energy networks association

APRIL 2014

THE ROAD TO **FAIRER PRICES**

PRICING PEAK DEMAND

Most Australians would be surprised to learn the way they pay for their electricity network bears little relationship to how much it costs to supply them.

Network tariffs for small customers recover most costs based on the *volume* of energy sold (kilowatt hours used since the last meter read), and a small fixed daily charge.

However, network costs are driven by how much consumers contribute to the *system peak demand* on a few days per year, because networks must invest to ensure reliable supply in extreme weather conditions.

The need to meet peak demand reliably can mean significant network capacity lies idle other than for short periods.

Unless there is a shift towards network tariffs that are based on the network cost to serve:

» unfair cross-subsidies will persist with customers using new technology and energy-intensive appliances being cross-subsidised by other customers paying higher energy bills;

» network investment to meet growth in peak demand will be larger than necessary; and

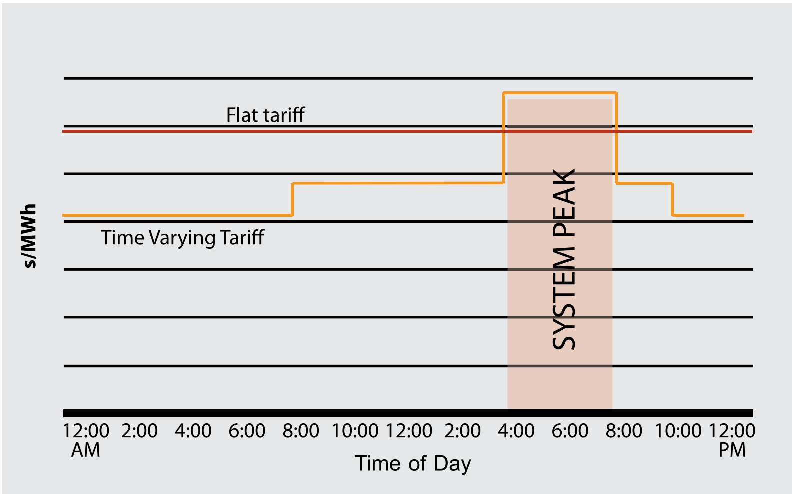
» it will be more difficult to efficiently integrate potential 'step changes' in technology use such as electric vehicles, battery storage and increased on-site generation.

There are a range of smart tariffs designed to signal the costs of peak use demand that could be 'energy based' (such as time of use pricing or critical peak pricing) or 'demand-based' prices (including capacity or maximum demand charges). These tariffs require interval meters or smart meters that are able to measure not just the total volume of energy consumed but at what time of the day it was consumed.

Except in Victoria, most small consumers in Australia do not yet have these advanced meters and increasing their penetration will be vital.

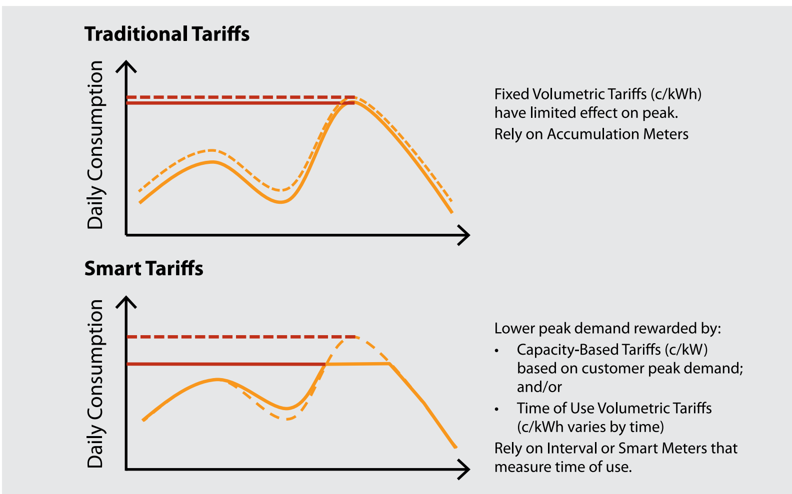
Concerted action at a national level, to develop and implement a road map for network tariff reform, is urgently needed to reduce the need for costly network augmentation, improve electricity affordability and ensure the resilience of the future grid.

