



**“Towards Net Zero Energy –  
Measuring Net-Zero Energy Homes”**

**Brief on Workshop Proceedings**

**Westin Harbour Castle, Toronto  
July 9<sup>th</sup>, 2007**

**EVENT SPONSORS:**



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## Introduction and Purpose

On July 9<sup>th</sup> 2007, the Net Zero Energy Home Coalition (the "Coalition"), in partnership with Alpha Tec Consulting and CRESNET, convened a workshop to identify practical next steps toward recognition of net-zero and near net-zero energy home standards. Related themes included exploring key requirements for integrating, optimizing, and deploying net-zero energy homes (NZEH).

The workshop, entitled "*Towards Net Zero Energy - Measuring Net-Zero Energy Homes*", was initiated as a result of recommendations from three forums convened by the Coalition in early 2007 – two in Ontario and one in Alberta. Over 200 stakeholders were consulted in these forums in order to identify critical barriers to NZEH deployment in Canada.<sup>1</sup>

One of the primary gaps identified in prior forums was the lack of an existing label that builders could use to quantify or measure an NZEH. To date, existing labelling programs have not accounted for the contribution of energy load reduction resulting from onsite renewable energy generation to a home's design.

The purpose of the July 9<sup>th</sup> workshop was therefore to:

- (1) Identify draft elements of how to measure a net-zero energy home; and,
- (2) Help define a near zero energy home benchmark that homebuilders could use to articulate progress in this area.

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<sup>1</sup> Documents from previous events are available from the Coalition website at: <http://www.netzeroenergyhome.ca/>  
Documents include proceedings from the forums, speaker presentations, and the final strategy document for Ontario.

To facilitate these outcomes, the workshop coordinators selected leading representatives from the green building industry to participate in the dialogue. Participants included homebuilders, government, consultants, renewable energy companies, and municipalities.

## Towards Net Zero Energy Homes

Mr. Simon Knight, Executive Director of Climate Change Central provided context for the day's discussion by describing global sustainable building developments, which are proliferating as the relationship between buildings and climate change is becoming better understood.

For example, buildings account for nearly 40 percent of global greenhouse gas emissions, and approach 70 percent of emissions in cities like New York and London. This realization has led to significant international advocacy and policy activity, as in the global *Energy Efficiency Building Retrofit Program*<sup>2</sup> and the *EU Directive on Energy Performance of Buildings (2002/9/EC)*.<sup>3</sup>

The Canadian building industry is also a significant contributor to greenhouse gas emissions. Assuming business as usual, the impact of this sector is expected to increase significantly as Canada moves into a major growth phase in new housing stock.<sup>4</sup>

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<sup>2</sup> Developed and delivered by the Clinton Climate Initiative, this program brings together four of the world's largest energy service companies, five of the world's largest banks, and sixteen of the world's largest cities in a landmark program designed to reduce energy consumption in existing buildings.

<sup>3</sup> This latter framework requires that every building be rated at time of sale or change of occupancy.

<sup>4</sup> For more information on these projections, please visit documents from the NZEH Ottawa Forum, Presentation by Natural Resources Canada, available at: [www.netzeroenergyhome.ca](http://www.netzeroenergyhome.ca)

Although some provincial building codes are changing to adapt to these new realities, much more needs to be done, and quickly, in order to shift pending environmental issues into opportunities.

The Coalition has identified that consensus around a harmonized energy rating scale is an important and enabling support measure for progress in this area. In closing, Mr. Knight emphasized that this discussion should be the principal focus for the day's activities.

### **Sustainable Housing Scales**

Mr. Kevin Lee, Deputy S&T Director for Housing and Buildings at Natural Resources Canada, next reviewed existing energy rating scales and developments in associated software.

*EnerGuide:* The EnerGuide rating scale, arguably the best known scale in Canada today, is a performance-based, non-prescriptive label. In theory this scale equates best performance (i.e. net zero energy usage) to a rating of 100.

