2017 Next Edition Building Code Consultation
Ministry of Municipal Affairs and Housing
Municipal Services Division
Building and Development Branch
777 Bay Street
2nd Floor
Toronto Ontario
M5G 2E5

EBR REGISTRY NUMBER 013-0536 — BUILDING CODE CONSULTATION

The Clean Economy Alliance (CEA) is a group of over 100 organizations representing a broad cross-section of Ontarians that have united to support the Province of Ontario in showing leadership in addressing the crucial issue of climate change. The CEA includes prominent Ontario businesses, industry associations, clean tech companies, labour unions, farmers' groups, health advocates, and environmental organizations. The views expressed in this submission draw on the collective expertise and experience of CEA members, and were developed in a participatory process over the past three months. ***Our comments are intended to support the Province in making full use of the Ontario Building Code (OBC) to enable and accelerate Ontario's transition to a low-carbon economy.***

The OBC is a critical tool in supporting the transition to a cleaner economy and an effective way to support broader policy towards decarbonisation. Homes and buildings account for about a quarter of Ontario's GHG emissions. With Ontario's population projected to grow by over 30% over the next 25 years[1], ongoing incremental improvements in energy efficiency are likely to be offset by growth. ***Ontario needs transformative changes in the way we build and renovate buildings, and we need them now before the current building boom locks in carbon emissions*** that will be prohibitively expensive and difficult to address down the line***.*** The Ontario building sector is also a key economic driver for jobs at all skill levels, an engine for innovation in clean technology, and market generator for the local knowledge economy. ***The OBC is a key tool for unleashing the enormous potential of the buildings industry to drive innovation, decarbonisation and job growth in the built environment.***

The CEA commends the Province for its commitments to achieving Net Zero new construction by 2030. The CEA also supports many of the building code changes proposed through this consultation. However, we believe that more can and needs to be done to put Ontario on a pathway to Net Zero, and that decisive action in the short-term will enable a smoother transition. Failure to act boldly and quickly, on the other hand, could jeopardize Ontario's ability to meet its ambitious climate targets.

The purpose of this document is to comprehensively summarize the collective response of our member organizations to the proposals and questions released through this consultation process. Generally, CEA supports the proposed

[1] Ontario Ministry of Finance, *Ontario Population Projections Update, Spring 2017.*

actions to align the OBC with the Province's Climate Change Action Plan. Specifically, the CEA supports the proposed actions in the following areas, with our commentary and recommendations discussed in Section 2 of this document and in the attached appendix:

- Empowering Local Governments
- Encouraging an Envelope First Approach
- Including Commissioning Requirements
- Adding Sub-Metering
- Renovations in Existing Buildings
- Expanding EV Charging
- Optimizing Green/Cool Roofs
- Additional Requirements for Solar Roofs

Additionally, the CEA has prepared comments on several topics not raised in the consultation process that we believe are critical to supporting climate action in Ontario and transitioning to a cleaner economy:

- Establishing a Trajectory to Net Zero in the OBC
- Supporting Improved Energy Modelling

1. Comments on Topics Not Addressed in the Consultation Materials

Establishing a Trajectory to "Net Zero" in the OBC

The Province of Ontario has articulated a commitment to achieve Net Zero *carbon* for small buildings by 2030 in the Climate Change Action Plan. Ontario has also endorsed Net Zero *energy* ready for all buildings, including large buildings by 2030, through the Pan-Canadian Framework on Clean Growth and Climate Change. The CEA supports these ambitious goals. The CEA believes that an achievement of this magnitude will require a complete market transformation. Further, the CEA also believes that in order to achieve this transformation there needs to be a strategic approach that includes the following elements: a clear articulation of what Net Zero and Net Zero Ready means; a clear set of regulatory steps that the Province will take between now and 2030; a transition towards performance targets (e.g. energy use intensity, greenhouse gas emissions intensity, thermal energy demand intensity) ; and last but not least, the empowerment of local leadership in regulation to push towards this goal in a consistent but timely fashion that is responsive to the local economy.

Industry would benefit from a clear regulatory definition of what Net Zero and Net Zero Ready means for the Province. This would include defining the difference between 'Net Zero carbon' and 'Net Zero energy ready', if both concepts are to be used in the OBC. Furthermore, the Province should clearly articulate its Net Zero Ready commitment for large buildings, as it has for small buildings. The articulation of where the Province intends to go would be helpful as these details can have a significant impact on technology choices. The CEA encourages the Province to review and, as appropriate, adapt definitions that are already established in Canada. These include the CaGBC's Zero Carbon Buildings Standard, the Canadian Home Builders' definitions, the City of Toronto's Zero Emissions Building Framework, and the soon to be released Federation of Canadian Municipalities research paper.

With a clear target, a progressive and predictable set of steps to achieve Net Zero can be developed to ensure that industry can invest in the appropriate technology and skills to meet the demands of future building regulations. We recognize that the Province is aware of these benefits as evidenced by the provision of the

next update to the OBC well in advance of its 2022 enactment. With more aggressive performance targets, more notice will help to lower the costs associated with meeting those targets.

In addition to providing a clear set of targets, the CEA would note that the current practice of updating the OBC every 5 years would only provide one further code interval (i.e. 2027) ahead of the target date for Net Zero. ***The Province should seriously consider moving to a 4 year code cycle, which would allow for an additional incremental step between 2022 and 2030.*** This change would make for smaller steps in performance improvements which will be easier for industry to adjust to. A shorter code cycle also supports the sense of urgency needed to achieve the 2030 GHG emission targets and honour Ontario's commitment to the Pan-Canadian Framework on Clean Growth and Climate Change.