FIGURE 1 HOW TIME VARYING TARIFFS REWARD OFF PEAK USE



Note: The system peak in Figure 1 is illustrative only. The actual system peak varies from network to network, depending on the location and can vary throughout the year.

FIGURE 2 EFFECTS OF TARIFF TYPE ON CONSUMPTION



UNFAIR OUTCOMES IN CURRENT PRICES

Unless network tariffs reflect the cost to supply the network service, some customers will pay less than their fair share while others will pay more. These cross-subsidies are effectively hidden when customers pay the same rate under a flat or block network tariff, regardless of what time of the day they use their energy.

The challenge of cross subsidies is exacerbated by trends in technology use – particularly the rapid increase in penetration of air-conditioning since the mid-1990s and the recent explosion in the use of solar panels by small customers. The two current examples where subsidies are evident are customers with air-conditioners and customers with solar PV. As new technology emerges, such as battery storage and electric vehicles, subsidies will persist unless tariffs are based on the network cost to serve.

SUBSIDIES TO CUSTOMERS WITH AIR-CONDITIONERS

Growth in air-conditioners has been a significant factor in the need to expand network capacity to meet peak demand. The penetration of air-conditioners has doubled since 1999 (see Figure 3). Air-conditioners use significant amounts of energy at peak times, but little or none at other times.

The Productivity Commission has estimated that the additional costs of meeting air-conditioner demand at peak times is $2500 per appliance. This means that customers who use air-conditioners at peak times effectively receive a hidden subsidy of $350 per year, paid for through the higher bills of all other customers who don't. Under a tariff that reflects the network cost to serve, customers using air-conditioners at peak times would pay more.[1]

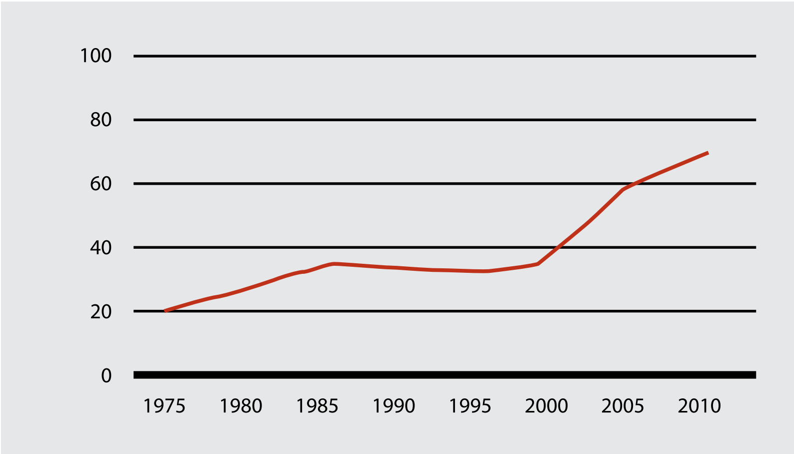
SUBSIDIES TO SOLAR PV CUSTOMERS

Figure 4 shows that the penetration of solar has increased 24 fold in just 4 years. As illustrated in Figure 5, high solar PV penetration does appear to have significant impacts on energy volumes, the main source of cost recovery under current tariffs. However, at least where the peak demand occurs late in the day, solar panels do not appear to materially reduce the peak demand, the key driver of network expenditure.

Customers with solar PV are able to reduce their energy consumption and at the same time reduce the contribution they make to the network cost to serve, which is largely fixed. The network costs that are under-recovered from customers with solar PV, then have to be paid for in the higher electricity bills of all other customers.

