

ISSUE

1. The RET in its existing form is not achieving one of its stated objectives, being to contribute to the development of export industries related to renewable energy. Generation delivered under the existing RET are dominated by wind and PV, both of which rely heavily on imports.
2. The timeline and commercial settings of the RET tend to favour technologies that deliver only intermittent power at the expense of technologies which deliver dispatchable¹ power.

PROPOSITIONS

Adjust the RET target to encourage technologies and services that can be exported

At current capital costs, wind and PV will likely dominate the new build of renewable generating assets. These projects feature imported equipment and technology. The RET needs adjustment if the objective is to be met of developing an **export** industry leveraging off the RET. The renewable technologies and system configurations developed using Australian expertise need a more favourable treatment to compete against the entrenched imported technologies. This could be achieved by financial support mechanisms favouring power sent out from projects that feature services or technologies which Australia can legitimately expect to market off-shore. Support options available within the RET might include technology banding and LGC multipliers. Other options would be available through ARENA or the CEFC.

Encourage technologies that will provide dispatchable rather than intermittent power

Project finance generally requires 10 to 15 years of revenue to recover capital costs. Unless a renewable technology can capture an assured forward revenue stream of that duration, it will not be viable. On current expectations of capital costs, wind and PV will remain preferred in the near term and there is a short window of opportunity during which other dispatchable configurations can fruitfully be encouraged. The market will provide project finance if revenue will exceed costs.

In the current form of the RET the likely outcome is that the majority of embedded renewable generation assets will be those that deliver intermittent power rather than dispatchable power. This will not serve the long term national need of gradually turning over the asset class from a fossil base to a renewable base. A suitable financial mechanism supporting output from a dispatchable power asset would change the relativity of income and costs by delivering more revenue, making the asset more competitive and more likely to be added to the generation fleet.

Adjust the Shortfall Charge to make opting out more difficult

The RET is structured so that the retailers with an obligation to surrender LGCs can opt instead to pay a shortfall charge, currently not indexed: it is falling in real terms over time. Supply and demand² market forces will set the price of LGCs. The ceiling price for LGCs is effectively set by the shortfall charge: new renewable capacity will only be built if it is commercially viable at that LGC price point. The higher the prevailing black power prices (linked to the carbon price regime) the lower the LGC price will need to be. Some will choose to pay the shortfall charge meaning less renewable capacity will be built³. This will lead to under achievement of one of the objectives of the RET, being to accelerate renewables uptake. By indexing the shortfall charge, market signals will tilt in favour of the construction of new renewable capacity.

¹ 'Dispatchable' system sends power out a time of the operator's choosing, de-coupled from the time the energy is available from the environment. Examples are geothermal, CSP with storage, biomass, hydro.

² Supply is dependent on installed assets. Demand is dependent on Renewable Power Percentage and rules.

³ Refer CCA's Renewable Energy Target Review, Oct 2012 Para 4.2.2 and Fig 28

DISCUSSION

The propositions above involve consideration of:

- The desirable attributes of the future national electricity generation fleet;
- The RET objectives;
- The nature of project finance; and
- The interaction of the shortfall charge and project finance.

Changing over the generation fleet

The overarching national objective is an effective response to climate change and the Draft Review notes that this requires that policy makers take a long term view⁴.

In the likely event that the climate science proves correct, the global political position is more likely than not to shift towards targeting emission reduction. Carbon emission permit pricing is the likely mechanism and the international trend will be to a **limited supply** of permits.

With a rising global population, total energy consumption is also likely to rise notwithstanding some per capita reduction. The net effect will likely be **rising demand** for emission permits.

The supply and demand balance for emission permits will tend to push up their price. To the extent that global carbon pricing is linked to a nation's energy supply framework, the price of electricity will also rise as a consequence.

For a country to be insulated from the carbon price impacts on electricity costs, it will need to develop a generation fleet that is less and less carbon intensive. Such a future low carbon generation fleet will need to supply to a profile that closely matches the daily and seasonal demand profile.

Thus within a few decades, the national generation assets will need to be characterised by:

- a high proportion of technologies that use zero carbon renewable fuel sources;
- coupled with energy storage;
- such that the electricity can be dispatched on call;
- to suit a demand that is managed with smart grid system design and devices.

RET objectives

In consideration of the overarching national objectives the RET seeks to accelerate Australia's achievement of a de-carbonised generation fleet pending traction of a universal carbon pricing mechanism.

This was articulated in the original objectives of the RET⁵ being to:

- accelerate the uptake of grid based renewable electricity in order to reduce GHG emissions;
- provide an ongoing base for the development of commercially competitive renewable energy as part of the broader package to stimulate the use of renewables; and
- contribute to the development of internationally competitive industries which could participate effectively in overseas markets.

