

# **The New Zealand Response to Climate Change: Impact on the Building & Housing Sectors**

Australasian Housing Institute Seminar -  
Social Housing: Playing Our Part in Tackling Climate Change  
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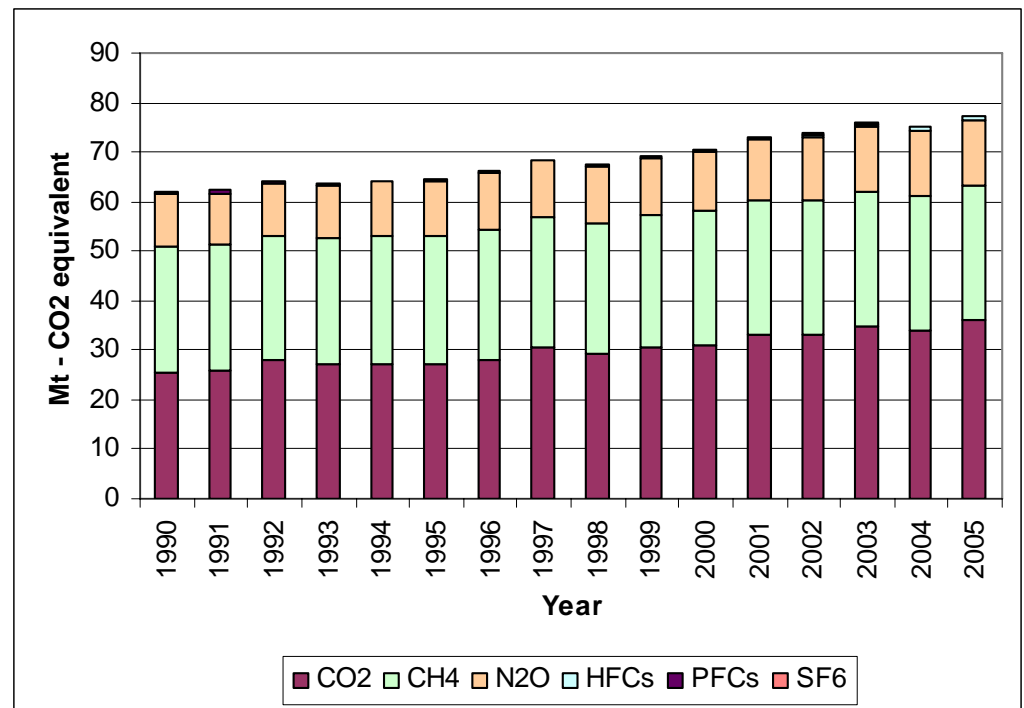


# Overview

- ❖ The climate change problem for NZ
- ❖ Influence of the Kyoto Protocol
- ❖ New Zealand's response
- ❖ Policy framework
  - Climate change and sustainable energy
  - Interactions with the building and housing sector
- ❖ Impacts on the building and housing sector in NZ
- ❖ Current initiatives
- ❖ Bedtime reading list

# So, what's the problem?

- ❖ New Zealand accounts for only 0.2 per cent of the world's greenhouse gas emissions
- ❖ Rated 12th in the world for per capita greenhouse gas emissions
- ❖ Unique emissions profile
  - Methane emissions from agriculture
- ❖ Carbon dioxide emissions continue to rise



