

The race is on!

Melbourne, Vancouver, Bristol, Adelaide, Copenhagen.....can you see the link? No, it's not a trick question, each of these cities has nominated itself as a contender to be the world's first carbon neutral city. Infradebt only invests in Australia, which is where we'll keep the focus of this article. Australia's contenders have both set target dates with Adelaide aiming for 2025 and Melbourne by 2020. Whilst at first glance, it appears that Melbourne has a more aggressive target, but Adelaide in most recent media statements is definitely aiming for first place.

Carbon neutral versus zero-carbon city

There's a vast difference between the two. A carbon neutral city is one in which carbon emissions associated with a city's activities are balanced by an equal amount of carbon sequestered or offset. A zero-carbon city runs entirely on renewable energy – i.e. all activities must not emit CO2. To achieve either outcome requires extensive investment, but the latter requires extensive investment and changes in behaviour (you effectively need to wean the entire population off activities emitting CO2 – most notably petrol powered cars) which makes it exceptionally challenging in the short to medium term.

The largest contributors to CO2 emissions

The two largest contributors to emissions are supply of stationery energy (electricity and gas) and transport. For example, the cities of Adelaide and Melbourne respectively keep track of their carbon emissions the table below show the composition from their latest reports

City	Electricity and Gas (Commercial)	Transport
Adelaide	47%	40%
Melbourne	57%	24.3%

The race: strategy and tactics

Each city has focussed on the 'low hanging fruit' activities and on its own unique starting advantage:

- Sustainable design: councils have made changes to planning laws to encourage sustainable design.
- Energy Efficiency – where possible cities have taken steps to improve the energy efficiency of existing buildings through changes to improve insulation, lighting and the efficiency of plant and equipment.
- Transport alternatives: cities have taken active steps to reduce unnecessary car travel by encouraging the use of public transport and other alternatives (walking, bikes).
- Grid intensity of emissions. The emissions intensity of the city's power supply has a meaningful impact on its carbon footprint. For example, as a starting point, Adelaide has an advantage as it sources 38% of its power from renewable generation (principally wind). By contrast 92% of the electricity in the Victorian grid is sourced from brown coal.

The above activities, taken in aggregate, do meaningfully reduce carbon emissions in each locality. But moving forward, energy efficiency activities on their own won't take carbon emissions to zero. Our cities, and the infrastructure that supports them, have been developed around the cost effective delivery and use of fossil fuels. The long-term strategy, which must be a subset of broader State/National environmental policy, must transition existing infrastructure to support low emissions technology – be it through augmentation or new infrastructure.

But if one wants to win the race, carbon abatement will have to figure in the equation, as the sheer magnitude of the task means that in the short to medium term it is not possible to reduce carbon emissions



to zero without offsets – for example it's hard to see 100% uptake of electric vehicles (charged from renewables) by 2020 or 2025. Thus in terms of race strategy, the victor will require an effective approach to investing in new infrastructure and acquiring offsets.

The transition to low carbon infrastructure is clearly a priority, but what is missing from each of the strategies for Melbourne and Adelaide is dedicated long-term funding. It is specific funding that will create opportunity for infrastructure investors.

The ACT, whilst not actively participating in the race, has sought to reduce the carbon intensity of the power it sources by instituting a 90% renewable energy target. Specifically: 'the renewable energy target will see 90% of electricity used in the ACT in 2020 coming from renewable energy sources.' The ACT is pursuing this strategy by supporting new renewable generators – principally wind. Through 20 year contracts for difference (CFD), the ACT supports new generators by covering the difference between the pool (spot) price and the levelised cost of the generator. The program is ongoing, but 40% of the target has thus far been achieved through CFDs with wind generators in Victoria and South Australia. Given that the electricity from these generators won't physically reach the ACT, and that the generators sell their output into non-ACT NEM pools, in effect, the CFDs are really a form of offset (effectively the ACT is acquiring LGCs), as the ACT will continue to physically source and consume power from NSW grid (principally coal generation). The ACT is seeking to offset circa 2,500 GWh of consumption annually. Assuming the pool price stays constant at today's prices, the cost to the ACT taxpayer is over \$1 billion over the 20 years, or \$4 per week, per household.

The ACT example demonstrates the cost of reducing CO₂ – especially with a large target. Given the large costs in supporting transition to renewables, are Melbourne or Adelaide city councils (or their State Governments) willing to fund the cost of new infrastructure and/or offsets? Equally are they willing to impose regulations or obligations on CBD based power users to force them to purchase increased amounts of renewable energy?

To date there has been significant media attention given to the intentions of both cities (which are laudable and supported by the team at Infradebt) but funding mechanisms remain unclear, if and when this occurs, new opportunities will arise for investors.

