



Eco-Sense Policy Overview
June 28, 2010

1. **General.** Eco-Sense has been actively involved in many aspects of policy. Activity includes collaboration with other groups, writing policy, research and documentation, and educational tours with building professionals and the public.
 - 1.1. **Comments for “Greening the BC Building Code” 2008.**
 - 1.1.1. <http://www.islandnet.com/~anngord/downloads/PolicyBarriers-SustainableBuilding.pdf>
 - 1.1.2. <http://www.islandnet.com/~anngord/downloads/080113-PropGreenBuildCodeCom.pdf>
 - 1.2. **Notes on meeting with BC Building and Safety Policy Branch June 25, 2008**
 - 1.2.1. <http://www.islandnet.com/~anngord/downloads/building-safety-policy-tour-080825.pdf>
 - 1.3. **Municipal Tour for Local Building Officials, Planners, and CAO’s May 21, 2009.** This was a very useful and inspiring tour. BO’s shared their main concerns regarding engineering and consistency of cob, lack of vapor barriers and moisture control issues, and lack of r-value data. Good learning experience for all.
2. **Financing:** 2009 Lenders Tour for VP of Banks - organized by CMHC and Vancity.
 - 2.1. Currently not possible for individuals building with cob to obtain course of construction insurance.
 - 2.2. Mortgage would only be possible with completed building and at a very high premium.
3. **Insurance:**
 - 3.1. Home Protection Office (see notes on HPO in 1.1.1)
 - 3.2. Difficulty getting regular home insurance due to lack of any actuarial data.
 - 3.2.1. Our insurance comes from Coast Capital and underwritten by Lloyds of London where they have lots of cob homes. Our cob home is not flammable so we got a fire discount.





4. **Land Participation (Use):**
 - 4.1. Multi-family: Eco-Sense is a multigenerational family home. Technically we are not supposed to have two kitchens.
 - 4.2. Net Zero Zoning - NZZ policy to allow density bonuses for net zero type construction. see 11.1

5. **Tax Disincentives for small scale Sustainable Energy** - During the building process Eco-Sense discovered that despite there being much publicity around incentives for sustainable energy/building, virtually nothing was available to them.
 - 5.1. **Notes for Appeal of BC Assessment.** See below.
 - 5.2. **Letter to Premier Gordon Campbell.** See below.
 - 5.3. **Further thoughts on this topic.** See below.
 - 5.4. **BCSEA report “Ten Barriers to Small Scale Renewable Energy”** Eco-Sense collaborated with the BCSEA to assist with identifying barriers and their solutions. http://www.bcsea.org/sites/default/files/Ten_Barriers.pdf
 - 5.5. **John Horgan MLA.** Provincial NDP Energy Critic has been very supportive of Eco-Sense and has discussed the challenges faced in the legislative assembly and in numerous radio/media events. <http://www.islandnet.com/~anngord/downloads/legislative-report-april10-08.pdf>
 - 5.6. **Complete lack of incentives for using LESS energy.** In fact not only were there no incentives for building deep green, there were no incentives at all for using less, since all incentives are based on consuming more and not less. Incentives are corporately sponsored and lobbied.
 - 5.7. **Net metering program with BC Hydro.** Eco-Sense has collaborated with Tom Hackney, Guy Dauncey and Bill Andrews of the BCSEA for their continued policy work in this area.
 - 5.7.1. GST (HST) charged on all kWh purchased, but no corresponding GST (HST) credit given for kWh sold to BC Hydro
 - 5.7.2. Eco-Sense charged a clean energy levy
 - 5.7.3. Eco-Sense charged a base amount
 - 5.7.4. Eco-Sense pays BC Hydro \$8.88 every two months even though we are net annual suppliers to BC Hydro
 - 5.7.5. Poor rates paid for renewable energy generation.
 - 5.7.6. Billing is sporadic, often a month late and can have errors
 - 5.7.7. Meter readers often do not come prepared to read our net meter with a magnet and often require assistance
 - 5.7.8. Phone support for net metering customers is poor





- 5.7.9. All billing is manual (and contracted out to a US company) which means that net metering customers cannot track their energy consumption on line like all the other BC Hydro customers. We do not qualify for all the BC hydro energy smart campaigns (i.e. community energy reduction goals) to reduce energy consumption because our data is not available.

