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HHT CEC Comments

Additional submitted attachment is included below.

Before the California Energy Commission

In the matter of:	)	Docket No. 18-AAER-06
Phase 2 Appliance Efficiency Regulations	)	Comments of the Hearth, Patio & Barbecue Association in Response to Invitation to Comment on Hearth Products
	)	June 6, 2018 DRAFT

Introduction

The Hearth, Patio & Barbecue Association ("HPBA") appreciates the opportunity to provide comment to the California Energy Commission ("CEC") in response to the Notice of Invitation to Comment on Hearth Products docketed on March 12, 2018 ("the Notice").

HPBA is the principal trade association representing the hearth products and barbecue industries in North America. HPBA's members include manufacturers, retailers, distributors, manufacturers' representatives, service installation firms, and other companies and individuals who have business interests related to the hearth, patio, and barbecue industries. HPBA's core purpose is to promote the welfare of the industries it serves, and one of its critical roles is to serve as an advocate representing the interests of these industries and of its individual members in matters involving the development or implementation of laws or regulations that affect them. HPBA has numerous members that are residents of the State of California, that manufacture gas fireplaces and related products sold in the State of California, or that sell such products in California. HPBA also has an interest in energy conservation, and – through its Energy Conservation Task Force ("ECTF") – has actively considered a wide range of energy conservation options relevant to the gas products its members produce. HPBA therefore has a keen interest in the subject of the Notice, and significant information and expertise to contribute.

HPBA's members produce an enormous variety of gas products to serve a wide range of consumer needs and preferences. The term "hearth products" is too broad and inexact to define any specific range of products that have sufficiently similar characteristics – and sufficiently limited material differences – to be categorized together for purposes of any cogent discussion with respect to energy conservation. Accordingly, HPBA believes that it is critical that the CEC limit its focus to a clearly-identified universe of products that are sufficiently similar to be grouped together for purposes of regulatory analysis.

HPBA believes that the most appropriate universe of products for consideration consists of vented gas fireplaces, vented gas fireplace inserts, and vented gas free-standing stoves. HPBA

questions the need for energy conservation regulations addressing these products, in part because of existing market trends and the industry's own ongoing efforts to address energy conservation issues. HPBA also notes that analysis of potential requirements for these products will be difficult due to the complexity of the products involved, the unique issues they present, and a general lack of reliable data for analysis. However, the universe of products consisting of vented gas fireplace, fireplace inserts, and free-standing stoves is well-defined, and has been the subject of considerably more information collection and relevant dialogue than any other universe of products that could broadly be described as gas hearth or patio products. To the extent the CEC believes that any other gas products are also worthy of regulatory consideration, HPBA recommends that such products be considered separately.

To facilitate the CEC's analysis, these comments provide an overview of the design, use, and unique characteristics of vented gas fireplaces, fireplace inserts, and free-standing stoves and of the considerations relevant to any potential energy conservation requirements for these products. In addition, HPBA has encouraged its members to submit data concerning these products to the CEC, using a form designed to promote the clarity and consistency the data provided. A copy of that form and related explanatory information is provided as Attachment A to these Comments.

Comment

I. The Relevance of DOE's Withdrawn "Hearth Products" Proposal

The Notice cites the Department of Energy ("DOE") proposed rule concerning "hearth products" published at 80 Fed. Reg. 7082 (February 9, 2015), and it is logical to assume that a proposed federal rule should inform any consideration of potential State regulation addressing similar issues. However, the proposed rule in question has since been withdrawn, and it is important to recognize that there are good reasons why that proposal did not lead to the adoption of a final rule.

The proposed rule would have required the elimination of continuous pilot lights for broad range of gas products.[1] One of the key reasons that DOE did not press ahead with a final rule is that many of the basic assumptions underlying the proposed rule proved to be incorrect. In short, the issues proved to be considerably more complex than the proposal suggested, and the opportunities to secure energy conservation benefits proved to be far more limited than previously understood. In the case of vented gas fireplaces, fireplace inserts, and free-standing gas stoves, there was already a strong market trend away from the use of conventional continuous pilot lights, and HPBA was (as it still is) pursuing an industry initiative designed to accelerate that trend. For other products targeted by the proposed rule, a standard eliminating continuous pilot lights proved to be more difficult to justify than the proposal had suggested, either because the products generally don't have pilot lights that could be left burning indefinitely – so that their elimination would provide no energy conservation benefits – or because the elimination of continuous pilots would raise significant collateral concerns. For

[1] A continuous pilot is a pilot that, once ignited, is designed to continue burning continuously until someone turns it off.

example, HPBA's ECTF explored the possibility of an industry initiative to eliminate the use of continuous pilots on a broad range of outdoor fire products, but found that such an initiative:

- Would have little potential to provide energy conservation benefits, because the products generally don't have pilot lights that can be left burning indefinitely; and

- Could potentially have negative safety consequences, because it would require the elimination of devices that qualify as continuous pilot lights but are used strictly as safety devices, not as ignition sources that would be left burning when a product's main burners are not in use.

HPBA raised many of these issues in comments submitted in response to the proposed rule, and – importantly – in more constructive dialogue that occurred long after the comment period on the proposal had closed. A copy of a written summary memorializing some of that dialogue (and explaining the ECTF's conclusions described above) [the summary of HPBA's June 16, 2016 meeting with DOE] is provided as Attachment B to these Comments. Under the circumstances, DOE's decision not to proceed with a final rule was not merely understandable; it was warranted on the merits.

