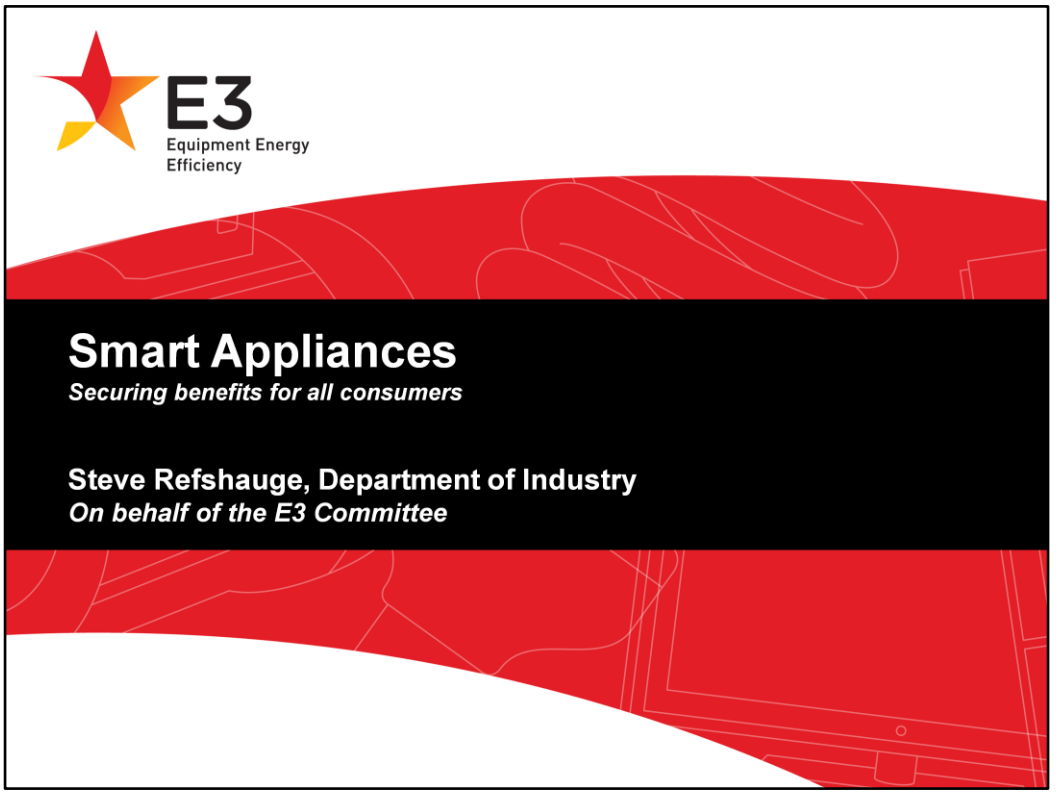
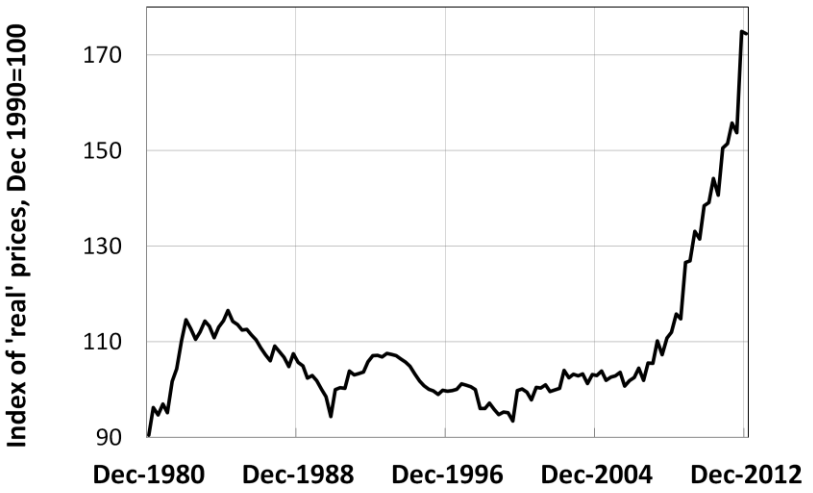


The Equipment Energy Efficiency (E3) Program is a joint initiative managed by the Commonwealth government on behalf of the State, Territory and New Zealand Governments.