*R-2000:* R-2000 is a performance-based label that shows a home has met a minimum standard for energy efficiency. A certified R-2000 home must have an EnerGuide rating of 80. This label places emphasis on training, licensing, and quality assurance.

*EnergyStar:* EnergyStar was developed to make the R-2000 target more available to production builders. Like R-2000, an EnergyStar house also has to meet an EnerGuide rating of 80, but can do so *via* a prescriptive as opposed to performance path.

*HOT2000 and HOT3000:* HOT2000 is a software tool developed by NRCAN to

help users quantify their EnerGuide rating. The next iteration of this software, HOT3000<sup>5</sup>, is expected to be released within two to three years.

*NZEH rating work to date:* NRCAN has also developed an unofficial EnerGuide rating system for NZEH designs to support the CMHC EQUilibrium competition.<sup>6</sup> This rating included the design of an envelope that would achieve an EG rating of 82.<sup>7</sup>

In debating the merits of using existing scales vs. the development of a new metric or scale, Mr. Lee suggested the following considerations need to be accounted for:

- *Existing EnerGuide legacy:* The EnerGuide has been applied to more than 300,000 existing and new buildings in Canada, and is the basis for all NRCAN-related labels. This momentum and existing legacy needs to be properly considered going forward as it provides necessary continuity for the industry.
- *Accounting for occupancy:* R-2000 and EnerGuide essentially separate the house from occupancy lifestyle at any given time. This has enabled the development of a standard benchmark for these

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<sup>5</sup> HOT3000 will provide the ability to model in 'time-steps', which will enable important gains as in monitoring the overall energy balance of a system and also determine 'balance of plant'. This latter aspect is an important supporting technology to NZEH, as it can help determine what portion of energy is being provided by renewables and at what time. The 'enthusiast' version of HOT3000 can be viewed at: <http://sbc.nrcan.gc.ca>

<sup>6</sup> This competition awarded 12 homes that had achieved an NZEH design in principle with 50K in capital cost funding. See [www.cmhc.ca](http://www.cmhc.ca) for more information.

<sup>7</sup> The thinking behind this approach was to address the building envelope as a first priority, and then examine base load (for example by asking questions as to whether air conditioning is needed de facto). This rating was in effect "an unofficial modified EGH for NZEH homes", which experienced a trial run under EQUilibrium.

programs. With NZEH however, there is a need to consider how the occupant may impact the type of rating that is or can be achieved.

- *Technology status and perception:* There is a perception that all of the required technology for NZEH exists today. The reality is that not all of these technologies are yet cost-effective, and more progress is required in order to achieve true mainstream deployment. This stage of technology development needs to be properly communicated.
- *Technology support:* Technological advancements are needed in order to satisfy the demand side of residential energy equation. The Coalition would be an ideal lobbying group for support in this area due to its backing of the NZEH concept. This is a timely opportunity given that Canada is on the cusp of a significant increase in new housing.

Mr. Lee's four closing recommendations for NZEH stakeholders were to:

- (1) Establish metrics for NZEH;
- (2) Define the next generation of technology and what this will look like;
- (3) Provide necessary support tools for builders; and,
- (4) Correct perceptions and ensure that support for ongoing development of new technologies is in place.

#### **Built Green™ Society of Canada**

Mr. Alex Joseph, Executive Director of EnerVision, presented information on the Built Green Program and the context for its success in Alberta and BC.

Steep energy costs and increasing water usage<sup>8</sup> concerns mean Alberta is

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<sup>8</sup> Water costs are expected to surpass energy costs in the near future. Although water was a recurring topic of discussion, in general participants felt that net zero was focused

undergoing 'the perfect storm' of factors to support energy efficiency development. The provincial government is also taking a stronger stance on waste reduction issues as exemplified by regulations under consideration to reduce construction and demolition debris by 50% by 2010. If initiated, these latter restrictions will be linked to building permits and consequently may impact the homebuilder industry.<sup>9</sup>

Created in 2003, the purpose of the Built Green program is to encourage homebuilders to use technologies that increase the efficiency of water use, energy use, and waste management. At present, the program employs mandatory R-2000 training, third party verification, and three levels of recognition – bronze, silver, and gold - to achieve these goals.