# PREDICTED IMPACTS

 Increased westerly winds

 Sea level rise

 Wetter

 Drier

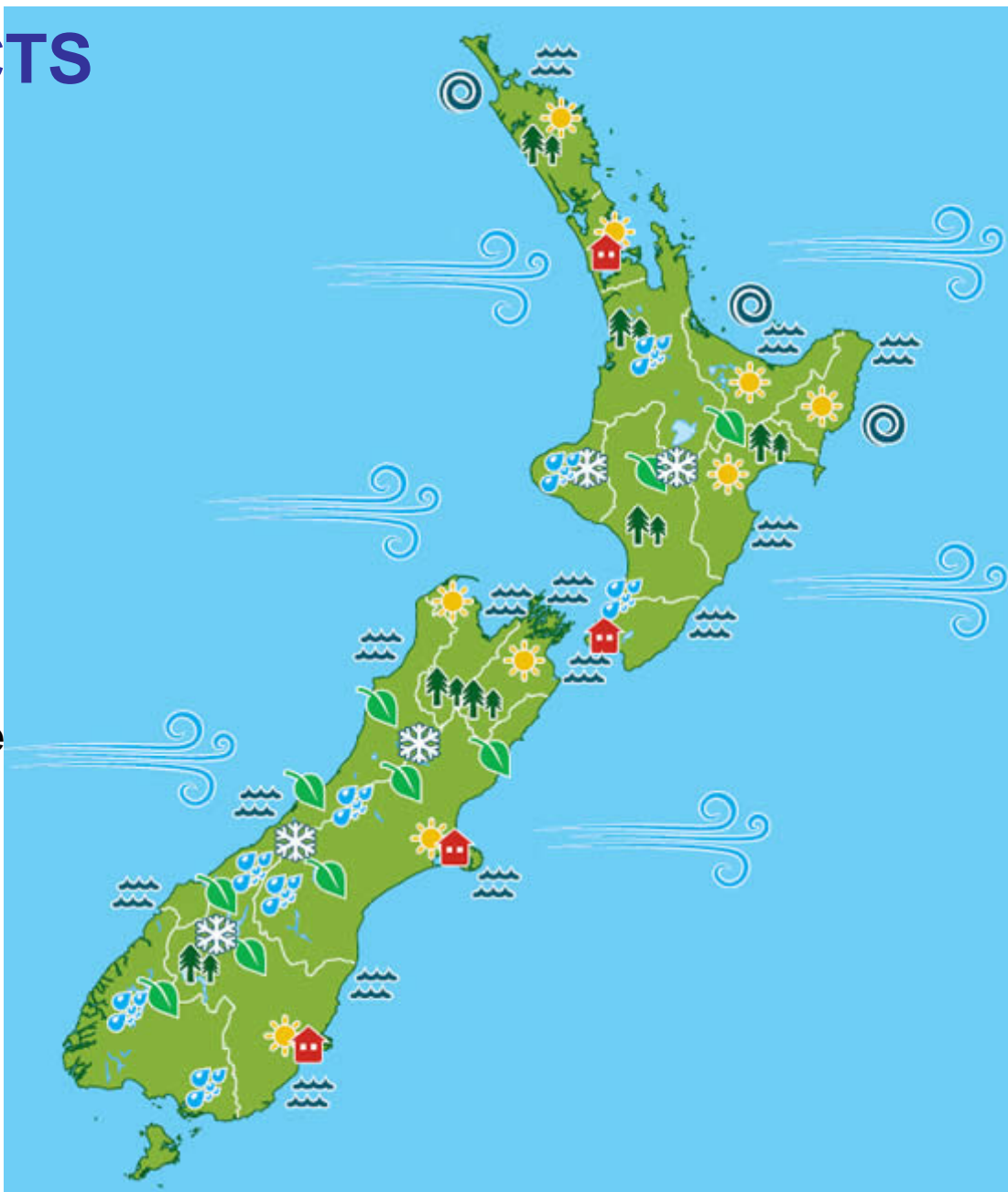
 Cyclones

 More snow likely but rise in snowline

 Natural areas

 Urban impacts

 Commercial forests



# Kyoto Protocol

- ❖ New Zealand ratified the protocol for several reasons
  - To show leadership to be able to influence the large global emitters
  - A trading nation - need to be on the same footing as our trading partners
  - Opportunities for business growth and new ideas
- ❖ Problems
  - Stronger than expected growth in net emissions
  - Analytical adjustments
  - Poor public understanding and strong opposition
- ❖ International negotiations continue but the debate has moved on ...