Rise of household electricity prices



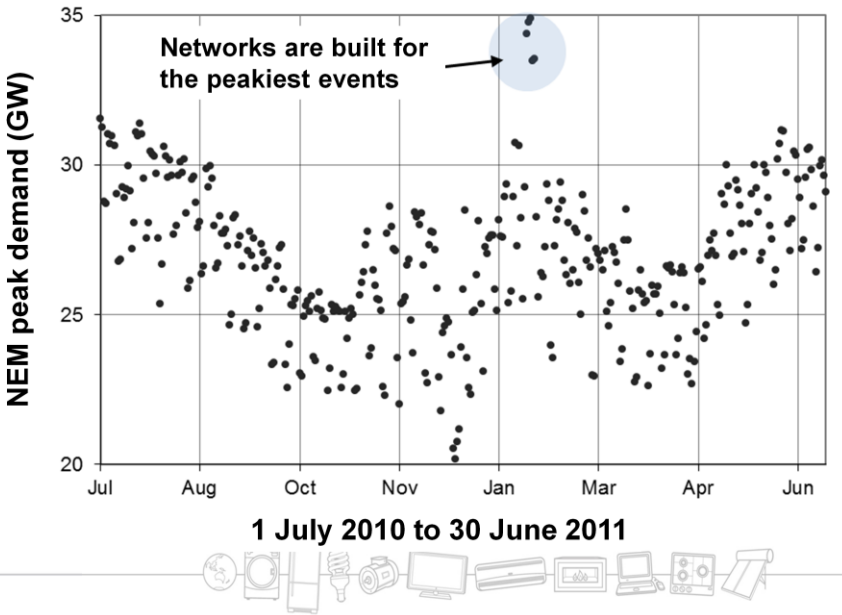
Source: ABS 2012

Retail electricity prices have increased by around 70% in real terms from 2007 to 2012. This is mainly due to the rising cost of peak electricity.

'Real' prices are household prices divided by the CPI average for capital cities. The index shows how much electricity prices have increased above inflation.

Data sources: ABS 2012, Consumer Price Index, Australia, December 2012, Cat. No. 6401.0.
ABS 2012, Producer Price Indexes, Australia, June 2012, Cat. No. 6427.0.

Peaks driving network investment

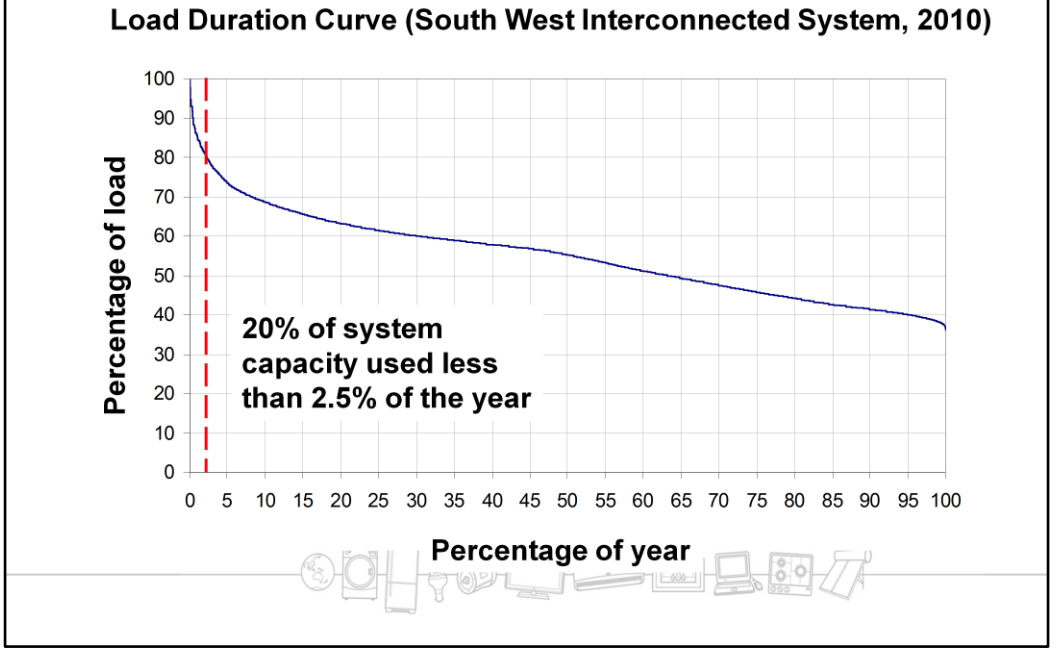


Source:
Productivity Commission, Report on Electricity Network Regulatory Frameworks, April 2013, p 17.