Unfortunately, the record DOE's rulemaking effectively ended with the proposed rule and its accompanying Technical Support Document ("TSD"), which reflect the serious errors that plagued DOE's initial analysis of the issues. "Initial analysis" is an appropriate term, because the proposed rule and TSD were the product of a truncated rule development process undertaken with remarkably limited data collection and essentially no dialogue. As a result, DOE lacked most of the basic information needed for regulatory analysis, and its proposal – as already suggested – reflected fundamental errors in DOE's basic understanding of the products at issue and of the different design features, technology options, and markets relevant to those products. In fact, it wasn't even clear what products *were* at issue, because DOE's proposed "hearth products" definition was so vague and open-ended that it was impossible to identify the full range of products DOE was proposing to regulate.

The problems with the proposed rule are evident from HPBA's responses to it. HPBA's initial response was a request that the proposal be withdrawn on the grounds that – far from providing a sufficient basis to justify a final rule – it did not even provide an adequate basis for public comment.[2] HPBA then followed up with a further request for clarification, as well as for additional time to review the TSD, which – rather than being developed through the normal iterative process for the development of such documents – had been assembled all at once without the benefit of any prior public review or input.[3] HPBA's comments on the proposed rule reiterated the point that DOE had "telescope[d] the entire public participation process into a single round of comment on a regulatory analysis based on an entire body of information, assertions, and analysis that the public ha[d] never seen before,"[4] and demonstrated that DOE's

[2] *See* HPBA's March 20, 2015 submission in Docket No. EERE-2014-BT-STD-0036.

[3] *See* HPBA's March 31, 2015 submission in Docket No. EERE-2014-BT-STD-0036.

[4] HPBA's May 15, 2015 submission in Docket No. EERE-2014-BT-STD-0036, at p.__.

decision to forego dialogue and skip the pre-proposal rule development process contemplated by its own rulemaking procedures had resulted in the publication of a proposed rule that was undermined by numerous fundamental errors and "based almost entirely on unreasonable assumptions that are unsupported by substantial evidence."[5] HPBA's comments reiterated its request that the proposed rule be withdrawn, as was ultimately the result.

HPBA does not present this background to air old grievances; to the contrary, HPBA was able to have a constructive dialogue with DOE after the close of the comment period on the proposal, and DOE appropriately elected not to proceed with a final rule. HPBA's point is that the proposed rule and its supporting TSD were undermined by such serious errors that neither can be treated as a reliable source of information for present purposes.

II. Product Definition and Scope

The problems with DOE's "hearth products" rulemaking started with DOE's "hearth products" definition, which was originally proposed in a notice published at 78 Fed. Reg. 79638 (December 31, 2013). HPBA's comments in response to that notice indicated that the proposed definition impermissibly classified a variety of dissimilar products as a single product, and that the definition was so over-broad and open-ended that it was impossible to identify the full range of products it was intended to cover.[6] DOE did provide some clarification as to the intended scope of its proposed definition, but uncertainties remained, the proposed definition was never adopted, and the inadequacies of the proposed definitional text were never addressed. Most importantly, DOE's definition continued to treat categories of materially different products as though they were all essentially the same. The assumption that these various categories of products are similar enough to be combined for purposes of regulatory analysis was one of the most fundamental errors undermining the "hearth products" rulemaking.

With this history in mind, HPBA urges the CEC to recognize that there are many materially different types of gas products, and that it is critical to ensure that categories of products being considered for regulation are clearly defined and limited to a range of products that present similar issues and challenges for purposes of regulatory analysis. For this reason, HPBA advises against use of the term "hearth products." That term is simply too broad and imprecise to be useful as a regulatory descriptor. HPBA's more specific recommendations as to product definition and scope are as follows.

A. HPBA's Recommendation as to Product Definition and Scope

HPBA recommends that the CEC to confine its current efforts to consideration of vented gas (*i.e.*, natural gas or propane) fireplaces, vented gas fireplace inserts, and vented gas free-standing stoves. This universe of products is vast and complex, and it includes several materially different categories of products. However, this universe of products is clearly defined, and it is limited to

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[5] HPBA's May 15, 2015 submission in Docket No. EERE-2014-BT-STD-0036, at p.__.

[6] *See* HPBA's January 30, 2014 submission in Docket No. EERE-2013-BT-DET-0057.

products that have important similarities and at least a reasonably limited range of material differences. It is also the same universe of products that is:

1. Certified to the ANSI Z21.50 ("vented decorative gas appliance") and Z21.88 ("vented gas fireplace hearers") standards;

2. Susceptible to the CSA P.4.1 heating efficiency test method currently used as the basis of testing requirements for such products in Canada;

3. The subject of a regulation recently adopted in the Canadian Province of British Columbia (BC) and of new regulation currently being considered by Natural Resources Canada ("NRCan").[7]

HPBA recommends that this universe of products be identified as "vented gas fireplaces, vented gas fireplace inserts, and vented gas free-standing stoves subject to the ANSI Z21.50 and Z21.88 standards." This should leave little ambiguity as to the range of products under consideration.

Within this universe of products, there are material differences between fireplaces, fireplace inserts and free-standing stoves (hereafter collectively "vented gas fireplace products" unless greater specificity is required). In addition, there are two materially different categories of each type of product: "decorative" products covered by the ANSI Z21.50 standard, and "fireplace heater" products (including fireplace inserts and free-standing stoves) covered by the ANSI Z21.88 standard. The distinctions between these categories of products are outlined below.

HPBA believes that the need for any specific regulatory terms or definitions should be deferred pending determinations of what regulatory distinctions need to be made, and why.[8]

1. Vented Gas Fireplaces

There was a time when fireplaces were the only cooking or heating appliance likely to be found in a home. In modern homes – with modern cooking appliances and central heating systems – fireplaces generally aren't needed for strictly utilitarian purposes. Nevertheless, fireplaces are one of the most popular home amenities, and – for many years – they have been present in approximately half of all newly-constructed single-family homes.[9] Notably, there is very little

[7] In Canada, vented gas fireplaces, fireplace inserts and free-standing stoves are all referred to as gas "fireplaces," with true fireplaces being referred to as "zero clearance" fireplaces.

