



# AIR LEAKAGE/ AIR SEALING

## **How Leaky are Canadian Homes?**

### **Results, Opportunities, & Challenges**

*Steve Goldberg, C3 Group*  
*Anil Parekh, CanmetENERGY*  
*Louise Roux, OEE*

October 28-29, 2009

1



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada 



## This session...

- Objective is to provide assessments of:
  - Trends in air tightness of Canadian housing evaluated under the ecoENERGY Retrofit Homes program
  - Overview of the air tightness field test protocols, calculations, and results interpretation
  - Air sealing opportunities and challenges identified during the ecoENERGY Retrofit Homes program





# Canadian Housing Stock

- About 13.6 million dwelling units.
- More than half of the stock is at least 35 years old.
- In the last five years, new construction of 220,000 dwellings/year.

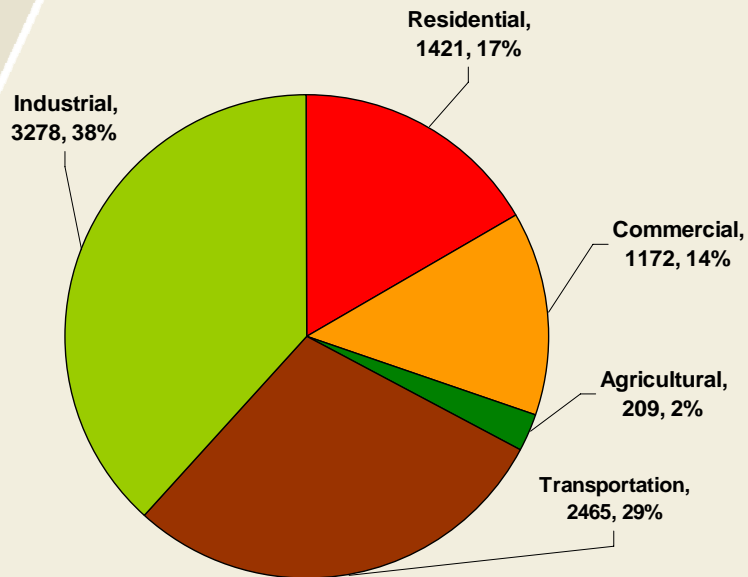
Provinces	Housing Stock	Representation of Housing Stock, %
BC	1,642,715	13.2%
AB	1,256,792	10.1%
SK	387,160	3.1%
MB	448,766	3.6%
ON	4,554,251	36.6%
QC	3,188,713	25.6%
NB	295,871	2.4%
NF	197,245	1.6%
NS	376,829	3.0%
PE	53,084	0.4%
NT	14,224	0.1%
YK	12,615	0.1%
NU	7,855	0.1%

	Number of Dwellings (in thousands)		Average Size sq m
Before 1946	1,832	13%	116
1946–1960	1,278	9%	102
1961–1977	3,353	25%	106
1978–1983	1,544	11%	119
1984–1995	3,019	22%	130
1996–2000	1,002	7%	139
2001–2008	1,583	12%	142 <sub>3</sub>
<b>Total</b>	<b>13,612</b>		