6. Disincentives for sustainable water use

- 6.1. **Grey water.** BC has yet to adopt Grey water reuse policy. Discussed with the BC Building and Policy tour of Eco-Sense. The BCBC still does not yet have policy requiring all new construction to be “Grey Water Ready”.
 - 6.1.1. Excellent grey water policy resources are available. <http://www.whollyh2o.org/>
 - 6.1.2. Eco-Sense offered a grey water course this May that was sold out within hours of posting. Wrote a booklet to go along with the all day hands on course at Eco-Sense.
 - 6.1.3. Installing your own DIY grey water system seems to be ok with officials as long as the home has the ability to be connected to an approved “Waste Treatment” system.
- 6.2. **Low Flush Toilets**
 - 6.2.1. CRD has incentives for homeowners to install low flush toilets as an upgrade to an existing toilet but only if the home owner is on piped water. For those on well water and dependent on ground water there are NO incentives.
 - 6.2.2. Eco-Sense was required to purchase and install a low flush toilet, flush once and then remove and install their **NO** flush toilet. No incentives!
- 6.3. **NO flush composting toilets.** 30% of indoor domestic water usage comes from flush toilets.
 - 6.3.1. Eco-Sense’s NO flush composting toilet is based on the book “The Humanure Handbook” composting system by Joseph Jenkins. This system is a bucket, with no water entering and no drain and therefore it is not considered a plumbing fixture and the BC Plumbing Code does not apply. There are currently no policy laws against this type of toilet. It then falls upon the home owner to demonstrate that the safety and objectives of the code are met for waste Disposable. See 10.2





- 6.3.2. Public Composting toilet facility completed at Eagles Lake, Highlands, BC June 2010. Council approved and health department ok'd. Load bearing cob construction.
- 6.4. **Living roofs.** Many people have difficulty in insuring living roofs, although we had no issues. Our living roof system was designed by ourselves and does not carry an engineers stamp.
- 6.5. **Rain water Harvesting.** Our 10,000 gallons are used for garden irrigation. The local building official informed us that if we wished to use this water for a potable source that we would need to install our filtration system and then get it tested. But we have heard very different report from others.
 - 6.5.1. Winter 2009 issue of ARCADE magazine. Article on Rain Water Harvesting by Ann and Gord Baird. <http://www.arcadejournal.com/public/IssueArticle.aspx?Volume=28&Issue=2&Article=352>
- 7. **Energy conservation:**
 - 7.1. Complete lack of any kind of financial incentives for using less energy.
 - 7.1.1. Rebates for energy efficient appliances such as dish washers etc. but no rebate for not having one in the first place. Once again all incentives are manufacturer driven.
 - 7.1.2. No rebates for LED lights, only CFL's
 - 7.2. Lack of CSA policy for many energy efficient items/devices used and approved in many other countries.
 - 7.2.1. Our fridge, our pumps, our LED lights, etc. See how we got around this in section 8.1
- 8. **Electrical Code:** In addition to the BCSEA barrier project.
 - 8.1. Class 2 of the electrical code allows one to use non CSA approved electrical devises if they are less than 100 VA (volt amp) circuit. For our 24v system this means a 3 Amp circuit breaker.
 - 8.2. Back in 2006 when we told our first electrical inspector that we wished to do a grid tie with BC Hydro, he literally rolled his eyes and made comment about how stupid that was...he was really belittling.
 - 8.3. We were required to wire our house completely for 110v AC even though we have very little to plug in. When we asked why, we were told that that building code is there to protect future owners. It seems than that the building code is making a prediction on what the future will be.





