

Weathering the Change – Draft Action Plan 2

North Canberra Community Council Inc. (NCCC) Submission
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How cities are structured – in the patterns of residential settlements, commercial and industrial land use, energy systems, transport networks, water and sewerage infrastructure, public health management, and more – will not only determine the quality of life of the majority of the world's population, but also whether humanity, at long last, is able to live sustainably with nature. To learn to do so is vital. Our livelihoods and very lives will depend on it. But it will not be easy by any means. The scale, scope, and complexity of the challenge will rival any that humanity has faced in recent centuries.

...The other major challenge is climate change mitigation: reducing humanity's greenhouse gas emissions in order to slow and eventually to stop or even reverse the human impacts on climate. Mitigation is every bit as complex as adaptation, and often the two are closely intertwined. Green buildings can both reduce energy use and also increase resilience to heat waves and other climate hazards. Mitigation will require major long-term changes to energy systems, the design of buildings, transport networks, and urban spatial patterns and zoning. Changing these fundamental attributes of cities will often involve making deep changes in the fabric of city life and its underlying economics. Yet the task of mitigation, essentially moving to a low-carbon society, will have to be carried out in thousands of cities around the world. The process will require decades of persistent and creative policymaking to achieve.

Jeffrey D. Sachs

Director of the Earth Institute at Columbia University and Special Advisor to UN Secretary General Ban Ki-Moon on the Millennium Development Goals
Climate Change and Cities: first assessment report of the Urban Climate Change Research Network, 2011, Cambridge University Press, p.x

The North Canberra Community Council (NCCC) recognises the importance and difficulty of the task before the whole ACT community in mitigating and adapting to climate change. We endorse the ACT Government's emission reductions targets, acknowledge the usefulness of the *Weathering the Change – Draft Action Plan 2* report, and applaud the government's endeavours to consult widely in developing an effective and efficient action plan.

1. General Comments on the Emissions Reduction Strategies

1.1 Energy efficient buildings

Given the enormous energy savings, and resultant emissions and cost reductions, that can be achieved through more energy efficient buildings – whether new or retrofitted – any action plan that omitted this strategy would be missing one of the most powerful and cost-effective levers available.

Stationary energy use in buildings comprises at least 35% of total global CO_{2-e} emissions. The materials used in construction, particularly cement and steel, also represent a very significant emissions 'investment'.

Both international and local experience shows that well-designed modern buildings, using existing and proven efficient infrastructure and technologies, can reduce energy usage to a third or less than that of older buildings – a significant improvement in a significant type of impact. Even retrofitting of older buildings with more modern systems can reliably halve energy usage, with payback periods often as low as 5 years. More radical, emerging technologies have the potential to offer far greater improvements.

There is clear evidence of a movement towards greener buildings in the commercial sector – initially led by Commonwealth Government requirements for energy efficient leased buildings, but increasingly being taken up voluntarily by all building owners and tenants. The situation in the domestic sector is not yet as well developed, but here too there is emerging evidence of a growing desire for more energy efficient homes, a growing recognition of the cost savings available over the life of a building, and a matching willingness to pay a modest premium for a better building.

Therefore we believe this strategy is relatively easy to implement, will be well-accepted in the community and is one of the most cost-effective ways to reduce emissions.

Though not overtly mentioned here, the wider question of urban densities and layouts is also relevant. Provided urban heat island effects are carefully mitigated, higher urban population density is generally helpful in reducing overall emissions intensities.

But the benefits of densification depend on high-quality building design and construction and the evidence also suggests that there is an optimum point for density: very high density high-rise inner urban developments can end up being more energy intensive, particularly because of the high embodied energy in construction. We would generally recommend that heights around six stories tend to be the optimum scale for inner urban development, shading down to three and two storey in inner suburbs. There is reason to believe that medium-density, townhouse style development in inner and middle suburbs represents one of the most energy efficient and socially acceptable urban forms.

