

CHBA Comments on draft *TRM in Sustainable Housing*

General Comments

1) Lack of coherent representation of Federal players in housing

The most glaring, and troubling, omission from the draft report is adequate recognition of the array of federal departments and agencies with key roles related to housing. This will contribute to the ongoing problem of “silo” thinking within government, something the CHBA has called on the federal government to address, with some urgency. Without much improved-consultation and coordination among federal players who affect housing, it will be very difficult to engage provincial jurisdictions in a meaningful and effective manner.

CHBA’s National President, Victor Fiume, focused on this issue in his inaugural speech, as follows:

“Today, governments face a new economic reality, a “new normal” that demands a new model for how they do business, and work with each other.

Fundamental to this smart business model is the need for much more collaboration within and among governments, and with our industry.

What complicates our situation is the sheer number of government agencies involved in housing, at every level.

Many years ago, our industry could address housing issues at the federal level by talking primarily with just one agency – Canada Mortgage and Housing Corporation. Today, we must deal with a significant number of federal department and agencies, and face the same situation at the provincial level.

This makes productive dialogue far more complex and challenging. And it makes silo thinking a near certainty.”¹

While NRCan and CMHC are cited in the report, there is no mention of other federal entities that have a key role to play. The most serious omission relates to the National Research Council, and its Institute for Research in Construction. NRC/IRC not only provides support for Canada’s model National Building Codes, the IRC is also a key research organization at the federal level.

The lack of appropriate recognition in the TRM report of the key role the NRC/IRC has in advancing housing technology and innovation is viewed by the CHBA as a very serious error and this must be rectified. Such recognition should also cite the important role that Canada’s Standards organizations (e.g., Canadian Standards Association - CSA) play in supporting both Building Codes and, more generally, in bringing technical innovation to a market-ready state. In this regard, the Canadian Construction Materials Centre, also part of the NRC, is an important player.

¹ *Getting it Right in the “New Normal”*, Inaugural Address by Victor Fiume, CHBA March 2010, page 6

The key role that NRC/IRC should play in the future was also noted by Victor Fiume in his inaugural address, as follows:

“As we move forward to use energy and water more efficiently, and to reduce the amount of waste we produce, disciplined evidence-informed analysis will be essential.

Today, there is no intergovernmental body that can undertake this work – a body, of national stature, that can focus on the future, provide objective technical and analytic support, and work with our industry as it strives to become greener.

We need such a body. Without better research and information, particularly in terms of the integrated “big picture”, our progress on the environmental front risks being unfocused, ineffective, and undermined by governments working at cross-purposes. Unfortunately, this is already happening.

From CHBA’s perspective, this effort needs be supported and resourced properly. Such a capacity would most logically be created within the National Research Council, given the NRC’s mandate and expertise in relevant areas.²”

In addition, there are numerous other federal departments and agencies whose roles also need to be recognized. These include Human Resources and Skills Development Canada, Health Canada, the Canada Lands Company, Environment Canada, the Competition Bureau of Canada and Infrastructure Canada.

Clearly, this shortcoming in the report must be addressed. This may best be accomplished by adding a preamble or forward to the report that overviews the role and capacities of the relevant federal agencies and departments in a coherent manner. Or appropriate citations and references might be added through the body of the report. Whatever the approach, from CHBA’s perspective, this matter must be addressed if we are to continue to participate in the TRM process.

2) Lack of recognition of history in relation to industry progress and commitment

With the exception of a sentence on page 15, and a brief sidebar on page 17 of the TRM report, there is virtually no recognition of a quarter-century of progress in developing higher-performance, environmentally responsible homes in Canada. A non-expert reader might well conclude that nothing much has changed in the way the housing industry operates. This is not the case.

Since the advent of the R-2000 Initiative, in the 1980s, the industry has been a very active partner with government in supporting energy efficiency innovation, and in addressing the parallel issues of indoor air quality, comfort and efficient use of resources.