Transitioning to Net Zero will require rethinking the way we regulate energy efficiency and carbon emissions under the OBC. The current approaches of prescriptive rules and code reference buildings are not well suited to the Net Zero transition, and require a fundamental rethink. Recent research on a large sample of new buildings in Toronto revealed that using a reference building approach did not predictably reduce energy use in Part 3 buildings. The reference building methodology resulted in modeled Energy Use Intensity (EUI) that varied by more than 230% for multi-residential buildings and 450% for commercial buildings, with no correlation between modelled % above code and modelled EUI[2]. While some differences are to be expected, this dynamic spread of energy use is enormous. For this reason the City of Toronto's Zero Emissions Building Framework is proposing a shift towards using performance targets for energy use, GHG emissions, and heating energy demand. This approach will ensure that buildings are absolutely using less energy and emitting less carbon. It should also be noted that other jurisdictions in Canada such as the City of Vancouver and the Province of BC have adopted similar approaches for the same reasons. Voluntary standards such as Passive House and the CaGBC's Zero Carbon Building Standard also use intensity targets to ensure lower energy and GHG outcomes.

The CEA recommends that the OBC transition to the use of absolute performance targets for the most common building types. This could begin as an optional compliance pathway, with other compliance pathways phased out in a future code cycle. ***The CEA recommends setting performance targets for total Energy Use Intensity, GHG emissions intensity, and thermal energy demand intensity***. In contrast to prescriptive and reference building approaches, absolute performance targets have the following benefits:

- Improved consistency in energy and environmental outcomes
- Enhanced simplicity and clarity for designers and developers
- Greater flexibility and potential for innovation
- Reduced potential for "gaming" the system

The performance targets approach used by the City of Toronto's Zero Emissions Building Framework is consistent with the metrics chosen by both the City of Vancouver and CaGBC's Zero Carbon Building Standard. These standards use an array of metrics to ensure delivery of important building characteristics, listed below:

- Thermal Energy Demand Intensity (also called heating demand) – TEDI – This metric calculates the load of thermal energy required to heat a building, absent of any efficiencies achieved by mechanical systems. As this metric does not recognize mechanical efficiency, it is designed to drive envelope and ventilation

[2] City of Toronto – Energy Efficiency Office. *Energy Analysis of Toronto Green Standard Projects, 2011-12.* August 2013.

performance. It also enhances resiliency by ensuring buildings can remain comfortable for longer during extended power outages or HVAC system failures.

- Total Energy Use Intensity – TEUI or EUI – This metric calculates the total energy use of the building from all energy sources for all applications. This metric is designed to drive efficiency throughout the building including mechanical and electrical equipment and lighting. It also ensures buildings are affordable to own and operate by driving towards lower overall energy costs.
- Greenhouse Gas Intensity Target – GHGI – this metric is derived from the total EUI, but applies emissions factors to the specific energy sources used within a building. This metric encourages the use of lower carbon fuels, while allowing flexibility to use natural gas as long as the total GHGI target is achieved. Since the policy priority is achieving Net Zero carbon emissions, it is critical for the OBC to incorporate GHGI targets.

For more information on these terms there are specific definitions in both the City of Toronto Zero Emissions Building Framework and the CaGBC's Zero Carbon Building Standard.

Transitioning to a performance target approach also enables the creation of a road map to the 2030 Net Zero (Ready) goals. The 2030 goals, once defined, will provide the required performance targets for the 2030 OBC. The Province can then work back from the 2030 performance targets to develop performance targets for 2026 and 2022.This is precisely the approach taken by the Province of British Columbia with the creation of the BC Energy Step Code. The Energy Step Code lays out a trajectory to Net Zero ready buildings. This 'step code' approach will allow industry and government to invest in the training, technology, and building design/construction processes required to achieve Net Zero cost-affordably. A similar approach in Ontario would increase predictability, lower costs and accelerate market transformation towards a Net Zero built environment. Recognizing that the development of a step code for Ontario would be a medium-term project, ***the CEA recommends that the Ministry create a working group including all relevant stakeholders to initiate the development of an Ontario energy step code which would be introduced as part of the 2022 OBC update, at the latest.***

Supporting Improved Energy Modelling

Energy modeling is essential to designing low-carbon energy efficient buildings, and it is also increasingly central in complying with OBC energy requirements. As we continue on the path to net-zero, energy modeling will only become more important for optimizing building design and achieving code compliance. However, there is currently very little guidance on how energy models should be done, and what qualifications energy modellers should have. In addition, climate datasets, including the Canadian Weather Year for Energy Calculations (CWEC) currently used by the building industry no longer represents the severity of our changing climate. ***The CEA recommends that the Province take action to improve guidance and standardization on energy modeling for code compliance.***

The CEA believes that significant performance improvements could be achieved in building design through provincial efforts to raise professional practice standards for energy modelling and make them commensurate with other engineering and architectural processes that impact building code compliance. ***This could include the development of professional practice guidelines that could be developed in cooperation with architecture and engineering professional associations.*** Similar draft guidelines have been developed in British Columbia. In addition, the BC Energy Step Code and the City of Vancouver have developed energy modelling guidelines that provide additional process guidance and are designed to ensure that energy models for code compliance are more consistent in their approach. While the focus of these specific guidelines are to address issues related to EUI calculations, they also provide guidance on how to address common issues that lead to lower overall energy

performance (e.g. how to calculate thermal bridging with greater specificity).

Examples of professional energy modeling guidelines:

- APEG Professional Practice Guidelines
  https://www.egbc.ca/getmedia/57d1ac24-368d-4800-a671-726c64d82a3f/APEGBC-Building_Enclosure_Guidelines.pdf.aspx

- City of Vancouver Energy Modelling Guidelines
  http://vancouver.ca/files/cov/energy-modelling-guidelines-v1.0.pdf

2. Comments on Topics Raised in the Consultation Materials

This section provides a summary of comments on topics raised in the consultation materials. For more detailed comments, see the proposal comment forms and survey answers attached as an appendix to this document.