1.2 Sustainable transport

Transport represents about 20% of global CO_{2-e} emissions: not huge but well worth addressing, particularly given the complicating factor of peak oil and resultant energy security concerns.

This will not be an easy strategy to pursue politically, as Australians have grown used to relatively cheap, indeed highly subsidised, independent transport through private cars. But, beyond the question of emissions, the health, safety and liveability of our cities requires us to tackle the transport problem. For too long we have allowed ourselves to be trapped in the Jevons paradox of building bigger, more expensive, land-wasting road and parking

infrastructure, only to find that it ends up aggravating the problems it sought to solve.

Encouragement of comparatively energy efficient vehicles – primarily cycles, motorbikes and scooters – will be useful, but public transport must be the centre-piece of a transport emissions reduction strategy.

The actual vehicle type/s used for public transport should be chosen based on a balance of flexibility and lowest-possible emissions. Electric vehicles (trains, trams and buses) have great potential – particularly if renewable energy generation is pursued actively – but all options, including hydrogen-fuelled vehicles, should be considered.

Ultimately, rail is likely to prove attractive – light-rail for main-route intracity transport and fast trains for intercity – primarily because rail is best able to manage high passenger (and potentially freight) loads efficiently and can most easily be operated with electric vehicles which can be charged through low-emissions renewable generation. However, in the short-term, it may be more sensible to develop Canberra's existing bus system in order to create and prove demand and trial routes before any fixed track is laid. The experience of the Brazilian city of Curitiba demonstrates that excellent systems can be built using buses alone. Furthermore, more medium and small buses will continue to be needed for lower volume intrasuburban routes, even if light rail is used for major town-centre-to-town-centre routes. The options for lowest-possible emission buses in particular therefore need to be investigated and tried.

The NCCC notes the work of RMIT transport scholar Paul Mees, indicating that effective public transport *can* be achieved with relatively low population densities, of the order currently in Canberra (the example of Zurich is particularly relevant). Nonetheless, we acknowledge that greater urban density, particularly if related to major transport routes, will be necessary to achieve better and more cost-effective public transport. Sufficient density will also allow walking and cycling for a greater number of journeys, as more facilities can be located closer to where people live.

But even the best public transport systems will never remove the need for private transport. And even the best systems to encourage active transport (cycling and walking) will never eliminate the need for independent powered transport through private cars. The NCCC notes and applauds the early work being done with Better Place to develop the infrastructure for electric vehicles in Canberra. We also note that, when used in conjunction with domestic solar photovoltaics, the battery capacity of electric vehicles can help make dispersed renewable energy generation significantly more effective.

1.3 Sustainable waste

Canberra already has a reasonably sophisticated waste management system and Canberra people are among the best recyclers in Australia. Furthermore, the ACT's current landfill is nearing the end of its life and, though methane tapping systems are operating, is still a significant source of emissions.

Therefore the NCCC supports strategies to both reduce waste by improving recycling and to develop energy-from-waste systems, such as the proposed 30MW facility.

We would note, in passing, that food production is a particularly high source of emissions and water usage, and that Australians notoriously waste large amounts of food. We therefore recommend that the ACT Government pursue a range of options to encourage efficient local food production and distribution, ranging from home-based food production and community gardens, through regional farming and retailing processes, to redistributing surplus and potentially waste food to people in need.

1.4 Renewable energy

Renewable energy generation must be a key part of the ACT's approach to reducing emissions. There are proven existing technologies that can deliver significant energy at increasingly competitive costs, and the technologies and manufacturing systems are evolving rapidly.

However, the overall national electricity grid infrastructure, from transmission lines through to meters, needs significant upgrading to enable high-percentage renewable generation. This is largely a national issue and beyond the power of the ACT Government. Nonetheless, whatever action and advocacy are possible should be vigorously pursued.

In summary, while renewable energy generation is not yet fully mature, and significant investment in enabling infrastructure will be required, the ACT should commence a strong program to develop local renewable energy generation capacity and skills.