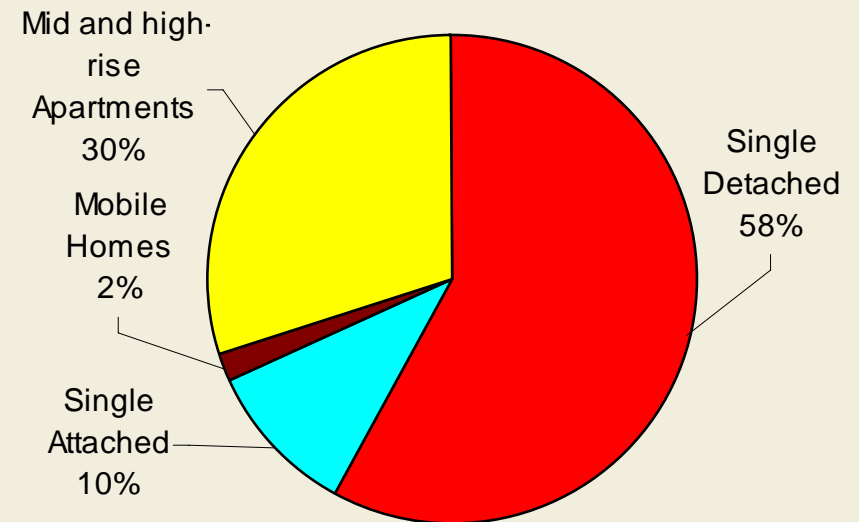


# Housing Statistics



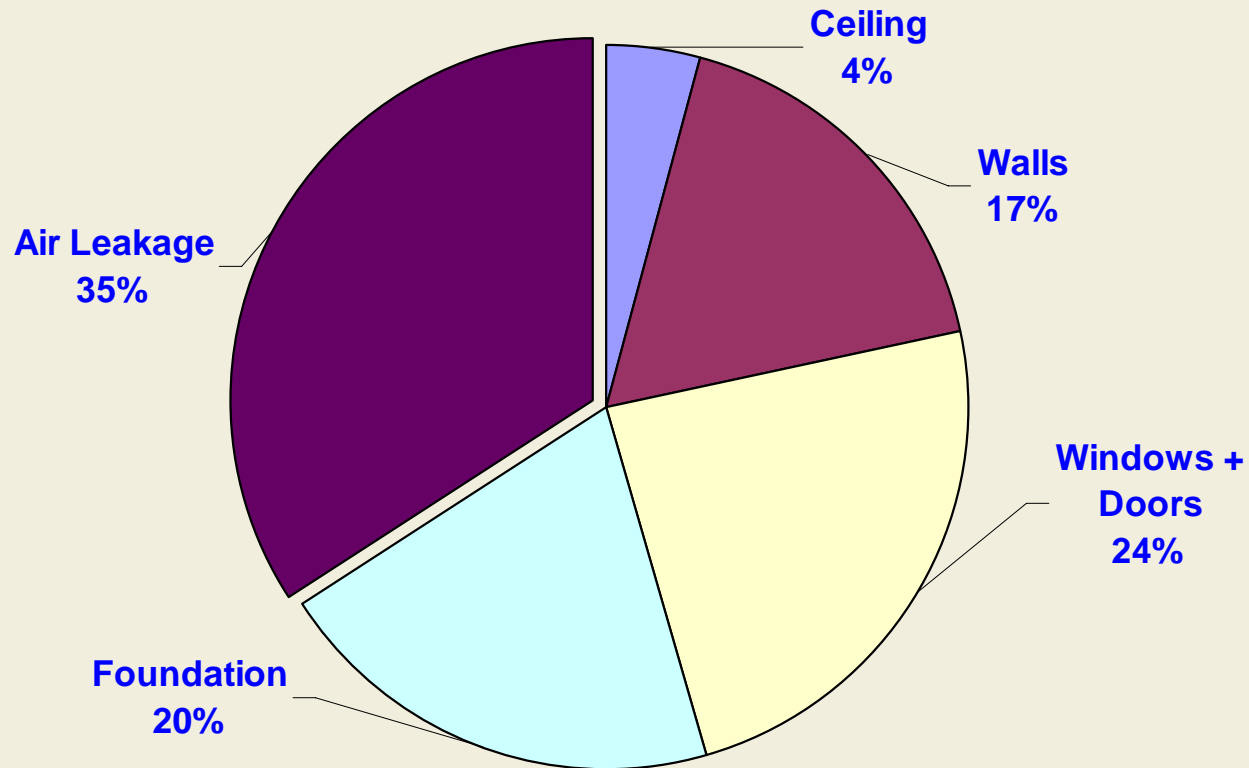
In residential sector, energy use accounts for \$22.4 billion annual expenditure (2008 data).

## Housing Types





# Typical Heat Loss Profile



About 30 years old, 2-storey, 2100 sq ft house.

5



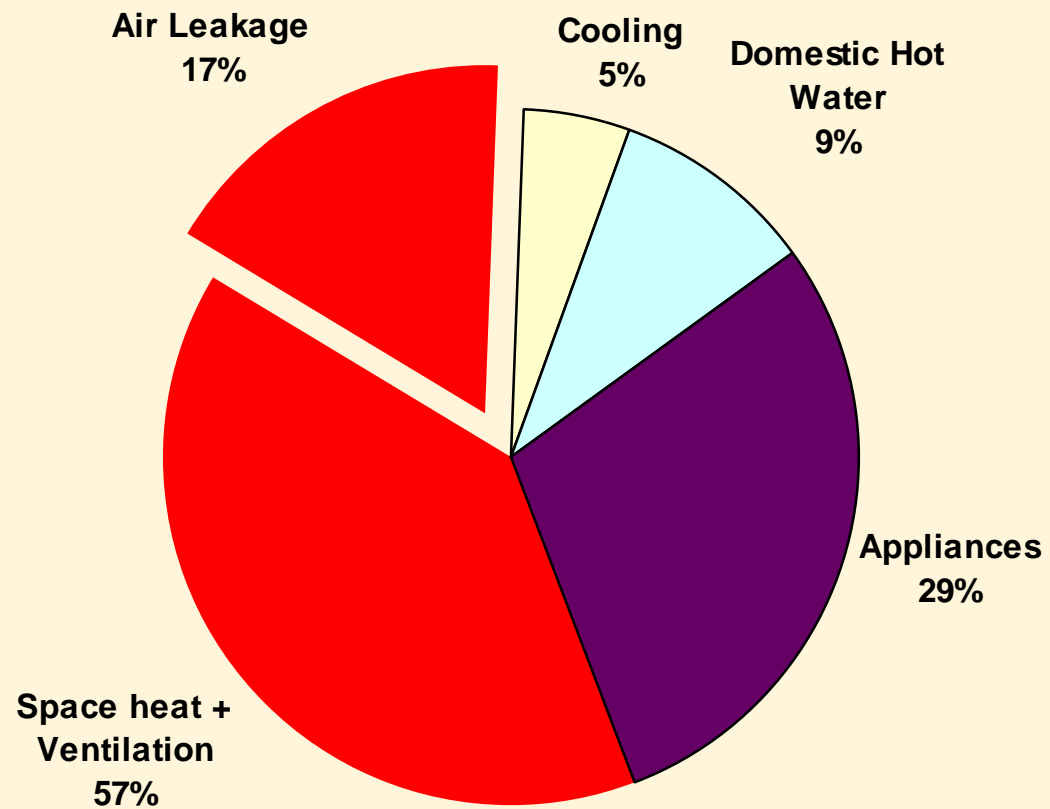
Natural Resources  
Canada

Ressources naturelles  
Canada

Canada



# Typical Energy Costs



6



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada



## Outline...

- Analysis of the air leakage characteristics of the Canadian housing stock
- Protocols and interpretation of test data
- Air-sealing opportunities and challenges
  - associated with the airtightness test procedures,
  - implementation of air sealing measures, and
  - requirements for the mechanical ventilation.

