

Debate over Tidal Power in Western Australia

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21 August 2000

Recently I was one of about 5 people interviewed on 'The 7.30 Report' about the tidal power station proposed for Derby in the north-west of Australia. As is common with TV, about 20 minutes of my interview was video-recorded and only about 15 seconds of that interview was played on air. So, for those who may be interested, I'll spell out my position here in more detail.

In Western Australia, the debate has been presented as a choice between tidal power, backed by the Federal Government, and a power station fuelled by liquefied natural gas (LNG), backed by the WA Government.

Tidal versus LNG Power Station in Derby W.A.

My position is that *both* technologies have significant environmental impacts and that *neither* technology, installed in the north-west, would assist Australia to move towards a sustainable energy future:

- The environmental impacts of the conventional type of tidal power station are similar to those of large-scale hydro-electricity. Its construction would involve much earth moving and the building of one or more big dams across estuaries, with similar ecological impacts to large dams on rivers. Significant quantities of greenhouse gases would be emitted as CO₂ during construction and as methane gas from the flooded vegetation for years after completion. In addition, 15-30% (depending upon which side you believe) of the electricity generated by this scheme would come from burning fossil fuel, either diesel or LNG.
- The conventional type of tidal power station is very costly compared to natural gas and other renewable energy technologies: capital cost about \$7,000/kW, compared with less than \$2,000/kW for large-scale wind (in other locations, not north-west Australia) and about \$3-4,000/kW for solar thermal electric. The tidal power station would have to have much larger capacity than is needed to supply electricity to Derby, Broome and various small communities in the region. Presumably the excess electricity would then be almost given away to resource industries such as aluminium.
- The tidal power station would capture essentially all of Commonwealth funding to WA under the Regional and Rural Power Generation Program - about \$61M -- which would be better spent on mix of smaller projects in solar & wind.
- In Australia, tidal power is unlikely to be a significant part of a sustainable energy future, because would not substitute for coal (which is currently 90% of electricity generation in Australia). Tidal power is too remote and geographically unique to be a useful contributor generally. The technology is well-established (earth-moving and dam-building) and so future price decreases cannot be expected. Solar and wind are much more relevant for a sustainable energy future for Australia as a whole.

- Natural gas has potentially an important role in the transition to a sustainable energy future for Australia as a whole, primarily by substituting for grid-connected coal-fired power in NSW, Qld, Vic., SA and the *south*-west of WA. However, the installation of a natural gas-fired power station in the *north*-west will not assist progress towards a sustainable energy future, unless natural gas is combined with solar, e.g. in solar thermal electric power stations or gas-boosted solar hot water systems.
- Natural gas has significant environmental impacts: GHG production while burning it and trucking it to power stations as LNG.

In the north-west, the way forward should involve a mix of energy efficiency & smaller scale renewable energy technologies, possibly with some LNG and/or diesel backup. The Commonwealth & WA Governments should be encouraging there:

- Energy efficient ceiling fans or evaporative coolers instead of air conditioners and energy-efficient refrigerators.
- Improved building design, including ventilation, insulation & shading.
- Domestic solar photovoltaic modules with batteries & backup diesels. Australia has the potential for developing a significant export industry for such remote-area power supplies based on solar (or small-scale wind).
- Town-scale solar thermal electric power stations, with LNG backup.
- In windy coastal areas, there is some potential for medium-sized wind generators with diesel back-up.
- Pricing electricity in a way that reflects costs in remote areas. This would mean that electricity prices would rise to between 50 cents and over \$1 per kilowatt-hour, depending upon location. For social equity or political reasons, people who live in remote/rural areas could be compensated by means of location allowances, but not by means of cheap electricity or fuel which undermines energy efficiency and renewable energy.