

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
Melbourne, 11 September 2007

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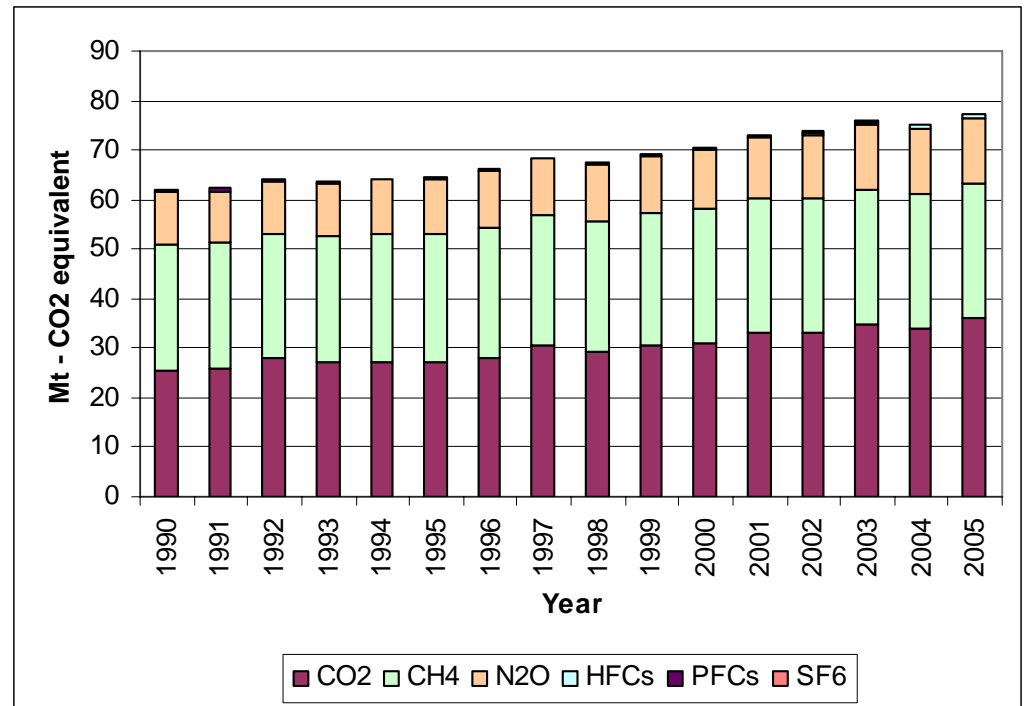