The voluntary approach of Built Green has given this program a competitive advantage which is further buttressed by its use of the homebuilder associations across the province to expedite program delivery.

Currently, Built Green has enrolled over 4,600 homes in Alberta and British Columbia. Interest is growing in the program as municipalities are recognizing that such homes are more affordable and result in significant infrastructure savings. Builders have also responded with alacrity to Built Green. More than half of enrolled homes are expected to be above EG 80 in 2006, compared to a median of EG 72 in 2005.

This rapid development has prompted Built Green to develop a fourth level:

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primarily on energy at this point and should be kept that way for the day's discussion.

<sup>9</sup> By preparing a waste management plan indicating how builders will deal with the waste. In California for example, there is a deposit required for this, which is refunded depending on whether the recovery is achieved.

platinum<sup>10</sup>, however the organization expects that a net zero level will be needed very soon as builders surpass even this latest stage.<sup>11,12</sup>

Mr. Joseph explained that recent challenges experienced by Built Green have been in part related to tying benchmarking to the EnerGuide program. For example, a recent attempt to certify an EG 88 home required the manual calculation of the certification scoring in Ottawa.

Another, perhaps more systemic challenge identified by Mr. Joseph, is that builders are benchmarking and designing homes to HOT2000. HOT2000 was initially developed to benchmark R-2000 homes, but it is now becoming apparent there needs to be a mechanism for leading edge near and net-zero builders to design homes at the EnerGuide 90+ level.

As the EnerGuide rating approaches Net-Zero manual work arounds are often needed. Participants also emphasized that a more advanced supporting tool like HOT3000 is needed.

### **EnerGuide and the HERS Index – A Comparison**

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<sup>10</sup> Expected to launch in January 2008, this level is looking at a minimum of EnerGuide 82, a possible 100-120 Checklist points with a specific weighting in each category to insure quality of performance, concern for effective ventilation, and EGNH 88 (SF+MURB) projects

<sup>11</sup> Some possible gray areas in reaching net zero include some uncertainties on ventilation, as there has been limited knowledge and experience at this level, even on the modeling side. Similarly there is a lack of information on building to net zero will affect moisture levels and impact the durability of materials such as SIPS as one moves to an air tight house.

<sup>12</sup> Other important considerations include a broader communities approach and involving the retrofit area. Built Green is considering both elements through a Built Green Communities and a Built Green Renovations level under development.

Mr. Bruce Gough, President of Energy Building Group Ltd. and member of the recently established Canadian Residential Energy Services Network (CRESNET<sup>13</sup>), provided a comparison of the EnerGuide Rating scale and the American Home Energy Rating System (HERS) index.

#### *The EnerGuide (Canada)*

Rated on a scale from 0 to 100, an EG rating is calculated by the following formula:

$$100 - 20 * (\text{consumption} / \text{R2000 target})$$

This formula deducts the ratio of consumption and is a fixed and static metric given that it compares a basic house and the R-2000 target. Basically, the better a house performs in terms of energy usage, the closer the score moves to 100.

Mr. Gough suggested that although EnerGuide has been in a strong position for a long time in Canada and is the common currency for all NRCan energy efficiency programs, its current applicability to the rapidly evolving green building industry is coming under question.

Mr. Gough stated that EnerGuide was never intended to become a measure for code compliance, even though it is becoming increasingly embedded in provincial building codes<sup>14</sup>. Its application was intended principally as a rating measure for the existing housing market as opposed to a specific target for new housing.

According to Mr. Gough, some of the drawbacks to EnerGuide are that it:<sup>15</sup>

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<sup>13</sup> CRESNET is an endorser of the HERS index system.

