

Comparison of Net Zero designs

"Make it right" is Mike Holmes' favourite expression but he is dispensing highly questionable advice in an article in the June 22 Ottawa Citizen (page I-14) in which he advocates the use of extreme measures to reduce the heat losses of homes, arguing that "energy efficiency" is the primary parameter in designing net-zero energy homes. He proposes that the building walls should have extremely high insulation value (R-56), that expanded polystyrene insulation should be placed under and around the foundation, that heat-recovery ventilators be used, along with triple pane windows, passive solar heat collection and the use of ground source heat pumps. In addition he says that "To support its own energy needs, it usually means incorporating a solar-electric system, and sometimes wind power, too."

Mr. Holmes concludes that although such measures are not cheap they will have a long term payback, concluding that "It's not a trend - its the future of housing."

The problem with Holmes' argument is that the basic assumption is wrong. The world is not running out of energy. Air-source systems tap an energy resource that has a virtually unlimited capacity in countries where seasonal temperature differences make it possible to store heat in the ground so there is no need to rely on energy efficiency. There is consequently no need to use extreme measures like R-56 insulation, heat recovery ventilators, triple-pane windows, etc., or to add solar-electric systems or wind turbines to homes. Individual homes can use heat stores that are comparatively compact and inexpensive because they work with higher temperature swings than GSHP's. Blocks of homes can go even further to employ shared exergy storage to flatten the grid power loads, so if the power companies adopt and pay for that feature then both the homeowners' capital costs and their operating costs are cheaper than any of the available alternatives. The homeowner's cost is reduced to the cost of the solar DHW component. In the process the cost, capacity and GHG emission challenges of the power grid are also met.

Mr. Holmes article is partly correct in its final conclusion - it is mandatory that in a cold country like Canada we must abandon the use of fossil fuels for heating and DHW. To do that we will need to choose technologies that can be retrofitted to the existing housing stock within a reasonable time frame. It would not be feasible to tear down all of Canada's existing homes in order to replace them with the net-zero energy homes described in the article so that proposal is unworkable on those grounds alone.

Unfortunately, this question is not being addressed by the federal, provincial or municipal governments in Canada, or even by most of the NGO's that consider the environment. The cities in particular should be considering it because they control both the construction of homes and the distribution of electricity. People who care about our future should be demanding that the options be considered ASAP.