



April 11, 2012

California Energy Commission
Dockets Office,
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

DOCKET	
12-BSTD-1	
DATE	APR 11 2012
RECD.	APR 11 2012

Re: Docket No. 12-BSTD-1

To Whom It May Concern,

AHRI is submitting the following comments on the 45 Day Language Express Terms of the Draft 2013 Building Energy Efficiency Standards.

COMMERCIAL BOILER PROPOSALS

Section 100.1 has the following proposed definition: Commercial Boiler is a boiler serving a space heating or water heating load in a commercial building. This is incorrect and unenforceable. Federal legislation defines a boiler having an input rate of less than 300,000 Btu/h as a residential boiler. That definition is irrespective of where the unit is installed. A residential boiler covered by Federal efficiency standards which is installed in a commercial application is still subject to those Federal regulations. Federal preemption provisions preclude the Title 24 standards from applying the requirements it specifies for commercial boilers to these Federally covered residential boiler simply be redefining any boiler installed in a commercial building to be a commercial boiler.

The proposed requirement of 120.9(a) is too vague and potentially unsafe. The terminology used in 120.9(a) is confusing and not consistent with technical terms historically used by boiler manufactures and others involved in the industry. Combustion air is the air supplied to a burner to provide for proper and complete combustion of the fuel. No combustion air is being provided to a burner when it is not firing. Conversely when the burner is firing it is critical that adequate combustion air be supplied. The combustion must not be shut off during burner operation. Furthermore the proposal does not explain what "positive shut-off" is nor does it specify when such shut-off is required. It appears that the proposal is intended to stop the flow of air through the venting system when the burner is not firing. If this is correct, the requirement should state so in precise, clear language using the conventional terms used by the industry.

Additionally, in national consensus safety standards for gas fired equipment the term negative or zero pressure operation refers to a gas control and burner system in which a vacuum or negative pressure is created at the outlet of the gas control, upstream of the burner. The critical component of this control is identified as a negative pressure regulator, also referred to as a zero governor.

Again, if our understanding of this proposal is correct it should address the pressure in the venting system. A natural draft or atmospheric boiler is connected to a venting system that designed to operate with negative pressure in the vent. The National Fuel Gas Code generally describes such equipment as “An appliance that operates with a nonpositive vent static pressure....” The term nonpositive covers both negative and zero pressure.

Our previous comments raised questions about the cost/benefit analysis of this proposal for commercial boilers. In particular the assumption that the number of hours of operation annually is the same for space heating boilers in every climate zone is invalid. The annual hours of operation of a commercial boiler depends on the climate conditions of the area in which it is installed. The boiler operating hours will be different in every one of California’s 16 climate zones. We estimated that the boiler operating hours in California’s more temperate climate zones are about 500 hours, well below the 2722 hours of boiler operation per year used in the CASE study supporting this proposal. Although the proposal has been changed to apply to boilers with input rates of 2,500,000 Btu/h and higher, we have not seen the revised analysis that justifies this proposal for the more temperate climate zones of California in which the majority of Californians live. We do not understand how this proposal is cost effective for a commercial boiler installed in a climate zone where it will only operate about 500 hours a year.

The requirement of 120.9 (c) assumes the use of parallel positioning controls. Our previous comments noted that our search of the CEC database of commercial boilers did not find any models of commercial hot water (or hot water and steam) boilers with inputs of 5,000,000 Btu/h or greater and equipped with parallel positioning controls. We also confirmed with our members who manufacture commercial boilers that insofar as new commercial boilers are concerned, parallel positioning control is not used to any significant extent to complying with NOx emission regulations in California. We believe we may have an explanation for this apparent discrepancy. In most, if not all, California Air Quality Management Districts, the NOx regulations for boilers with inputs of 5,000,000 Btu/h or greater apply to both new and existing boilers. In many cases the existing boiler was modified to be brought into compliance rather than installing a new boiler that complied with the NOx emission limit. Such modification may have included a new burner system and/or the application of a parallel positioning control. Thus, low NOx burners with parallel positioning control are available in California. However, the information supporting this proposal has not addressed our comment that new boilers with inputs of 5,000,000 Btu/h or greater that comply with this proposal are not available. The Title 24 requirements apply to new boilers, not existing boiler installations or individual burners. This proposal for commercial boilers should not be adopted until the assumption that complying models are readily available is verified.