[8] HPBA notes that the definitions of the terms "fireplace" and "decorative gas appliance" in Section 100.1 of California's 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings are not helpful. The text of the "fireplace" definition appears to be directed as solid fuel fireplaces, and the "decorative gas appliance" definition is underinclusive in that it is limited to products that are "installed for visual effect only" (a material overstatement) and "simulat[e] a fire in a fireplace" (which not all gas fireplaces do).

[9] There are many years of Census Bureau data as to the percentage of new homes completed with fireplaces: http://www.census.gov/construction/chars/pdf/fireplaces.pdf

correlation between fireplace ownership and climate; for example, the percentage of homes that have usable fireplaces is actually higher in San Diego California than it is in Buffalo, New York or Chicago, Illinois.[10] The reasons for this are not difficult to understand: fireplaces are architectural features that are desired for their unique visual and cultural appeal, and they serve to enhance the ambiance and market value of a home whether or not they are actively used.[11] In fact, a significant percentage of all usable fireplaces – apparently as many as half – are used only rarely or not at all.[12]

Vented gas fireplaces are *fireplaces*. Specifically, they are factory-built gas (*i.e.*, natural gas or propane) fireplaces that use factory-built pipes to vent products of combustion outside the dwelling, eliminating the need for a standard chimney system.[13] There is a distinct market for fireplaces, and within that market vented gas fireplaces compete directly with other kinds of fireplaces, including wood-burning and electric fireplaces. In addition – particularly in the new home market – fireplaces compete with completely different types of home amenities.

When vented gas fireplaces were first developed, they were designed as direct substitutes for conventional wood-burning fireplaces; as such, they were intended to be used primarily to provide aesthetic enjoyment during family or social gatherings, romantic evenings, and quiet leisure time. However, manufacturers recognized that the use of direct vent technology would enable them to produce products capable of delivering more heat – on a considerably more efficient basis – than traditional wood-burning fireplaces. This led to the introduction of "heater rated" vented gas fireplace products designed to appeal to consumers interested in greater heating utility. As a result, two different categories of vented gas fireplaces emerged: "decorative" vented gas fireplaces certified to the ANSI Z21.50 standard, and vented gas "fireplace heaters" certified to the ANSI Z21.88 standard. In effect, "decorative" fireplaces are designed to have the appeal of traditional wood-burning fireplaces: they can produce significant heat – and can be used for emergency heating if necessary – but they are desired primarily for aesthetic enjoyment and for the festive, romantic, and comforting feelings they invoke. By contrast, "fireplace heaters" – while providing all the beauty and ambiance of a fireplace – are also designed to be suitable for utilitarian heating use.

2. Vented gas fireplace inserts

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[10] J. Houck, Residential Decorative Gas Fireplace Usage Characteristics (2010) at pp. 2-4. This report was submitted with HPBA's November 15, 2010 comments in Docket No. EERE-2009-BT-TP-0013.

[11] The presence of a fireplace in a home has a significant positive impact on home value, and many consumers invest in fireplaces for precisely that reason.

[12] J. Houck, Residential Decorative Gas Fireplace Usage Characteristics (2010) at p. 10.

[13] The term "fireplace" is itself relatively broad, and includes a wide range of products that may or may not resemble a traditional fireplace. The key distinguishing feature is that fireplaces (as opposed to inserts or stoves) are built into wall or island.

Vented gas fireplace inserts are enclosed gas (*i.e.*, natural gas or propane) appliances designed to be installed partially or fully in the firebox of an existing solid fuel fireplace using a flue liner through the existing chimney or other means to draw combustion air from outside the home (usually) and to exhaust combustion products outdoors (always). Vented gas fireplace inserts are certified to the same standards for "decorative" and "fireplace heater" products as vented gas fireplaces (*i.e.*, the ANSI Z21.50 and Z21.88 standards). They are also susceptible to a common heating efficiency test method, and utilize the same range of main burner ignitions systems.

By their nature, fireplace inserts are not installed in new homes, but in existing, typically older homes in which a fireplace already exists. Rather than providing a fireplace, fireplace inserts replace existing fireplaces, generally for the purpose of converting a wood-burning fireplace to clean-burning natural gas, to replace a conventional fireplace with a product of greater heating utility, or both. Accordingly, the market for fireplace inserts – unlike the market for vented gas fireplaces – is completely unrelated to the market for new home construction. Within this market, vented gas fireplace inserts compete directly with other fireplace inserts, including solid fuel and electric fireplace inserts. Moreover, fireplace inserts are highly discretionary purchases that compete to a significant extent with "no purchase" decisions: *i.e.*, decisions to leave older existing fireplaces alone. The market for these products is relatively small in comparison to the market for vented gas fireplaces.

Traditionally, fireplace inserts tended to resemble small wood-burning stoves, but – while such products continue to exist – there are now vented gas fireplace inserts that are visually indistinguishable from vented gas fireplaces. However, vented gas fireplace inserts are materially different from vented gas fireplaces in several respects.

First, fireplace inserts are designed to be installed directly in existing fireplace hearths that generally do not provide an existing gas or electrical hook-up. As a result, the installation of fireplace inserts requiring an external supply of electricity almost always require the installation of an electrical hook-up as well as a gas line, substantially increasing the installation cost for such products.

Second – while vented gas fireplace inserts may be decorative products, they are more commonly designed for relatively high thermal efficiency and, on average, would likely have a higher heating efficiency than vented gas fireplaces. Due to differences in the market appeal of fireplace inserts (as opposed to fireplaces), fireplace inserts are more likely to be used in response to heating needs than fireplaces.