⁴ *Op cit* Para 3.2.1

⁵ *Op cit* Para 1.4.1

The *ARENA General Funding Strategy 2012/12 to 2014/15* notes the linkages between carbon pricing, RET and CEFC. It also discusses an investment plan that might focus on ‘... areas where Australia ... has an advantage or where Australia has the potential to make an impact globally.’ This aligns with the third stated objective of the RET.

The first two RET objectives are best achieved by policy settings that encourage development of lowest available cost renewable energy generation to the full extent of the 41,000GWh target while remaining indifferent to the technology.

The third RET objective is best achieved differently. It requires policy settings that encourage the development of a generation fleet using technologies and services developed in Australia and suitable for adoption overseas.

Under the existing RET architecture, wind is proving to be the dominant technology followed by PV. That outcome fails to satisfy the third stated RET objective as these are both characterised by the use of imported technologies. ‘Internationally competitive industries’ implies the development of technologies and services that can be sold to the world: the RET’s structure should assist corporate Australia to position itself as price makers for exported services rather than price takers for imported technology.

The RET does not satisfy the implied national fleet replacement objective as neither wind nor PV provide dispatchable power unless coupled with some form of energy storage. If wind and PV projects dominate the market in supply of LGCs, the nation will end up with a generation fleet that does not provide dispatchable power and the development of which has not supported export industries.

Project Finance

Commercial viability is measured as return on equity. A developer needs to recover his lifetime costs plus a margin through revenue for every unit sold. To be commercially viable, the margin must provide adequate compensation to equity for the risks taken on over the life of the project, based on a prudent mix of debt and equity in the project financing.

On the cost side, a proponent will develop a scheme with costs as low as possible for a plant configuration that drives a suitable financial return.

- Costs in renewable energy facilities are dominated by up-front construction costs which need to be as low as possible: this is achieved by getting the costs of technology and project delivery down the learning curve as quickly as possible;
- Fuel is free;
- Emission permit requirements are nil;
- Operational costs are relatively small; and
- Finance costs need to be as low as possible: this is achieved by low technology risk, low delivery risk and high revenue certainty.

Revenue comes from the sale of electricity and LGCs. Under an NPV calculation, near term revenue is more important than mid or long term revenue. The revenue stream needs to be as high as possible, particularly in the early years, with as much certainty as possible over the design life of the asset. A proponent will develop and implement a strategy to sell power and LGCs into the market for as high a price as possible, preferably under a long term PPA, consistent with the risk appetite of the equity participants. Given that generation assets have long lives, a proponent will take into account the future market for his products and adopt a hedge position to suit the risk appetite of the equity participants.

Debt providers will take into account the long term revenue before settling on whether to finance a project and the terms thereof. Unless the revenue stream can be forecast to be high enough, secure enough and to go on for long enough, the debt and equity will not be available and a project will not get built.

Shortfall charge and the LGC market

The shortfall charge mechanism in the existing RET design makes it possible that, under some settings, retailers with LGC surrender obligations will elect to pay the un-indexed shortfall charge rather than buy LGCs.

The Authority notes⁶ in respect of the shortfall charge that:

- it has only operated in circumstances of mismanagement;
- it serves as a safety valve; and
- it sets an explicit price signal.

However, if the shortfall charge mechanism is accessed, it will mean that the national generation fleet will deliver less than the 41,000GWh target which reduces the implied support to the longer term objective of a decarbonised dispatchable generation fleet.

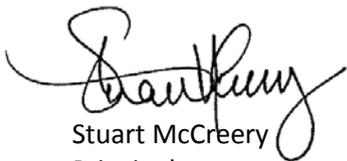
In the Review, the Authority's preliminary view⁷ is that the current settings for shortfall charges should be maintained and reconsidered as part of the 2016 review. This approach is flawed in that project financing decisions will need to be made **before** that review date if a project is to be built in time to get the necessary deal flow of LGC revenues: approximately 15 years of secure revenue is required. Longer dated revenue is important but less so.

To be financially viable, a new renewable energy asset must:

- be built and in production by 2015 or thereabouts;
- have 15 or so years of certainty over LGC pricing revenue;
- be deliverable for an LCOE that competes with wind, currently viable around \$110/MWh;
- have a financing arrangement that repays debt at commercial rates and provides a return to equity suitable to its needs⁸.

Dispatchable technologies cannot yet compete on an LCOE basis as they have not yet come far enough down the learning curve. Although significant progress is being made in the commercialisation of those technologies, there is doubt any will be commercially competitive with wind and PV before 2015 which is when the window of project finance opportunity closes.

The commercial gap might be closed through complementary measures such as capital grant equity funding or revenue support from ARENA and project debt finance through the CEFC.



Stuart McCreery
Principal
Evans & Peck

⁶ *op cit* para 6.3

⁷ *op cit* R.16

⁸ Capital grant from ARENA might be free equity; balance of return uplifts commercial equity's outcome.