Section F: Use cases

20.Is it important for a national definition to cover all building types, including commercial, multifamily, and single-family?

AGA Response:

A fuel-neutral approach would permit flexibility and allow the inclusion of different energy sources, such as renewable energy gas, and hydrogen. In addition, a fuel-neutral approach permits the use of existing infrastructure while minimizing the impacts created by a fuel-neutral approach. There are many circumstances in which the use of on-site natural gas can help reduce a building's energy consumption.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

21.Are there any other recommendations that would help clarify and improve the definition?

AGA Response:

An absolute zero emissions building definition is beyond the department's authority to promulgate and in conflict with the department's delegated authority under the Energy Policy Conservation Act. Promulgating a zero emissions building definition is in conflict with its delegated authority to develop federal "minimum" efficiency standards for products "covered" by the Energy Policy Conservation Act of 1975 and its amendments (collectively, "EPCA"). A definition that eliminates all building emissions is not only contrary to the Department's authority under EPCA, but it also places any state or municipality which may adopt it in violation of EPCA, which prohibits promulgation of efficiency standards that differ from federal minimum efficiencies.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

22. While Part 1 of the definition focuses on operating emissions, what other areas should be considered in future parts of the definition, such as embodied carbon, refrigerant, and grid interactivity?

AGA Response:

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery

to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.

General questions and comments
23.Other questions or comments not included above.

AGA Response:

AGA supports efforts to reduce greenhouse gas emissions through efficiency and GHG-focused codes and standards that are fuel-neutral and utilize full-fuel-cycle metrics and means that are technologically feasible, economically justified, and follow statutory requirements. The definition should recognize the benefits of using natural gas and emerging fuels in achieving ***net*** zero emissions. Natural gas is a clean, abundant and preferred form of energy by a large percentage of the United States population and to exclude it as a foundational element to the future of energy would be imprudent and in violation of DOE's authority delegated by Congress.

DOE should reconsider its approach to ensure alignment with the Energy Policy and Conservation Act, to foster consumer choice, and to preserve access to today's cost-effective technologies and options and tomorrow's innovations. The proposed 'zero emissions' definition conflicts with the broader goal of achieving 'net-zero' greenhouse gas emissions, as outlined by the President.

AGA is concerned about the practicality and feasibility of the proposed definition. The removal of entire categories of onsite energy sources would severely limit the ability of buildings to quickly and cost-effectively reduce emissions consistent with net-zero pathways. DOE should establish a definition that is ultimately achievable.

Moreover, DOE's proposed definition lacks robust analytical backing. Under the proposed definition, essential options like pipeline gas and other fuels would be excluded from the building sector's future solutions. Furthermore, emerging technologies, particularly those involving carbon capture, storage, and utilization at the building site, would be ineligible under the DOE's current proposal despite their potential contributions. The proposed definition could disincentivize onsite equipment needed for energy reliability.

In November 2023, GTI Energy's 'Designs for Net-Zero Energy Systems' report, a meta-analysis of U.S. economy-wide decarbonization studies, concluded that pipeline gas and liquids remain integral in all building sector scenarios achieving net-zero emissions by 2050. Further analysis indicates that integrating Renewable Natural Gas (RNG) could be a more feasible and cost-effective solution for many consumers than solely relying on all-electric pathways for zero net greenhouse gas emissions. Emerging technologies, particularly those involving carbon capture, storage, and utilization at the building site, would be ineligible under the DOE's current proposal, despite their potential contributions.

Any definition should be inclusive of key tenets such as building safety, affordability, reliability,

resilience, and practicality of implementation. Furthermore, any definition should encompass a spectrum of local, state, and regional factors, such as climate variability, diverse consumer bases (including commercial and industrial buildings), building stock characteristics, renewable energy potential (spanning electricity, gases, and other fuels), energy system impacts, consumer equity and preferences, technological maturity, anticipated technological advancements, requisite implementation support, and regional and state policy frameworks.

Note: This response supplements AGA's written comments sent via email to The.Secretary@hq.doe.gov and hayes.jones@ee.doe.gov and overnight commercial delivery to the DOE's Sec. Granholm, Prin. Dep. Asst Sec. Marootian and Hayes Jones of the Building Technologies Office.