A more accurate portrayal of matters would recognize that improved environmental performance in homes, particularly in energy efficiency, has been, and will continue to be, a process of continuous improvement in

² Ibid, page 11

which both industry and governments have distinct and important roles. Within this “system”, voluntary, market-driven initiatives like R-2000 have particular importance (Note: this is elaborated on further in the specific comments provided later in this review).

To provide some perspective on the importance of this “system”, consider that the magnitude of improvement achieved in relation to the thermal performance of new homes in the last 20 years (roughly 50%) is similar to that required in the next period of time if we are to see broad deployment of “net-zero ready” construction. Net-zero ready represents a key milestone in the TRM “vision”. The fact that this momentum is already in place (and that we are already “half-way there”) should be recognized, as it will be critically important going forward.

Such recognition would provide a more realistic context to the report, one that recognizes the continuous character of innovation in housing technology and the fact that this is, in itself, a positive thing.

3) Lack of recognition of current tools and resources to support technological innovation

This point follows on the previous one. As noted, the TRM report draft tends to convey the sense that the home building industry will need to move towards high-performance housing from a standing start, which is incorrect.

Another important aspect of this issue is the need to recognize the various tools and resources already in place that will support a process of continuous innovation and improvement in housing.

As pointed out, the roots of this “system” go back to the early 1980s when the CHBA and the federal government collaborated to create the R-2000 Initiative. While government support for R-2000 languished in the interim, more recently there has been a very significant process of renewal undertaken by NRCan, with the support of the CHBA.

This involves not only the R-2000 Initiative, but also the EnerGuide Rating System and ENERGY STAR.

Additional R&D-related collaboration is focused on community-scale opportunities to achieve significantly higher levels of residential energy performance through efforts involving NRCan, the CHBA, and collaborative mechanisms such as QUEST³. CMHC’s Equilibrium Initiative, and the current CMHC/NRCan Equilibrium Communities Initiative are already demonstrating related concepts and innovations.

Each of these initiatives represents an important tool or resource that supports innovation in housing.

However, to appreciate fully their significance the linkages among them need to be recognized and understood. This view, which can help in preventing “silo-ing”, was laid out by CHBA President Victor Fiume, as follows:

³ Quality Urban Energy Systems of Tomorrow, see www.questcanada.org

“Our green agenda in housing has five distinct components, or “pillars”:

- First, building codes will establish, through a disciplined, evidence-informed process, an acceptable minimum level of energy efficiency for all new homes,*
- Second, the “next generation” EnerGuide Rating System will provide a sound and reliable basis for measuring the energy efficiency of any home, new or old,*
- Third, voluntary, market-driven initiatives like ENERGY STAR, and regional green initiatives such as Built Green, will offer consumers a significantly higher level of performance, representing the “best in class” for production-built homes,*
- Fourth, an updated R-2000 Standard will target the “leading edge” of performance that is commercially viable today, and*
- Fifth, initiatives like EQUilibrium Homes and EQUilibrium Communities will continue to support the research, development and demonstration of future technologies and building innovations that hold commercial potential.*

Together, these five pillars form a system that supports innovation and can be adjusted upwards over time, as new technologies mature. It avoids unnecessary risks and costs. It harnesses the power of the marketplace.

And it allows us to manage properly the risks that come with technical innovation while ensuring that greener homes remain within the financial reach of Canadian families.⁴”

This integrated and truly “holistic” perspective is currently lacking in the TRM report, and consideration needs to be given as how best to represent it.

Specific Comments

Page 3, first paragraph

The statement that the TRM is intended to “move the industry toward a **comprehensive, collaborative** and **integrated approach** to sustainable housing⁵” is gratuitous. As discussed elsewhere in these comments, and evidenced by the previous extract from CHBA President Victor Fiume’s Inaugural address, the industry has pursued this approach for many years, and has a very clear view of how it can be achieved going forward. While the TRM may highlight the value in continuing this approach, it is not a new development.

⁴ *Getting it Right in the “New Normal”*, Inaugural Address by Victor Fiume, CHBA March 2010, page 11

⁵ Emphasis in the original.