Empowering Local Governments

The CEA commends the Province's commitment and action to enable municipalities to implement green development standards based on optional technical standards in the OBC. However, we are disappointed that the current proposal is limited to green roofs. While the CEA supports enabling cities to implement green roof standards, we believe that municipalities should also be empowered to implement green standards directly addressing energy efficiency and GHG emissions. We note that the Province is increasingly requiring and/or encouraging municipalities to establish GHG reduction targets, develop GHG reduction plans/policies, and report publicly on this progress[3]. ***The CEA recommends that the Province empower municipalities to implement green development standards directly addressing energy efficiency and GHG emissions.***

The development of an Ontario energy step code, as recommended above, would provide an ideal framework for municipal green standards. This would allow for a more nuanced approach to market transformation that takes into account the local market conditions of each municipality. This is the approach that has been taken in British Columbia, where the BC Energy Step Code expressly allows municipalities to reference the "step(s)" of their choice as city-wide requirements, neighbourhood requirements, or optional requirements with incentives. The reality is that different regions in Ontario vary widely in-terms of their capacity to implement stronger energy efficiency and GHG emissions requirements for new construction. The current "one-size fits all" approach requires slowing progress in the OBC to the speed at which all regions adapt at the same time. ***Allowing municipalities that have greater capacity the option of moving faster towards Net Zero — while using a consistent framework referenced in the OBC — will benefit all regions of Ontario.*** Cities that move ahead of the minimum OBC requirements will stimulate industry capacity and experience needed to implement Province-wide requirements more cost-effectively.

The CEA recognizes that the development of an Ontario energy step code would take some time. ***As an immediate step, the CEA recommends that the OBC allow local governments to adopt the OBC's 2022 energy performance requirements in advance of Province-wide enactment.*** This could be done by allowing municipalities to adopt SB-10-B and SB-12-B, or by allowing them to require a 20% improvement over the 2017 OBC requirements. While we recognize that the Province may not finalize SB-10-B and SB-12-B for some time, it should be possible to address any critical issues raised in this consultation in 2018 and allow their adoption as municipal

[3] For example, through the *Growth Plan for the Greater Golden Horseshoe* (2017)

green standards beginning in 2019. Giving cities the opportunity to adopt these targets earlier will provide real market-testing of the requirements and inform better Province-wide deployment in 2022.

Lastly, the proposed OBC development standards on green roofs do not mention maintenance plans, leakage testing, and details surrounding growing media or plants. These components are critical to the successful implementation of green roofs, and if left out, may compromise the expected benefits and confidence surrounding this technology. ***The CEA recommends that the Province provide a Supplementary Guide to green roofs***. A similar approach has been adopted by the City of Toronto with the 'Green Roof Supplementary Guidelines' which can help inform Provincial guidelines.

We have provided specific comments in the following forms: 2-CC-A-01-04-01 and 2-CC-B-05-10-01

Encouraging an Envelope First Approach

The CEA supports the overall approach taken by the Province in encouraging an envelope first approach to energy conservation. Specifically, the removal of trade-off pathways that allow designers to lower envelope performance, the inclusion of airtightness testing, addressing thermal breaks, and higher thermal resistances are supported by our members. Envelope-based solutions are typically the most durable energy conservation measures and result in the most local economic spin-off. Other benefits include comfort and health for residents, as well as building resilience during power outages. Our comments to the specific proposals offer some nuances that we feel could improve performance and expected benefits even further. ***Specifically, we support being more aggressive on implementing air leakage testing and considering even higher resistance values.*** From a feasibility and financial standpoint, it is much more beneficial to implement a higher efficiency building envelope at the time of construction than to make changes later in the building lifecycle. In regards to implementing air leakage testing, a phased plan will allow industry time to successfully adapt to the process and meet the necessary requirements. This plan would first suggest voluntary testing before introducing mandatory testing, followed by mandatory testing with a target.

We have provided specific comments in the following forms: 2-CC-A-03-02-01, 2-CC-B-11-03-01, 2-CC-B-12-02-02, 2-CC-B-12-02-03, 2-CC-B-12-02-04, and 2-CC-B-12-02-05

Including Commissioning Requirements

The CEA supports the inclusion of commissioning in future versions of the OBC. Commissioning has been demonstrated to be an effective energy conservation measure that is not only cost effective but also lowers GHG emissions. This is a key component that is often overlooked and directly impacts the performance of new systems. The CEA sees the inclusion of Commissioning not only as important in new construction, but also as a component that can be applied to energy conservation measures in existing buildings. Retro-commissioning commercial and multi-family buildings could have huge potential for energy conservation and GHG emissions reductions. The CEA also recommends that the Province take advantage of the availability of real-project data captured in the commissioning reports. ***In addition to municipalities receiving commissioning reports to verify compliance, the CEA recommends that copies of these reports are also submitted to the Province for research purposes and to inform the development of future code changes.***

We have provided specific comments in the following forms: 2-CC-B-11-03-01, Commissioning of Large Buildings: Q1-Q5 Responses

In the survey questions, the CEA has provided detailed feedback on how a commissioning requirement could be structured, which is modelled on the Seattle Building Code. Our primary recommendation on this topic is that the approach to regulating commissioning needs to be based on the size and complexity of the mechanical and electrical equipment rather than the floor area and occupancy that the OBC uses for other fire and life safety requirements.

We have provided specific comments in the following forms: Commissioning of Large Buildings: Q1, Q4 & Q5 Responses

Adding Sub-Metering

The CEA supports the proposal to add sub-metering to the OBC. The comments we have provided in this area are aligned with the recently developed proposals for energy sub-metering for the next iteration of the Toronto Green Standard. The overall approach to sub-metering should be an economical one with the primary objectives of assigning costs to the appropriate users of energy or water and enabling retro-commissioning and optimisation throughout the useful life of buildings.