Overview

- ❖ 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

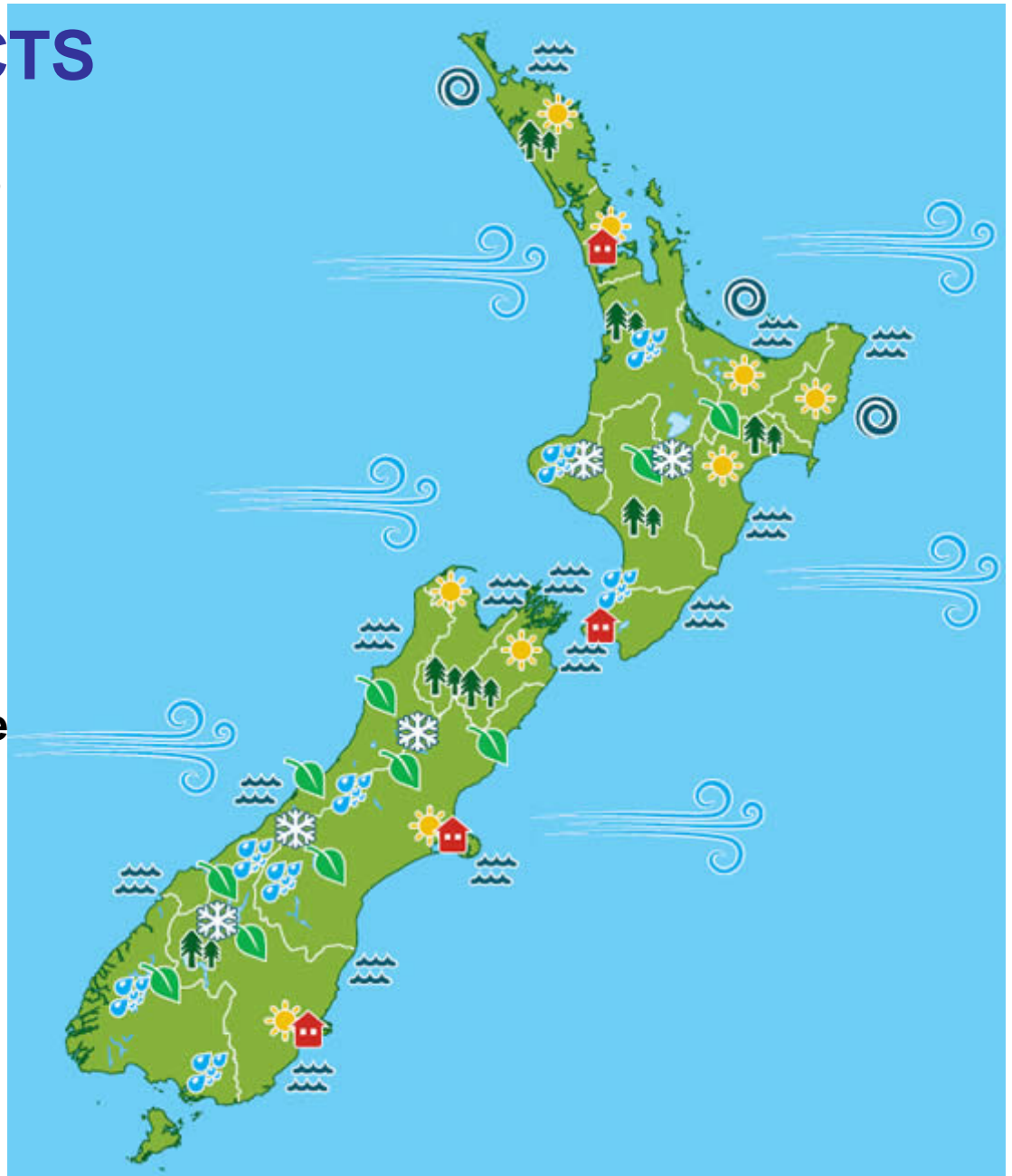
 Cyclones

 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

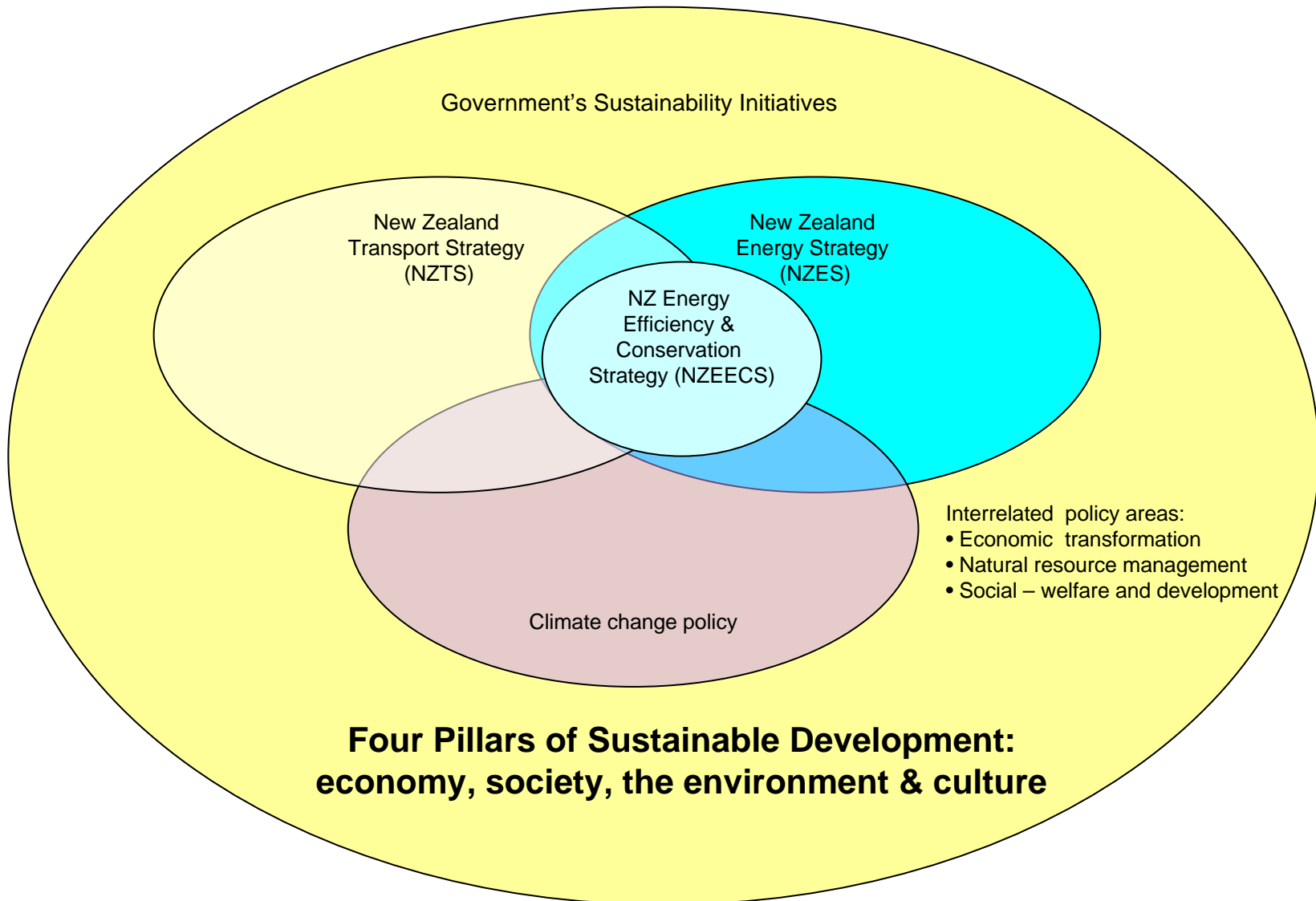
Impact on building and housing sector

1. Setting the vision and strategic direction
 - i. Urban Design Protocol
 - ii. Sustainable energy strategies (NZES and NZEECS)