<sup>14</sup> NRCan: all homes to be EGNH 80 by 2010.

Ontario OBC 2006: EGNH 80 alternate and mandatory by 2012; other provinces considering

<sup>15</sup> Please see paper: "Measuring Up Canada's EGNH" for more information

- Does not use the "real building" proposed for reference consumption. Instead, it uses R2000 which has degree days and volume. This is potentially misleading as windows, surface areas, etc. can vary such values significantly.
- Uses a reference energy consumption that can be variable<sup>16</sup>
- Does not include AC or electrical
- Does not vary electrical consumption or heat gains by building size or occupancy
- Imposes limits on air tightness
- Has no model for duct leakages
- Has no rules for renewable generation
- Makes use of closed vs. open software tools i.e. HOT2000<sup>17</sup>
- Provides no electrical peak load model
- Does not measure by cost

#### *The HERS Index (USA)*

Mr. Gough next described the HERS (Home Energy Rating System) index. The HERS index is used widely in the United States and is another tool that can measure building performance. Whereas EnerGuide is rated like a grade (in that a high score indicates low energy consumption and good performance), HERS works similar to a golf score in that the lower the score the better.

In comparison to the EnerGuide constraints outlined, Mr. Gough expressed that the HERS model has no top end limit, accommodates various climate codes and has a set of standard reference conditions for each climate zone. Further, the HERS is applied on a national level which can transcend all state codes if *sub par*.

Participants supporting this scale noted its explicit rules for renewables, and the measure of value on the basis of cost as opposed to quantity. Some participants suggested that cost was a more compelling way to articulate value to a homeowner. HERS also benefits from an open software system, however similarly to EnerGuide does not address electrical peak demand. Lastly, although HERS does have air tightness limits, these are low.

Comments during this session pointed to the difficulty of working with the EnerGuide scale past a certain level, as dramatic improvements to an already efficient design can result in minor changes in the rating scale. At an EG of 80 for example, a builder only has effectively 5-10 points to work with as opposed to the HERS index, which at this level offers a much broader range (i.e. 60 points) for valuation.

According to Mr. Gough, the adaptation of the HERS index or a similar model to Canada would require groundwork, but is important to consider. Some of the more obvious requirements to adoption include defining climate and provincial zones, as well as the development of reference specifications. Software and delivery partners would also have to be identified, and some technical review would be needed.<sup>18</sup>

#### **Home Energy Rating Systems – The US Experience**

Steve Baden, Executive Director of Residential Energy Services Network (RESNET<sup>19</sup>), described the US historical experience with home energy rating systems.

<sup>16</sup> If one runs a reference house at reference conditions using a real set of geometries

<sup>17</sup> NRCan commented that this discussion has not yet taken place in regards to HOT3000, however there would be merit in exploring this

<sup>18</sup> For example of air leakage, electrical end use formulation, and/or duct leakage formulation

<sup>19</sup> RESNET is a public comment and consultation organization that administers the energy use index HERS

### *History of development: Home Energy Rating Systems in the US*

In 2005, the US was using a system very similar to what Canada has now (where a score of 100 was optimal). Builders using this system ran into difficulty at higher levels of product efficiency, as costs rose exponentially for a very small gain on a point level. In essence, the system in place was inflexible and too compact to properly reward improvements at higher levels.

The decision was then made to change the point system. This was a considerable challenge at the time given that there were already 600,000 homes certified to the old label. Understandably, this was a controversial decision which resulted in threat of program secession from some member states, including New York.<sup>20</sup>

Mr. Baden stressed that although the implementation of the new program was not easy, the logic behind it was, as by reversing - and in effect expanding - the scale, users could move beyond valuating only heating, cooling and hot water and start addressing the other 55 - 65% of energy uses of a home.

### *Present day use of the HERS Index*

Today's HERS Index uses a measure of 100 to represent the energy use of an American Standard Building, and a metric of 0 to express no net purchased energy.

