

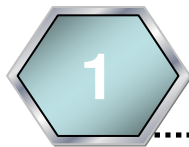
“What’s stopping us?”

Analysis

R-2000 Program Evaluation:
Barriers to Innovation and Change



Content



R-2000 Program Overview



Impacts



Barriers



Spin-offs



Program Overview

- **NRCan's R-2000 Program**
 - **Started in 1980-81**
 - **Evaluated in 1995**

 - Encourage construction of energy-efficient single-family houses in Canada
 - Improve technical standards of new home construction
 - Builders' training program
 - House inspection/recognition



Stakeholders

➤ **NRCan**

- Canadian Home Builders Association (CHBA) and provincial HBAs
- Energy utility companies
- Builders
- Home Owners



Impacts

Indirect

- Building Codes
- Technologies
- Energy efficient practices in Canada
- Incentive programs
- Clones
- 1981-95: 83 PJ +/- 43 PJ

Direct

- 6,500 houses built (as of 1995)
- Energy efficiencies
- Higher quality houses
- 580\$/yr savings
- 1981-95: 1PJ



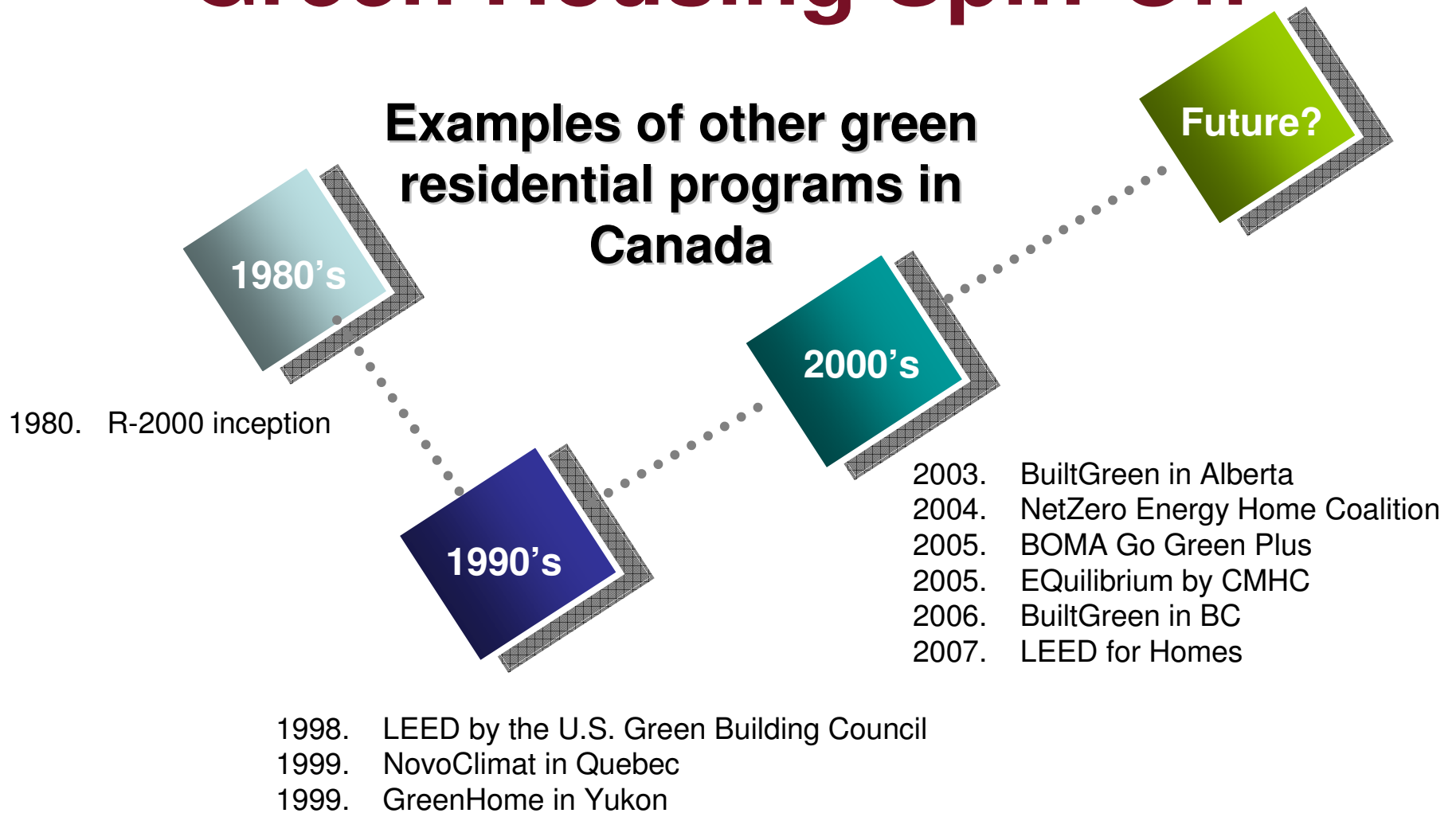
Summary of Barriers

- **Most Important Barrier:**
 - High cost of R-2000 upgrade
 - Average homeowner paid \$8,400 extra
- **Significant Barriers:**
 - Low public awareness for the Program
 - Low energy prices (1995)
 - Low housing starts
- **Other Barriers:**
 - Paperwork for builders
 - Increased supervision time
 - Issues around air quality