3. Vented free-standing gas stoves

Vented free-standing gas stoves are enclosed gas (*i.e.*, natural gas or propane) appliances that resemble a solid fuel stove, stand inside a dwelling with no framing construction required, and use factory-built pipes to draw combustion air from outside the home (usually) and to exhaust combustion products outdoors (always). Vented gas free-standing stoves are certified to the same standards for "decorative" and "fireplace heater" products as vented gas fireplaces (*i.e.*, the ANSI Z21.50 and Z21.88 standards), are susceptible to a common heating efficiency test method, and utilize the same range of main burner ignitions systems.

Unlike fireplaces, free-standing stoves were traditionally considered to be heating appliances. This is reflected in obvious design differences: instead of being built into a wall and venting through a chimney, free-standing stoves are designed to be located out in the room, where heat can radiate in all directions not only from the stove itself, but typically from an exposed vent extending up, over, and up again through the ceiling. Because of their different visual and cultural appeal, free-standing gas stoves generally are not direct substitutes for fireplaces in new home construction; nor do they typically serve – like fireplace inserts – to replace older fireplaces in existing homes. Instead, free-standing stoves serve a more specialized market in which they are often used in remodeling or custom home building, or to replace existing solid fuel-fired free-standing stoves. As a result, the market for free-standing stoves is not closely tied to the market for new home construction, and – within this market – vented gas free-standing gas stoves compete directly with other free-standing stoves (including solid fuel and electric free-standing stoves) and, to a lesser extent, with other space heating alternatives. The market for these products is relatively small in comparison to the market for vented gas fireplaces.

Some vented free-standing gas stoves serve only to provide the unique, rustic ambiance of a traditional free-standing stove. However, these products most commonly appeal to consumers who are also interested in heating utility, and – due in part to their inherent design – vented gas free-standing gas stoves, on average, are more heat-efficient than vented gas fireplaces. Accordingly, free-standing gas stoves are more likely to be used to satisfy heating needs than vented gas fireplaces and can therefore be expected to have significantly different patterns of use.

B. Common Considerations

As already mentioned, vented gas fireplaces, fireplace inserts, and free-standing stoves – despite their differences – present generally similar issues from an energy conservation standpoint. The visual appeal of all of these products is a critical consideration, and despite many years of innovative efforts by manufacturers to squeeze more aesthetic appeal out of a given unit of energy input, the results thus far have been limited to features that appeal to some consumers but not to others. As a result – from the standpoint of energy conservation – discussion has focused primarily on two issues: heating efficiency and pilot light usage.

1. Vented Gas Fireplace Heating Efficiency

To understand the relevance of heating efficiency for vented gas fireplace products, it is useful to start by recognizing the basic considerations involved when vented gas fireplaces are being selected.

One of the basic considerations is that a fireplace needs to be the right size for the room in which it is installed. Judgments on this issue will differ based on personal tastes, product styles, and the architectural settings involved, but a decision-maker will ultimately want a size that "looks right" for the relevant setting. Similarly, there will be a decision as to what flame volume "looks right" for the size of the product, given the setting involved. The desired flame volume – in turn – determines the energy input needed for a product that "looks right" for the installation.

Another basic consideration is *heat output*. Consumer needs vary dramatically depending on the intended use of the product and the amount of heat output that is desired or at least compatible with the intended use of the product. In short, a given amount of heat output may be too low for one installation and too high for another; as a result, consumer complaints relating to the heat output of vented gas fireplace products include complaints about excessive heat as well as inadequate heat.

The intersection between required energy input and desired heat output is generally what defines the heating efficiency that is appropriate for a particular installation: for a product of a given energy input, consumers looking for high heat output opt for higher heating efficiency, while consumers looking for lower heat output opt for lower heating efficiency. However, there are many consumers for whom heating efficiency is an independently-significant consideration. When fireplaces are used strictly in response to heating needs – being turned on when heat is needed and off when heating needs have been satisfied – higher heating efficiency reduces main burner operating time and thereby provides energy savings. While this is an important consideration for consumers that use their products in response to heating needs, many consumers operate their fireplaces to enjoy a fire, not to produce a required amount of heat as quickly as possible. Where that is the case, higher heating efficiency does not produce energy savings by reducing burner operating time, and the only relevant question is how much output would be desirable and how much would be undesirable.

In summary, heating efficiency – as a characteristic independent of heat output – is important for consumers who use their products strictly in response to heating needs. Higher heating efficiency may also be useful when greater heat output from normal fireplace use would at least be welcome, as would often be the case for an appropriately-sized vented gas fireplace in an installation where heating demand is high. However, high heating efficiency may be actively undesirable in an otherwise-identical installation where heating demand is low and the consumer simply wants to be able to have a cheerful fire in the fireplace for social occasions during the holiday season. As a result, manufacturers produce a wide range of vented gas fireplace products to serve a wide range of consumer needs and preferences, including both "decorative" and "fireplace heater" products in a wide range of sizes and styles. Manufacturers compete vigorously to produce the best products for different consumer needs, from "fireplace heaters" with high heating efficiency and thermostatic controls[14] to "decorative" products that provide a nice fire with low heat output, and everything in-between, including products that can be paired with specialized duct systems to redirect heat away from the fireplace – into another area, another room, or even into the outdoors – to enable consumers to tailor the heat output of their vented gas fireplaces to their particular needs.

