Australian PV Association

APVA Response to Australian Electricity Market Commission's Power of Choice Review Draft Report

October 2012

AEMC's "Power of Choice Review Draft Report", has made a very useful contribution to improving consumers' ability to manage their electricity use, and to some extent also their active participation in the electricity market. We commend the AEMC for their recommendations, and in particular the recommendation that:

> ***Market arrangements regarding the ownership, connection and operation of distributed generation options should not constrain their use.***

Nevertheless, the APVA supports the development of a new retail market for distributed energy services (including energy efficiency (EE), distributed generation (DG), demand management (DSM), storage and ancillary services), which is quite different to the approach proposed in the Draft Report, which focuses on attempting to find ways to maintain existing Network and Retail business models. The current market structure was not developed with sophisticated distributed energy options in mind. A new retail market would facilitate a range of new energy service providers to enter the market with entirely new business models.

The APVA supports the recommendations concerning greater customer access to data on their electricity use and on market information more generally. This is a necessary precursor to active market participation. Similarly, multi-channel time-of-use meters, with two way communication, are an important component. It should be noted that many new appliances, as well as home energy management systems, inverter-controllers and even smart phones increasingly have load management capability, so that, if meters offered by electricity companies are too expensive, have restricted capability or come with onerous contracts, they may not be seen as an attractive option.

The focus of this submission by the APVA is on matters concerning distributed generation, and in particular, photovoltaics (PV), although there are other issues discussed in the Draft Report which are also relevant to PV.

As highlighted in our submission to the Directions paper, measures to address the impacts of distributed energy are critically needed in that current NEM and retail tariff arrangements are unsustainable under rapid trends to low, zero or plus energy buildings, smart and efficient appliances, on-site generation, energy storage and smart controllers, combined with changing customer energy use attitudes and behaviour.

The Draft Report (Section 7.3.2, p 129) identifies four ways for decoupling DNSP revenue from volumes of electricity sold. This focus on maintaining DNSP business models and revenue, despite possible decreases in electricity purchases, is in conflict with the stated objective of reducing customer bills as a result of various demand side participation options – or at least limits it to reductions in wholesale costs. Nevertheless, assuming that, as foreshadowed in the Draft Report,

the first option (revenue cap regulation) is excluded, we note that the second option (compensation for loss of revenue for DSP programs) is only suitable for network operators' own programs – not Distributed Energy uptake independently sourced and implemented by consumers or by 3rd parties. We assume that option three (setting a high fixed charge) is not being recommended because it would result in much lower usage charges and so act as a significant barrier to Distributed Energy Services, as well as being in conflict with the Recommendation of Section 6.3.6 of the Draft Report:

> ***The distribution network pricing rules in the NER are amended so that distribution network businesses have sufficient guidance to set efficient and flexible network tariff structures that support DSP.***

Option four (establishing a comprehensive DSP incentive mechanism), sounds very promising but does not appear to be further discussed. The APVA suggests that the establishment of a new Distributed Energy Market, as discussed in our submission to the Directions paper, would facilitate all options without hindering uptake of new technologies and services as these become available, or the entry of new energy service providers.

Section 7.4 on Distributed Generation focuses very much on electricity that is exported to the grid, seemingly assuming that electricity that is used on-site doesn't change customer load or help to reduce peak demand. There is also an apparent focus on large-scale projects. The evidence to date is that the vast majority of PV is installed in sub 10kW systems, with the majority of generation being consumed on-site. With low or prohibited export from larger commercial-scale systems, they are typically sized so that most if not all generation is consumed on-site. AEMO estimated that in 2011/12 rooftop PV generated about 1,702 GWh, and in 2012/13 are expected to generate 2,473 GWh, reaching 7,558 GWh by 2021/22.[1] Although this will be only about 3.4% of total energy at that time, it does make up a significant proportion of total DG, with 25-35% of output typically contributing to peak load reduction and as high as 38% in South Australia over summer[2]. With increasing electricity prices, reducing PV costs and reducing battery costs, the contribution of PV to load and peak reduction could become much more. While the points raised and addressed in Section 7.4 are clearly important for larger-scale DG, they do not sufficiently address the issues for distributed PV.

Section 7.4.3 a) raises four points that might reduce the willingness of a DNSP to connect DG, but then addresses only the need to provide financial incentives to cover shallow and deep connection costs. Neither of the points on power system security and loss of revenue are addressed in this Section (although the loss of revenue problem has in part been addressed in Section 7.3.2 as above). For distributed PV, the grid impacts of electricity used onsite and electricity exported are quite different. They can be positive or negative and extend beyond power system security to power quality and quality of supply. There are many well established ways of addressing such issues that don't involve simply restricting connection of DG.[3,4] Implementing such approaches should be an integral part of a Distributed Energy market. It is also worth noting that, under current arrangements, electricity that is exported from distributed PV systems does not result in loss of revenue for DNSPs (but in fact, as discussed below, likely results in increased revenue

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[1] AEMO (2012) *National Electricity Forecasting Report: For the National Electricity Market (NEM)*, by the Australian Energy Market Operator.

[2] AEMO (2012) *2012 South Australian Electricity Report*, AEMO.

[3] Passey, R., MacGill, I., Spooner, T., Watt, M. and Syngellakis, K. (2011) The Impacts of Grid-connected Distributed Generation and How to Address Them: A Review of Technical and Non-technical Factors, *Energy Policy*, 39(10), p6280-6290.

