AEMC

INFORMATION

Fact sheet
Net system load profiles

Giving consumers options in the way they use electricity

The final report of the AEMC Power of choice review sets out a substantial reform package for the National Electricity Market. This package provides households, businesses and industry with more opportunities to make informed choices about the way they use electricity and manage expenditure.

Identifying and rewarding consumer efforts to reduce consumption

The net system load profile (NSLP) is a method used by the Australian Energy Market Operator (AEMO) to approximate how much electricity is used by all consumers with accumulation meters in a region, for each half hour of the day. The NSLP is used because it is not possible to develop an individual consumption profile for consumers with accumulation meters.

As part of the Power of choice review, the AEMC is recommending that all future new meters installed are smart meters, which are able to record consumers' exact consumption.

How does the net system load profile work?

The amount of electricity that an individual consumer uses is measured by a meter. There are a number of different types of meter currently used in the NEM. The two main meter types considered here are:

- Smart / interval meters: these meters record consumption on a near real time interval basis (i.e. half hourly). This includes recording how much electricity has been consumed every half hour. A smart meter is a form of interval meter with additional functions.
- Accumulation meters: these meters record the total volume of electricity consumed across a longer time period (3 months being a common period for residential consumers). However, these meters do not record when during the day the electricity was consumed, or how much was consumed at that time.

The information recorded by meters is used to determine how much each consumer has used and therefore, how much their retailer owes to the wholesale electricity market on their behalf. However, the information directly recorded by an accumulation meter cannot be used to determine this wholesale market liability. This is because while the wholesale market is settled half hourly (with different prices and volumes for each half hour), accumulation meters provide only a single gross energy consumption figure, spanning a much longer period of time. Instead, the NSLP is used as an average proxy for the consumption profile of consumers with accumulation meters.

AEMO's process for determining the NSLP involves measuring how much energy flows into a distribution area for each half hour of the day, then subtracting off energy associated with non-accumulation meters, including any interval metered loads within the area. In some jurisdictions, AEMO will also net off certain "controlled load", such as off-peak electric hot water load.

The net volume remaining after AEMO has netted off these loads represents the energy consumed by all accumulation metered customers in that region, for the half hour. This process is repeated for each half hour of the day, to form a load profile of all accumulation metered consumption across the day.

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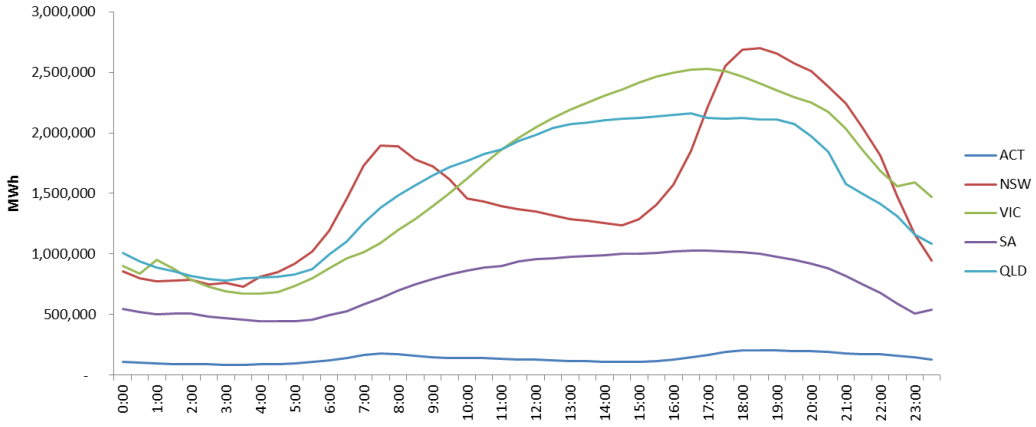
There are likely to be benefits associated with more accurate load profiling as the final energy costs included in bills would be based on an actual pattern of usage, not the aggregate pattern of usage

How does the net system load profile work? (continued)

NSLPs are used to determine how much a retailer owes to the spot market by aggregating the load of their accumulation metered customers (taken via the three monthly meter reading process) and "shaping" this load into the NSLP. The total gross energy usage of a retailer's accumulation metered customers is assumed to have followed the profile of the NSLP. This forms the basis of a retailer's exposure to spot prices in the wholesale market, which will in turn influence the retailer's prices offered to consumers. State based electricity regulators use the NSLP to inform their development of regulated electricity retail prices

The shape of NSLPs varies between states, reflecting different usage patterns and populations. Figure 1 below shows peak demand day NSLPs for several regions.

Figure 1: Peak demand NSLPs



Source: AEMO data for 2010 aggregated NSLPs for individual network areas.

What are the implications of the NSLP for consumers?

The NSLP is the aggregated demand of all consumers in a distribution area with an accumulation meter. This means that the load profile of individual consumers may differ from the NSLP. A consumer with a load profile which is less peaky than the NSLP still faces the costs associated with the peakier NSLP, while a consumer with a profile which is peakier than the NSLP does not face the full costs associated with their consumption. This represents a cross subsidisation between these two different types of consumers.

These arrangements mean that a consumer receives no benefit from changing the times when they consume electricity during the day. Even if a consumer were to shift their consumption away from a peak demand period (when wholesale energy costs are high), the final energy costs included in their bill will still be based around the assumed consumption pattern of the NSLP. So, unless all consumers in the same region change their consumption patterns, the individual consumer will see no direct benefit.

Similarly, retailers receive no particular benefit if they encourage their customers to change their consumption patterns, as any benefit associated with a change in the load profile of the retailer's customers will be shared with and diluted across all other retailers.

There are likely to be benefits associated with more accurate load profiling. Individual consumers may benefit where they have a load profile that is "flatter" than the NSLP. Such consumers are likely to benefit if a more accurate load profile is applied, as the final energy costs included in their bill will be based on their actual pattern of usage, not the aggregate pattern of usage. It is likely that the best way to achieve this outcome will involve moving to interval meters for all consumers.

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