Page 3, Sustainable Housing – Canadian Perspective

The housing industry is an entrepreneurial enterprise, where new home builders compete in the marketplace. The marketplace is heavily regulated and influenced by a variety of forces. In that context, it is an exaggeration to state *“Canada’s housing industry has the ability, capacity and power to change the general Canadian consciousness of sustainable housing through education and leadership.”*

The statement also implies that the industry is fully responsible for deciding whether housing innovations are adopted, which is certainly not the case. Governments have a central role in a number of key areas including Code and Standards, support for research, development and demonstration, and in terms of regulations and land use controls. Most significantly, government imposed costs on housing directly compete with capital that could otherwise pay for innovation going forward. While the role of new home builders should not be understated, this sort of overstatement is unhelpful, as it presents an unrealistic view of matters.

Page 7, Paragraph 4

The statement, *“The residential construction sector alone accounts for approximately 17% of total energy used by final consumers in Canada, and 60% of water use”* is incorrect as stated.

First, it is the residential sector (i.e., Canadians living in homes) that accounts for residential energy end use, not the residential construction sector. The amount of energy used in construction is relatively insignificant.

Second, the value given is wrong. According to the latest NRCan Energy Use Handbook (see Total Energy End Use, Table 2), which reports secondary energy use by sector, in 2007 residential end-use was 1,447.2 PJ, while Canada’s total was 8,870.5 PJ. Residential end use was 16.3% of the total for 2007, not 17%. The correct rounded value is cited on page 14 of the report, in Section 2.2.

It might also be worth noting that in 1990, residential end-use accounted for 18.5% of total end-use, so the residential sector’s share of total energy end-use has gone down by nearly 12% over this period. This speaks to the issue of “momentum” raised previously.

Page 9, Section 1.2 A Technology Roadmap in Sustainable Housing

Pursuant to previous comments, where is the NRC/IRC and CSA in this? No mention.

Page 12, Section 2.0 Market Trends Towards Sustainable Housing

The sentence, *“Should the sector truly transform itself to employ a holistic sustainable housing approach, the ripple effects throughout the country will be remarkable”*, should be struck, as it amounts to hyperbole at best, and is patronizing at worst.

This erroneous statement frankly makes no sense. It seems to imply that the housing industry is fully the “master of the house” when it comes to “sustainable” housing – that it is free to decide whether to pursue this outcome or not. This is nonsense.

First, new home building does not take place in the sort of vacuum implied here – it is a highly regulated industry, one where the actions of governments have a profound impact on outcomes. Regulation through Codes, Standards and land use controls are one aspect of this, government imposed costs also significantly impact housing affordability and act to limit consumers’ ability to opt for higher-performance features. As well, in many areas government policies and regulations act to inhibit innovation, particularly in relation to energy efficiency.

The use of the term “*holistic sustainable housing approach*” should also be reconsidered, as this level of jargon seriously undermines the credibility of the report.

Finally, on page 12 there is a question posed, asking, “how can Canada’s housing industry choose not to move toward sustainable housing?”. This is both gratuitous and patronizing and should be deleted. As indicated in these comments, the industry embraces a culture of continuous improvement while operating within a business environment that is both highly regulated and market-driven. What builders “choose” to do is but one element in what determines the direction and velocity of change.

Page 15, second full paragraph

Here, in mid-paragraph, appears the following sentence, “*Significant improvements in housing technology and practices have almost halved energy consumption in new houses compared to homes built before 1946*”. Other than the sidebar presented on page 21, this is virtually the only reference to what should be recognized as a remarkable achievement. This amounts to “damning with faint praise” and also overlooks the significance of this in relation to the vision laid out in the TRM.

The performance threshold generally recognized as representing “net-zero ready” is about 50% higher than today. This is also the performance requirement being proposed for the “Next Generation R-2000 Standard”. So, in real terms, new housing is about halfway in the spectrum that links older homes, and what the TRM is calling for, and the voluntary, market-driven mechanism required to accelerate the innovations required to “go the other 50%” is currently under development by the federal government at the request of the home building industry.