We have provided specific comments in the following forms: Sub-Metering: Q1 – Q3 Responses

Renovations in Existing Buildings

The CEA strongly supports the inclusion of specific upgrade requirements for energy efficiency in existing buildings, given their significant impact. The existing building sector in Ontario represents one of the largest opportunities for energy use and GHG emission reductions. Adding renovation requirements will ensure that as our building stock is being renewed, opportunities for increased energy efficiency are being realized. The CEA encourages the Province to explore the opportunity of providing incentives or financing to ensure building owners have the resources and motivation to undertake renovations — which are not mandatory***. Additionally, the CEA recommends that the Province ensure adequate training is made available for both municipal staff responsible for enforcement and industry stakeholders responsible for complying.*** Without this effort and focus on the existing building stock, the GHG emissions reduction target for 2030 will be hard, if not impossible, to reach.

We have provided specific comments in the following forms: 2-CC-B-11-03-01, Commissioning of Large Buildings: Q1 – Q5 Responses

Expanding Electric Vehicle (EV) Charging

Electric vehicles are noted several times in Ontario's Climate Change Action Plan as a tool to reduce GHG emissions in the transportation sector. With more Canadians living in multi-family buildings there is an increasing need to ensure that these buildings are designed to accommodate the growth of these vehicles. For these reasons the CEA supports the proposals for EV charging in 20% of spaces be expanded to multi-family buildings by 2019. ***The CEA supports the ongoing evolution of this requirement over time, and recommends increasing the number of stalls to 33% in 2022.*** The increase to 33% is an important benchmark as studies from EV manufacturers have shown that this is a tipping point representing sufficient infrastructure to expand charging to all parking spots later in a buildings' lifecycle by utilizing load management technology.

Noting that much of the cost to providing more charging stations in buildings is tied to increasing the electrical service of these buildings, the CEA encourages the Province to work with the Electrical Safety Authority to examine how load management technology can be recognized within the Ontario Electrical Safety Code.

We have provided specific comments in the following form: 2-CC-B-03-01-01

Optimizing Green/Cool Roofs

The CEA recognizes that optimizing the roofs of our building stock can be a useful strategy to manage storm water, improve overall building efficiency, cool the urban environment and generate renewable energy. In general, the CEA supports all of the proposed changes but encourages the Province to align the cool roof standards with those already existing in the City of Toronto and cited by the LEED rating systems. Using a lower standard may create market confusion within the building industry that is designing and constructing these roofs throughout Ontario.

We have provided specific comments in the following form: 2-CC-B-05-10-01

Additional Requirements for Solar Roofs

Exploring the move from solar ready to requirements for solar generation on rooftops would be a significant driver of renewable energy development and help build the capacity required to achieve net-zero buildings in the future.

We have provided specific comments in the following forms: 2-CC-B-04-01-01 and 2-CC-B-12-05-01

Conclusion

The CEA is sincerely thankful and pleased to have this opportunity to be part of the process in developing the OBC. The development and implementation of this OBC update comes at a key period of transition for Ontario toward a greener economy, one that will drive innovation in clean technology and growth in the building market. In addition to the economic benefits, this OBC update comes at a time when substantial climate action is necessary, and the CEA is glad to support this important transition.

Making this historic transition to Net Zero construction will require an 'all government' approach. The proposed OBC changes need to be supported by the Training in Low Carbon Building Skills initiative being rolled out by the Ministry of Advanced Education and Skills Development, as well as by incentives and financing programs to be rolled out by the Green Ontario Fund. All of these initiatives need to be actively coordinated to undertake the market transformation needed to achieve Net Zero construction.

In addition to our comments and suggestions, the CEA would like to extend a general offer of support in any future endeavours to develop further green and resilient building standards for the Province of Ontario, including the possibility of an Ontario Building Step Code.

Once again, the CEA thanks the Province of Ontario, and looks forward to the next opportunity for cooperative collaboration.

Clean Economy Alliance Members

ArcTern Ventures

Asthma Society of Canada

Biochar Ontario

BioFuelNet

Bioindustrial Innovation Canada

Blue Green Canada

BOMA Toronto

Burlington Green

Bullfrog Power

Canadian Association of Physicians for the Environment

Canadian Biochar Initiative

Canadian Biogas Association

Canadian Hydrogen and Fuel Cell Association (CHFCA)

Canadian Solar Industries Association

Canadian Wind Energy Association

Canadian Wood Waste Recycling Business Group

Carbonzero

Cement Association of Canada

Chrysalix Energy Venture Capital

Citizens Environment Alliance of Southwestern Ontario

Clean Air Partnership

Clean Energy Canada

Climate Reality Project Canada

Climate Smart Agriculture Youth Network

CoPower

Corporate Knights

CRH Canada Inc

Cycle Toronto

David Suzuki Foundation

Delta Management - Clean 50

Earth Day Canada

Earth Rangers

Ecosystem Energy Services Inc.

Efficiency Capital Corporation

Energy Storage Ontario

EnviroCentre

Environmental Defence

Evergreen CityWorks

Fadco Consulting Inc.

Faith & the Common Good: Greening Sacred Spaces

Field Chemical Technologies Inc

Forests Ontario

Geosource Energy Inc.

Green Communities Canada

Green Neighbours 21

Green Planet Bio-Fuels

Innovolve Group

International Institute for Sustainable Development

Lafarge Canada Inc.

LED Roadway Lighting

MaRS Advanced Energy

MaRS Cleantech

Mindscape Innovations

Mountain Equiment Co-op

Nanoleaf

NEI Investments

CLEAN ECONOMY ALLIANCE

environmental defence

North American Insulation Manufacturers' Association

NRStor

Ontario Association of Architects

Ontario Clean Air Alliance

Ontario Federation of Agriculture

Ontario Lung Association

Ontario Nature

Ontario Rivers Alliance

Ontario Secondary School Teachers' Federation

Ontario Society of Professional Engineers

Ontario Sustainability Services

Ontario Sustainable Energy Association

Ontario Waterpower Association

OpenConcept Consulting Inc.

