

December 29, 2018

Jamie Hulan
Director
Equipment Division
Office of Energy Efficiency
Department of Natural Resources
930 Carling Avenue
1st Floor, Room 136-C
Ottawa, Ontario K1A 0Y3

Re: Comments on Energy Efficient Heating and Ventilation Products from *Canada Gazette*, Part I, Published October 20, 2018

Dear Mr. Hulan,

The Atmospheric Fund (TAF) is a public agency established in 1991 by the City of Toronto and endowed by the City and the Province of Ontario. TAF works closely with stakeholders across the Greater Toronto and Hamilton Area (GTHA) to test and advance innovative programs to reduce greenhouse gas (GHG) emissions and air pollution. However, the views expressed in this submission do not necessarily represent those of the City of Toronto, the Province of Ontario or other GTHA stakeholders.

Efficiency Canada advocates to make sure our country is a global leader in energy efficiency. We convene people from across Canada's economy to work together to advance policies required to take full advantage of energy efficiency. And we communicate the best research out there to build a more productive economy, sustainable environment and better life for Canadians.

TAF and Efficiency Canada would like to thank Natural Resources Canada for the opportunity to provide input on the proposed amendments to update the *Energy Efficiency Regulations*.

General Comments

We commend the Government of Canada's (the "Government") renewed efforts to improve and expand the minimum energy performance standards (MEPS) for ventilation and heating product categories. Space and water heating represent a significant portion of Canada's GHG emissions, at 12%

in 2014.¹ TAF commented on the preliminary proposal on energy efficiency requirements for gas and oil-fired commercial boilers (see Appendix); we reiterate the need for the Government to act swiftly to implement the proposed efficiency standards to support Canada's 2030 GHG emissions reduction target and the transition towards a low-carbon economy. These energy efficiency standards are a key tool that the Government can use to meet the objectives established in the Pan Canadian Framework for the heating and cooling of buildings.

Modernizing MEPs for heating and ventilation products will encourage innovation aimed at improving energy efficiency, paving the way for the adoption of a net-zero energy ready model building code by 2030.² These amendments represent a core element of the Government's national plan to reduce emissions from the building sector, providing a regulatory approach to encourage a market for high-efficiency products and ultimately reducing energy consumption. **Improved energy efficiency is expected to support Canada's sustainable economic growth, including job growth and increased competitiveness.** This growth will be further supported by the alignment of federal and provincial energy efficiency standards, while also maintaining consistency with US federal regulations in some areas.

Minimum energy performance standards are one of the most cost-effective tools the Government can use to support significant GHG emissions reductions. Over the long-term, the total benefits of Amendment 15 are expected to exceed the total costs by more \$1.8 billion dollars. Canadian households and business will benefit from \$215 million in average annual energy cost savings, while reducing carbon emissions by a cumulative total of over 5 megatonnes by 2030.³ Energy savings experienced by households and businesses will be recycled into other sectors of the economy, stimulating job growth and enhancing productivity.

We appreciate the Government's renewed commitment to moving forward with energy performance standards, and we urge the Government to move forward with the proposed standards.

Sincerely yours,

Bryan Purcell
Director of Policy & Programs
The Atmospheric Fund

Brendan Haley
Policy Director
Efficiency Canada

¹ <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/complementary-actions-reduce-emissions.html>

² <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/complementary-actions-reduce-emissions.html>

³ http://www.gazette.gc.ca/rp-pr/p1/2018/2018-10-20/html/reg3-eng.html?_cldee=YnB1cmNlbGxAdGFmLmNh&recipientid=contact-2773c7d20329e71180fe5065f38b2271-ce5939b7e4434d2981ae8d0924994621&esid=9afeadc0-ced2-e811-813e-c4346bdc3131

Appendix

April 6th, 2018

Christopher McLellan
Senior Standards Engineer
Office of Energy Efficiency, National Resources Canada
580 Booth Street
Ottawa, Ontario
K1A 0E4

Re: Energy Efficiency Regulations - Gas & Oil-fired Commercial Boilers

Dear Mr. McLellan,

Thank you for providing the opportunity for feedback on the latest set of Energy Efficiency Regulation changes. We, the undersigned, would like to offer the following comments in relation to the proposed gas and oil-fired commercial boilers efficiency requirements.

We would like to commend National Resources Canada for reviewing the energy efficiency of gas and oil-fired commercial boilers and proposing efficiency requirements moving forward. Space and water heating represent a significant portion of Canada's GHG emissions, at 12% in 2014.⁴ With 70% of space heating in Canada powered by fossil fuels, it is critical that newly installed boilers are as efficient as possible in order to reduce GHG emissions and meet our efficiency targets for space heating equipment.⁵

We strongly support the proposed minimum energy performance standards for commercial boilers. Given the current state of market availability, we would like to recommend that Natural Resources Canada consider moving the enforcement date up by twelve months. As demonstrated by the market transformation report from the 2017 Energy and Mines Ministers' Conference, the technology for condensing boilers exists and is acceptable for installation across the country.⁶ In fact, our sources indicate that more than half of all commercial boilers sold today already meet the proposed standard, demonstrating that the industry is capable of delivering compliant products at scale today. Furthermore, energy efficiency standards such as those proposed for gas and oil-fired boilers are a key part of the building pathway to meet the objectives established in the Pan Canadian Framework for the heating and cooling of buildings.⁷

⁴ https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/complementary-actions-reduce-emissions.html#3_2

⁵ https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Market-Transformation-Strategies_en.pdf

⁶ https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Market-Transformation-Strategies_en.pdf

⁷ http://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Building_Smart_en.pdf



Currently, federal policies only address the use of energy efficient commercial boilers in new construction through the National Building Code, even though over 70% of the building stock predicted to exist in 2030 is already constructed.⁸ The proposed federal model code for existing buildings will make a substantial difference in the energy efficiency of our building stock, however it is not slated for rollout until 2022.⁹ In order to address efficiency in existing buildings now, it is important to ensure a swift implementation of the efficiency standards. Our research indicates that typical boilers have a service life of over 25 years, therefore, it is critical to make the transition to high efficiency as soon as possible to reach our climate targets. An extended implementation timeline will lead to the unintended consequence of locking in unnecessarily high GHG emissions from less efficient boiler replacements for decades, hindering Canada in reaching our GHG emissions targets.