This chart shows daily peak demand in the National Electricity Market for the year to June 2011. The peaks tend to be in summer and winter due to very hot or cold weather. This chart also shows the few 'critical' peaks that occurred on extremely hot days. Networks are designed to cope with these critical peaks and it is this investment that has driven much of the increase in electricity bills.

In fact, the investment needed to meet peak demand in the National Electricity Market is forecast to exceed $42 billion for transmission and distribution over the current 5 year regulatory period.

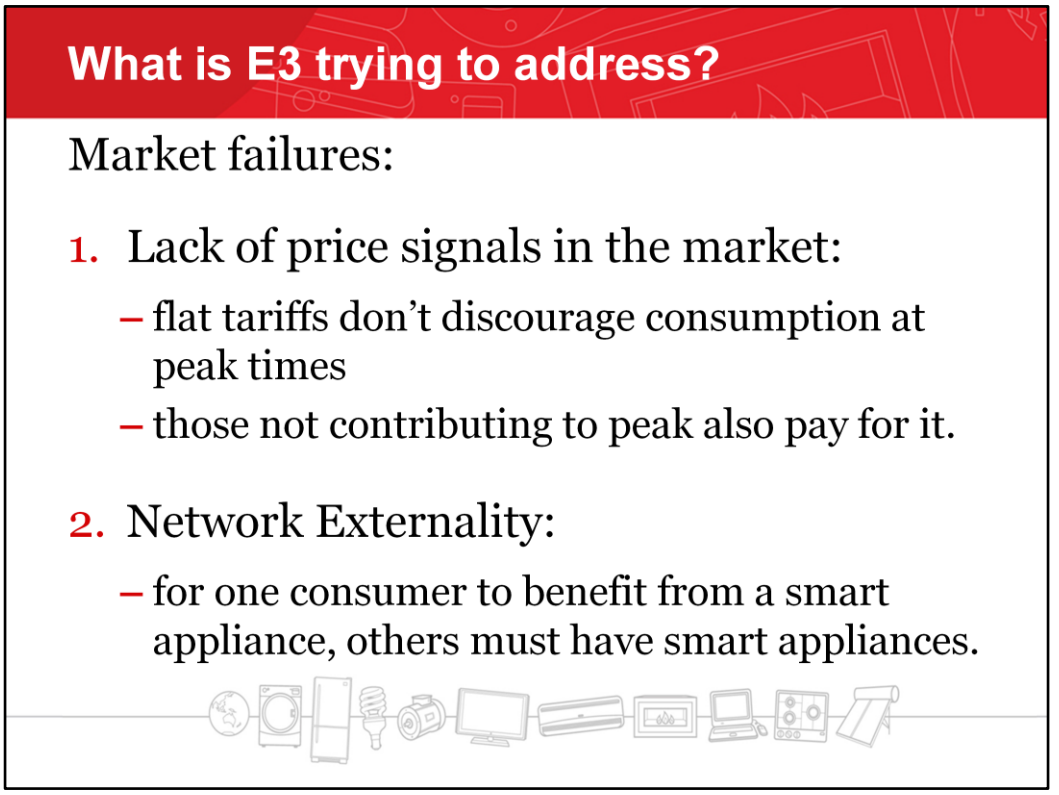
The Problem – build more or control demand



This is another way of looking at it – it's a typical 'load duration curve' for the South West Interconnected System (SWIS) centred on Perth. As you can see, 20% of this network's capacity is used for less than 2.5% of the year. Worse, the last 10% of capacity is only used for about 40 hours per year.