HPBA does not believe that minimum heating efficiency requirements can be justified as efficiency standards for vented gas fireplace products because – while relatively high heating efficiency is unquestionably beneficial for some consumers – the existence and extent of any

[14] In the United States, thermostatic controls are available on products certified to the ANSI Z21.88 standard for "fireplace heaters," but not on "decorative" vented gas fireplaces certified to the ANSI Z21.50 standard.

benefits depend entirely on the manner in which the product is used. High heating efficiency provides little if any energy conservation benefit when products are being turned on and off for aesthetic enjoyment rather than in response to heating needs, and in many cases – particularly in the warmer climates in which vented gas fireplaces are disproportionately sold[15] – high heating efficiency can be actively undesirable. In fact, higher heating efficiency isn't always beneficial even for "fireplace heaters," because – even when products are used in part for supplemental heating – *very* high efficiency products would put out too much heat to allow them to be used *as fireplaces* in most normal installations.[16] So – while very high-efficiency products using condensing technology are available for consumers who want them – the demand for such products is limited.

Because the range of consumer needs – and thus the range of required heating efficiencies – is so broad, HPBA believes that the only reasonable option is to ensure that consumers have the information they need to identify the products that are appropriate to their needs. As a result, HPBA believes that the existing distinction between "decorative" and "fireplace heater" products is appropriate, and HPBA's ECTF has considered a variety of options for ensuring that consumers understand their choices and that – at least for "heater-rated" products – heating efficiency testing is conducted on a consistent basis and the results of testing are presented to consumers in a consistent way.

2. Vented Gas Fireplace Ignition Systems

There is nothing novel in the idea that energy can be saved through the elimination of continuous pilot lights that might otherwise be left burning unnecessarily when products are not in use. HPBA is currently pursing an industry initiative to eliminate the use of conventional continuous pilots on vented gas fireplace products, and there is already a substantial market trend toward alternative ignition options. For many products, it was relatively easy to replace continuous pilots with intermittent pilot ignition (IPI) systems.[17] However – in the case of vented gas

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[15] Census Bureau data indicates that – of all U.S. single family homes completed with fireplaces from 2009 to 2013 – nearly half were located in the south and less than one eighth in the northeast. http://www.census.gov/construction/chars/pdf/fireplaces.pdf

[16] A specific example may be helpful for purposes of illustration. If two adults are at rest in an average sized living room in a typical home, with an outdoor temperature of 35 °F and an indoor temperature of 65 °F, a vented gas fireplace with a typical energy input (30,000 BTU/hr.) and a heating efficiency of 67% would raise the room temperature to 85 °F in less than 35 minutes. In this example, the heating efficiency of the product – and hence it's heat output – is simply too high to permit more than fleeting enjoyment of the fire.

[17] Like a conventional pilot light, an IPI system is a pilot ignition system (*i.e.*, a system that utilizes a pilot flame as the ignition source for main burner ignition). However, in an IPI system, the pilot flame is ignited upon a call for main burner ignition and is automatically extinguished when a product's main burners are turned off.

fireplace products – the issues are significantly more complex and technically challenging than experience with other types of products would suggest.

The basic problem is that main burner ignition presents materially different challenges for vented gas fireplaces than it does for the gas products (such as furnaces and hot water systems) for which IPI systems were originally designed. The latter products are generally installed in out-of-the-way locations, have small, unobstructed combustion chambers, and are often power-vented with pre-purge and post-purge operating cycles. As a result, main burner ignition is easily accomplished, and relatively minor ignition issues tend to go unnoticed by the consumer. By contrast, vented gas fireplaces are located directly in living spaces where they can be seen and enjoyed, have large glass- or ceramic-fronted combustion chambers with burners and other features designed to create realistic, active yellow flames, and must typically operate with natural flue draft systems that can vary considerably in their performance based on product installation. When outside temperatures are cold, the heat from a vented gas fireplace must initially overcome a column of cold air in the vent system, and this can present significant challenges with longer vent installations, particularly with more heat-efficient designs that employ heat exchangers or flue restrictors to raise thermal efficiency and control excess air. With a cold start-up, these factors can cause operational issues such as start-up lag, flame lift, burner outage, draft reversal, and delayed main burner ignition. Moreover – in view of the nature of the products involved – any such issues would likely occur under the immediate observation of the consumer. A continuous pilot light – by warming the flue and establishing proper draw prior to main burner ignition – provides a means to address all of these issues, thereby significantly reducing the potential for operational and maintenance problems. In addition, the ability to warm the vent system of a vented gas fireplace prior to main burner ignition may be particularly important for some product designs due to the combination of features and functions they provide (including, as noted above, features designed to increase thermal efficiency); as a result, the inability to provide continuous pilot flame effectively imposes limits on what product designers can achieve.

In the case of vented gas fireplaces, a burning pilot light can provide additional utilities as well. First, a pilot light serves to keep the glass or ceramic face of a vented gas fireplace from becoming cold due to its exposure to outdoor air via the product's vent system, an effect that – due to the typically prominent location of hearth products in commonly-occupied living areas – can be felt to an extent that consumers may find objectionable. Second, a conventional pilot light provides an important utility that is actively marketed and viewed as a priority by some consumers: the ability of a vented gas fireplace to operate indefinitely without any source of electrical power. This utility is important for the increasing number of consumers who want vented gas fireplaces that can provide emergency heating capability, if necessary, when electrical power goes out.

As a result of the challenges involved, early efforts to adopt IPI technology to vented gas fireplaces were plagued with difficulty. In most cases – even with significant product redesign – it was necessary to develop IPI systems that give consumers the ability to activate a continuous pilot as desired to facilitate cold weather operation. This continuous pilot ignition ("CPI") function – generally activated through the use of a switch or remote control – is commonly referred to in the industry as a "cold climate" feature. With this innovation, the use of IPI systems – which was all but non-existent in the gas fireplace industry as recently as 2005 –

expanded dramatically, to the extent that IPI systems are now – by far – the most commonly type of ignition system used in vented gas fireplace products.