Although we do not agree with this proposal, we will note that the requirement of proposed 120.9(c) may not be fully consistent with current boiler control systems. Specifically the prohibition of the use of a common gas and combustion air control linkage or jack shaft is overly restrictive. Control actuation devices exist, sometimes called “trim effecting devices” that allow independent oxygen trim control of combustion air with respect to firing rate. The trim effecting device further trims the position of the jackshaft with an additional modulating positioning device, effectively modulating the combustion air damper for true oxygen trim control.

Therefore, use of a common gas and combustion air control linkage or jack shaft should not be prohibited if it is used in combination with a trim effecting device capable of providing effective oxygen trim control. Also, the requirement that the oxygen concentration must be 5% or less over the entire firing range may not be practical. At firing rates of 10-15% there is very little trim possible and oxygen trim may be disabled.

WATER HEATER PROPOSALS

Proposed requirement 150.0 (j)1.A. requires all storage water heaters, regardless of energy factor, to be externally wrapped with R-12 insulation. This directly conflicts with the provision of federal law (10 CFR Part 430, Section 430.33) which preempts any state regulation providing any energy conservation standard or other requirement with respect to the energy efficiency or energy use of a covered product that is not identical to the Federal standard. This proposal clearly addresses the “energy efficiency or energy use” of residential water heaters. In effect it does not allow the installation of any residential storage water that complies with federal minimum efficiency standards. Therefore, we believe it is unenforceable due to federal preemption.

Furthermore, there are significant safety concerns involving the use of external insulation. Wrapping a storage water heater which is listed to national safety standards will render that water heater in noncompliance with those standards. As an example, gas storage water heaters listed to ANSI Z21.10.1 must show various instruction and warning labels on the water heater including with lighting instructions, the risk of flammable vapors ignition, the risk of scalding, and other potential hazards. Having the water heater wrapped will hide these important consumer safety labels required by the standards. In addition, there is a risk that the external insulation may be improperly install in the field such that it blocks combustion air openings or interferes with the draft hood or venting system thus creating an abnormal operating condition which may create unacceptable levels of carbon monoxide emissions.

Also, there is a diminishing return in energy savings from adding more insulation such as an external blanket. Most gas water heaters currently are insulated with 2 inches of foam, which is a better insulator than fiberglass insulation. The “Initial Statement of Reasons” provides no information to explain this proposal nor has any analysis of its cost/benefit been provided.

Proposed 150.0 (n) is vague and restrictive. The specification of “straight pipe between the outside termination and the space” is not sufficiently clear. Does this allow the pipe to be vertical or horizontal? The vent pipe can be straight in either case. This requirement may force the installation of the water heater in an otherwise impractical area of the new dwelling unit. We urge the commission to reconsider and adopt the following recommendation: For gas water heaters using a natural draft venting system, the building plan shall include a vent retrofit plan identifying a horizontal vent path less than 12 feet without any interior walls along the path and a side-wall vent location in compliance with the National Fuel Gas Code.” This is simpler than the proposal and provides the builder with more flexibility relative to locating the water heater.

The requirement in subparagraph (D) for a gas supply line with capacity of at least 200,000 Btu/h is unnecessarily restrictive and in some cases will add cost for no benefit. For example, if

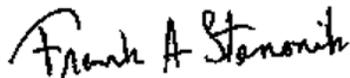
the water heater installed in the new home is a condensing storage model with an input of 125,000 Btu/h or a condensing tankless model with an input of 150,000 Btu/h or the home has two or more lower input water heaters multi-unit installation, there is no need to install a gas supply line with capacity of at least 200,000 Btu/h. A gas line of that capacity is not required for the initial installation of a higher efficiency water heater or water heating system nor will it be needed to allow for the future installation of similar higher efficiency water heaters.

Proposed 150.01(c) 8.B. replaces the term “instantaneous” with tankless. The California Appliance Efficiency Standards (Title 20) and federal efficiency regulations define residential water heaters in terms of storage and instantaneous. Although residential instantaneous water heaters are commonly referred to as tankless, the term defined by the CEC and federal regulations is instantaneous. Therefore, to avoid unnecessary confusion between definitions and requirements, we recommend that “instantaneous” be retained in this provision.

Proposed 150.01(c) 8.D should be modified to indicate clearly that the term “electric resistance water heater” covers both storage and instantaneous (tankless) models.

We appreciate this opportunity to submit comments. If you have any questions or require additional information, please contact us.

Respectfully submitted,



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