[4] ENA (2011) *Impacts and Benefits of Embedded Generation in Australian Electricity Distribution Networks*, Energy Networks Association.

disproportionate to the service provided by DNSPs), whereas electricity used on-site does, and so the latter should also be a focus for DG in this regard.

Section 7.4.3 b) raises the important issue of feed-in tariff value, and we support the Draft Report's recommendation for a time varying tariff which could encourage export in peak periods. Such flexibility may be an important component of a well-functioning Distributed Energy market. Past feed-in tariffs applied in Australia have either encouraged overall exports (net export models), resulting in an exacerbated residential evening peak, or have had no time signal (gross models). Since the levelised cost of PV electricity dropped lower than retail tariffs, the APVA has advocated a net metering approach, with export tariffs reflecting time of day costs. We would also favour location-based signals being provided via tariffs, to encourage generation in areas of the grid which would otherwise need upgrading to cope with increasing load. Appropriate export tariffs could be used to encourage west facing arrays in residential areas, thus better matching PV generation to load, or to strengthen weak rural grids, which may otherwise require costly upgrade, despite relatively low loads. In the longer term of course, maintenance of long rural lines with low loads using cross subsidies from other customers may need to be examined carefully, as distributed energy technologies now provide increasingly cost-effective and more reliable options. Incentives to provide customers on such lines with a superior energy service using stand-alone power systems or mini-grids at similar or lower cost to the central grid will need to be considered. There may also be safety (e.g. bushfire risk) and environmental reasons (e.g. running power lines through sensitive areas) for looking at such options.

Section 7.4.3 c) again focuses very much on exported electricity rather than DG electricity that is used on-site. Our only further comment here is that the discussions on tariff structures for electricity use (relevant to 'own use' DG electricity), and tariff structures for export, need to be better integrated, and the impact of 'own use' tariffs on DG needs to be considered. Tariffs set for own use can have a significant impact on how a DG system may be installed (eg. a PV system may be faced west to meet a high afternoon tariff) and operated (eg. a PV system with battery, or battery alone, could again be operated to deliver electricity during the evening peak). However, forcing a DG system onto a gross meter to export all electricity, such as advocated recently by the Queensland Competition Authority, combined with the currently low tariffs for export, would stop such innovations. This would occur even if the export tariff was TOU with a higher afternoon/evening tariff, as it would still be less than the usage tariff. It may also be considered discriminatory, by acting to prevent customers from reducing their electricity costs, and may encourage customers to consider total self-sufficiency and disconnection from the grid. This would leave stranded network assets, largely in public hands.

Further, if AEMO really is interested in having cost-reflective tariffs, DUOS charges should be significantly reduced for small-scale PV electricity that is exported to the grid. The current export tariffs recommended by various state regulators assume that retailers (in effect) pay DUOS on exported electricity when it is on-sold – which is correct. However, given that this electricity will use a very small part of the network compared to electricity that is generated centrally, much smaller DUOS charges should be applied.

Attachment A: Background on the APVA

The APVA is an association of companies, government agencies, individuals, universities and research institutions with an interest in solar photovoltaic electricity. In addition to Australian activities, we provide the structure through which Australia participates in an International Energy Agency (IEA) programme called PVPS (Photovoltaic Power Systems), which in turn is made up of a number of activities concerning PV performance and implementation. Further information is available from www.apva.org.au.

APVA Objective

The objective of the Australian PV Association is to encourage participation of Australian organisations in PV technology and industry development, policy analysis, standards and accreditation, advocacy and collaborative research and development projects concerning photovoltaic solar electricity.

APVA membership provides:

Information

- Up to date information on new PV developments around the world (research, product development, policy, marketing strategies) as well as issues arising
- Access to PV sites and PV data from around the world
- International experiences with strategies, standards, technologies and policies
- Australian PV data and information
- Standards impacting on PV applications

Networking

- Access to international PV networks (PV industry, government, researchers) which can be invaluable in business, research or policy development or information exchange generally
- Opportunity to participate in international projects, with associated shared knowledge and understanding
- Opportunity to meet regularly and discuss specific issues which are of international, as well as local interest. This provides opportunities for joint work, reduces duplication of effort and keeps everyone up to date on current issues.

Marketing Australian Products and Expertise

- Opportunities for Australian input (and hence influence on) PV guidelines and standards development. This ensures both that Australian products are not excluded from international markets and that Australian product developers are aware of likely international guidelines.
- Using the information and networks detailed above to promote Australian products and expertise.
- Working with international network partners to further develop products and services.
- Using the network to enter into new markets and open new business opportunities in Australia.

The International Energy Agency PV Power Systems Programme (IEA PVPS)

One principal activity of the APVA is to manage Australian participation in the PVPS Programme. This work is arranged by Tasks, each with its own commitments of time and resources. Support is provided by the Australian Solar Institute. At present Australia participates in:

Task 1: PV Information Exchange and Dissemination

Task 11: PV Hybrid Systems within Mini-grids

Task 14: High Penetration of PV in (Smart) Electricity Grids

and maintains an interest in:

Task 8: Very Large-Scale PV Systems

Task 9: PV in Developing Regions

Task 12: Environmental Health & Safety for PV Systems

Task 13: PV System Performance

For further information on the Australian PV Association visit: www.apva.org.au

For further information on the IEA PVPS Programme visit www.iea-pvps.org.