One of the advantages of HERS is that it in effect "freezes" a reference home into the software. This reference home is technically a non-existent geometric twin of the rated home aligned with the 2004 model energy

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<sup>20</sup> Today, however, New York State is one of the biggest supporters of HERS index.

code. This reference home can be manipulated to represent locations, degree days, and various parameters of interest. Mr. Baden indicated this capability makes the HERS Index a very powerful tool and reference case.<sup>21</sup>

Since 2005 HERS has expanded to 50 states and has rated over 120,000 new homes, or approximately 10% of the new homes built. This translates to 780,000 - 800,000 rated buildings in the US alone.

Mr. Baden's most important point was that green building stakeholders must not have their progress constrained by measurement antecedents. Instead, it is more important - and imperative - to consider flexible designs that can accommodate the large number of homes that can be engaged in the future.

### **NZEH on the Ground: Case Study of Stickwood Walker**

Mr. John Godden, Principal of Alpha-Tec Consulting, provided an overview of the Stickwood Walker and Rodeo Homes development as an example of NZEH "on the ground".

Mr. Godden explained that increasing numbers of developments in Canada are focusing on sustainable design. The Block 39, TRCA project for example- with its 1600 EnergyStar homes and LEED certified buildings, is Ontario's largest EnergyStar development for new homes to date.

Stickwood Walker, based in Newmarket, and the first "Ecohousing" subdivision in Canada, is another such project. This project has achieved a

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<sup>21</sup> Put another way, the reference home is the geometric twin of rated home, of what it looks like *at that location*. In effect the rated home is being rated against itself, which offers great flexibility and regionality.

25% reduction in household water draws, a 60% reduction in wastewater outflow, and positive impacts on solid waste, energy use (including space heating, hot water, and plug load), and greenhouse gas mitigation.<sup>22</sup>

High sustainability features<sup>23</sup> of the Rodeo Green development include:

- High performance windows (i.e. EnergyStar)
- Insulated sheathing on the outside
- Extruded polystyrene on outside and under basement slab
- *Roxul*, which also provides LEED points due to its high recycled content
- Dual purpose condensing boiler to give heat and hot water at 90% efficiency
- Integrated air handlers which can get ventilation from the same blowers used for forced air distribution
- Circulation pump
- Instant hot water on demand and timer
- Radiant flooring in basement
- Solar preheating panel<sup>24</sup>
- Drain water heat recovery
- Solarheat, an air solar thermal panel which preheats the ventilation system

#### *Applying the EnerGuide to Rodeo Green*

Mr. Godden described how, in the course of developing Stickwood Walker, the City of Newmarket decided that it wanted some sort of validation of the 60% reduction it had achieved in energy use. The builder also wanted recognition from the market place for these efforts.

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<sup>22</sup> Compared to a conventional home.

<sup>23</sup> The project architect also negotiated a municipal laxation on setback from the road so as to allow more area for solar ready design. This enables the eventual installation of air and hot water PV on roofs.

<sup>24</sup> Resulting in 60% of hot water from sun

Unfortunately, according to Mr. Godden, these demands could not be met by the present EnerGuide label with satisfaction (Stickwood Walker would score 84 on the EnerGuide scale). Essentially, although a move from EG 80 to EG 84 can represent a step change in technology and in cost, EnerGuide does not adequately convey the degree of difference – and effort required – to achieve this higher score.<sup>25</sup>

In comparison Mr. Godden noted that applying the HERS index to the Rodeo Green development would result in a HERS score of 47 plus an additional 21 LEED credits that can be applied (as opposed to an EnerGuide rating of 84, which is fixed).

***NB.*** *This observation and comparison between EnerGuide and HERS is illustrated in the figure provided at the end of this document.*

In closing, Mr. Godden suggested that Canadian green building stakeholders would benefit by considering the US experience with HERS and applying this knowledge to evaluate current rating scales.