This is something that the TRM should both recognize and celebrate – it does neither.

Page 16, What Does This Mean for Canada?

The first sentence in this section is as follows: “*Homes built with sustainable housing practices and products experience improved energy efficiencies – homeowners simply use less energy*”.

This sentence is both incorrect and misleading.

First, many of the “sustainable” attributes identified in the TRM report have no impact on either a home’s thermal efficiency or its net energy use. At present, some so-called “green labels” allow certification of homes that do not even meet current Building Code requirements for energy efficiency (e.g., LEED for Homes), yet are widely touted as being “more sustainable”. This sort of “green-washing” is a growing problem. The TRM report needs to steer clear of it.

A more correct statement might be: *Homes built to higher levels of thermal performance and which incorporate on-site energy generation, or that incorporate technologies that deliver household services using less energy, provide considerable potential to improve the energy efficiency of new homes.*

The new home builder can only deliver a home with this potential – the homeowners will determine what the end result will be. For reference here, talk with NRCan about their data sets tracking energy use by household appliances and electronics (i.e., plug loads). Huge improvements in the efficiency of white goods are being largely offset by growth in standby losses from electronics. This is another instance where the role of government – through application of the Energy Efficiency Act – is very important. Suggesting that this process is “simple” is incorrect, as it is anything but simple.

Page 17, Section 2.3 Manufacturing

A reference to CMHC International in relation to housing exports would be appropriate in this section. In addition, statements calling on manufacturers to “*continue to adapt to remain successful and competitive*” are somewhat patronizing and should be re-thought. As with new home builders, manufacturers do not exist in some sort of vacuum. Governments have a decisive role in creating the conditions under which innovations can be developed and moved into commercial use. As with previous statements about the housing industry, this section implies that manufacturers are much freer agents than is the case. A reference to the Canadian Construction Materials Centre would also help here – it has a potentially large role in making innovative products available for commercial use.

Page 20, Section 2.5 Infrastructure

Towards the end of this section, under the subtitle “What Does This Mean for Canada?”, it is noted that more sustainable approaches to housing “*places less stress on aging infrastructure, requires less investment in new infrastructure and can thus lead to significant savings for Canadian municipalities and communities.*”

The authors need to become better acquainted with how infrastructure is paid for in Canada. New home buyers (via their builders) and the federal government contribute a far greater share of municipal infrastructure investment than do municipalities, via their property tax base. One might hope that more efficient use of infrastructure might benefit new home buyers, who substantially finance it. The role of Infrastructure Canada in this area should also be referenced.

Page 21, Sidebar, A Canadian Success Story

While it is gratifying to see this sidebar included, it seems somewhat incongruent with the main text of the report. As the sidebar makes clear, the GHG emission performance of the residential sector since 1990 has been very good – intensity (GHG/m²) has improved some 21%, over a period generally characterized by low energy costs. While this result reflects improvements in both existing and new homes, it speaks to the sector’s momentum in addressing environmental performance, particularly when compared to commercial and institutional buildings over the same period.

With the exception of the sidebar contents, and the reference cited on page 15, this performance is not recognized in the TRM report. This creates a narrative that is not reflective of transformations already taking place in the marketplace, and which have been taking place for a considerable length of time.

In short, we are not starting from “zero” here – we are looking to build on momentum already in place, over an extended period of time. Some additional reference to this reality in the main report would provide a more realistic, and optimistic, perspective.

Page 21, Table 1

Here is the Table as it appears in the draft report:

Table 1: GHG Emissions by End-use Sector in Canada⁶

	2007		% Growth⁷
	Megatonnes/year	% Share	(1990–2007)
Residential buildings	74.3	14.8%	11%
Commercial/institutional buildings	64.5	12.8%	36%
Industrial	168.5	33.6%	24%
Transportation	179.4	35.8%	36%
Agriculture	14.9	3.0%	11%

As indicated in the footnotes, this data was taken from NRCan’s Comprehensive Energy Use Database (CEUD). It is also noted that GHG performance varies from year to year. It might be useful to put in some reference to weather-related impacts, as these have considerable impact on energy use in the residential sector, which is dominated by space conditioning energy use.

