



Centre for Energy and
Environmental Markets

NSW Government Climate Change Framework
Submission to the Climate Change Fund Draft Strategic
Plan 2017-2022

by
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About CEEM

The UNSW Centre for Energy and Environmental Markets (CEEM) undertakes interdisciplinary research in the design, analysis and performance monitoring of energy and environmental markets and their associated policy frameworks. CEEM brings together UNSW researchers from the Australian School of Business, the Faculty of Engineering, the Institute of Environmental Studies, the Faculty of Arts and Social Sciences and the Faculty of Law, working alongside a number of Australian and International partners. Its research areas include the design of spot, ancillary and forward electricity markets, market-based environmental regulation, the integration of stochastic renewable energy technologies into the electricity network, and the broader policy context in which all these markets operate.

CEEM has been undertaking research into Australian energy and climate policy over more than a decade, with a focus on the electricity sector. More details of this work can be found at the Centre website – www.ceem.unsw.edu.au. We welcome comments, suggestions and corrections on this submission, and all our work in the area. Please contact Associate Professor Iain MacGill at i.macgill@unsw.edu.au.

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1 Introduction

CEEM welcomes the opportunity to contribute to this important NSW Government consultation process. Effective climate policy design has proven challenging for jurisdictions around the world over the past two decades, and particularly challenging in Australia. The lack of bipartisan consensus on the importance of addressing climate change, and the most appropriate mechanisms for achieving effective emissions reductions, has been particularly problematic.

The release of the NSW Government's Climate Policy Framework last month represents important progress in this regard. It follows announcements of renewable energy targets from the majority of other State Governments over the past few years. Queensland is seeking 50% renewable generation by 2030, Victoria 40% by 2025 and South Australia 50% by 2025. The Australian Capital Territory looks set to achieve 100% renewables by 2020 while the Northern Territory has just announced a 50% target for 2030.

While the NSW government has not proposed a State renewables target, it has now joined Victoria, South Australia and the ACT in having an aspirational zero net carbon emission target for 2050.

The importance of the NSW Framework has been highlighted by the Federal Government's response to the recent release of several reports including the Finkel Review's initial findings into the future security of the Australian National Electricity Market, and the Australian Energy Market Commission's report on integrating energy and emission reduction policies. Both reports canvassed the potential role of an emissions intensity scheme in reducing electricity sector emissions. Unfortunately, the Federal Government has proven unwilling to even consider such a policy approach.

At present, the Federal Government does have a renewable energy target of around 23.5% renewable electricity by 2020 (almost certainly falling over the period to 2030) and a 2030 target of 26-28% greenhouse emission reductions from 2005 levels as Australia's contribution towards the Paris Agreement. These ambitions fall way below those of Victoria, Queensland, South Australia, the ACT and the NT in terms of renewable targets, and Victoria, South Australia and the ACT in terms of longer term emission reductions. The current Federal Government targets are also entirely inadequate in terms of delivering the almost complete electricity sector decarbonisation by 2040 that the International Energy Agency says is required globally to avoid dangerous global warming. Despite this, the Federal Government has been highly critical of the various State renewable energy targets.

The NSW Government has now set an aspirational goal of net zero emissions for 2050. While the hard work of achieving this goal lies ahead, and through processes including the draft strategic plan for the Climate Change Fund, it is notable that this target will almost certainly require complete decarbonisation of the electricity sector within the next 25 years.

Energy and climate challenges have an obvious national jurisdictional context, including Australia's participation in international climate change processes such as the UNFCCC. National policy coherence also has value in avoiding uncoordinated policies that can adversely impact investment incentives, increase compliance costs, and generally lead to less efficient outcomes.

Nevertheless, while suitably ambitious, nationally consistent, legislation under Federal Government leadership might be ideal in theory, it hardly seems realistic at present. The Commonwealth has promised a wide ranging review into climate policy next year but the apparent divisions within the Federal Government seem likely to prevent useful progress. It might well be either State leadership or very little leadership over the next few years; years that will be key to setting Australia on a clean energy path fit for the future.

More generally, combined state action has historically played a key role in Federal climate policy, while States have pioneered innovative energy and climate policies over the past two decades, with some seeing wider adoption.