A major contributor to peak demand is the increasing take-up of air conditioning. The proportion of households with at least one air conditioner was about 25% in the 1990s, but is projected to exceed 70% by 2020.

The problem as the Government sees it is that there are market failures that must be addressed.



The first of these is a lack of price signals in the electricity market.

In contrast to most markets in which consumers bear the costs of their consumption, there are no cost-reflective price signals to alert households to the cost of consuming electricity at peak times.

For example, the majority of air conditioner owners pay a flat rate for their electricity. However, this flat rate does not cover the true cost of running an air conditioner because it doesn't reflect the cost of providing the extra network capacity to cope with the critical peaks. So, the true cost of this additional network capacity is spread across all consumers, regardless of whether they have an air conditioner.

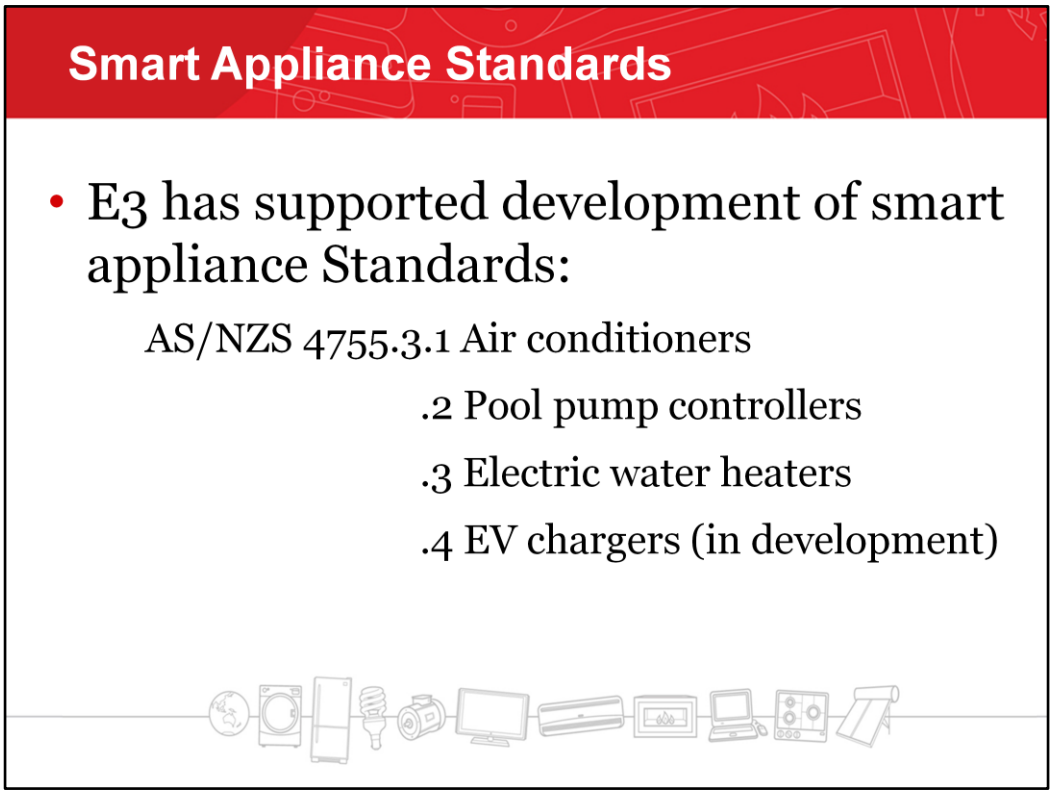
This has caused an inequity in the market: households *without* an air conditioner pay for network investment to meet peak demand caused by households *with* an air conditioner.

This inequity could be overcome if distribution network service providers (DNSPs) could better manage energy use at peak times through Direct Load Control.

Direct load control has been in place for over 50 years now in the form of off-peak water heaters. This has successfully displaced about 4 – 6% of peak load to off-peak periods.

The second market failure is a 'network externality' (also called "demand side economies of scale"). This is where the benefit an individual gets from a product depends on the number of other users of that product. A classic example is the telephone. Similarly, for someone to benefit from having a smart appliance it is also necessary for others to have smart appliances.

If smart appliances were widespread, this would enable service providers to achieve the economies of scale needed to begin offering consumers a demand response scheme for appliances.