Mr. Godden also suggested that coming to a definition of near zero would be a very useful outcome from the day's proceedings, as many participating builders could immediately begin building these homes.

#### **Reports from the Breakout Groups**

Workshop participants were split into three breakout groups that looked at: (1) scale options, (2) appropriate technologies and (3) how to market an

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<sup>25</sup> Further the EnerGuide scale was primarily developed for existing homes and was only extended into new homes because R2000 homes were performing better than target and this had to be demonstrated in some manner.

NZEH. Participants were asked to identify stakeholders, strategies, and next steps of importance related to these topics.

#### *Breakout Group One: The Scale*

Group #1 looked intimately at the characteristics of an ideal scale for quantifying net or near zero. The goal set for this group was the development of a strategy for measuring a NZEH.

The group discussed a scale 'wish list', in terms of ideal attributes that would address builder needs over the longer term. The group identified that this ideal scale should:

1. Have a long shelf life
2. Allow for the comparison of 'new to old' and 'new to new'
3. Be able to link to an absolute number
4. Be able to link to marketing points or a brand
5. Be easily saleable to consumers
6. Respond accurately and visually to technical changes
7. Be responsive to new technologies
8. Be related in some manner to carbon
9. Be able to include all energy usage in a house, including renewables, and allow this usage to be broken out
10. Measure zero energy use as zero.<sup>26</sup>

Other "nice to have" attributes included that the scale:

1. Have the ability to enable or allow for the use of a community based system

2. Consider some kind of factor or computation to address water use, but not address this in entirety
3. Report on peak demand in some manner
4. Account for occupancy use, but not necessarily penalize for lifestyle
5. Account for size of home in some manner, but not build this into the index
6. Enable some kind of relevance to international developments in carbon trade
7. Enable some mechanism for continuous improvement
8. Make a linkage to energy costs
9. Allow for net positive energy contributions to the grid
10. Be self explanatory to the public and more illustrative of the changes made by investing in onsite renewable energy

The group also discussed the option of having the scale link to a range of outputs, for example megajoules, dollar values, carbon, or other units of interest. Other helpful attributes would include evaluating the technical accuracy of the scale on an ongoing basis.

In terms of the reference house, or baseline, the group recommended simply the use of the 2006 OBC. This reference could stay the same across the country, but be modified for degree days.

Overall, the group felt that net zero should be represented by the number zero on this new scale, with the *proviso* that this concept would need to be tested in terms of its marketability with consumers.

The group also acknowledged that some kind of benchmark around EG 85 or HERS 50 would be an important measure to identify in the near term so that builders have a label of some kind to work with now.

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<sup>26</sup> In terms of the absolute number, the group had some trouble in wrestling with zero vs. 100 and thought perhaps this was fundamentally a marketing question. Although the group thought that technically zero was a better goal, they recommended a course of due diligence with the public in terms of identifying which goal would be easier to understand.

### *Breakout Group Two: The Home*

Group #2 was asked to identify what technical features or technologies would be needed in order to achieve a net or near zero house.

The group started its task by equating the reference point to (HERS) 50<sup>27</sup>. This reference point was selected as it was considered currently achievable, marketable and saleable.<sup>28</sup>

It was decided that a HERS 50<sup>29</sup> house would require the following attributes<sup>30</sup>:

- An integrated space and domestic hot water system
- Be 'renewable ready' - in terms of enabling appropriate surface area (i.e. for solar PV) but also enable the use of other technologies like geothermal
- Enable district heating at the outset
- Consider indoor air quality technologies, for example through enabling fresh air, point exhaust source control, HRVs, etc.
- Have meters to help the homeowner understand and control energy use
- Have remote monitoring

A HERS 50 achievement was seen as a threshold measure, or a tipping point on the path to net zero. The addition of capital-intensive PV was suggested to be the deciding factor for moving beyond this threshold into the near zero realm. A threshold home would then be defined as "having a minimum

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<sup>27</sup> It was interpreted that this measure was applicable on the HERS scale, similar to where a EG 84 would equate to a HERS rating of 47.