We therefore thank you for the opportunity to provide this input to the development of the Climate Change Fund Strategic Plan. The Climate Change Fund (CCF) represents a significant endowment for the community of NSW which can be strategically leveraged to make NSW a leader in GHG abatement and energy system transformation efforts.

This submission draws from technical and policy analysis expertise from the University of NSW Centre for Energy and Environmental Markets, School of Electrical Engineering, and School of Photovoltaic and Renewable Energy Engineering. Together CEEM and these schools at UNSW offer a range of relevant interdisciplinary expertise in technical modelling and policy analysis. This submission comments on, and provides suggestions for consideration by the NSW Government, in a selection of areas listed in the Plan with a focus on the proposed actions for accelerating advanced energy.

The authors are available to provide additional information, clarification, or comment on any aspect of this submission. We hope that it is of value to the government.

2 Unlocking investment under the Renewable Energy Target

We agree with the NSW Government's desire to enhance the development of the renewable energy industry in NSW, and that that the risks of the national 23.5% RET target for 2020 not being met justifies efforts to facilitate greater investment in new renewable projects in the State. NSW is also well placed to offer renewable energy deployment options that will be more easily integrated into the National Electricity Market (NEM) than States with significantly higher variable renewable penetrations such as South Australia and Tasmania. However, if the objective is only for NSW to achieve a 'fair share' of the National target, then CCF efforts might not provide additional national renewable energy deployment beyond what would occur under the RET anyway. Renewables present a far greater opportunity for NSW than this in terms of emission reductions and economic development opportunities.

- CCF support, e.g. via contracts for difference can help to de-risk investment in new renewables generation, which is critical to minimising financing costs, which are a significant fraction of these capital-intensive projects. It is evident from experience internationally and also in Australia (notably the ACT auctions) that reduced developer risks can greatly reduce overall project costs. However, such approaches may shield developers from energy market 'signals' regarding the value of their generation in terms of its locational and temporal characteristics. The energy market value risks of projects are transferred, instead, to the CFD funder. There are opportunities to better tailor competitive CFD approaches by exposing project developers to some relevant energy market signals, or at least considering them in the project selection process.
- A planned sequence for closure of pollution coal generators, potentially driven by minimum emissions performance standards would also reduce risk for renewables plant entering the market, and hence drive down costs.
- An opportunity exists to direct funding so as to maximise co-benefits across different activity programs, particularly the *Accelerate Advanced Energy Stream*. The NSW government may wish to consider priority support for projects which that provide demonstration with respect to the integration of large quantities of intermittent renewables into future power systems.

In addition to support for generation investment under the RET, the potential exists to harness consumer choice as a new source of demand underpinning RE developments. The US has seen the rapid emergence of the corporate PPA market for end user procurement of offsite renewable energy. In 2015 a larger share of new US wind capacity was underpinned by end user offtake agreements than under RET like Renewable Energy Portfolio standards. Recent UNSW research has revealed a clear desire by NSW businesses to procure offsite RE via corporate PPA like mechanisms.

- While an initiative to expand behind the meter solar power PPAs under the Resource Efficiency Policy would be of great potential merit, it would also be valuable to include offsite RE PPAs under this initiative. Government led projects, including the North West

Rail Link and Kurnell Desalination Plant agreements, provide valuable examples for entities in both government and the private sector to follow. Enhancing the role of government in demonstrating offsite RE deal structures would help accelerate the development of the wider corporate PPA market in NSW.

- The efforts by the NSW Government to support initiatives such as the WWF-JLL Renewable Energy Buyers Forum are commendable. As already noted, the emergence of an end user driven corporate PPA market would accelerate the transformation of the electricity system and diversify the RE industry away from a reliance on retailer backed offtake agreements. Our research has shown that at present, this market is highly immature with end users suffering from serious bounded rationality and information provision problems. An institutionalised support mechanism along the lines of the Rocky Mountains Institute – Business Renewables Centre is needed in the Australian/NSW context. CCF support for an NGO conducting such activities would be very valuable in maximising benefits from the development of such a market in NSW.
- Electricity retailers are critical stakeholders in facilitating end user procurement of offsite RE. Large incumbent electricity retailers have commercial incentives which may reduce their interest in facilitating such agreements. Smaller, newer, electricity retailers on the other hand, see a business opportunity in this space. The financial credit rating requirements around counterparty risk, however, act as a barrier to these retailers facilitating such agreements. Therefore, the CCF might wish to explore an initiative, possibly in partnership with the Clean Energy Finance Corporation, which would provide credit support to smaller electricity retailers to overcome this market barrier and further open up the corporate PPA market in NSW.