One issue with this is that currently there are competing technologies for communicating with appliances. Neither appliance manufacturers nor energy utilities will risk committing to a single approach for communicating with smart appliances.

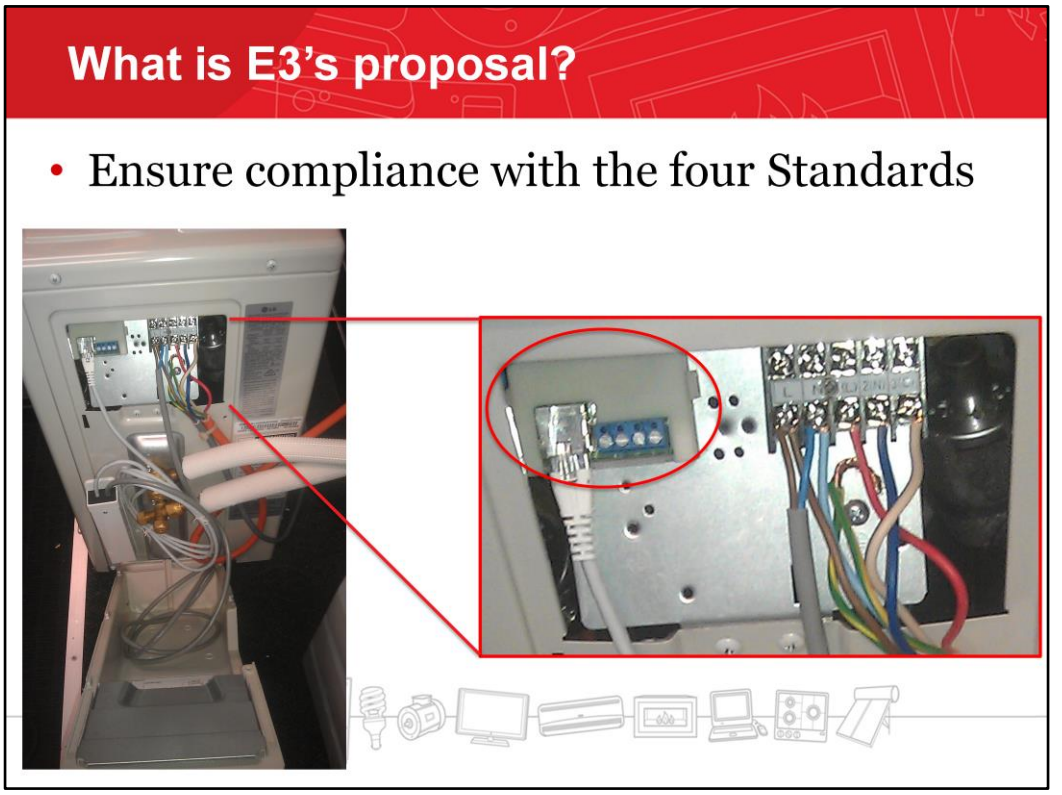
A significant part of the solution to these market failures is to provide a standard mechanism by which an appliance can be remotely powered down during peak events. The Department of Industry, on behalf of the Equipment Energy Efficiency (E3) Program, has worked with key stakeholders to develop the AS/NZS 4755 series of standards to enable this form of remote interaction.

Smart appliance Standards are now available for air conditioners, electric water heaters and pool pump controllers and a Standard for electric vehicle charge/discharge controllers is on its way. These 'Smart Appliance' Standards provide guidance for manufacturers to design their products in a specific way such that network providers are able to design compatible communications systems.

This is similar to the USB standard, which establishes a standard form of communications between personal computers and other devices.