Patagonia

PCL Constructors

Perkins+Will

Petrolup

Plug n' Drive

Price Carbon Now, ON!

RainGrid

Registered Nurses' Association of Ontario

RESCo Energy Inc.

Responsible Investment Association

Rethink Green: Solutions for a Sustainable Sudbury

Rural Ontario Institute

Shareholder Association for Research & Education

Smarter Shift

St Marys Cement

Sustainability CoLab

Sustainable.TO Architecture + Building

Terragon Environmental Technologies Inc.

The Pembina Institute

Top Drawer Creative

The Atmospheric Fund

Toronto Centre for Active Transportation

Toronto Cycling Think and Do Tank

Toronto Environmental Alliance

Toronto Parks and Trees Foundation

TREC Education

TREC Renewable Energy Cooperative

Unifor

United Steelworkers

Windmill Development Group, Ltd.

World Wildlife Fund Canada

Zerofootprint Software Inc.

CLEAN ECONOMY ALLIANCE

environmental defence

Appendix: Comment Forms for the Proposed Building Code Changes

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____**2-CC-A-01-04-01**_____ **(**e.g. A2-01-01-01**)** Mark one of the following with an **"X"**:

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____**Please see attached document for comments.**__

_____

(Please attach additional sheets as necessary)

Personal information provided in response to Building Code Consultation is collected under the authority of the Ministry of Municipal Affairs and Housing Act for consultative purposes, and for contacting you should we need to clarify your response to this consultation. Responses to the consultation may be shared with provincial and national building and fire code development committees. Questions about the collection of personal information may be submitted to the Ministry of Municipal Affairs, 16th Floor, 777 Bay Street, Toronto, Ontario, M5G 2E5 or by email to buildingcode.consultation@ontario.ca

Code Change Number: 2-CC-A-01-04-01

Organization (specify)**: Clean Economy Alliance**

We support the potential requirements with modifications. (provide a reason below):

The Clean Economy Alliance (CEA) supports the ability for municipalities to pass by-laws to require green standards, with the following amendments for your consideration:

The CEA recommends that the current proposal should be expanded to go beyond green and reflective roofs to include other building standards that can help reduce energy consumption and greenhouse gas emissions, improve water conservation, and assist construction waste management, or go further with electric vehicle charging requirements.

With regards to energy and GHG management, the CEA has provided more substantial commentary on this topic in the cover letter submitted as part of this consultation process. The Province should implement a 'step code' approach to the 2030 Net Zero (Ready) goals that would make future updates to energy requirements more predictable, charting a pathway to net zero. The development of an Ontario energy step code would provide an ideal framework for municipal green standards, allowing local governments that have greater capacity the option of moving faster to Net Zero and adopting these standards in advance of Province-wide enactment. This stepped approach is a similar framework to that which has recently been adopted in the Province of British Columbia, and to what is currently proposed for the update to the Toronto Green Standard.

Recognizing that the development of a stepped energy code for Ontario could be a lengthy process, the CEA recommends that a beneficial interim measure for both the Province and Local Government that are interested in climate protection could be to allow jurisdictions to adopt the proposed 2022 energy requirements in advance of their province wide enactment. This would allow early deployment and testing of the proposed requirements for the Province while also achieving potential carbon savings.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____**2-CC-A-03-02-01**_____ **(**e.g. A2-01-01-01**)**

Mark one of the following with an **"X"**:

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____**Please see attached document for comments.**_____

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-A-03-02-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the proposed change to enable functional statements on thermal bridging and air leakage. We further recommend adding a functional statement focused on GHG emissions that will compel designers to consider fuel choice as well as efficiency.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____**2-CC-B-03-01-01**_**(**e.g. A2-01-01-01**)**

Mark one of the following with an **"X"**:

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____**Please see attached document for comments.**

_____

(Please attach additional sheets as necessary)

Personal information provided in response to Building Code Consultation is collected under the authority of the Ministry of Municipal Affairs and Housing Act for consultative purposes, and for contacting you should we need to clarify your response to this consultation. Responses to the consultation may be shared with provincial and national building and fire code development committees. Questions about the collection of personal information may be submitted to the Ministry of Municipal Affairs, 16th Floor, 777 Bay Street, Toronto, Ontario, M5G 2E5 or by email to buildingcode.consultation@ontario.ca

Code Change Number2-CC-B-03-01-01

Organization (specify)**: Clean Economy Alliance**

We support the potential requirements with modifications. (provide a reason below):

The Clean Economy Alliance supports the addition of EV charging requirements for apartment buildings required in 2019, in addition to other buildings already planned for 2018.

We would further support provisions to gradually and predictably increase the percentage of EV charging stalls required to 33% in 2022. EV manufacturers have shown that this percentage is a tipping point representing sufficient infrastructure to enable charging to all parking spots at a later time by utilizing load management technology.

Further the CEA would encourage the Province to better define the rough-in requirements to enable additional charging stalls in the future. This would provide the market with greater certainty regarding potential costs.

Related to this the CEA also supports the concept of requiring the installation of sufficient electrical power capacity in new buildings to support the installation of electric vehicle charging infrastructure in 100% of parking stalls in future. Upgrading the power supply to a building can be more complicated and costly as retrofit compared to new construction. Recognizing that costs of installing this new supply can still be problematic for some projects the CEA recommends that the Province, working with the Electrical Safety Authority, examine the potential role that load management, load sharing and stationary energy storage technology can play in ensuring sufficient capacity while reducing the need to increase the overall electrical service.