2007 was about 1% warmer, on a national basis, than 1990. More significantly, Cooling Degree Days had increased 38% since 1990. Coupled with significant increases in the use of air conditioning in homes, this represents an underlying change worth noting. This data is included in the CEUD tables that provide Canada-wide residential sector performance.

A more significant concern with the data set in Table 1 is its attribution of both primary and secondary energy-related GHGs to the end-use sectors, rather than reporting GHGs emitted at point of end use. The primary result of this approach is that electricity generation is not included as an end-use sector, and all electricity-related GHG emissions accrue to the electricity end-user. This methodology creates a number of significant distortions, which should be considered:

⁶ http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/tablesanalysis2/aaa_00_1_e_4.cfm?attr=0

⁷ Note, the growth rate of GHG emissions will change depending on the reference year. The numbers presented show the upward trend in emissions from all sectors.

- a) The GHG emissions factor for electricity generation varies tremendously across Canada. In some provinces (Québec, Newfoundland, Manitoba, B.C.) it is at or near zero. In others, (Alberta, Saskatchewan, Nova Scotia) it is quite high. As a result, when this methodology is applied, it results in an unrealistic picture of house performance, as it is significantly affected by the mode of electricity generation in place within a jurisdiction. For instance, using this methodology, it can be argued that all-electric homes in Québec are already “zero-carbon homes”, regardless of their energy performance.
- b) Home energy performance and the carbon factor of electricity generation are independent variables – changes in one have no direct correlation with the other. It is generally agreed that treating electricity generators as a specific sector is the appropriate approach (i.e., this is the reporting format Canada agreed to under the Kyoto Protocol, and how we report our GHG emission performance to the United Nations).
- c) Moving forward, attribution of electricity-related GHGs to end users will create some potential distortions in the apparent performance of net-zero homes. While “net-zero” is accepted as meaning “net zero purchased energy consumption”, all existing net zero homes both purchase electricity from the grid, and sell into the grid. While the site-generated electricity sold into the grid is likely to be carbon-free, the same cannot be said for that which is purchased from the utility during periods when home energy demand exceeds on-site generation capacity. In some cases, such as in the province of Alberta, this could lead to a “net-zero” home being attributed a fairly significant carbon footprint. A somewhat perverse outcome.

It is suggested that this Chart be reconsidered. At the least, it should include GHG performance both with and net of electricity related emissions. In the case of the residential sector, net of electricity-related emissions, the 2007 GHG emission level was .24% higher than in 1990. The other sector data can easily be calculated from the CEUD.

Page 21, First Paragraph

This includes the sentence that begins. *“Given that implementing stricter levels of energy efficiency and integrating renewable energy in residential buildings is more cost-effective in new construction projects, the GHG reductions that will result from accelerating the adoption of integrated sustainable housing practices would be an effective CO₂e abatement measure.”*

There are a number of ways in which this statement is problematic.

First, the term “stricter” implies a regulatory outcome, not a market driven change, and adds confusion to the meaning of the sentence. Is it calling for stricter regulations, or not? It also mixes its metaphors to some extent – the fact that adding energy efficiency and renewable is more cost-effective during initial construction than via retrofit does not equate with such measures actually being cost-effective.

Beyond these points, the statement implies that the envisioned measures can make a significant contribution to reducing Canada’s total GHG emissions. This needs to be qualified. As of 2006, based on Environment Canada data reported to the U.N. under the provisions of the Kyoto Accord, the residential sector accounted for a total of 6.8% of Canada’s total GHG emissions. Including emissions related to electricity used in homes, this total would likely increase to about 11%. On an annual basis, new homes

account for 1% to 1.5% of total housing stock. While we would all like to see Canada's total GHG emissions decrease, we need to be realistic about what new housing can contribute to this outcome. Stating that high-performance homes "would be an effective CO₂e abatement measure" overstates matters. At best, it can make a minor contribution to this outcome in any near- or medium-term scenario.