Over the past five years TAF has retrofitted 10 multi-unit residential buildings with gas-fired condensing boilers. This includes condensing boilers used for space heating and domestic hot water applications, ranging in size from 800 kBtu/h to 4,000 kBtu/h. As part of these retrofits, TAF has undertaken comprehensive measurement & verification including natural gas and thermal sub-metering to evaluate the real-time performance of these systems. Our research has shown the following:

- Efficiency gains with condensing boilers are possible even when the operating conditions are outside ideal condensing conditions (i.e. above 130°F). Post-retrofit data have shown that even if return water temperatures are expected to fall outside the ideal condensing range, it still makes sense for building retrofits to use condensing boilers over lower-efficiency units. In other words, our data shows that a high-efficiency boiler will outperform lower efficiency boilers at any given operating temperature, especially when stand-by losses from lower-efficiency boilers are taken into account.
- It is possible to take advantage of the full efficiency gains of condensing boilers in building retrofits, especially ones targeting multi-residential buildings. Although in some cases this requires operational changes to ensure loop temperatures are not kept as high as prior to the retrofits, this is not an insurmountable task. When properly sequenced, we have found that reducing system operating temperatures to maximize the time condensing boilers are within ideal conditions does not compromise the quality of space or water heating provided to residents.
- During the shoulder seasons, buildings have a smaller heating demand causing the heating plant to operate at lower temperatures in order to avoid overheating and wasting energy. The corrosion resistance of condensing boilers enables them to operate at these lower temperatures without damaging their heat exchangers, providing additional value to building operators. Lower efficiency boilers are vulnerable to condensation damage if operations are not carefully managed, often resulting in premature end of service life.

⁸ https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/complementary-actions-reduce-emissions.html#3_2

⁹ https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/complementary-actions-reduce-emissions.html#3_2

- One of the concerns often raised with condensing boilers is the associated costs of installing new venting systems. However, it is important to consider that in most cases these costs cannot be avoided once the existing boilers need to be replaced, even if lower-efficiency boilers are selected. Any forced draft boilers would require new venting. Our experience has shown that the existing boiler venting is usually not reusable when it comes time to install the any new boiler, due to the condition of the venting and/or building code requirements triggered by any boiler replacement project. The fact that these costs are generally unavoidable needs to be considered when evaluating the cost-effectiveness of the proposed commercial boiler standards.

In closing, we urge the Federal government to move forward with the proposed standards as expeditiously as possible. Should you have any questions, please do not hesitate to reach out.

Sincerely,

Bryan Purcell
Director, Policy and Programs

The Atmospheric Fund



Keith Brooks
Programs Director

Environmental Defence



Derrick Finn
President

Finn Projects



ENERGY SOLUTIONS

Jeff Ranson
Director, Greater Toronto Chapter

Canada Green Building Council



Frédéric Leonard
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Ecosystem



ecosystem

About the Signatories

The Atmospheric Fund (TAF) is a public agency established in 1991 by the City of Toronto and endowed by the City and the Province of Ontario. TAF works closely with stakeholders across the Greater Toronto and Hamilton Area (GTHA) to test and advance innovative programs to reduce greenhouse gas (GHG) emissions and air pollution. However, the views expressed in this submission do not necessarily represent those of the City of Toronto, the Province of Ontario or other GTHA stakeholders.

Finn Projects is an engineering company, established in 1990, that specializes in energy management services. Finn Projects provides engineering design, drawings and specifications for the implementation of energy efficiency measures for buildings, some of which are turnkey design-build projects with guaranteed energy savings.

Frederick Leonard is Project Director for Ecosystem, a leading energy services company with 175 employees based in Quebec City, New York, Toronto, Montreal and Boston. Ecosystem specializes in building infrastructure improvement and works collaboratively with our clients to design and deliver integrated projects with guaranteed performance. Our objectives are to dramatically reduce energy costs, renew assets, minimize environmental footprint and enhance occupant comfort.

Since 1984, Environmental Defence has been working to protect Canadians' environment and human health. We challenge and inspire change in government, business and people to ensure a greener, healthier and more prosperous life for all. Environmental Defence supports the Ontario government's commitments to develop and implement a climate change strategy. We recognize that reducing greenhouse gas emissions (GHGs) will bring many benefits, including cleaner air, improved public health, and more jobs and business opportunities in the clean economy.

The Canada Green Building Council - Greater Toronto Chapter is Southern Ontario's leading authority on green building best practices. With an ever-growing member network of over 3,500 building industry professionals, the Canada Green Building Council - Greater Toronto Chapter is dedicated to creating a cleaner, healthier, high-performance built environment through education, collaboration and innovation. We work with both government and private enterprise to accelerate the adoption of green building principles, policies, standards and tools.