# NZ Response: Think globally, act locally (1)

- ❖ Climate change is real and we must do our bit to help the world deal with it
- ❖ The government's focus for the future
  - We need to be strategic as a country and think about where we want to be in 30 – 40 years time.
  - Action is required at multiple fronts. This includes preparing for climate variability as well as reducing emissions.
  - Climate change is a global issue and New Zealand needs to be influential.
  - Industry, general public, businesses, and the international community need to be involved.

# NZ Response: Think globally, act locally (2)

## ❖ International / national level

- Energy investment decisions, development of carbon markets, food miles, primary sector actions

## ❖ National / regional level

- Realities of economic vulnerability, competitive positioning in the energy market, transport investment decisions, social issues, sustainable business practices, impact of dairy farming boom, speculative behaviour starting

## ❖ Community / individual

- Focus on daily life choices, transport options, buildings, heating and insulation – making it real

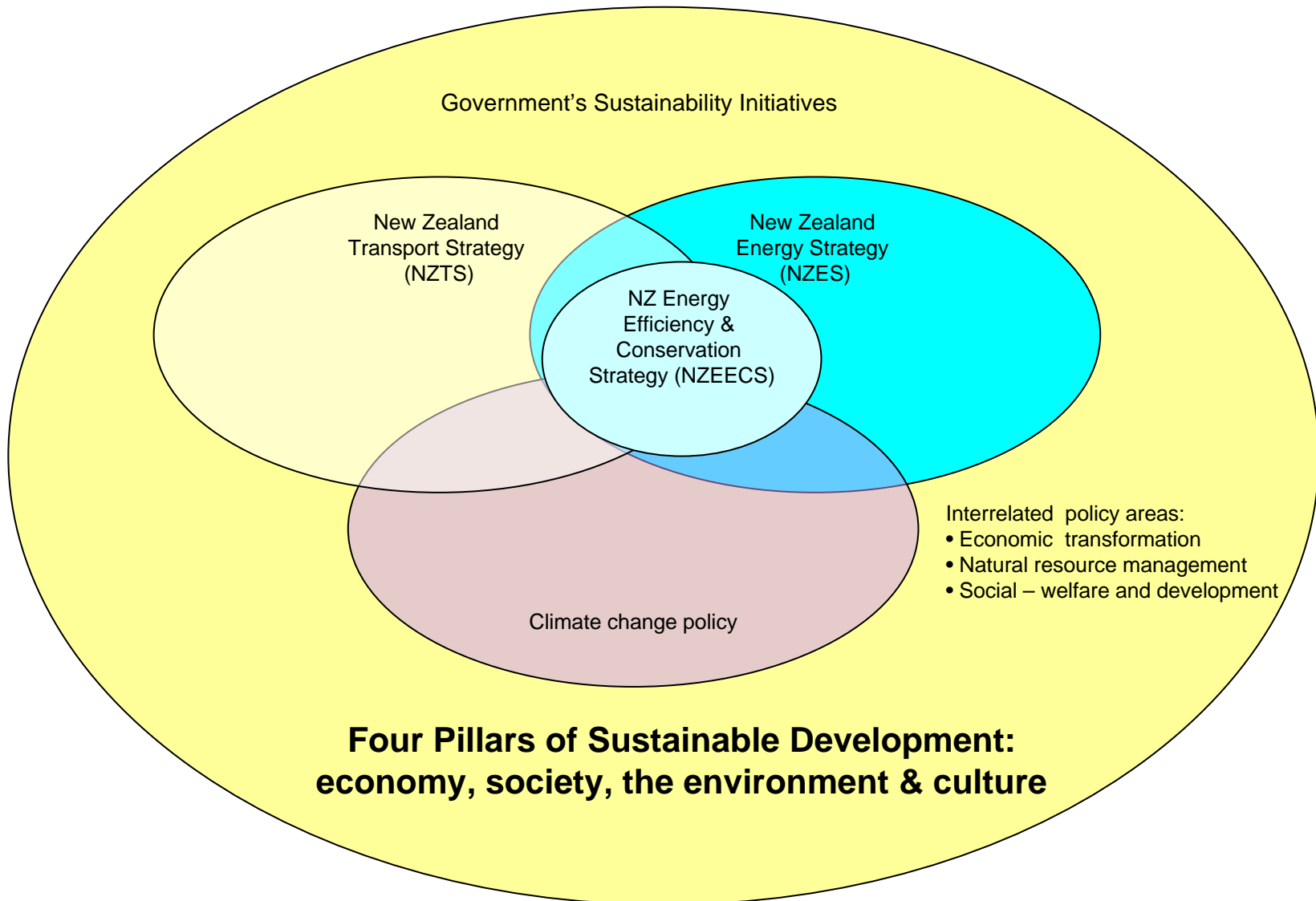
## ❖ New Zealand to become the world's first truly sustainable country