- 8.4. When we asked our first building official about not hooking up the the grid (off grid), he said we had to hook up to the grid it was the law. He was misinformed.
9. **Recycled and Home Made Building Materials:** The use of reclaimed materials in the building for systems and structure.
- 9.1. **Light fixtures:** We used recycled AC light fixtures with DC LED bulbs. Class 2 of the electrical allowed this...few people are aware of this...including inspectors.
- 9.2. **Recycled lumber:** 80% of the wood used in the Eco-Sense home was recycled. As long as the lumber still has a visible stamp it is generally allowed. The older lumber was superior to the quality today.
- 9.3. **Locally milled lumber:** 10% of the wood used was milled from our own trees or local. Most inspectors wood require this lumber to be graded...ours thankfully did not.
- 9.4. **Recycled sinks and plumbing fixtures** CSA stamps required. (One of our used sinks did not have a stamp but we installed it anyways...got away with it.)
- 9.5. **Home made bathroom fixtures:** Obviously no CSA stamps on home made earthen shower stalls. Never had an issue...
- 9.5.1. Tadalkt shower stalls have been used in Morocco and Rome since the beginning of civilization.
- 9.6. **Earthen floors and counters:** no policy issues.
- 9.7. **Home made range hoods:** No policy issues. Wired for 24vDC with fan and LED light.
10. **Alternative solutions:**
- 10.1. **Solar Hot water.** 2007 http://www.islandnet.com/~anngord/downloads/eco-sense-solar_hot_water-071126.pdf
- 10.1.1. This solution was accepted by the Victoria region plumbing officials as this was the first they had been exposed to. They since have written policy that would not allow this solution as they would require a double walled heat exchanger. Very expenses and less effective. There is no need for this as it is impossible to have back flow into the well (potable water supply) from the food grade glycol due to the pressure differential.
- 10.1.2. CSA is a major challenge for our system as it is a combination solar hot water system. Combination means that domestic hot





water and space heating are combined and there is no CSA policy written.

- 10.1.3. Our evacuated tubes (Mazdon) are the highest quality available and at the time we purchased there was a federal grant if installed by a certified professional. First problem was that these tubes are NOT CSA certified so it is illegal to install. Second problem is that there were no certified installers for a combination system.

10.2. **Composting toilets. 2009** http://www.islandnet.com/~anngord/downloads/eco-sense-functional_statements_objectives-composting_toilet-091215.pdf

10.3. Fixture units, grey water pipe, reduced supply lines

- 10.3.1. Eco-Sense was allowed to have a smaller grey water pipe than code would dictate based on fixture units as they reduced the water supply line to each fixture for water conservation. Less water in equals less water out. Hard wired for water conservation.

11. **Eco-Sense Policy.** Ann sat as the only female on the nine member Highlands Sustainability Task Force. During 2009 the group prepared an outstanding report including 42 recommendations to council and a road map to follow. Council has accepted the entire report and has begun to explore and incorporate all 42 recommendations. The Highlands is small rural commuting suburb of approx. 2000 people. Ann was largely responsible for the recommendations on building and was a driving force for the true meaning of sustainability throughout all 42 recommendations. Ann, through Eco-Sense was the only task force member living the sustainability talk. http://www.highlands.bc.ca/planning/documents/SustainabilityTaskForce_FinalReport.pdf

11.1. **Recommendation 11 - Net Zero Zones.** http://www.islandnet.com/~anngord/downloads/eco-sense-draft_net_zero_zone_policy-091215.pdf

11.2. **Recommendation 12 - Flush Toilet Ready.** http://www.islandnet.com/~anngord/downloads/eco-sense-flush_toilet_ready_draft_policy-091215.pdf

- 11.2.1. Eco-Sense had to complete the partially installed septic system and field even though they had no plans on using. Flush Toilet Ready policy will help other avoid this environmental and financial cost.