An additional and more recent development has been the introduction of another form of ignition system that was developed at the initiative of the gas fireplace industry for the specific purpose of decreasing energy consumption and greenhouse gas emissions. This technology option – referred to as a "pilot on-demand" – is designed to reduce pilot light gas consumption by automatically extinguishing a product's pilot light if a product's main burners go unused for a predetermined period of time. In effect, this "time-out" function eliminates pilot light use during periods in which a product is not in relatively frequent use. This technology has now been available for several years, and its use is expanding. In addition, and the concept of a "time-out" feature has also been carried over to the CPI function in the IPI systems used in vented gas fireplace products, effectively converting the CPI option into a "pilot on-demand" option.

As a result of these developments, there has been a dramatic trend away from the use of conventional continuous pilot lights in vented gas fireplace products. While available data is limited, HPBA did collect some relevant data in response to DOE's proposed "hearth products" rule. Although HPBA did not have the time or resources for a comprehensive effort, it did collect 2014 U.S. product shipment data for nearly 300,000 vented gas fireplace products (approximately 75 percent of the total 2014 shipments of such products as reported through HPBA's normal data collection activity), and found that less than eleven percent of those products had been shipped with conventional continuous pilot lights. Even if data for an additional 100,000 product shipments had been obtained and fully half of those additional shipments were products with conventional pilot lights, the percentage of vented gas fireplace products shipped conventional continuous pilot lights in 2014 would have been less than 21 percent. Since that time, HPBA's ECTF developed its industry initiative to eliminate the use of conventional continuous pilot lights on vented gas fireplace products, and HPBA believes that the prevalence of continuous pilots on such products has continued to decline.

HPBA does not believe that energy conservation standards prohibiting the use of continuous pilots are warranted. Existing market trends – and HPBA's efforts to accelerate those trends – suggest that the use of continuous pilots is limited and will continue to decline in the absence of regulation. In addition, there are reasons to question whether regulation eliminating continuous pilots on vented gas fireplace products would be economically justifiable. HPBA is pursuing an initiative because it considers that to be a responsible course, but it is important to recognize that concerns about consumers leaving pilot lights burning indefinitely are based on limited (and often questionable) data concerning products that – in many cases – have pilot lights that can only be operated on hands and knees with a flashlight and screwdriver. In view of the increasing prevalence of controls that enable consumers to turn their pilot lights on and off with simple knob and push-button controls (or the simple push of a button on a remote control) the case for energy savings sufficient to justify a regulation appears to be questionable at best.

C. Other Products

As discussed in HPBA's comments in DOE's "hearth products" rulemaking,[18] there are no other products that can reasonably be lumped together with vented gas fireplace products for purposes of analysis. No other products are susceptible to the common heating efficiency test method applicable to vented gas fireplace, fireplace inserts, and freestanding stoves, and – with the exception of vent-free products not available in California – no other products are suitable for the same range of uses or have the same range of main burner ignition options and design constraints as vented gas fireplace products. Accordingly, HPBA believes that it would be more confusing than efficient to attempt to consider other products along with vented gas fireplace products and that any other products should be reviewed separately, if at all.

III. Additional Issues

1. Existing Test Procedures and Test Procedures Under Development

There are two existing heating efficiency test methods that have been commonly applied to vented gas fireplace products. The first is the Annual Fuel Utilization Efficiency ("AFUE") test method for "direct heating equipment" specified in DOE's regulations at Appendix O to Subpart B of 10 C.F.R. Part 430. The second is the CSA P.4.1 test method, which is the only test method specifically developed for vented gas fireplace products.

The AFUE test method has applied to vented gas fireplace products in the United States for many years, in part because there was no available alternative until the P.4.1 test method was introduced in 2003. However, the method was not designed for vented gas fireplace products and – from a technical standpoint – is not strictly applicable to them.[19]

The P.4.1 method is a broadly similar but more evolved test method that was specifically developed to provide a measure of "fireplace efficiency." The method has undergone multiple revisions through the ongoing work of the CSA Group, a major international standards-setting organization, and provides the basis for required testing under Canada's EnerChoice program.

HPBA strongly believes that there should be a single test method for determining the heating efficiency of gas fireplace products. The use of multiple test methods is more confusing than helpful, and any need to apply multiple test methods would impose substantial unnecessary costs.

HPBA also strongly believes that the P.4.1 test method is the appropriate test method to standardize throughout all of North America. While the P.4.1 test method is not perfect, it is unquestionably the best test method currently available for vented gas fireplace products, and the CSA Group's standards process provides an appropriate means for the test method to be further

[18] *See* HPBA's May 11, 2015 submission in Docket No. EERE-2014-BT-STD-0036, at pp. __.

[19] Among other things, AFUE test method makes operating assumptions that are completely inappropriate for vented gas fireplaces. See HPBA's November 15, 2010 Comments on the AFUE test method in Docket No. EERE-2009-BT-TP-0013. However, there are a number of additional problems with the method, including some problematic ambiguities and technical errors.

refined and improved. HPBA and its members are actively engaged in efforts to improve the existing P.4.1 test method, particularly by exploring appropriate means to account for the radiant heating benefits of vented gas fireplace products and to ensure that test results better reflect performance during normal product use.

2. Sources of Test Data

HPBA believes that the most reliable and consistent data concerning the heating efficiency of vented gas fireplaces products consists of Fireplace Efficiency ("FE") ratings based on testing using the P.4.1 test method. Manufacturers of vented gas fireplace products sold in Canada are required to report the FE ratings for their products, and NRCan maintains a publicly-accessible database of reported test results that can be accessed at the following link:

http://oee.nrcan.gc.ca/pml-lmp/index.cfm?action=app.search-recherche&appliance=FIREPLACE_G

The NRCan database is obviously confined to the range of models sold in Canada – which is likely to differ from the range of products sold in California – but HPBA is not aware of any other comparable compilation of heating efficiency testing data for vented gas fireplace products.