# Impact on building and housing sector

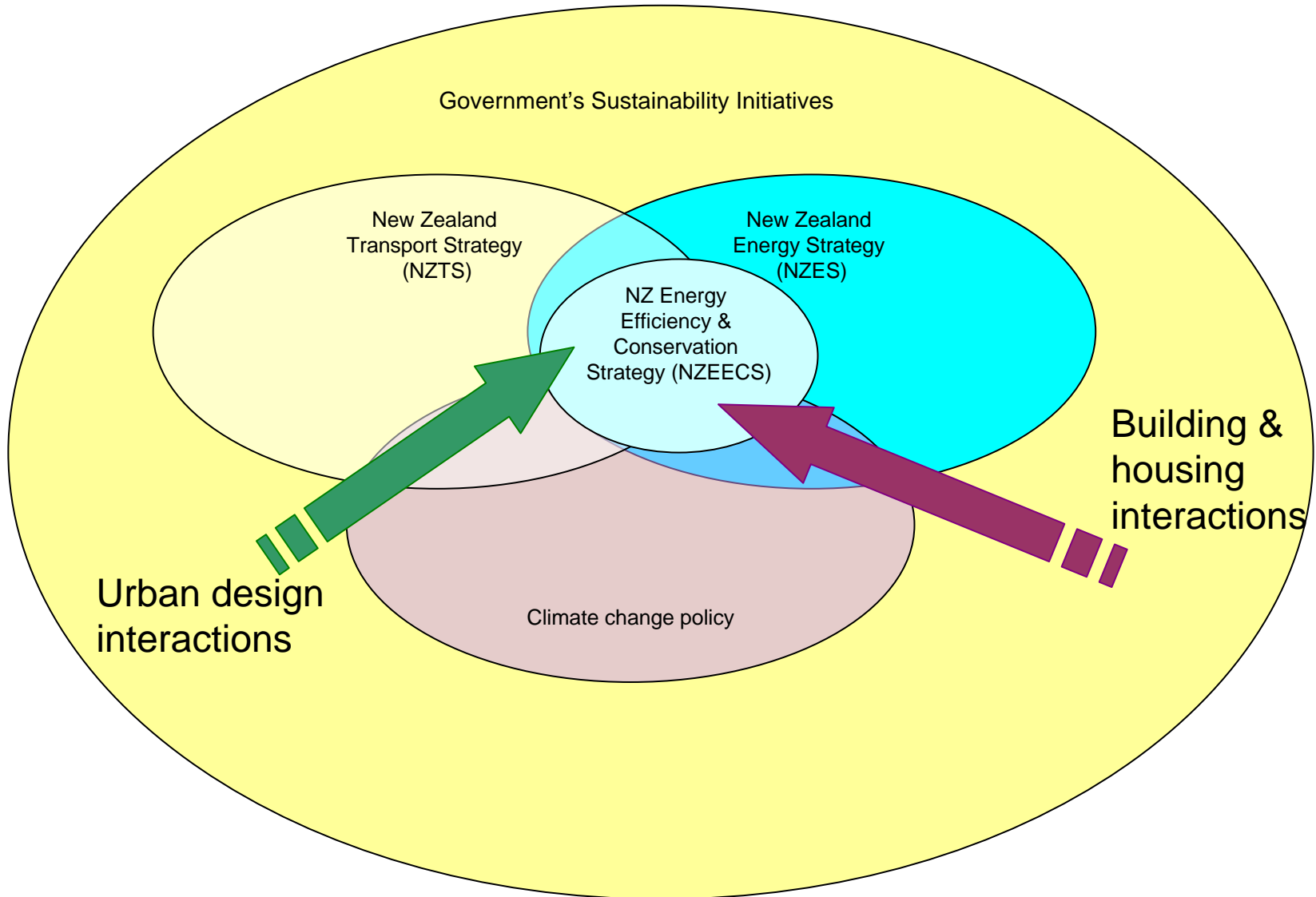
1. Setting the vision and strategic direction
  - i. Urban Design Protocol
  - ii. Sustainable energy strategies (NZES and NZEECS)
  