11.3. **Recommendation 13 - Incentives for Energy and Water conservation (page 16)**

11.4. **Recommendation 14 - No Net Increase in Energy or Water Consumption (page 17)**





12. **Alternative Solutions Resource Initiative (ASRI)** April 2010. Co-founding Board members.

This initiative is the undertaking of a group of Victoria-based engineers, designers, natural builders and homeowners. Our purpose is to create a set of authoritative guidelines to support and foster the use of alternative construction methods that are currently not contained within the building code. The focus will be on natural materials and techniques that have low-embodied energy, are environmentally friendly and promote a healthy and sustainable living environment. These guidelines will:

- offer detailed information on the requirements of the code in relation to these specific materials and techniques;
- offer a valuable resource when working with natural alternatives;
- remove the risk of uncertainty by providing referenced sources, and;
- mitigate building department exposure to liability through the use of standardized procedures.

The contents of the document will be based on the most current and comprehensive research and testing available, as well as suitable precedents and building code appendices or guidelines that already exist in various parts of the world.

The information will be scrutinized by competent building professionals, with an emphasis being placed on material that relates directly to our regional climatic and seismic conditions. This edited data will then be collated into a format that serves both the building industry and inspection departments alike.

By providing a clear, concise and thorough reference, we believe that the resultant publication will greatly benefit all sectors of the building community.

12.1. Cob walls as load bearing - Eco-Sense will be writing an alternative solution for load bearing cob construction for the ASR.

12.1.1. Written out to identify how cob construction meets the function and objectives of the BC building code

12.1.2. Include research references locally and globally

12.1.3. Include structural guidelines

12.1.4. include engineering testing requirements

12.1.5. Include standardized construction methods

12.2. Mass wall performance of cob - include results from Cascadia/Vancity research project on Eco-Sense home. Peer review research.

12.2.1. R-Values/ U-values

12.2.2. Thermal Conductivity

12.2.3. Moisture diffusivity





5.1 On February 18, 2010, Ann appeared before the BC assessment Review Board. Three review board members present as well as BC assessment officer...all men.

Notes for Property Assessment Review Panel

Area: 01 Jurisdiction: 361 Highlands (SD61) Roll: 15016.160
Re: 3295 Compton Road, Victoria, BC V9E 1C8

• Comments to Doug Burkinshaw

- I think he has done a great job trying to fairly assess the home.
- It is wonderful that the earthen architectural style is properly valued

• Brief introduction to Eco-Sense - see info sheet

- Features (see printout)
- Costs (see printout)
- Living Building Challenge, \$35K Vancity grant, Enormous publicity
- Policy work with BCSEA, municipal and provincial governments
- Met with MLA John Horgan yesterday - regular contact as he is the Energy critic for the BC Govt.

• **BC Assessment challenges for the Eco-Sense Home** (a few areas but wish to spend most of our time discussing the energy systems within the appraisal).
Brief discussion of some of the minor issues resulting from our assessment.

- Important to note: NO similar case studies or home exist for comparison

2. Thickness of mass wall system - Doug and I have worked through this issue to fairly assess our 2 foot thick mass wall system.

3. Ability to obtain a mortgage on this style of sustainable home

- financing is possible but only at large interest rate premium
- Does this reduce assessment of the home?

4. Home only has composting "Waterless" toilets. There are two bathrooms but only one is plumbed for a flush toilet. Does this reduce assessment of the home? Should it?





5. **Valuation of the sustainable energy (SE) systems.** Easy to determine costs...difficult to assess their BC assessment value.

- Why is this important? about 22% of the cost of our home is the sustainable energy systems
- Incorporating SE systems into the BC Assessment results in extra municipal taxation which is not amortized. (In 25 years we will be paying an additional \$10,000 in taxes based on today's rates).
 - At our home we pay an extra \$400 EVERY SINGLE YEAR for our future energy production.
 - Will BC Assessment values decrease over time? expected lifespan of the solar PV is 25 years.

