

# Energy in a Changing Climate

## Zero Carbon Australia plan - a reality check

The renewable energy advocates (and the Greens apparently) must be very pleased. Particularly Bob Brown judging by his opinion piece last week. The University of Melbourne in conjunction with Beyond Zero Emission (BZE) have solved all the problems with getting renewable energy to run our entire electricity network.

Their recent report called [Zero Carbon Australia Stationary Energy Plan](#) is a very impressive document that seems to have all the "i"s dotted and the "t"s crossed. The authors have spent hundred of hours carefully explaining how we can harness renewable energy to provide *all* our energy needs by 2020.

In the plan, all the energy we currently get from fossil fuels is replaced with energy from renewable sources. This means all the fossil fuels we burn in our vehicles and all the coal and gas we burn in our homes and factories will be replaced. Nothing is spared. And this is intriguingly done by converting everything to run on electricity and making all that electricity using the sun and the wind and some discarded crop waste. Simple, clean and easy to understand.

OK, sounds great, but what's the cost?

Well not much really. Only \$8 per family per week. Oh - but there are a few drawbacks.

First, the authors have made a number of assumptions to get the cost down to \$8. The good authors have not made any attempt to hide any of these assumptions. They are all clearly spelled out in the plan to anyone prepared to plough through the 194 pages to find them. As many of you will not have the time (or perhaps the inclination), we have done the job for you [here](#).

For the \$8 a week extra on your electricity bill, you will give up all domestic plane travel, all your bus trips and you must all take half your journeys by electrified trains. This will allow all you two-car families to cut back to just one electric car.

But can we trust it will only cost \$8 a week more? This is where it gets a bit more complicated.

Unfortunately the authors seem to have developed the plan around getting the cost down to a price that should be easy to sell. This is where some of the assumptions start to unravel.

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The plan assumes we will be using significantly less energy by 2020 than predicted by the government department [ABARE](#). What's more, the plan believes we can reduce this energy

use without any damage to the economy. Unfortunately, this flies in the face of 200 years of history.

You better stock up on candles because you can certainly expect more blackouts and brownouts with the ZCA plan. Our analysis shows that insufficient generating capacity has been allocated to maintain reliability in the electricity networks. Fortunately our responsible network operators will not let that happen.

We even crunched a few numbers to see what it would actually cost to address these issues. The bad news is it could add more like \$50 a week to your power bill not the \$8 promised by BZE. Ouch!

These are the conclusions from our analysis:

- The ZCA2020 Stationary Energy Plan has significantly underestimated the cost and timescale required to implement such a plan.
- Our revised cost estimate is nearly five times higher than the estimate in the Plan: \$1,709 billion compared to \$370 billion. The cost estimates are highly uncertain with a range of \$855 billion to \$4,191 billion for our estimate.
- The wholesale electricity costs would increase nearly 10 times above current costs to \$500/MWh, not the \$120/MWh claimed in the Plan.
- The total electricity demand in 2020 is expected to be 44 per cent higher than proposed: 449TWh compared to the 325TWh presented in the Plan.
- The Plan has inadequate reserve capacity margin to ensure network reliability remains at current levels. The total installed capacity needs to be increased by 65 per cent above the proposed capacity in the Plan to 160GW compared to the 97GW used in the Plan.
- The Plan's implementation timeline is unrealistic. We doubt any solar thermal plants of the size and availability proposed in the plan will be on line before 2020. We expect only demonstration plants will be built until there is confidence that they can be economically viable.
- The Plan relies on many unsupported assumptions, which we believe are invalid. Two of the most important are:
  1. a quote in the Executive Summary: *"The Plan relies only on existing, proven, commercially available and costed technologies."*
  2. solar thermal power stations with the performance characteristics and availability of baseload power stations exist now or will in the near future.

Of course we don't have to pay such a hefty price to replace fossil fuels. If our government would allow it, nuclear power can replace all fossil fuels for an increase on our power bills of probably less than \$5 a week. How about it Bob?

Written by Martin Nicholson and first published in On-line Opinion 16 Aug 2010