<sup>28</sup> Further, the group indicated that moving beyond HERS50 at this juncture might incur novel technologies that would need to be accommodated in a different manner.

<sup>29</sup> Equating to approximately EG 85.

<sup>30</sup> The group concurred with the presentations as far as the rating scale, feeling that scales need to go beyond plug load.

energy level and a solar ready component to its design".

The group concluded that a metric beyond EnergyStar is needed that can differentiate to this next level of achievable design, expressing that either the EnerGuide system should be expanded or some other system needs to be put in place.

### *Breakout Group Three: Marketing*

Group #3 was tasked with determining how to market net zero homes through identifying the customer, scope of market, brand, and other exercises.

The group began by defining the problem in terms of to whom, and what, is being marketed.

*The Market:* The market was defined as homebuyers, building communities, municipal building officials, city councilors, politicians, and realty assessors.

*The Pitch:* An NZEH was considered to be inherently marketing two attractive attributes:

1. *Lifestyle*, in terms of energy cost reductions, comfort, investments and payback, and quality; and,
2. *Environmental Responsibility*, in terms of addressing responses to global warming, concepts like 'solar chic', and pressure from the next generation.

*The Brand:* It was suggested the NZEH brand should capitalize on the popularity of the hybrid car, and bill itself conceptually as a hybrid house. Although not technically accurate, this concept would be more easily understandable by consumers.

Sustainability would be the underlying message of the brand, and the group felt that net zero energy as the priority

was the critical goal (at least as a starting point).

The group next discussed what kind of sales pitch and marketing channels would be useful, and decided that:

1. The sales pitch to the builders needed to increased sales, higher margins, and market differentiation (i.e. by demonstrating corporate social responsibility, or CSR).
2. The sales pitch to the buyer should communicate the monetary savings in energy bills, a deep green approach to lifestyle, and the ability to achieve energy independence and security (i.e. "future proofing").<sup>31</sup>

Marketing channels included finding the trendsetters who can disseminate this concept by word of mouth.

Next steps that can help to expedite deployment include beginning the education process with consumers and beginning to advocate near or net zero homes. Politicians having an appetite for sustainability would need to be recruited, and ideally some activity at high levels of government linking NZEH to climate change would be important.

### **Final Discussion**

Workshop participants next embarked into a broad discussion that touched on all topics brought up during the day.

The Coalition asked participants where the industry needed support in the near term and under what timeline. The Coalition also noted that it would benefit from more support on the advocacy front, particularly if it were

requested to approach key decision makers at all levels of government.

Of all topics, several participants expressed concern with the implication of builders moving beyond, and wanting to move beyond EnergyStar and not having the best supporting tools to work with. A timeline of three years for the next iteration of HOT2000 from the only supplier of this software was also felt to be discouraging.

Some participants expressed that builders would like a label, and "they would like it today". Revised R2000 was brought up as a possibility to build upon, however there was general consensus that another step would be needed should this approach be taken.

On the software issue, the suggestion was made that government should enable other private industries to develop supporting models in the time frame of the next two to three years. This would allow and enable creativity to be brought to the market.

Although it was recognized this would pose some complexity for proponents of HOT3000, government participants indicated the department could still participate in this development, and vocally supported the need for an all encompassing and better tool, as well as a better scale.

An example was given of a successful communications campaign that the group could consider, whereby the Wood Council of Ontario sent a well-crafted resolution to all the municipal councils in Ontario. This proposal was supported by multiple councils (i.e. in the 100s) as a result. It was suggested that the Coalition could follow a similar pathway to enable buy-in, and should take immediate steps to draft a resolution and work with workshop participants to bring this to a political level.

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<sup>31</sup> Although brought up in jest, the group thought the idea of *Freedom55* was appealing in terms of freeing the consumer from energy costs at HERS 55.