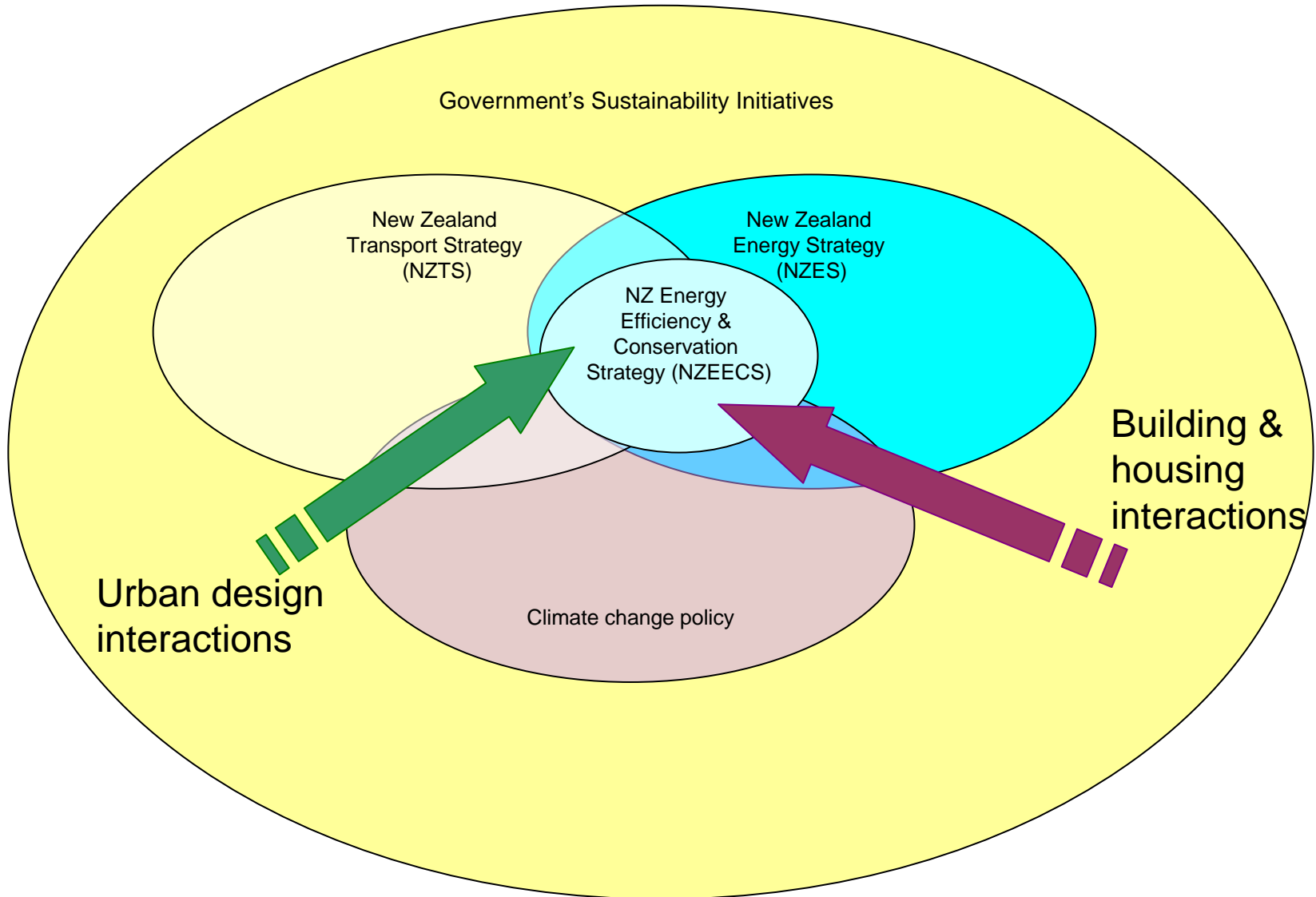
2. Increased effort to address building and housing energy use – current initiatives
 - i. Government's sustainability initiatives (including Smarter Homes)
 - ii. Energy efficiency retrofits
 - iii. Energy rating schemes
 - iv. Building Standards

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)
 - Building Code review (www.dbh.govt.nz/bcr-2007-consultation)
- ❖ Housing New Zealand Corporation (www.hnzc.govt.nz)
- ❖ Ministry for the Environment (www.mfe.govt.nz)
- ❖ Ministry of Transport (www.transport.govt.nz)
- ❖ Energy Efficiency & Conservation Authority (www.eeca.govt.nz)

- ❖ Parliamentary Commissioner for the Environment
 - Get smart, think small: Local energy systems for New Zealand (www.pce.govt.nz)

- ❖ Environmental Change Institute, University of Oxford, United Kingdom
 - 40% House (www.eci.ox.ac.uk)