• **How should SE systems be assessed?**

- The purpose of my appeal is to explore this question because the current process creates a tax DIS-incentive to homeowners incorporating SE technologies to reduce GHGe?
- For comparison, BC hydro customers don't have all of their future energy consumption added onto their BC Assessment...Their BC Assessment doesn't include their portion of the hydro dams and transmission lines.
- This is an emerging issue - I recognize that this is not yet a mainstream issue...but it will be.
- The Future of SE for residential application is such that most home owners cannot afford the up front costs. What is currently happening in this industry is for financing companies to purchase the equipment, install on the roof of the home owner, and then charge the customer in one of three ways:
 - 1) an equipment leasing fee
 - 2) a fee for energy consumed (like BC Hydro)
 - 3) the use of municipal Local Improvement Charges. (LICS)
 - In this case, the home owner owns the system but pays for the capital costs with yearly payments added to municipal taxes
- In these scenarios, how would BC Assessment appraise the home?
- These are important questions to ask as our society moves towards reducing our GHG's and creating incentives rather than disincentives.
- Everyone seems to agree that a problem exists here. We shouldn't have to pay an additional \$10,000 for doing the right thing. Our local and provincial politicians, climate action NGO's, community groups, and sustainable energy advocates all agree.
- My goal with this assessment is to bring this to your attention and ask you, what is the next step?. How can you help to remove this barrier?





Respectfully Submitted,

Ann Baird, BSc

5.2 March 11, 2010 Letter to Mr. Campbell. Mailed.

Dear Premier Campbell,

As the Olympics come to a close I would like to bring to your attention another global competition. The race to be the [GREENEST building](#). The [Living Building Challenge](#) is a visionary building certification program well beyond LEED platinum. With over 70 global projects registered and only four completed, the Eco-Sense Home in Victoria BC is leading the way.

Eco-Sense embodies the principals of the Living Building Challenge. This multi-generation affordable near net zero family home incorporates the best of modern technologies into an innovative modern example of earthen architecture. see www.eco-sense.ca

The Eco-Sense home has had over 100 media events including TV, magazines, radio, newspaper, documentaries, Royal BC Museum displays, and books. Tours have included policy makers, politicians, engineers, government officials, architects, builders, climate scientists, community leaders, groups of bankers, groups of building officials and planners, as well as school groups and the public.

As you can imagine a project of this magnitude has encountered many policy barriers. Ann and Gord Baird, through their achievements, have identified many barriers while working towards the solutions.

Energy Policy is at the forefront of the identified barriers and we would like to share what we have learned from the front line of actually walking the sustainability talk. Below are the main barriers to Eco-Sense becoming the most sustainable code approved family home in North America.

1. The BC Hydro Net metering program is very poor and is lagging behind. Eco-Sense IS a NET PROVIDER of electricity to BC Hydro on an annual basis. If BC Hydro had a better net metering program which paid the real cost of all the sustainable energy sold to the grid, many of the cost barriers to sustainable energy and fully net zero living would be overcome. BC Hydro is WAY behind as





they only pay 8.2 cents per kWhr. Quite embarrassing for a province that wishes to lead the way towards sustainability.

- better policy in this area would support a distributed grid, energy conservation, community pride, and local energy resiliency.
2. Removal of all the current tax disincentives to solar PV. (Here are a few of them)
 - HST on solar technologies - sustainable energy should be exempt from HST
 - Electrical permit fees on entire solar installations - leads to very large permit fees for individuals installing solar systems
 - increase in municipal taxation because of property value increases due to BC Assessment of all future energy production
 - Eco-Sense pays an extra \$400 per year in municipal taxes because we generate sustainable energy (works out to \$10,000 over the 25 year life cycle of the system)
 - Our Sustainable energy systems comprise 21% of the total cost of our home. (see PDF link below for complete cost breakdown of the Eco-Sense home)
 - We recently discussed this issue with the BC Assessment appeal board, the BC Sustainable Energy Association (BCSEA), and our MLA; everyone agrees that this is wrong. Solution involves changing the legislation with the BC Minister of Finance.
 3. The climate science dictates that policy MUST encourage the people and industry to take BIG steps to move rapidly towards sustainability. Most of the current GHG reduction policy involves encouraging baby step.