3 Accelerate Advanced Energy Technologies

We note the definition of Advanced Energy used in the Climate Change Framework as being: *“Advanced Energy involves clean generation and storage technologies combined with existing infrastructure, the internet, software, regulation, demand management, energy efficiency, market design, pricing and other innovations to ensure that energy savings becomes reliable and affordable.”* The benefit of this definition is that it not only covers renewable generation technologies, but also the holistic manner in which they are integrated into industry structures and beneficially adopted by end users. In this regard:

- There are excellent reasons for the NSW government to support the funding of projects which demonstrate the deployment of technology which enhances the flexibility of the power system. The focus on complementary technologies (specifically storage technologies) can enhance the reliability and flexibility of future power systems given RE intermittency is also a good one. Some caution, however, is required given that there are a mix of technologies which can provide power system flexibility. Support should aim to build a portfolio of options rather than pick winners in this regard.

- The proposed actions have an explicit technology focus which doesn't capture the full breadth implied in the definition of Advanced Energy. The NSW Government might also consider CCF support for research into market design and regulatory frameworks for future energy systems, particularly with respect of the integration of distributed energy. Such research may not only assist the NSW Government in its interaction with COAG processes but also assist parties in proposing and advance National Electricity Rule changes at the AEMC. Such funding would complement technology demonstration projects and address the 'other side' of the electricity industry transformation challenge.

4 Make NSW the centre for advanced energy innovation

The transformation of the electricity system will require innovation across technology, business models, policy and regulatory frameworks. The use of CCF funding to support innovation across all these domains will therefore be important in maximising benefits from advancing the Government's GHG emission target. The focus on commercialisation of advanced energy technologies dovetails well with the objectives of other action streams and the international innovation initiatives noted would be highly valuable replicated in the NSW context.

While the activities proposed under "start-up funding to accelerate innovation in advanced energy" are valuable in this context, the NSW Government may wish to consider a wider view of innovation beyond simply supporting start-ups, sponsoring events and developing collaboration tools.

- Retail electricity markets and innovative business models in the retail market space will be essential in enabling the potential of distributed energy. While some of these business models will be in the context of start-ups and very early stage businesses, a number may also be in established businesses (both large and small). A focus which is exclusively on start-ups may exclude niche innovation occurring in established business operations. We recommend that instead of focussing support on businesses as a particular stage of development, support should be targeted towards the nature of the innovation being sought.
- More generally, innovation follows as well as leads deployment. Efforts to push innovation in technologies and services which are having only limited deployment success is often very challenging. On the other hand, and as seen with renewables worldwide, major deployment can facilitate developing innovation capabilities. An explicit NSW renewable energy target, with appropriate policy mechanisms, would strengthen the opportunities for NSW to be a centre for advanced energy innovation.

5 Accelerate the transition to a 21st century transport fleet

The electrification of NSW's transport fleet will be a key element in transitioning the energy system and achieving the Government's aspirational GHG emission goals. The initiative to develop a NSW Electric Vehicle (EV) Strategy is an important first step in developing arrangements to support EV integration and maximise their benefits. In addition to the set of actions proposed to putting the NSW vehicle fleet on the path to doubling energy productivity, the NSW Government may also wish to consider other opportunities for accelerating and appropriately guiding this transition:

- Research at UNSW has clearly identified the critical importance of non-residential EV charging infrastructure in 1) maximising emission benefits 2) maximising the potential for EVs to act as a flexible resource for the power system, and 3) enabling the beneficial use of high future penetrations of solar PV. As non-residential charging infrastructure is critically important in realising the potential benefits from widespread EV uptake, there is a rationale for CCF funding to address barriers and market failures which impede efficient investment in this area. In particular, the California experience demonstrates that market failures associated with split incentives, and network effects, require government intervention to deliver efficient investment outcomes.
- The initiative to work with vehicle suppliers to increase the availability of zero emission vehicles available to the NSW market could be particularly valuable. It is important to note, however, that the use of CCF funding to subsidise the purchase of EVs may, in the presence of supply constraints, simply be capitalised into higher prices without driving significant additional uptake. Australia has not proven a particularly attractive market for major EV manufacturers and distributors to date, and their efforts would appear to be focused elsewhere.