Finally in reference to proposal 2-CC-A-01-04-01, this would also provide an excellent opportunity to increase the number of options for local governments to put EV charging requirements in place that go beyond minimum requirements.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____**2-CC-B-04-01-01**__ **(**e.g. A2-01-01-01**)**

Mark one of the following with an **"X"**:

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____**Please see attached document for comments.**___

_____

(Please attach additional sheets as necessary)

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Code Change Number2-CC-B-04-01-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the addition of structural provisions during construction to facilitate the addition of PV/solar hot water systems at a later date. However, we feel that this proposal could be improved. Specifically, Section-10 of the proposed change is vague and may change in its meaning according to the interpretation of the clause “dead load of solar panels is counteractive”. We are concerned that without further clarification, the full and clear adoption of this proposal could be limited. We recommend that Section-10 should be removed or better defined. With respect to proposal 2-CC-B-12-05-01, we also support the addition of a solar ready requirement to Part 9 residential buildings, as well as commercial buildings.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-05-10-01

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-05-10-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the proposed change to establish standards for High-Reflectance and Vegetative Roof Construction, but feels the target should be more aggressive, and set at no lower an SRI than 78. This aligns with LEED V4 and City of Toronto requirements for high reflectance roofs and reduce potential for market confusion within the building industry. Several products are currently available on the market that comply with this requirement at no additional cost.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-07-06-01

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-07-06-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the proposed change to better align with National Building code requirements. We also ask that the OBC consider prohibiting “once through cooling” systems. While antiquated, there are still some systems (primarily in industrial applications) that use potable water in cooling applications in which water is cycled through the system once before being sent to the sanitary sewer. Other jurisdictions such as the City of Vancouver have prohibited such systems to help conserve potable water.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____**2-CC-B-07-06-02**

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____**Please see attached document for comments.**___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-07-06-02

Organization (specify)**: Clean Economy Alliance**

We support the potential requirements with modifications. (provide a reason below):

The Clean Economy Alliance supports the proposed change that clarifies water-use efficiency requirements for urinals. We recommend that an additional requirement should be added to require that water closets be equipped with devices capable of preventing flush cycles when not in use, for all occupancies.

For occupancies other than Group C, flow rates should be reduced to match the following Group C requirements:

- Toilets 4.8LPF
- Lavatory faucets – 4.8L/min (residential),
- Kitchen Faucets 6.8L/min and
- Commercial faucets 1.9L/min

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-09-32-01

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-09-32-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the proposed change as it is outlined. We recognize, as does the OBC, that as airtightness is increased, it becomes very important to supply fresh air in a controlled manner. Exhaust-only ventilation may not provide the appropriate fresh air levels and can result in significant building durability issues in cold climates. This includes, for example, the formation of interstitial condensation. We recommend this requirement to take effect in large buildings in 2019.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-09-32-02

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-09-32-02
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): See CEA comments in 2-CC-B-09-32-01.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-09-32-03

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-09-32-03
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the proposed change, but recommends providing further clarification on how ERV's should interface with other home ventilation appliances, such as bathroom fans and kitchen range hoods. Further, Section 9.32.3.11(2) should be clarified. It seems to provide minimum sensible recovery efficiency for HRV systems, but not for ERV systems. One possible interpretation is that the recommendation is the same for both, but this is not clear. Finally, we recommend that the minimum SRE requirements be aligned with the current requirements for packages in SB-12 (55% to 75%).

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-09-32-04

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-09-32-04
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance supports the proposed change that harmonizes the building code with SB-12, and requires that ventilation systems coupled with forced air heating systems include a heat or energy recovery ventilator. We additionally suggest the inclusion of a requirement for the use of direct ducting to bedrooms. Other jurisdictions have made this clarification to ensure adequate ventilation in the bedroom where it is most critical to human health.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-11-03-01

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-11-03-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance strongly supports the proposed changes to include energy efficiency during building renovations, similar to fire and structural safety requirements. Further, we suggest the addition of the general statement “material alterations or repairs also to include modifying or replacing a large component of any building system” to Section 11.3.1.1.(1) “Definition of Material Alterations”. In addition to the above, our general commentary is that the measures outlined here are very prescriptive and that in order to provide a performance path, the OBC should consider offer an alternative compliance route based on “retro-commissioning”. Please see the CEA comments on “Commissioning for Large Buildings” outlined in our submission to Section 4 questionnaire.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-12-02-02

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-12-02-02

Organization (specify)**: Clean Economy Alliance**

We support the potential requirements with modifications. (provide a reason below):

The Clean Economy Alliance strongly supports the proposed change to add air tightness testing for large buildings in 2019.

We further recommend a stepped approach, moving mandatory testing to begin in 2020 (with no requirement to pass the test) and mandatory testing with a requirement in 2022.

We also request that more explanation as to whether trade-offs will be allowed until 2022 be provided, as this is not currently clear. The trade-offs described in proposal 2-CC-B-12-02-04 for Part 9 buildings could be used as a model. We further recommend clearly limiting trade-offs to 10% (matching Part 9) until 2022, and eliminating them altogether in 2022.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-12-02-03

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-12-02-03
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance strongly supports the proposed changes, but suggests that the change come in effect for January 2019, rather than January 2020. This change is not difficult for industry to adapt to.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-12-02-04

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-12-02-04

Organization (specify)**: Clean Economy Alliance**

We support the potential requirements with modifications. (provide a reason below):

The Clean Economy Alliance strongly supports the proposed changes, as well as the continuous insulation requirements. We further support limiting trade-offs to 10% in 2020 and eliminating them by 2022.

We further suggest that in order to reduce confusion, the should OBC match the target dates and requirements/recommendations for large building envelopes. Under this approach, voluntary air tightness testing will be requested for 2019, mandatory testing for 2020 (but with no requirement), and testing with mandatory requirements for 2022.

