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December 21, 2018

Mr. Jamie Hulan
Office of Energy Efficiency
Natural Resources Canada
580 Booth Street
Ottawa, ON, K1A 0E4A

Re: Canada Gazette, Part I, Volume 152, Number 42: Regulations Amending the Energy Efficiency Regulations, 2016 (Amendment 15) – Water Heaters

Dear Mr. Hulan,

The Canadian Institute of Plumbing and Heating (CIPH), The Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) and the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) are submitting these comments pertaining to commercial electric water heaters and commercial gas-fired and oil-fired water heaters in response to NRCan's October 2018 Canada Gazette, Part I, Volume 152, Number 42: Regulations Amending the Energy Efficiency Regulations, 2016 (Amendment 15). In this letter, we would like to address the proposed regulations for water heaters.

Members have identified the following issues needing further consideration:

In general we continue to support the need to harmonize with U.S. Department of Energy (DOE) efficiency regulations wherever possible. Harmonization provides for the best economies of scale and less burden on all manufacturers and distributors. NRCan has reiterated their policy goal of alignment with DOE regulations, but they are making several exceptions in this proposal. This divergence of standards is in conflict with the goals and direction being taken by the United States-Canada Regulatory Cooperation Council (RCC).

Commercial Electric water heaters

The NRCan proposed maximum standby loss standard is the same as the current U.S. Department of Energy (DOE) efficiency regulation and we support this action to harmonize with that DOE standard. Because this efficiency standard is harmonized with the U.S. DOE regulation, we have no concerns with the proposed effective date of January 1, 2020.

There is a segment of the commercial electric water heater market which includes small household-size appliances, with nominal input rate less than 12 kW, which are specifically labelled and sold only to the commercial market due to their ability to deliver water at a controlled

temperature range including and above 82°C (180°F). This delineation was recently eliminated in the DOE definitions because of concerns that this definition was being used to circumvent the U.S. requirement for electric household water heaters above 55 gallons storage capacity to be a heat pump. No such requirement exists in Canada, nor is it proposed in this amendment. However, the recent change in the U.S. has caused considerable problems in the market, and DOE has acknowledged that they are significant enough to warrant a delay in implementing this change via a non-enforcement policy that is still in effect today. The products incorrectly lumped into the household category are still being manufactured, and NRCan should not replicate this mistake. We believe that these "commercial" water heaters should be differentiated from household appliances by referencing the temperature rating in the definition of commercial electric water heaters. We would recommend that the definition for commercial in 370.1 (b) be changed as follows:

(b) commercial, if it is has an input rate of greater than or equal to 12 kW (40,982 Btu/h), or if it has an input rate less than 12 KW and is designed to provide outlet hot water at temperatures greater than or equal to 82°C (180°F)

Gas-fired Storage Water Heaters

We are supportive of the concept of separate requirements for new construction and existing construction, and commend NRCan for taking this route with MEPS requirements for commercial gas-fired storage water heaters. We believe that the creation of educational pieces, similar to those being developed for the EF to UEF transition that were introduced in Amendment 14, would assist all industry stakeholders to better understand these new requirements. Members have recommended that *replacement only* units must be very clearly labeled as follows "FOR USE ONLY IN THE RETROFIT MARKET IN CANADA".

Residential Duty Commercial Gas-fired storage water heaters

In the case of residential duty commercial gas-fired storage water heaters installed in new construction, we support the general concept of a MEPS that requires the use of condensing technology. Since this level is more stringent than what is currently in force in the U.S., we require additional time to comply as detailed further below in our comments. We also support the proposed level for the *replacement only* market which is harmonized with current U.S. Regulations and thus far could be implemented as proposed on January 1, 2020.

Commercial Gas-fired storage water heaters

In the case of commercial gas-fired storage water heaters installed in *new construction*, we support the proposed minimum thermal efficiency standard. We do not support the proposed maximum standby loss requirement for this category because the standby loss factor of 0.63 is too stringent. It will require significant redesign and result in increased water heater footprint, making installation very difficult and costly. We recognize that NRCan is referencing this value from DOE's NOPR. However the industry is extremely concerned that this value is unreasonable and not justified for the entire category. Very few models being sold currently achieve that low level of standby loss. NRCan states in the Canada Gazette that *"market data suggests that over 30% of the market is already at this level; therefore, the Department does not agree that it is necessary to lower the standard"*. Members believe that this analysis is not correctly representing the products that are available to Canadian consumers. We believe that assumptions used by NRCan in their analysis of what models are available to meet the proposed new MEPS may be erroneous and could have an impact on the conclusions that have been drawn by NRCan. We believe that the analysis that was done regarding water heater models predominance in the market was based on actual listing of model numbers and not on actual shipment data. There could be a huge difference between the two as a manufacturer could have a large number of its model numbers complying with a certain requirement but in fact those model numbers only represent 10 percent of actual shipments.