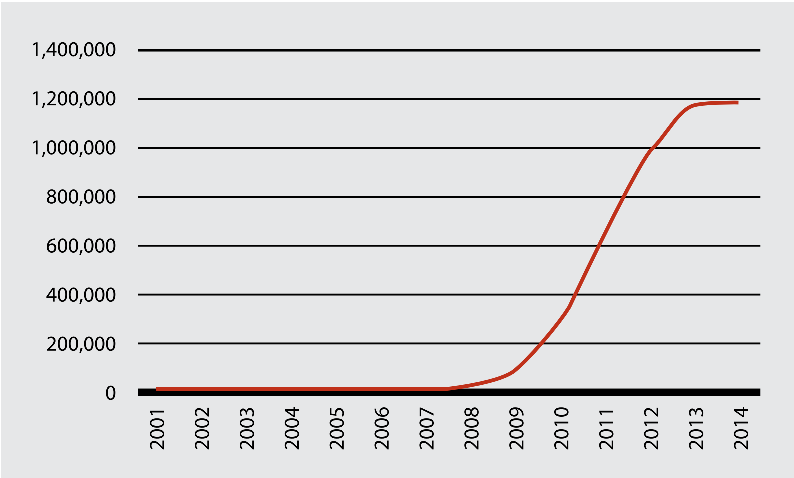
As illustrated in Figure 6, ENA has estimated that an average customer without solar PV could

FIGURE 3 PERCENTAGE OF AUSTRALIAN HOMES WITH AIR-CONDITIONERS



Source: Productivity Commission, Inquiry Report, Volume 2, Electricity Network Regulatory Frameworks, p. 350

FIGURE 4 RISING PENETRATION OF SOLAR PV IN AUSTRALIA



Source: Data from the Clean Energy Regulator, small scale installations summary data http://ret.cleanenergyregulator.gov.au/REC-Registry/Data-reportsmall scale

1 Productivity Commission, Inquiry Report, Volume 2, Electricity Network Regulatory Frameworks, p. 352

pay a subsidy of $60 per year to support the under-recovery of network costs for an average customer with solar PV. For large customers, the subsidy could be up to $180 annually. This dynamic is consistent across jurisdictions. For instance, it has been estimated that the high penetration of solar PV in Queensland has added $100 million to the electricity bills of households without solar PV. Under a tariff that better reflects the networks actual cost to serve a customer, such as a capacity tariff, solar PV customers would pay their fair share of the network costs.

THE RIGHT TARIFF TODAY.... ALSO MEANS LOWER BILLS IN THE LONG TERM

Most network costs are determined by the capacity required to meet peak demand.

Much of the network capacity to meet the maximum possible demand lies idle other than for short periods. It has been estimated that $11 billion of network infrastructure is used for the equivalent of 4 or 5 days a year. One distribution network business has estimated that around 20 per cent of network capacity is used for the equivalent of 23 hours per year.[2]

Price signals are needed to signal to customers the network cost to serve at peak times when the network is congested. One estimate is that reducing peak demand could reduce forecast expenditure in network and generation capacity by between 3-9 per cent, i.e. between $4.3 billion to $11.8 billion.[3]

As illustrated in Figure 7 below, New South Wales distribution networks have undertaken trials indicating significant reductions in peak demand use can be achieved by time-varying tariffs combined with other tools. The trials reflect Seasonal Time of Use (STOU) and Dynamic/Critical Peak Pricing (DPP)[4].