We further recommend that the minimum continuous insulation level be RSI1.76 (R10), rather than RSI 0.88 (~R5). Implementing a higher efficiency envelope initially is much more feasible and cost effective, compared to implementing these changes once the building is already constructed.

Finally, we recommend that the OBC consider banning spray foam insulation with high GHG intensity propellants. Other jurisdictions with GHG functional statements have done this because there are significant fugitive emissions that are greater than the potential operational savings.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-12-02-05

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-12-02-05
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance (CEA) supports the proposed changes with the following additions. Please refer to CEA's cover letter submitted as part of this consultation process for more information. We recommend transitioning to the use of absolute performance targets for total Energy Use Intensity (EUI), GHG emission intensity (GHGI), and thermal energy demand intensity. By moving to a metrics-based approach, the Province can set a clear benchmark with regards to where they believe building energy use and greenhouse gas maximums should be. Similar to our response for proposal 2-CC-A-01-04-01, we feel strongly that a clear pathway to Net Zero or Net Zero Ready for both SB-10B and SB-12B construction is needed to ensure that industry can adapt and invest in the most effective ways to reduce costs. Further, while energy modelling is not explicitly part of the Building Code, we recommend that more guidance is necessary with regards to how buildings are simulated. This should include, but not be limited to, explicit guidance on thermal bridging, ventilation rates, and occupancy schedules.

Comment Form for Potential Changes to the 2017 Building Code

Indicate change number and make additional copies of this form for each change.

A. Respondent Information

Name: _____Bryan Purcell _____

Title: _____Director of Policy and Programs at the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify): Clean Economy Alliance

_____

Function:

☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Potential Code Change

Code Change Number: _____2-CC-B-12-05-01

☐ I support the potential requirements.
(do not provide a reason below)

☒ I would support the potential requirements with modifications.
(provide a reason below)

☐ I do not support the potential requirements.
(provide a reason below)

Reasons: _____Please see attached document for comments.___

_____

(Please attach additional sheets as necessary)

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Code Change Number: 2-CC-B-12-05-01
Organization (specify)**: Clean Economy Alliance**
We support the potential requirements with modifications. (provide a reason below): The Clean Economy Alliance (CEA) supports the proposed changes with the following additions. With the rapid reduction of prices in the solar energy industry, the CEA recommends that the installation of solar PV or solar hot water should be required by 2022. The CEA acknowledges that not all buildings have suitable solar access and that this term needs to be better defined; however, for roofs that do have solar access, a reasonable target can be established at approximately 25% of the total roof area. We have also noted our support for solar ready requirements in our response to proposal 2-CC-B-04-01-01.

Comment Form for Consultation Discussion Items: Potential Longer-Term Building Code Act and Building Code Amendments

Important: Each topic/question response you prepare needs to be a separate document Include footers with the topic/question ID number and page number information (e.g. Question II. 3. — Page 1 of 3). Complete one comment form for each response you prepare and attach it to the corresponding response document.

Hint: If you are providing input for more than one topic/question, complete the respondent information and then make enough copies for each response document.

A. Respondent Information

Name: _____Bryan Purcell_____

Title: _____Director of Policy and Programs, the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify):

_____Clean Economy Alliance _____

Function: ☐ Building Official ☐ Builder/Contractor

☐ Supplier/Manufacturer ☐ Designer/Code User

☒ Property Owner/Public ☐ Sewage Hauler/Installer

B. Consultation Discussion Items (Mark only one of the following with an "X")

I. Commissioning of Large Buildings	II. Adaptive Thermostats	III. Sub-metering
☒ 1.	☐ 1.	☐ 1.
☐ 2.	☐ 2.	☐ 2.
☐ 3.	☐ 3.	☐ 3.
☐ 4.	☐ 4.	**IV. Other**
☐ 5.		☐ 1.

Input: (Please attach the corresponding response document)

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Section 4 Commissioning of Large Buildings

Organization (specify)**: Clean Economy Alliance**

Discussion Question 1 Response:

1. What parts of the building should be subject to building commissioning to support the government's energy conservation and GHG emissions goals?

Note the below provisions are referenced against the Seattle Energy Code which, in the opinion of the Clean Economy Alliance (CEA), has the most rigorous and comprehensive commissioning regulation in North America. All Part 3 buildings should be subject to the commissioning requirement, provided their systems meet the following minimum requirements:

*HVAC and refrigeration***:** All HVAC systems with over 70 kW's (240 kBTU/h) cooling or heating, plus all walk-in coolers and freezers and all refrigerated warehouse coolers and freezers.

Lighting and receptacle controls: Lighting and controlled receptacles in projects with at least 20 kW installed lighting overall, or more than 10 kW installed lighting with daylight or occupancy controls.

*Water heating***:** any system with more than 70 kW's capacity.

Metering: All metering and sub-metering systems

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Title: _____Director of Policy and Programs, the Atmospheric Fund

I am responding on behalf of: ☐ Myself

☒ Organization (specify):

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☐ Supplier/Manufacturer ☐ Designer/Code User

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B. Consultation Discussion Items (Mark only one of the following with an "X")

I. Commissioning of Large Buildings	II. Adaptive Thermostats	III. Sub-metering
☐ 1.	☐ 1.	☐ 1.
☒ 2.	☐ 2.	☐ 2.
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☐ 4.	☐ 4.	**IV. Other**
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Section 4 Commissioning of Large Buildings
Organization (specify)**: Clean Economy Alliance**
Discussion Question 2 Response: **2. Should building commissioning apply to all large buildings or a select group of large buildings based on either occupancy type or size (e.g. assembly occupancies that are a minimum 4,645 m2 (50,000 sq/ft) in size)?** We recommend that commissioning requirements be based on mechanical and electrical system sizes, rather than floor area or occupancy. This is because occupancy and floor area are not good indicators of system complexity or capacity. We would strongly recommend against a simple floor area or occupancy trigger for the regulation.