We recommend that the same maximum standby loss requirement of SL ≤ 0.84 that is specified in the Energy Star program for commercial water heaters should be referenced instead for this category of *other than replacement* products. This would ensure availability of a wide range of products, a smoother transition in the market, and not rely on proprietary designs that allow certain manufacturers to meet levels below this.

In the case of commercial gas-fired commercial storage water heaters marked for *replacement only* use, we commend NRCan for including provisions for this *replacement only* category. However, we do not support the required increase in thermal efficiency from 80% (current DOE requirements) to 82% for this category. This increased MEPS is extremely problematic for the industry and will result in the elimination of the majority of the models that are currently utilized for replacement applications in Canada. The result will be a very limited product offering for consumers, as most models currently available would not meet the new efficiency requirements. Manufacturers would be reluctant to redesign their product lines due to the significant cost and resources involved in R&D efforts needed to achieve this goal for a relatively small Canadian replacement market. The design changes required to achieve higher thermal efficiency levels would be very onerous and costly for manufacturers who in some cases would be required to redesign most or all of their product line.

Higher efficiency models also increase the risk of condensation in the vent and borderline Category I atmospheric venting system limits, resulting in possible hazardous situations in some applications. Flue gas condensation can leads to premature deterioration of the chimney, potential blockages, and CO spillage into the mechanical room. These failures in the field can result in structural damages, injuries or even death. Members take this situation very seriously because manufacturers inevitably will bear the brunt of these problems, and will likely be blamed for damages and injuries.

Members recommend that the MEPS requirement for this *replacement only* category be harmonized with the current U.S. DOE regulations for those products, ensuring availability of a wide range of products and a smooth transition in the market.

Gas-fired instantaneous water heaters

Household

Members can support the proposed MEPS at condensing levels for these products.

Commercial

In the case of gas-fired instantaneous water heaters, the definition for Commercial units is those units having an input rate of ≥ 58.56kW (200 MBH), and a Vr of 7.6 L to 37.85 L (2 US gal to 10 US gal). There are products on the market that are sold as gas-fired, instantaneous water heaters, have >4000 Btu/hr/gal, >200 MBH, but they contain more than 10 US gallons of water in the heat exchanger. These products do not have an internal “tank”, however are often, but not always, connected to an un-fired storage tank or recirculation loop. It is unclear from this definition how such a gas-fired, instantaneous water heater with greater than 10 US gallons will be treated – as a storage model or an instantaneous model. We would ask NRCan clarify these definitions to more accurately reflect the commercial market.

Members believe that the best solution is for commercial instantaneous gas water heaters, to have their MEPS be the same as those for commercial gas storage water heaters, and we believe there should be separate requirements for new construction versus replacement installations due to the same challenges that inhibit certain gas storage water heaters from being installed. We request

that replacement installations of this product type would need to meet MEPS that harmonize with the current U.S. minimum for thermal efficiency. For new construction installations, we propose a thermal efficiency MEPS of 90 percent.

In the case of the proposed effective date of these regulations, members are strongly opposed to the proposed effective date of January 1, 2020 with a coming into force six months after the final publication. With the new regulations not being finalized until 2019, manufacturers cannot be expected to determine future production plans and product development in such a short period of time. Manufacturers must know what the finalized MEPS are before they can start to make the changes to get their products into compliance. Those manufacturing changes require a significant amount of time. For new MEPS or for any minimum efficiency standard that is more stringent than the current U.S. regulations, we recommend that the effective date be pushed back to at least three years after the date the regulation is finalized. This will provide manufacturers with the necessary time required to redesign or develop products, implement changes to production plants and upgrade or install new manufacturing equipment to meet increased minimum efficiency standards.

We thank you for the opportunity to comment on these important matters. CIPH, HRAI and AHRI would welcome an opportunity to discuss our concerns further with NRCan's representatives.

Sincerely,

Sandy MacLeod	Caroline Davidson-Hood	Ralph Suppa
HRAI President & CEO	AHRI General Counsel	CIPH President & GM

cc: D. Villarroel
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