6 Empowering local communities to adopt renewable energy

An appropriate set of policy and regulatory arrangements could see communities play an important role in diversifying support for renewable energy developments, particularly of a distributed and diversified nature. Many councils and community groups are already taking action to support renewable energy locally. In this regard we commend the inclusion of an activity stream focussed on empowering local communities to adopt renewable energy. In addition to the set of listed activities, the NSW Government may also wish to consider the following:

- Community groups seeking to support and procure renewable energy face a set of challenges associated with interacting with the electricity industry. In addition to community groups, councils, embedded network operators, etc., electricity retailers represent a key stakeholder group in enabling and facilitating community energy initiatives. A number of community energy focused electricity retailers have recently

emerged to fill this business area, which is largely ignored by the large incumbent retailers. The NSW government could, along with councils and community energy groups, identify community focused electricity retailers as a group for engagement and support.

- Community focused electricity retailers are small businesses which face the same regulatory and licensing requirements as a large incumbent electricity retailers. While not seeking to downplay the importance of licensing requirements, the current one size fits all licensing approach represents a significant barrier to the emergence of a larger number of smaller, community focused electricity retailers. The NSW Government may wish to explicitly include retail licensing regime reforms in its engagement with COAG processes and support the development of research into alternate licensing requirements through CCF funding.
- There are also likely to be opportunities to engage with communities to build energy efficiency knowledge and capacity through renewable energy programs and networks. Given the importance of energy efficiency for cost-effective decarbonisation, and the difficulty in communicating effectively about energy efficiency, it would be worthwhile exploring these opportunities.

7 Save emissions and maximise the benefits in NSW

The NSW Government has committed to an aspirational GHG emission target of zero net emissions by 2050. All longer-term targets are aspirational to at least some extent. If meaningful, this is a serious long-term commitment which will require serious policy to achieve. While the NSW Government may be committed to supporting the Commonwealth in achieve Australia's interim and long term emission targets, there is growing concern that there is no prospect of meaningful Commonwealth action, at least for the remainder of this term of government. Therefore, in order to advance progress towards the NSW government's aspirational target, maximise benefits for NSW, and make Sydney the Asia-Pacific carbon market hub, the NSW government, may need to explore initiatives in this area independently of the Commonwealth.

- In the absence of a tradable GHG emission/abatement scheme there seems to be little prospect, regardless of the extent of CCF support, for Sydney to be the Asia Pacific carbon market hub. At this point, there is effectively no carbon market in Australia. Environmental markets in Australia are limited to trading of Renewable Energy Certificates (large and small) and Energy Efficiency Certificates in the context of regulatory markets created by relevant Commonwealth and State schemes. While there is the prospect for the evolution of the Emission Reduction Fund Safeguard Mechanism to create a market, present settings of the Emission Reduction Fund were explicitly designed to prevent tradability. Given the likely lack of Commonwealth leadership, if the NSW Government wishes to support the development of Sydney as the Asia Pacific Carbon Market Hub, it should build on its historic experience with the NSW Greenhouse Gas Abatement Scheme (GGAS), potentially in co-operation with other

states, in order to provide a market which can then support the development of workforce skills, business and financial infrastructure justifying CCF support.

8 Finding cost-effective pathways to reduce emissions

In order to advance an aspirational emission reduction target of zero net emissions by 2050, political and intellectual engagement will be required to develop strategy applying over many decades. In this context, a highly valuable use of CCF funding may be to support the development of long term strategy which can inform government policy and program development on an iterative and ongoing basis. In this regard, the NSW Government may consider:

- Given that the decade long task of achieving NSW emission targets, an opportunity exists to fund the development of longer term, strategic capacity in NSW institutions to provide input to the development of policy and plans to achieve NSW Government goals. Such longer term strategic capacity may involve the funding of a cross-institutional research and advisory centre within NSW Universities, ideally building on, and enhancing existing research capacity. The development of a long term, strategic research and advisory institute would not only assist government decision making through the provision of high quality qualitative and quantitative research, but also potentially act as a high quality independent entity for monitoring and predicting the impact of policy initiatives on State emission performance.