Carbon Neutral Communities Forum
9am - 12:30pm, 22 February 2010

Carbon Neutral Communities – Making the Transition

Ralph Horne
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Project Website: www.rmit.edu.au/cfd/cnc
Overview

- What is the problem?
- What is a CNC?
- How do we measure them?
- What are promising pathways to achieving them?
Context

- Currently more than 7.7 million homes (ABS, 2007)
- Residential buildings contribute significantly to greenhouse gas (GHG) emissions & place considerable demand on water supplies
- Focus of political and media attention
- Mitigation strategies – technology, information, labelling, demand management
- Despite growing awareness, demand is increasing
Problems and ‘solutions’

• Diminishing household size
• Larger dwelling sizes
• More new homes
• Lifestyle choices that consume more power and water
• Low density
• Poor public transport systems
• … (new urbanism, TOD principles)

• Technically it can be done
• Why isn’t it being done? Should we try harder?

Some non-technical barriers:
• Cost, split incentive?
• Lack of institutional capacity?
• Lack of social capacity? Others….
ARC Carbon Neutral Communities – Making the Transition (CNC) – ABOUT THE PROJECT

Australian Research Council funded project (2007-2010)

Research centres:
- Centre for Design & Global Cities Institute RMIT and University of South Australia

7 Industry Partners
- Manningham City Council (Vic) and the City of Playford (SA)
- Consumers Affairs Victoria, Intern. Council for Local Env. Initiatives (ICLEI), Moreland Energy Foundation (MEFL), Northern Alliance for Greenhouse Action (NAGA), Community Power (Darebin).
‘The CNC Team’

RMIT:
• Ralph Horne (CI)
• John Fien (CI)
• Susie Moloney
• Trivess Moore (PhD)
• Yolande Strengers
• Annette Kroen
• Anna Strempel
• (Maria Cugnetto)

Uni SA:
• Jon Kellett (CI)
• Steve Hamnett (CI)
• Cathryn Hamilton (PhD)
ARC Carbon Neutral Communities – Making the Transition (CNC) – SCOPE AND PHASING

1. Assessment of greenhouse emissions for local government areas

2. Assessment of renewable energy potential for local government areas

3. Analysis of behaviour change theories and programs

4. Development of frameworks and ideas for social change programmes
1. Defining Carbon Neutral Communities and assessing GHG emissions

- **What do we mean by ‘carbon neutral’?**
  - Combustion of fossil fuels for heat and by-products thereof;
  - By-products and pollutants from other chemical processes;
  - Various greenhouse gases (including oxides of nitrogen and methane) from agricultural and forestry processes; and
  - Methane from landfill and other waste materials.

- **What is a community?**

- **Boundary conditions?**
  - Physical/spatial limits;
  - Temporal limits; and
  - Process/system limits.

**A carbon neutral community is one which has zero net greenhouse emissions**
*(the term carbon being a short-form common term for greenhouse gas)*
How do we measure it?

The logic of planning for sustainable suburbs implies that we can define and measure outcomes (otherwise how will we know when we are successful?)
Carbon baselines by suburb
(after Hamilton and Kellett)

1. Top down approach
   - State based energy consumption (ABARE, 2006) for each fuel for each Sector
   - ABS population data from 2006 Census (ABS Quickstats, 2007)
   - AGO Emission factors

2. Bottom up/Hybrid
   - Used ABS data and residential energy use studies (gas, electricity, wood) where available
   - Industrial/Commercial and Agric sectors state-based ABARE data per employee
   - Transport sector – state based fuel use by number/types of vehicles registered
   - Agricultural sector
   - Waste – local government data for waste to landfill
   - AGO Emission factors

3. CCP
   - State based per capita residential energy use
   - State based per capita average vehicle kilometres travelled for transport
   - Energy use per employee for commercial and industrial (ANZSIC and ABS)
   - Local waste data is used
   - Population is based on ABS Regional Population Growth Forecasts
   - AGO Emission factors
2. Renewable Energy Assessment for Local Government Areas:
City of Playford (SA) and Manningham (Vic)

• We looked beyond the large power plant conceptualisation framework
• Focussed on the idea of using community infrastructure as points of energy generation as well as use
• Included assessment of solar, wind and biomass potential
• Total energy demand for each LGA was calculated
3. CNCs: Technical solutions are essential but not enough!

...Beyond behaviour change and ‘barriers’ thinking

- Range of technical solutions (e.g. Energy efficient lighting, renewable energy)
- Important but do not create intrinsic motivation and action competence required for broad-based change
- Technical solutions and information alone inadequate
- Need better understanding of how behaviours and social norms are produced
- Mix of strategies needed to generate behaviour change

“Understanding the householder is a key to successful home energy action programs” (Shipworth, 2000)
CNC review of Behaviour Change Programs

- Collected information on over 100 programs across Australia
- Interviewed 12 organisations
- Developed a framework for programme design ‘beyond behaviour change’
- Worked closely with 2 organisations to apply and then refine the framework
### 4. The Initial Draft CNC Framework for Analysing Programs

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<th>Theme</th>
<th>Questions</th>
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| Framing Behaviour and Social Practices     | What assumptions are made about behaviour and motivators for behavioural change? How are these reflected in the techniques used eg. information, workshops, goal setting etc? To what extent are routines, practices and context explored or identified as important in these programmes?  
*(Spectrum: from targeting individual behaviours to understanding and scripting social practices, norms and values)* |
| Beyond Barriers and Constraints            | What barriers and factors are identified and how are they addressed?  
*(Spectrum: from individual behaviour specific barriers to collective, institutional and regulatory systemic factors)*                                                                                                                                 |
| Approaches to Agency and Empowerment       | What support does the programme receive from key agencies? How is the need for individual and collective agency and empowerment recognised and incorporated as a key component of these programmes?  
*(Spectrum: from individually focused behaviour change to collective capacity building)*                                                                                                                                 |
| The Need for Systemic Changes              | What technical and systemic factors are considered in addressing change? How are they addressed?  
*(Spectrum: from individual focus to systems of provision - changing light bulbs to accounting for how, what and who constitutes the ‘light bulbs system’)*                                                                                                                                 |
| Paths Through Learning and Integration     | What approaches to learning are adopted in these programmes?  
*(Spectrum: from providing information to capacity building and social learning)*                                                                                                                                 |

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To go beyond ‘just try harder’ we need to understand:

- How daily routines, habits & norms are produced & reproduced
- The relationship between consumption, technology & practice
- The way individual behaviour is constructed in socio-technical systems & within a social context
- Importance of social, economic, political & legal context
- What people know about their energy & water use
- Householder needs & concerns
- Social & cultural influences on resource use in homes
Today’s sessions – and where to next?

Programme:
9.30 - Delivering Renewable Technologies
10.40 - Behaviour Change - the Need to Go Further
11.40 - Capacity Building for Carbon Neutrality

Questions for the morning:
• What role can local government play in community resource consumption and emissions reduction?

• What are good and innovative examples of initiatives supporting carbon neutrality?

• How can communities, LGAs and community organisations support the transition to carbon neutral communities?
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