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Section 4 Commissioning of Large Buildings

Organization (specify)**: Clean Economy Alliance**

Discussion Question 3 Response:

3. How regularly should a building commissioning process be reviewed by municipal enforcement officials, and what information should be made available to them?

We recommend that 'Submittals' be reviewed at Building Permit application and at Occupancy.

At Building Permit, we recommend that applicants provide a Commissioning Plan that contains the following:

- Narrative description of the commissioning proposal
- Commissioning team roles and responsibilities, and contact information.
- Schedule of commissioning activities, listing what systems will be commissioned, functions to be tested, the required test conditions, and performance criteria.

At Occupancy Permit, applicants should provide a Commissioning Report containing the following:

- Deficiencies noted and corrections made
- Test procedures and criteria
- List of deferred tests, and climatic conditions required to perform them
- List of unresolved deficiencies

This report should be signed by both the accredited Commissioning Agent and the owner.

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Section 4 Commissioning of Large Buildings

Organization (specify)**: Clean Economy Alliance**

Discussion Question 4 Response:

4. Beyond any building commissioning process, what remedial actions can building owners/operators be reasonably required to take to ensure that buildings continue to operate as originally designed?

The City of Seattle has created a Commissioning Permit, which must be applied for prior to occupancy being granted. The Commissioning Permit must be closed within12 months of its issue. This policy tool allows commissioning requirements to transcend the Occupancy Permit, and extend into the first 12 months of operation in order to allow for testing to occur in all four seasons. This strategy also allows owners to complete all of their other documentation and permits at occupancy, but still allows the Authority Having Jurisdiction to track any outstanding work that needs to be completed post-occupancy.

We recommend that testing be done on all systems and that these tests, including deficiencies listed, to be summarized in a report to be signed-off by the owner. Compelling action after occupancy is problematic without abatement requirements.

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Section 4 Commissioning of Large Buildings

Organization (specify)**: Clean Economy Alliance**

Discussion Question 5 Response:

5. How can proposed regulations for home energy audits, and large building energy reporting and benchmarking, complement potential future requirements for building commissioning?

Reporting and benchmarking programs enable the implementation of Building Energy Performance Standards (BEPS). BEPS are abatement requirements that stipulate that a building must achieve certain performance standards or undertake a prescriptive process which is in most cases retro-commissioning. The performance standards that are used could be a Portfolio Manager score or EUI outcome for certain classes of commercial buildings, or an EnerGuide score for homes and residential buildings. The benefit of BEPS programs is that they can target the worst performers where there is potentially the most savings at the most optimal or lowest cost. Cities like Atlanta and Seattle have adopted BEPS for their large commercial buildings.

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Section 4 Sub-metering

Organization (specify)**: Clean Economy Alliance**

Discussion Question 1 Response:

1. Can the Building Code better enable sub-metering for electricity? If so, what amendments could be made to enable sub-metering?

The purpose of sub-metering is two-fold. The first is to ensure that consumers of energy have the requisite price signals to make energy conservation choices. The second purpose of the sub-metering is to enable the owner of a building to undertake retro-commissioning or other corrective action to reduce energy use. Given this, the recommendation of the Clean Economy Alliance is to require the sub-metering of electrical systems in the following way:

- By major occupancy – e.g., retail units should be sub-metered separately from commercial office space
- By use - e.g., parking, amenity and common spaces should all be sub-metered separately within multifamily buildings.
- Where a building component is expected to consume more than 5% of the buildings total energy - e.g., the central HVAC system.
- In commercial buildings greater than 3 floors for every floor of the building

This level of sub-metering allows owners to diagnose issues better and more quickly than when all loads are grouped together on a single meter.

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☐ 1.
☐ 2.
☐ 3.
☐ 4.
☐ 5.

II. Adaptive Thermostats

☐ 1.
☐ 2.
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☐ 4.

III. Sub-metering

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Section 4 Sub-metering

Organization (specify)**: Clean Economy Alliance**

Discussion Question 2 Response:

2. **Should the Building Code simply require the "rough-in" of electrical systems to facilitate sub-metering installation by responsible utilities or authorities? If so, are there products available that would assist in future sub-metering?**

The Clean Economy Alliance does not support the rough-in of meters at this point, given that the future of this technology is likely wireless.

To the second point, there are many sub-metering technologies that can be retro-fitted into buildings, but many of them are not Weights and Measures Canada-certified and therefore are not "utility grade". This is not an issue provided the motivation of providing sub-metering is educational rather than cost recovery based.

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Section 4 Sub-metering

Organization (specify)**: Clean Economy Alliance**

Discussion Question 3 Response:

3. **Should the Building Code's requirements for sub-metering be expanded to better enable sub-metering for water and gas supply?**

Yes. The minimum requirements should be that sub-metering should be done for gas and water at least at the building level, so that multiple buildings are not connected to single meter.

The regulations should stipulate that separate uses (e.g. Commercial, Retail, Amenity space) within a building should be metered for gas and
water separately. All domestic hot water systems over 70 kW should be sub-metered.

In addition to the commentary provided above pertaining to use and expansion of metering for gas and water consumption the CEA also notes that there would be significant benefit to requiring sub-meters on heating systems that have recirculation loops. Recirculation loops are a great economic opportunity for carbon reduction but have to be metered and monitored effectively in order to deliver those savings. Metering and monitoring of recirculation should be required to help identify where and when losses are occurring in distribution.

Finally, in addition to sub-metering for volume, the province should consider adding requirements to sub-meter for in-building pressurization of the water service. If residential buildings have incorrectly pressurized (over pressurized) systems, this can negate all of the potential water saving benefits of low flow fixtures.

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Section 4 Other (General comments)
Organization (specify): Clean Economy Alliance
Please refer to CEA Summary Document.