3. Existing Standards and Standards Under Development

a. Standards

HPBA is not aware of any existing standards (or standards under development) for vented gas fireplace products in the United States, though there some existing restrictions in California that apply to "fireplaces [and] decorative gas appliances" installed in newly-constructed low-rise residential buildings. *See* Section 150.0(e) of California' 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. These restrictions include a prohibition on continuous pilot lights that the CEC has interpreted to apply to apply to "decorative" but not "heater-rated" vented gas fireplaces.

There are both existing standards and standards currently under development in Canada.

Under current national regulation, all vented gas fireplace products sold in Canada are subject to testing using the P.4.1 test method, with test results being disclosed via mandatory reporting to NRCan and voluntary EnerGuide labeling.

In addition, the Province of British Columbia recently made changes to its Energy Efficiency Standards Regulation to address vented gas fireplace products. The new regulation divides this universe of products into two categories: "vented gas fireplace heaters" and "vented decorative gas appliances." These two categories are based on the scope of the CSA 2.33 and C.22 standards (the Canadian equivalents of the ANSI Z21.88 and ANSI Z21.50 standards, respectively); as a result, the regulation makes no distinction between vented gas fireplaces, fireplace inserts and free-standing stoves, but it does distinguish "decorative" products from "fireplace heaters" as defined by the applicable standards.

Under the regulation, both "fireplace heaters" and "decorative" products must be tested using the current P.4.1 test method and – effective January 1, 2019 – the disclosure of FE ratings on an energy efficiency verification label will become mandatory. In addition:

- Both fireplace heaters and decorative products will be required to have IPI or pilot-on-demand ignition systems rather than conventional continuous pilots;

- Fireplace heaters will be required to have a minimum FE of 50%; and

- The energy efficiency verification for decorative products must indicate that the product is decorative and not intended to be used as a heating appliance.

NRCan is currently considering adoption of essentially the same requirements. In addition, NRCan is considering:

- A requirement for third-party verification of P.4.1 efficiency testing results;

- A requirement that decorative products have a feature that automatically shuts off the product's main burners after a specified period of static operation; and

- A prohibition on decorative products – except products for replacement use only – that draw combustion air from indoors.

b. HPBA's Comments

The regulations imposed or being considered in Canada are obvious grist for discussion, but – in addition – they raise one truly critical consideration: it would be disastrous to see *conflicting* regulatory requirements imposed by different jurisdictions in North America. That does not necessarily mean that all jurisdictions should have the same requirements, but it does mean that different jurisdictions should be careful to ensure that they do not impose different obligations designed to address the same concern, thereby imposing different (and cumulative) regulatory burdens to secure a single regulatory benefit.

With that general admonition, HPBA offers the following perspective on existing requirements and requirements currently under consideration in other jurisdictions.

i. Scope of Coverage

The existing Canadian efficiency testing requirements, the regulation adopted in British Columbia, and the new regulations being considered by NRCan all have exactly the same scope of coverage that HPBA has recommended for the CEC's review.

ii. Heating Efficiency

The Canadian regulators have recognized that there is a need for both "decorative" and "fireplace heater" products, and that higher heating efficiency is not automatically beneficial for either category of products. Nevertheless, the rules recently adopted and now under consideration do reflect the view that products should not be marketed as "fireplace heaters" unless they are at least reasonably heat-efficient. HPBA understands the logic involved, but – in view of requirements for labelling providing efficiency testing results – questions the practical need for a "definitional" efficiency criterion of this kind.

iii. "Test and Disclose" Requirements

As already indicated, HPBA supports the use of the P.4.1 test method as a single consistent heating efficiency test method for vented gas fireplace products. HPBA also believes that "test and disclose" requirements are appropriate at least for heater-rated products and HPBA's ECTF has discussed the possibility of an industry initiative to implement and industry-wide test-and-disclose initiative in the United States. However – due to the cost of efficiency testing – HPBA questions whether testing should be mandatory for all decorative products. HPBA also has concerns about the cost of third-party verification testing, though it agrees that there is a need to ensure the credibility of test results; this is another issue HPBA's ECTF has actively considered.

iv. Ignition Systems

As already indicated, HPBA is pursuing an initiative to eliminate the use of continuous pilot lights on vented gas fireplace products. The BC regulation and NRCan proposal appear to be consistent with HPBA's approach, but the economic justification for a regulatory requirement appears to be dubious at best.

iii. Automatic Main Burner Shut-Off

The idea of an automatic main burner shut-off feature for decorative gas fireplaces is a solution in search of a problem. In short, HPBA sees no reason to believe that consumers leave the main burners of vented gas fireplaces on accidentally. A fire in a fireplace is too conspicuous to be easily overlooked, and the potential for over-heating – combined with the fact that unnecessary fireplace use imposes non-trivial costs – make it difficult to believe that there is any problem requiring an engineering (let alone regulatory) solution. Conversely, it is easy to see how an automatic shut-off feature could become a nuisance, particularly where products sold for both home and commercial use are installed in settings such as hotel lobbies where extended static use is the norm.

iv. Venting Restrictions

The vast majority of vented gas fireplace products are direct vent products that use that use factory-built pipes to draw combustion air from the outdoors to the combustion chamber and vent combustion products back outdoors. These products are effectively sealed units in which the combustion chamber of is closed-off behind a viewing pane.

The two design alternatives are:

- Vent-free products, which – like stovetop burners – use inside air for combustion and do not vent combustion products outdoors. Vent free fireplace products are not permitted in California.

- "B-Vent" products, which – like traditional wood-burning fireplaces – use indoor air for combustion but vent combustion products outdoors.