Ann and Gord Baird of Eco-Sense strongly encourage the Campbell Government to take bold steps forward on Energy and Taxation Policy to create the future we all desire, for our children, our citizens, our beautiful province and to showcase for the planet that BC is truly a leader. Just think, BC could have the first certified "Living Building Project" in the World.

Please see this [PDF of the features of our home](#).

We would also like to extend an invitation for a private tour of our home.

Respectfully,

Ann and Gord Baird
Victoria, BC





EMAIL response from the Office of the Premier...

Thank you for your email regarding the Living Building Challenge and your Eco-Sense home in Victoria.

We appreciate the time that you have taken to share your views with us regarding policies for green building projects as they relate to taxes, permit fees and rates paid by BC Hydro to providers of electricity through their net metering program. As noted, you have also shared your email with the Honourable Blair Lekstrom, Minister of Energy, Mines and Petroleum Resources, and with the Honourable Colin Hansen, Minister of Finance. You can be assured that your feedback will be included in related discussions between the appropriate ministry representatives.

Again, thank you for writing. We appreciate the time that you have taken to share your concerns with us.

pc: Honourable Blair Lekstrom
Honourable Colin Hansen

5.3 Further thoughts after the presentation to the appeal board.

I went before the appeal board last week and gave an in depth presentation that was very well received. The bottom line is that BC Assessment has done a good job assessing the fair market value of the home (\$370,000). Their mandate IS NOT TAXATION, but simply the valuation of the home...

John Horgan visited Gord and I last week on the day before my appeal. We had a lovely three hour chat about many things. He agreed that this taxation was wrong but that changes would have to come from legislation in the ministry of finance. He said that this would be a difficult push at this point because, face it, there not too many people in this position. It comes back to the chicken and egg argument.

The appeal panel also agreed that this seems to be unfair and is effectively a disincentive. They said the solution may be something like the farm tax credit. They





also had some vision in saying that in a perfect world all homes would have solar roofs and there wouldn't need to be special treatment.

So, that's where I'm at. I may take it to the next appeal which will be recorded for public record...and thus perhaps get the media involved. (the first appeal was private with NO record) other than my own memory.

June 2010 update: I did not end up taking this to the next appeal board. Ran out of steam on the issue. The BCSEA picked up on this issue and ran with it to include in the "Barriers Project"

The thing about getting a wholly new housing classification is that it would be province-wide. It would come with education for the assessors so they can identify the houses better This advantage is huge because administrators don't like going out on a limb too often or too far, if the policy is there then they can run with it. If not, too bad, tough luck.

The resulting lower valuation which would yield the de facto tax benefit, not a tax credit. I am guessing that Initially this would take the FlN Min approval but it would be on the whole category and not on a house by house basis. I can see how BC Assessment would like it because it would allow them more budget for training (public servants love courses) and to rehire staff to administer the applications for 'natural built/green status' applications.

My thought was this, if zonings are tackled one by one across every municipality it could take decades to get a substantial change happening in this province. Municipalities are slow-moving entities and somewhat slow to take on new ideas by their nature. BC Assessment evaluates every home (structures) in the province by a very narrow set of parameters and they are all based on traditional building styles.

If the BC Government (via BC Assessment) were to add a special designation for natural built homes and or homes with carbon neutrality, then it would give the ability for the province to potentially give tax benefits for homebuilders/owners who employ natural, local materials and processes and systems that are carbon neutral.

Ann

