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Smart Demand – what's in it for consumers ?

Outline

- **Rationale for smart demand**
- **What is smart demand**
- **Value of smart demand**
- **Issues for consumers**
- **Consumer protections**

Rationale for smart demand

- Costs of infrastructure (electricity networks) to meet peak demand - main driver of Australia's rising electricity prices.
- Demand has fallen & peak demand stabilized recently
- Uncertainty remains (Mike Sandiford), Victorian heat wave peak demand close to a record 10.3 gigawatts
- Peak demand problems can be very localised
- Tackling peak demand could help keep costs manageable.
- Households - 25% of total demand but contribution to peak can be 45 per cent peak days at peak time between 4-8pm.

What is smart demand ?

- Smart demand is the **use of automation (including direct load control) to enable demand to respond automatically to signals to switch on or switch off**.
- The purpose is to **reduce costs in the electricity system** - substituting demand response for additional generating or network capacity.
- These reductions in costs can be shared with the consumer.
- Smart demand does not have to lead to lower comfort or inconvenience for example air conditioners can be cycled down for a few minutes in an hour with the impact on comfort being barely noticeable

Value of smart demand

- Automation and smart demand alongside flexible pricing (e.g. TOU or CPP) can deliver a more substantial and reliable **(firm)** response than flexible pricing alone.
- In some cases automation may be an effective alternative to changing tariffs and pricing structures
- The ability to provide **firm demand response** is important when planning the electricity supply system - has greater value to retailers and networks.
- Customers could therefore potentially be paid more for automated than non-automated response.

Electric vehicles – where smart demand may be particularly valuable

- Take up of electric vehicles - limited at present but could increase over next few years.
- Charging unit for an electric car - peak demand of 6 to 10 kW - highest energy consuming device in most homes.
- Widespread adoption of electric cars could lead to big increase in peak demand - many users would start charging them on their return from work - the evening peak.
- Automation of charging times – e.g. plug in vehicle at 6 pm with charging to take place sometime between 6pm and 7 am - could help to avoid future peak load problems.

Smart demand in Australia

- Electric storage hot water with ripple control – a form of smart demand that has been around since the late 1950s
- Used by 700,000 households in Queensland, 1 million in NSW and hundreds of thousands in Victoria.
- More recently, many networks have run trials of smart demand, particularly with air conditioners (case study)
- Commonwealth Government - consulted on a proposal to mandate ‘smart appliance’ interfaces in air conditioners, pool pumps, water heaters and electric vehicle chargers (will hear about in this session)

How smart demand may develop in Australia

- Consumers sign up **voluntarily** to an offer from a retailer, network, or other company who offers smart appliances or home energy management systems.
- Might be targeted to households in constrained areas – e.g. to enable the network to avoid or defer investment.
- Customers who choose not to participate in smart demand where it is offered would not share in any direct benefits such as incentive payments.
- However, non-participating consumers should benefit over the longer term - costs to all electricity users should be lower than otherwise.

What do consumers think about smart demand ?

- Smart demand may be more convenient for consumers than time of use pricing (as response is automated).
- However, consumers will need smart appliances or adaptors (such as smart plugs) and communications devices. May represent an additional cost (new or refrofit).
- Some consumer resistance to automation and load control.
  - Some concerns that air conditioning will be turned off on hot days when they need to use it,
  - or wariness about lack of control over appliances.
  - Some negative press coverage about “big brother” control by utility companies and privacy concerns.

Customer protection proposals

- SCER amendments to the National Energy Retail Law (NERL) for smart meter consumer protections include supply capacity control (SCC) and direct load control (DLC).
- Would allow existing uses of SCC for network management, but place some restrictions on new uses whilst trials are conducted to assess risks, particularly for vulnerable customers.
- SCER noted that regulation of DLC should only apply where bundled with sale and supply of energy - other appliance automation services would be covered by Australian Consumer Law and general legal protections.

Some key issues for consumers in respect of smart demand

- Choice about whether to opt-in
- Incentives – what will consumers be paid and/or save on bills?
- Costs of new equipment or retrofitting existing appliances
- Amenity – Effects on comfort and convenience
- Noise - e.g. people may not want to run dishwashers, washing machines, clothes dryers late evening/overnight/early morning
- Scope to manually over ride remote control.
- Vulnerable households – any risks and how to avoid?
- Will only the better off be able to participate and benefit?
- Conditions for sign up to and for ending a DR contract
- Privacy – will the distributor and/or retailer be collecting more data – who controls how it is used ?

Conclusions

- Smart demand offers some potential to reduce costs in the electricity system – should benefit all including consumers
- Important that concerns regarding customer protection are adequately addressed – but also need to avoid inhibiting innovation
- Effective consumer engagement and protection would be important to realise the benefits.