Page 22, Section 2.7, Conclusion

The conclusion portrays a move towards sustainable housing as a new direction for the industry, which is incorrect. As discussed in various CHBA comments on the TRM draft report, this process has been in place for many years, and is grounded on the reality of continuous improvement. The "vision" elaborated upon within the TRM involves continuing in a direction that is already well established. It should be portrayed, correctly, in this manner.

Page 24, Section 3.2, Academic and Research Support

The first paragraph lists a number of industry associations. The CHBA is not referenced. Given the Association's long history in supporting high-performance housing through initiatives such as R-2000, and other activities, this seems rather odd. Is there a reason for CHBA's exclusion?

Page 25, Section 3.3, General Comments

It is useful that the report includes mention of the various programs and demonstration projects, but there is important information missing from this summary. Some of the specific initiatives mentioned, such as R-2000 and ENERGY STAR have played (and continue to play) a very important role in the technological and market evolution of new housing in Canada, both through stimulating innovation and prompting its diffusion more broadly across the industry. This important function needs to be mentioned – voluntary, market-driven initiatives like these have a very crucial role in moving technological innovation into the marketplace.

As discussed later in these comments, this is highly relevant to the TRM "vision" as the "Next Generation" of the R-2000 Standard will provide a strong voluntary, market-driven platform for commercializing homes that are essentially "net-zero ready".

Page 25, Section 3.3, The EnerGuide Rating System (ERS)

The report should note that NRCan has initiated a consultative process to support development of the "Next Generation" ERS. The initial meeting the new ERS Policy Advisory Committee took place in March, 2010. You should get a precise definition of the intended outcomes from the process from NRCan, but CHBA's understanding is that NRCan wants to see the development of a more robust and informative home energy rating system. This would address many of the weaknesses of the current version, including the added capacity to incorporate renewable energy contributions.

The "Next Generation" ERS will also partially address some of the concerns raised in the TRM process about definition and metrics, at least in the area of home energy performance.

Page 26, Section 3.3, The R-2000 Standard

While the draft references current work to develop the “Next Generation” R-2000 Standard, and notes that this will likely include a more stringent energy performance requirement, the specifics cited appear to be incorrect. The new R-2000 energy target will be 50% lower than the current target. In some provinces, this would also be 50% below Building Code requirements, but this is not currently the case for all provinces.

It should also be noted that the CHBA is, and always has been, a partner with NRCan in the R-2000 Initiative.

Two additional, more general but important comments can also be made concerning references to R-2000 in the TRM report.

- First, the TRM references the need to move towards net-zero ready and net-zero homes over a period of time. It is generally agreed that the proposed new R-2000 Standard, which will approximate current performance of ERS 86, represents a Net-Zero Ready condition. As such, it corresponds with a significant performance milestone recognized during the TRM process – this should be made clear in the report.
- Second, in relation to education and training, the significance of the proposed new R-2000 Standard should also be discussed. R-2000 builder training has always formed a valuable component of the R-2000 Initiative, and has served to underpin many of the other new home label initiatives in place across Canada (i.e., ENERGY STAR, Built Green, PowerSmart, Nouveau Confort, etc). As a new R-2000 Standard is introduced, it is assumed that this will be supported by upgraded builder training. This will directly address some of the requirements identified in *Annex 2: Working Group Two – Infrastructure*, specifically Needs 2.1.1 and 2.1.2, and to a lesser extent, 2.1.3.

Page 26, Section 3.3, Federal Demonstration Initiatives

The references to EQUilibrium should note that this also involves NRCan, it is not purely a CMHC undertaking.

Page 28, Section 3.3, Other Initiatives

There are two points related to this section.

