

Consumers or prosumers, customers or competitors?—Some Australian perspectives on possible energy users of the future

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Executive summary

Electricity industries play an essential role in societal welfare and progress, and there is a broad societal interest in their success in serving all energy users. Their governance arrangements commonly claim the interests of energy users as their paramount objective, and this would suggest a key decision making role for them, in all their diversity. However, large interconnected power networks are also highly complex socio-technical systems requiring very high levels of coordination to ensure secure and reliable operation, and have large social, economic and environmental externalities. Balancing individual energy user preferences against these broader, longer-term, shared interests is challenging and involved changing roles for energy users over time; from highly engaged clients in the industry's early days, to citizens with a right to this essential 'public good', to non-specific consumers within ever larger vertically integrated utilities, to now, in restructured industries, customers. Increasingly, however, emerging distributed energy technologies including photovoltaics, storage and 'smart' loads are offering energy users new industry roles as prosumers rather than just consumers, and utility business partners, or potentially even utility competitors, rather than just customers. The implications are potentially profound, yet highly uncertain and contested.

This paper outlines some of the experiences of energy users in the Australian National Electricity Market (NEM) over the past decade. The NEM provides an interesting case study as Australia was an early and enthusiastic adopter of electricity industry restructuring and has retail electricity markets that are considered highly competitive by international standards. However, it also has the world's highest residential photovoltaic (PV) system penetration – over 15% of stand-alone houses have such a system – and has been identified by a number of energy technology providers as a key early market opportunity for distributed energy storage.

These retail market and prosumer developments are certainly related, but not in the way one might envisage. By some conventional measures of retail competition – numerous private retailers, high customer transfers (less charitably churn) and large price spreads between market offers – most of the States in the NEM might be argued to have effective retail competition. By other measures, however, including the NEM's significant retail market concentration, high retailer margins, and the major proportion of customer bills going to monopoly (non-competitive) network businesses, effective competition seems less assured. Certainly, it is hard to sell the

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success of retail competition to small energy users who have seen very high electricity price rises over the past decade.

The evident limitations of retail market restructuring in the NEM has now seen growing policy attention to the importance of more effective energy user engagement in the NEM. This attention is surprisingly belated – efficient markets require effective participation on both the supply and demand side. A range of initiatives have been implemented to improve engagement, largely focused around customer information, education and, particularly, movement towards more ‘cost reflective’ network tariffs. Meanwhile, however, a growing number of energy users have found a new and highly effective way to engage in their energy service provision and take greater control of their electricity bills. Residential PV system numbers grew from the order of ten thousand to 1.5 million in around seven years. Households deploying PV were supported initially through generous State Government feed-in tariffs as well as what is effectively a Federal Government capital grant. While the feed-in tariffs were quickly wound for being ‘too successful’, many households can still save money with PV under the present net metering arrangements, where self-consumption of their PV generation saves them their residential volumetric tariff, while PV exports are paid a much lower (around one quarter) rate. Households and businesses have also responded to rising electricity bills with improved energy efficiency.

The response of the key NEM electricity supply stakeholders and governance institutions to the rise of PV prosumers might best be termed mixed. Residential PV can raise some technical challenges for the distribution networks. Furthermore, its value in reducing peak network demand, a key driver of long-term network costs, is generally limited and highly context specific. The key issue, however, has been the adverse financial impacts on their businesses, given primarily volumetric tariff structures. Retailers have also seen reduced sales volumes, although these are matched at least in part by reduced purchases from the wholesale market. However, one might have thought that policy makers would have welcomed this enhanced energy user engagement. Instead, however, they appear to have struggled to reconcile formal market principles of encouraging energy user participation, with the realities of what such participation can do to existing business models, and the social construct with energy users. This has been particularly evident with the implementation of purportedly more cost reflective tariffs. Policy makers argued that tariffs which better reflected the varied costs of serving different types of consumers would put customers at the center of future decision making. Instead, however, many of the tariffs being proposed involve higher fixed charges, specific solar charges, or non-peak ‘peak’ charges; changes whose impact is to limit consumer options to invest in new distributed energy technologies and change their behavior in order to reduce their electricity bills. While PV and volumetric tariffs do create cross-subsidies between houses with and without PV, these are dwarfed by present subsidies between households with and without air-conditioning, and urban versus rural households. Tariffs are of course as much social constructs as economic ones, and the social acceptance of some of the proposed tariffs appears questionable in Australia. It is also evident that energy users need assistance beyond price signals to respond appropriately to their distributed energy opportunities – something which has received inadequate attention.

Australia’s experience holds broader relevance as electricity industries worldwide look to better manage the challenges posed by prosumers while facilitating, and maximizing, the societal benefits they can bring, particularly with the growing capabilities and falling costs of PV and energy storage systems. More generally, facilitating greater engagement with energy users will

likely be essential in establishing the societal consensus required for the profound and highly disruptive transformation to a cleaner energy future.