Overall there was the sense that there exists a critical mass and interest in moving forward on NZEH at this point in time, and this momentum needs to be capitalized upon.

### Summary and Next Steps

Simon Knight, Executive Director of Climate Change Central, summarized the day and next steps with the help of participants:

1. *Measurement:* The pace of green building development in Canada has been such some stakeholders are now finding current tools and measuring systems are preventing progress. The US experience illustrates the wisdom of re-evaluating and improving current measurement systems to meet this evolving need, or adopting new ways to value progress in this area.

It was suggested during the workshop that HERS 50 could be viewed as a threshold measure to net zero. This threshold home was defined as having a minimum energy level and a solar ready component to its design.

It was thought that this line in the sand can help stakeholders explore methods to facilitate deployment of such homes, as acquired information can help to improve current tools and measuring systems.

The Coalition will work with stakeholders to solidify the threshold home elements suggested, and provide the results of this exercise to relevant decision-makers.

2. *Software:* Stakeholders suggested that new software, or accelerated development of old software, is required to meet present needs

before the next iteration of HOT3000 is scheduled for release.

It was recommended that the Coalition should help support and disseminate this bridging work and this effort should make use of current commitments from parties like Cresnet, as well as the research underway by OZZ, Mattamy Homes and Ryerson University.<sup>32</sup>

3. *A Label:* A label that goes beyond or augments Energy Star is needed very soon. This is a priority as builders and consumers want to move forward and no labels are in place to articulate and market this interest.

The opportunity exists now to 'fix the label' and industry cannot afford to wait for NRCAN or other parties to come forward, although these latter groups indicated they will encourage partnership and help leverage the resources of other organizations.

Some dissent was voiced in terms of what exactly was needed (i.e. old label, new label, EnergyStar+, other), however involved participants should include the key government ministries and the CGBC.<sup>33</sup> One suggestion was that Built Green could provide initial label elements given they need a net zero level in the future.<sup>34</sup>

The Coalition will move forward on assisting in this area by communicating the feedback acquired to date through the provincial forums and the

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<sup>32</sup> These groups are developing a proposal to the Ontario Centres of Excellence that will identify the shortcomings of R2000

<sup>33</sup> Although some felt that code is for laggards and this new label needs to be for leaders.

<sup>34</sup> Recognizing that EnerQuality would thereby need to be involved.

workshop to relevant decision-makers and stakeholders.

4. *A Resolution:* The final recommendation was that the Coalition draft a resolution that could be circulated to all municipal councils in Ontario in order to generate grassroots support for NZEH.

The event was coordinated by **John Godden**, Principal of Alpha Tec Consulting and **Gordon Shields**, Executive Director of the Net Zero Energy Home Coalition, with assistance from **Simon Knight**, Executive Director of Climate Change Central.

Event facilitation was provided by **Tex McLeod** of McLeod & Associates.

Break out session facilitators include **Lorraine Gauthier** of Work Worth Doing, **Gord Cooke** of Air Solutions, and **Mark Salerno** of the Canada Mortgage and Housing Corporation.

Breakout session note takers included **David Elfstrom** and **Jack Zhou** of Alpha Tec Consulting and **Damian Rogers** of Ryerson University. David Elfstrom and Jack Zhou also provided event support on behalf of Alpha Tec Consulting.

#### ***Author***

This brief was written by **Melissa Felder**, M.Eng. on behalf of the Net Zero Energy Home Coalition.

#### ***More Information***

For more information, please visit:  
[www.netzeroenergyhome.ca](http://www.netzeroenergyhome.ca)

#### ***Contributors***

## EGNH Scale vs. HERS Scale on Rodeo Green Model 40-2

**"0 represents major in air leakage, no insulation and high energy consumption."**

**"100 represents very well insulated, airtight yet well ventilated, and heated by renewable energy sources, such as wind or solar power."**