2. Increased effort to address building and housing energy use – current initiatives
  - i. Government's sustainability initiatives (including Smarter Homes)
  - ii. Energy efficiency retrofits
  - iii. Energy rating schemes
  - iv. Building Standards

# 1. Strategic Direction and Vision

# Relationship of Sustainable Development, Climate Change & Energy Policy Frameworks in New Zealand



# Relationship of Sustainable Development, Climate Change & Energy Policy Frameworks in New Zealand



# Urban Design Protocol

- ❖ Voluntary commitment to specific urban design initiatives
- ❖ Aim: to make our towns and cities more successful by using quality urban design to help them become:
  - Competitive
  - Liveable
  - Healthy
  - Inclusive
  - Distinctive
  - Well-governed
- ❖ Environmental sustainability is an important aspect
  - reduced vehicle emissions
  - more sustainable use of non-renewable resources

# Sustainable Energy (1)

- ❖ New Zealand facing similar energy issues as other countries – some differences:
  - High percentage of renewables in the system due to large amount of hydro
  - But share of renewables has been declining
  - Age of cheap Maui gas is over
- ❖ Vision needed – and then an action plan
  - Climate change policy development continues
  - New Zealand Energy Strategy (NZES)
  - New Zealand Energy Efficiency & Conservation Strategy (NZECS)
  - Drafts released December 2006; final strategies due late 2007



# Sustainable Energy (2)

- ❖ Key actions and ideas within draft NZES
  - Development of “energy services” concept
  - Strong push for renewable energy options
  - Greater emphasis on the demand side
  - Future role of distributed generation
  - 5% discount rate for government energy investments
  - Hierarchy of investment for energy interventions – do energy efficiency first
  - Emissions Trading Scheme proposal under development
  - Importance of innovation



## Sustainable Energy (3)

- ❖ New Zealand Energy Efficiency & Conservation Strategy (NZEECS)
- ❖ Action plan for the uptake of energy efficiency, energy conservation and renewable energy
- ❖ Consumer energy usage in 2005
  - Residential sector - 13%; 62 petajoules
  - Commercial sector – 11%; 49 petajoules
- ❖ Proposed Objectives:
  - Healthy homes – more comfortable with less energy
  - Smarter commercial buildings – more productive work environments



## 2. Current initiatives

# Government's Sustainability Initiatives

- ❖ Household sustainability program
- ❖ Business partnerships for sustainability
- ❖ Carbon neutral public service
- ❖ Government procurement policy
- ❖ Enhanced eco-verification program
- ❖ Towards zero waste

# Household Sustainability - Smarter Homes

- ❖ New website for homeowners, renters, building and property professionals
- ❖ Take a step towards a home that's warmer, drier, healthier, more comfortable, more affordable and kinder to the environment.
  - “... you can help the environment and enhance your quality of life at the same time”
- ❖ <http://www.smarterhomes.org.nz/>