FIGURE 5 IMPACTS OF SOLAR PV ON ENERGY CONSUMPTION & PEAK DEMAND

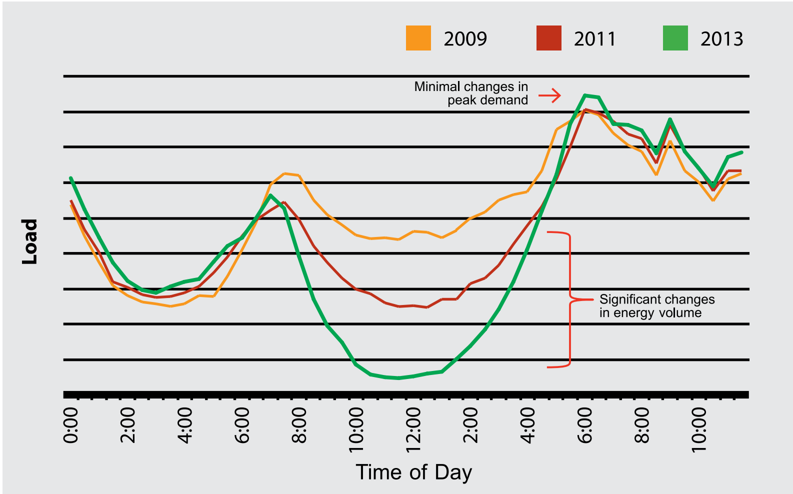
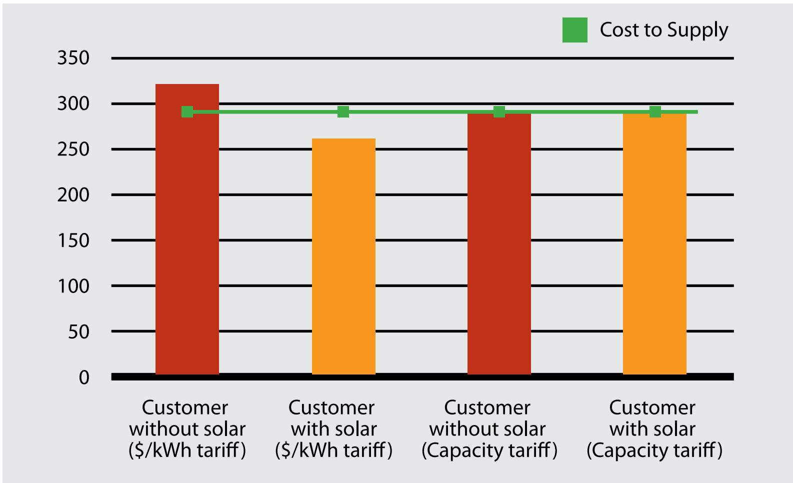
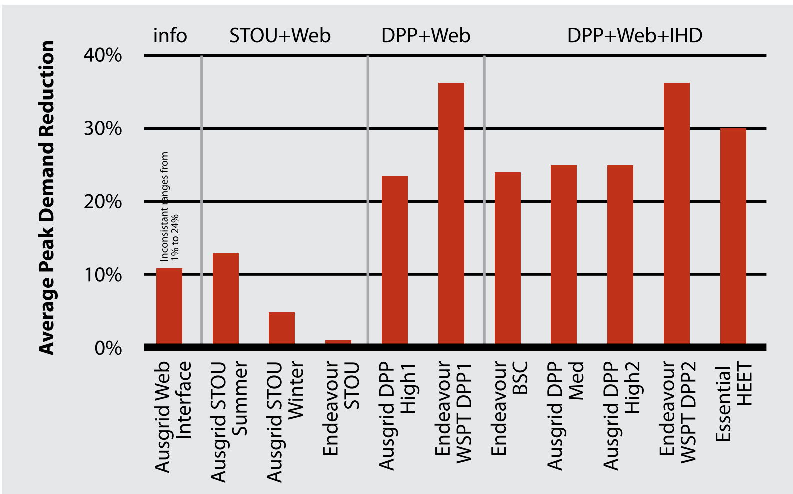


FIGURE 6 HOW CAPACITY NETWORK TARIFFS FAIRLY ADDRESS CROSS SUBSIDIES



Source : ENA submission to the Distribution Network Pricing Arrangements Rule change, 2013, p. 7. Example provided by United Energy

FIGURE 7 PEAK DEMAND REDUCTION ACHIEVED BY TIME VARYING TARIFFS



Source: AEMC, Power of Choice Review, Final Report, 30 November, 2012, p.250

2 Ausgrid, Supply and demand;our five year network plan 2011-12, p.10; ENA submission to the Senate Select Committee Inquiry into Electricity Prices 2012, p. 8.
3 AEMC, Power of Choice Review, Final Report, 30 November 2012, p. vi
4 Source: AEMC, Power of Choice Review, Final Report, 30 November, 2012, p.250

ENA'S ROAD MAP FOR TARIFF REFORM

A balanced framework for smart meters that achieves the fastest, economic rollout to benefit all consumers.

Better Information and decision tools for consumers through a joint initiative between electricity networks, retailers and governments.

National agreement to introduce flexible pricing and smart meters for key consumers, based on **triggers** (such as the connection of solar panels, battery storage, electric vehicles and connections to new premises) and **consumption thresholds**.

Review of customer hardship programs to support vulnerable consumers during change to pricing structures.

Deregulation of retail prices, delivering long-standing Council of Australian Governments (COAG) commitments to deregulate where markets are sufficiently competitive.

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