Green Housing Spin-Off

Examples of other green residential programs in Canada





Lessons Learned

- **High Costs:**
 - **EQilibrium by CMHC:** Affordability
 - **ecoEnergy:** Incentives

- **Awareness:**
 - **Building Codes**
 - **NetZero:** Promotion and Deployment plan
 - **Super-E:** International Best Practices
 - **Websites:**
 - <http://oee.nrcan.gc.ca/residential/personal/new-homes/r-2000/About-r-2000.cfm>
 - <http://r2000.chba.ca/>



TELFER

THANK YOU



1980: R-2000 Program by NRCan

Other Programs in Canada illustrating relation (unless noted):

1989: Power Smart New Home, BC Hydro

1991: Power Smart New Home, Manitoba by Manitoba Hydro

« The Power Smart New Home Program and the R-2000 Home Program are complementary programs targeted at different markets. R-2000 standards offer the highest level of energy efficiency a homeowner can include in their new home. » http://www.hydro.mb.ca/your_home/new_home_for_builders.shtml

1999: NovoClimat, Quebec by the Agence de l'efficacité énergétique

« L'Agence de l'efficacité énergétique du Québec vient d'intégrer la prestigieuse norme fédérale R-2000 à son programme Novoclimat, établi fin 1999 pour favoriser la construction et la certification de maisons saines à haut rendement énergétique... R-2000 devient donc le palier supérieur du programme Novoclimat » <http://www.lamaison.qc.ca/energie/page38.html>

1999: GreenHome, Yukon by Yukon Housing Corporation (YHC)

« There are no minimum envelope insulation levels, provided the house meets the calculated energy target of 80 on the *EnerGuide for Homes* scale (or the energy target » http://www.housing.yk.ca/pdf/greenhome4_design_objectives.pdf

2003: BuiltGreen, Alberta by the Calgary Region Home Builders Association (CRHBA)

2004: NetZero Energy Home Coalition (NZEHC)

«The potential of this new program builds upon Canada's pioneering work in energy efficient home construction, embodied in the R2000 standards. » <http://www.netzeroenergyhome.ca/index.php?option=about>

2006: BuiltGreen, BC by CHBA-BC

« Built Green™ BC has now been adopted by CHBA BC as the delivery agent for all its energy programs, including R-2000 and Energuide for New Homes. » http://www.chbabc.org/uploads/files/Launch_of_Built_Green_BC.pdf



Other Programs in Canada (No relation):

2005: Go Green Plus, Canada by Building Owners and Managers Association (BOMA)

Commercial application (existing buildings): « Go Green targets existing buildings owners who want to have a more environmentally friendly building. » http://www.bomagogreen.com/news/20060320_RENX_BGGOneYear.pdf

2005: Equilibrium, Canada Mortgage and Housing Corporation (CMHC)

« The most significant difference between Equilibrium and the R-2000 and Energy Star programs is that Equilibrium homes are designed and built to be super energy-efficient. [They] produce as much energy as they consume on an annual basis... « We're not in competition with programs like EnergyStar and R-2000; they are certification levels. An EnergyStar home is a 77 score and an R-2000 is an 80 using the EnerGuide for Housing rating system -- we're going for 100. » » <http://www.merlinwrites.com/portfolio-display.php?ID=73>

Other Programs abroad (No relation):

1976 and more recently: State-Specific Programs in the US (<http://www.pathnet.org/sp.asp?id=20978>); the oldest being **Good Cents, Texas**

« The Good Cents program is the oldest and largest energy-efficient home certification program in the country. It was developed in 1976 to encourage builders to construct energy-efficient homes. » <http://www.cstx.gov/home/index.asp?page=809>

International Programs (No relation):

1998: Leadership in Energy and Environmental Design (LEED), by US' Green Building Council (USGBC)

Commercial application (new buildings): « LEED Green Building Rating System® is focussed on assessing new construction high-performance, sustainable buildings. » http://www.bomagogreen.com/news/20060320_RENX_BGGOneYear.pdf

2007: LEED for Homes, by US' Green Building Council (USGBC)

Residential application (new homes): « The first phase of the LEED for Homes initiative is focused on the construction of new homes. A program for existing homes is being considered but no specific development plans are in place. » <http://www.usgbcidaho.org/faq/LEED-H-FAQ.pdf>