# Priorities for Energy Efficiency: Homes & Commercial Buildings

- ❖ Five priority areas announced by Minister for Building & Construction – October 2006
  - Performance requirements for **thermal insulation in new houses**
  - Documentation for **solar water heating installations** to comply with the Building Code
  - Increased energy effectiveness and efficiency of **hot water systems**
  - Performance requirements for **lighting systems in commercial buildings**
  - Performance requirements for heating, ventilation and air-conditioning (**HVAC**) **systems in commercial buildings**

# Energy Efficiency Retrofits (1)

- ❖ Housing New Zealand's Energy Efficiency programme:
  - Improves the warmth and ventilation of homes built before 1977
  - No impact on rent
- ❖ Energy efficiency features include:
  - insulating hot water cylinders and pipes, ceilings and floors
  - adjusting the hot water cylinder thermostat
  - fixing draughty windows
  - reducing condensation and dampness
- ❖ Healthy Housing project also addresses energy efficiency
  - joint project between Housing New Zealand and District Health Boards (DHBs); began in 2001.

# Energy Efficiency Retrofits (2)

- ❖ EnergyWise home grants programme
  - for improving insulation in pre-1978 houses occupied by people on low incomes
  
- ❖ Warm Home Energy Checks in Christchurch



# Energy Rating Schemes

- ❖ Home Energy Rating Scheme (HERS)
  - Developing a rating scheme to rate the energy performance of homes
  - To stimulate a market premium for these homes
- ❖ Building Energy Rating Scheme (BERS)
  - Proposed in draft NZEECS
- ❖ Supported by ongoing research
  - Home energy end-use project (HEEP)
  - Business energy end-use project (BEEP)

# Building Standards (1)

## ❖ Performance based system

- Building Act 2004
  - promotes building design, construction and use in ways that promote sustainable development
- Building Code
  - sets the performance standards for buildings but does not prescribe how to do it
- Compliance Documents / Acceptable Solutions
  - set out ways to design or build to meet the standards

# Building Standards (2)

- ❖ Energy efficiency improvements being progressed
  - Short to medium term proposals for revisions to NZ Building Code and Compliance Documents
  - Hot water systems in houses and air conditioning in commercial buildings
    - Submissions closed 29 June 2007
  - Solar water heating
    - Submissions close 26 September 2007

# Building Standards (3)

- ❖ Building Act has a requirement “to promote sustainable development”
- ❖ But current Building Code falls short
  - Only considers operating energy – no life cycle assessment
  - Does not account for efficient use of material or require waste from construction and demolition to be minimised
  - No requirement for conservation or efficient use of water

# Building Standards (4)

## ❖ Building Code Review

- Long-term transformational change is proposed
  - Submissions close 28 September 2007
- Proposed that carbon dioxide emissions be used to measure the whole-of-life impact of using resources in buildings
  - From construction, through operation and maintenance, to demolition
- Building designer could choose the most effective and economical means of designing for carbon dioxide emissions through the life cycle

# Bedtime Reading

- ❖ Department of Building & Housing ([www.dbh.govt.nz](http://www.dbh.govt.nz))
  - Building Code review ([www.dbh.govt.nz/bcr-2007-consultation](http://www.dbh.govt.nz/bcr-2007-consultation))
- ❖ Housing New Zealand Corporation ([www.hnzc.govt.nz](http://www.hnzc.govt.nz))
- ❖ Ministry for the Environment ([www.mfe.govt.nz](http://www.mfe.govt.nz))
- ❖ Ministry of Transport ([www.transport.govt.nz](http://www.transport.govt.nz))
- ❖ Energy Efficiency & Conservation Authority ([www.eeca.govt.nz](http://www.eeca.govt.nz))
  
- ❖ Parliamentary Commissioner for the Environment
  - Get smart, think small: Local energy systems for New Zealand ([www.pce.govt.nz](http://www.pce.govt.nz))
  
- ❖ Environmental Change Institute, University of Oxford, United Kingdom
  - 40% House ([www.eci.ox.ac.uk](http://www.eci.ox.ac.uk))