First, the assertion that LEED for Homes, an American developed and owned brand, is “gaining momentum in Canada” may overstate matters. We have seen precious little evidence that this is happening. You should also be aware that in some jurisdictions, notably Nova Scotia and some areas of British Columbia, the LEED for Homes energy efficiency prerequisite is below current minimum Code requirements. As well, LEED standards discriminate against Canadian wood producers by not recognizing Canadian-developed and internationally-accepted sustainable wood certification systems.

Second, the description of the CHBA’s EnviroHome Initiative is incorrect. EnviroHome is not a certification or labeling initiative – it is a marketing initiative that provides support to builders of R-2000 homes that incorporate innovative products, materials and systems. R-2000 certification is required to participate in

EnviroHome. No other certification is involved. Please correct this reference, and remove EnviroHome from the category of “Labels”.

Page 29. Section 3.4, International Initiatives in Sustainable Housing

In the third paragraph of this section it is reported that, “*Experience has shown that energy consumption of new houses can be reduced by as much as 50% with little or no impact on the cost of construction*”. Assuming that this statement did have its origins with the Building America Program, some caution should be exercised in presenting it in a manner that could suggest the same is true in Canada. Canadian homes are, as a general rule, far more energy efficient than homes built in the U.S. As a consequence the incremental cost of energy efficiency is correspondingly higher in Canada. The statement is certainly not applicable or accurate in relation to Canada.

Page 31. Section 4.0, Priority Challenges and Strategies for Sustainable Canadian Housing

In all of the sub-sections of this chapter of the report, governments at all levels should be listed as stakeholders.

Page 36, Section 4.2.1, Desired Outcome

The assertion that “a common, national definition of sustainable housing” will somehow “serve as a starting point for understanding other related initiatives (e.g., R-2000, LEED for Homes, etc)” is misplaced.

First, it is misleading to categorize a long-established initiative like R-2000, which has had a profound impact on the way all new homes in Canada are built today, with LEED for Homes, which is non-Canadian, fairly new, and which has not had a significant impact in the marketplace.

Second, many of the concepts integral to the notion of “sustainable housing” will, by definition, stand on a foundation created by the R-2000 Initiative, such as “house as a system”.

The inferences in this summary are quite misplaced and at odds with the history of new home building in Canada over the last few decades.

Page 37. Section 4.2.1 and 4.2.2, Definition and Metrics/Monitoring and Verification/Key Activities

There are two comments on this section, as follows:

- 1) As a general comment on the question of metrics, measurement and verification of performance, it would be prudent to note that while the notion of “sustainability” involves a number of variables, not all of these are easily subject to quantification. Where quantification of performance is realistic, and where there are broadly accepted methodologies for doing this, measurement of performance should be a priority. However, in areas where such methodologies do not exist, or where these are not broadly accepted as being meaningful or accurate, caution is required. In general, operational inputs such as energy and water use are more easily measured and quantified. Other aspects of house performance, such as indoor air quality, “comfort” and embodied energy, are far more problematic. In the absence of science-based methodologies, developed through accepted processes and based on objective data rather than subjective anecdotes, it may be highly unrealistic to assume that meaningful

metrics can be generated. If caution is not applied, such efforts could well pose real risks to the credibility of all those involved in the undertaking.

The application of metrics that are not well founded has significant potential to result in “green washing” or errors that undermine consumer confidence.

- 2) In Point 5, data gathering collaborations should list all levels of government, not just municipalities. Much of the data currently available is produced by the federal government through various Statistics Canada and NRCan research and reporting. It seems unlikely that municipalities would undertake similar research, as for the most part they lack the capacity and resources to do so.
- 3) The list of Key Activities should also take note of the work, currently underway by NRCan, to develop the “Next Generation” of the ERS. This is a broad-based consultative process utilizing an approach based on the Standards Council of Canada methodology and holds the promise of providing all stakeholders with a state-of-the-art energy performance measurement tool, one that is technically sound, robust in its administration and highly credible.