The restriction being considered by NRCan would effectively prohibit "B-Vent" decorative products, except as replacement models. The thinking is that B-Vent products – like traditional wood-burning fireplaces, though to a significantly lesser extent – send conditioned air outdoors, and that this is necessarily a bad thing. The short answer is that the premise underlying the proposed restriction is invalid: venting indoor air to the outdoors simply makes a fireplace product incrementally less effective *as a heater*. That may not be optimum for a fireplace being used for utilitarian heating purposes in Manitoba, but it may be a significant advantage for a fireplace being used for a Thanksgiving Day gathering in San Diego. In effect, a ban on B-Vent products would make it impermissible for products designed to simulate traditional wood-burning fireplaces to more closely simulate traditional wood-burning fireplaces.

Section 150.0(e)(2) of California' 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings imposes a similarly misguided restriction: it prohibits "the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building." This restriction is particularly contrary to the consumer's interests, because the capability to vent cooling air requires non-standard ducting that is offered only because consumers want it and purchased only by consumers willing to pay additional material and installation costs to get it. The prohibition on such venting cannot possibly be justified as a means to rescue consumers from inefficient heating appliances; its effect is simply to force consumers to live with all of the heat their vented gas fireplace produces *even if that amount of heat is actively undesirable*. The result is simply that consumers are deprived of a product that is appropriate to their needs and are left to manage the problem of excess heat by other (likely less satisfactory, less energy-efficient) means.

At bottom, venting restrictions are simply another manifestation of a failure to recognize that many consumers want the gas equivalent of a traditional wood-burning fireplace: a product that produces all the enjoyable features of a fireplace without more net heat than a traditional wood-burning fireplace would add to a home. Consumers are entitled to such products just as they are entitled to have big screen TVs and other products that serve "only" as a source of personal enjoyment.

4. Product Lifetime

Product lifetime is difficult to assess due the nature of the products involved and dramatic differences in patterns of product use, the nature and extent of maintenance performed, the potential for parts replacement, the impacts of differences in product design and quality, and differences in installation conditions and climate. Compounding these difficulties are uncertainties associated with significant and relatively recent changes in product design and

construction, including changes related to brand new barrier screen safety requirements and significant the significant evolution in product controls and main burner ignition systems that has occurred over the last decade.

More fundamentally, there may be important differences in how product lifetime should be defined. For example, fireboxes tend to last longer than controls, so which "lifetime" – if either – is relevant? HPBA will be reviewing available information to determine how product lifetime can be addressed for purposes of regulatory analysis.

5. Typical Per-Unit Energy Savings

HPBA does not believe there is any credible way to determine typical per unit energy savings for any vented gas fireplace feature. The problem is simple: the energy savings associated with any product feature are dependent on product use, and there are dramatic variations in product use. In particular:

- Some consumers purchase vented gas fireplaces because the presence of a fireplace has a positive impact on home value (in which case the product may be used rarely or not at all).

- Some consumers purchase vented gas fireplaces almost exclusively for holiday or entertaining use (in which case the products are used only a few times per year).

- Some consumers use vented gas fireplaces strictly for aesthetic enjoyment, turning them on and off as desired with essentially no impact on home heating requirements.

- Some consumers use vented gas fireplaces for aesthetic enjoyment, but with at least some collateral impact on home heating requirements.

- Some consumers use their vented gas fireplaces for zone heating; and

- Some consumers use their vented gas fireplace products as their sole source of heat (most commonly for an otherwise unheated room).

Unfortunately, reliable data as to the percentage of consumers in each category – and of the use patterns characteristic of each category of use – is lacking. Most available data is survey data that is skewed toward more active product use, either as a result of survey bias (*e.g.*, lower expected survey response rates from consumers that don't have an active interest in the products at issue), the intentional exclusion of responses indicating little or no product use, or the structure of the survey questionnaire.[20] To complicate matters, significant regional differences in product use can be expected; for example, fireplace use in Phoenix, Arizona is so heavily concentrated in

[20] For example, the 2009 RECS data is based on a questionnaire that grouped fireplaces under heating equipment, with the result that the response rate was low and limited to responses from consumers who – on a least some level – view their fireplaces as heating equipment. HPBA's May 15, 2015 submission in Docket No. EERE-2014-BT-STD-0036, at p.__.

just a few days per year (including Thanksgiving Day, Christmas Eve, and Super Bowl Sunday), that it is observable in air quality data in the form of massive spikes in particulate emissions. Such regional differences are particularly important in view of the extent to which sales of vented gas fireplaces – spurred by new home construction – disproportionately occur in the South.

Another problem with available data concerning the "heating use" of vented gas fireplace products is confounded by lack of a clear definition of what "heating use" actually is. The warmth (particularly in the form of radiant heat) emitted by a fireplace is a pleasurable part of the fireplace experience, the enjoyment of which – depending on the precise questions being asked – could easily be reported heating use. This kind of ambiguity makes it difficult to identify the prevalence of fireplace use for which high heating efficiency is useful: particularly use in which a fireplace is turned on and off strictly in response to heating needs.

Despite all of these problems with existing data, several general points seem clear:

- Vented gas fireplaces are commonly used for aesthetic enjoyment, and – where that is the case – the annual hours of main burner operation are typically quite low.

- Where vented gas fireplaces are used for supplemental heating, annual hours of main burner operation are typically higher, but still low as compared to products in primary heating use.

In 2010, a report based on then-available data concluded that the average hours of use for gas fireplaces in the United States was about 75 hours per year, and that the average hours of use for decorative gas fireplaces is about half that number.[21] Significant effort would be required to develop more rigorous estimates.

III. Conclusion

[21] J. Houck, Residential Decorative Gas Fireplace Usage Characteristics (2010) at ii.