1.5 Gas-fired electricity generation

Gas-fired electricity generation has attractions: not least its capacity to act as a flexible, quick-response option to cope with peak load demands that stretch even the best renewable generation systems. But its 'green' credentials are less than ideal, with evidence that fugitive emissions from the entire extraction and piping process may be higher than generally believed and therefore greatly reduce the claimed lower carbon profile of this fuel source. Nonetheless, it will probably be needed as a bridging technology until fully effective, peak-load-capable renewable generation networks can be developed.

However, this does not mean that the ACT should try to achieve an independent local gas-fired generation capacity. We are currently almost purely purchasers of electricity generated elsewhere, and will remain significantly so for many years. Therefore it would be better for the ACT to focus on developing appropriate renewable capacity and aim to buy any needed peak load power from interstate gas-fired plants.

1.6 Carbon offsets, including biosequestration

There is a superficial economic rationality to purchasing offsets. However, the validity and reliability of national and, particularly, international offset markets and processes is unproven. Additionally, purchasing offsets provides none of the second-order benefits that can be achieved for the ACT community by investing in energy efficiency and sustainable energy generation infrastructure. Finally, it would not be politically attractive.

More localised biosequestration processes, including possible local production of biochar through pyrolysis of appropriate waste streams, would be worth pursuing, but is unlikely to be a major contributor to emissions reduction.

Nonetheless, the NCCC would not wholly reject the judicious use of high quality offsets, particularly as a last resort to close gaps between targets and achievements.

2. Comments on Proposed Pathways

2.1 Pathway 1: Renewable energy

While it is superficially admirable, this pathway is simplistic and relies too heavily on technologies that, though ready to be used as a significant part of the solution, are not yet mature enough to achieve the full reduction targets on their own. This is also an expensive option.

2.2 Pathway 2: Buildings, transport, waste and renewable energy

If the NCCC were forced to choose one option from the five pathways, this would be it. It uses the efficient levers of buildings and waste, deals with the more expensive but important issue of transport, and emphasises the development of renewable energy. It does so at a reasonable cost.

2.3 Pathway 3: Buildings, transport, waste plus gas-fired electricity generation and offsets

This pathway has many of the same benefits as Pathway 2, and is relatively inexpensive, but relies too heavily on the debatable green credentials of gas-fired generation and fails to grasp the opportunity of developing local renewable energy generation. NCCC sees it as a 'second-best' option.

2.4 Pathway 4: Buildings, transport, waste and offsets

Because of stated concerns with offsets, NCCC would see Pathway 4 as a 'third-best' option, despite its apparently attractive cost profile.

2.4 Pathway 5: Carbon offsets

NCCC sees this as the weakest of the five pathways, because of the high cost, doubtful political acceptability, lack of second-order benefits, and unreliability of available offset mechanisms.

3. Recommendation

NCCC recommends that Pathway 2 should form the basis for an ACT Action Plan. However, we would add that the judicious use of gas-fired generation (purchased through the national grid) and higher-quality (preferably more local) offsets be included, particularly to fill gaps in the capacity of renewable generation to meet peak loads and as ‘last resort’ strategies to achieve targets.

Finally, we offer three additional recommendations below.

4. Supplementary Recommendations

Because so many issues around energy generation and emissions reduction unfold at a national, and even international, level, NCCC recommends that the ACT Government continues to be an active player in processes such as COAG and in relevant international processes and forums (mayors’ sustainability networks, etc.).

As noted in section 1.3 above, we recommend that the ACT Government encourage more efficient local food production and distribution systems as a genuine, though too often forgotten, part of an overall sustainability target.

Finally, we note that sustainability efforts can sometimes be sabotaged by unintentional and unnoticed perverse incentives in legislation and regulation. We therefore recommend that a detailed audit of the impact of all ACT legislation and regulation on achievement of the reduction targets be carried out and any necessary remedial action be pursued.

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