Page 39. Section 4.2.3, Design Process

In the background discussion for this section, the term “house as a system” is used, and this is quite appropriate. This term, which emerged from the R-2000 Initiative in the 1980s, is well understood by new home builders and has a defined technical meaning. Today, the home building industry also recognizes that a home is also a “system within a system”, in that it integrates with external systems including energy supply, water and sewage services, transportation, etc. “House as a system”, and the well-defined technical concepts that underpin it, has considerably greater meaning than terms such as “holistic”, used elsewhere in the report. For the sake of clarity and comprehensibility, consideration should be given to removing the term “holistic”, or providing a clear definition of its meaning and intent. “House as a system” has an accepted meaning in technical discourse.

Additionally, the discussion on the virtues of design charrettes could benefit from being linked to existing processes already in use by new home builders when designing higher-performance housing. The key concept behind design charrettes is to integrate thinking on a range of design variables. In relation to a large building project, or a large scale development, this process may be manageable and affordable. At the single house level, it is not.

The development of the R-2000 Standard provided new home builders with an integrated design tool – HOT2000. This allows the builder or their designer to explore a wide range of design options in a trade-off context, to determine the most cost effective approach that will deliver an intended level of energy performance. The value of this tool should be noted, as it provides many of the elements of a charrette without the complexity, time requirement or high cost. Given that the TRM is focused at the individual house, the need for this connection seems obvious.

Page 43. Section 4.2.5, Energy Simulation and Design Tools

The first Key Activity calls for the development of energy system software. This is already underway within NRCan through development of the open-source HOT3000 program. The “Next Generation” ERS process

is also addressing this requirement. Both will provide a simulation framework that will allow integration of renewable energy and other innovative systems. This is a significant development and should be noted.

Page 47. Section 4.2.7, Training and Education

Some discussion of the role of the federal government in collaborating with the provinces in this area is needed. This is particularly relevant for the residential sector, in that many provincially-designated residential trades are not currently recognized under Red Seal, and so are not receiving adequate training support. This is an issue that needs to be addressed by Human Resources and Skills Development Canada.

The list of key stakeholders should include apprenticeship authorities, as one of the Outputs involves apprentice training.

Page 50. Section 4.2.8, Market Information and Education

The background discussion presents a rather strange picture of how new home builders operate, as it seems to lecture them to “know their customers”. In practice, this is how new home builder typically organize their marketing and sales efforts – because failure to do so usually leads to business failure.

The implication of the discussion is that addressing any lack of consumer demand is primarily the responsibility of those building and selling new homes. This is not accurate – governments and others play an influential role. First, builders can only sell what regulators allow them to build. Second, builders must sell what consumers want and are willing and able to pay for.

The key function of the marketplace must be recognized. Builders who promote higher-performance or “green” features do so in order to establish product differentiation within a competitive marketplace. While builders certainly play an important role in influencing consumers, they do this within a complex system of constraints, many of which come from governments. Governments clearly have a role to play in removing barriers to higher-performance housing, and in informing consumers about the merits of such homes.

As well, in the stakeholder section, the new home warranty industry should be added, as they must provide warranty coverage for these homes.

Page 52. Section 4.2.9, Financial Frameworks

The references to incentives should probably be clarified as referring primarily to government-provided incentives.

An aspect that is not addressed is the importance of aligning the policies and actions of multiple players towards a specific outcome. For instance, with programs such as ecoENERGY Retrofit for Houses, federal leadership and initiatives lead to participation by both provincial governments and utilities, who brought forward complementary incentives, based on the federal model. This degree of alignment increased the overall effectiveness for all participants. Similar alignment will be important in the future. In this scenario, federal leadership will also be critical.

There should also be some reference made, somewhere in the report, to governments also addressing the desired outcomes in their specifications for social housing, and the management of social housing portfolios, where they hold an ownership position. If, as noted on page 7, “the Canadian housing sector is under increasing pressure to reduce its environmental impacts”, it is difficult to fathom why governments, which hold significant portfolios of social housing units, should not be subject to the same pressure. As owners of housing, governments have a clear stake in, and opportunity to demonstrate, their commitment to sustainable housing.