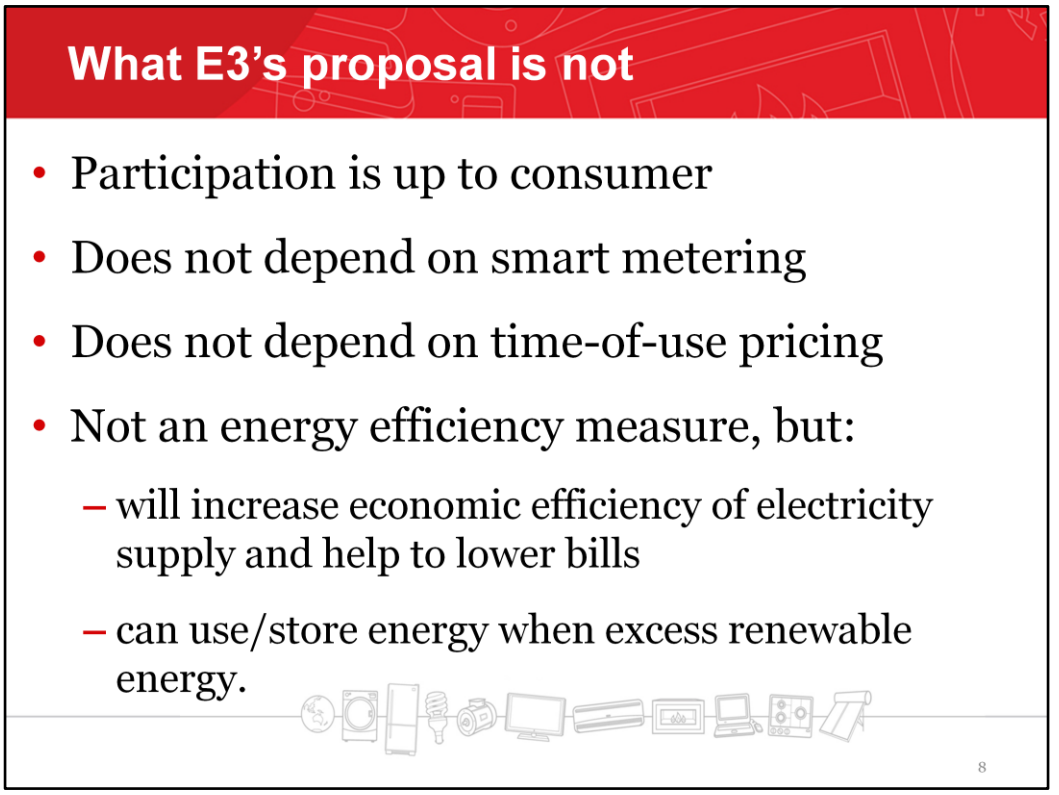
The standards have already been put to use on a voluntary basis. A direct load control program for 'smart' air conditioners is operated by Energex in SE Queensland. Energex offers financial incentives to consumers in exchange for the right to temporarily turn down or turn off the compressor of an air conditioner. Trials have shown that consumers are not aware when these events occur, in part because the fan inside the home continues to operate and provide some cooling.

However, Energex is the exception. No other network providers currently operate such a program for householders. This is due in part to the network externality I mentioned: network providers won't provide a direct load control program if smart appliances are not available, but manufacturers won't supply smart appliances in the absence of direct load control programs for consumers.



To overcome this problem, we are proposing to ensure that products comply with the four smart appliance standards. This would ensure that a smart appliance interface is included in selected appliances and that the interface can turn the appliance off.

This would simply mean these appliances must have a smart appliance interface (circled) so that, if a consumer wants to participate in a direct load control program, they can.



The proposal:

- Will not mean consumers have to participate – this will be up to the consumer;

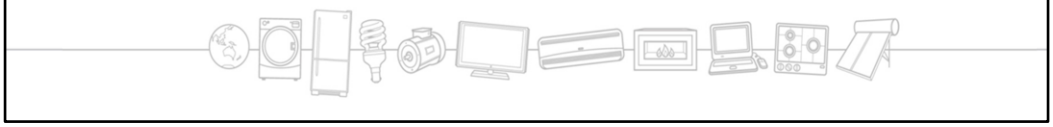
- It will not depend on smart meters – there are several alternative communications pathways, including the existing ripple control pathway that is currently used to control off-peak water heaters;

- It will not depend on time-of-use pricing – but smart appliances will make time-of-use pricing less risky; and

- It is not an energy efficiency measure – but it will increase the economic efficiency of electricity supply and help to lower bills through reduced investment in poles & wires. It will also allow energy to be used or stored when there is excess renewable energy in the grid which will assist with management of increasingly 'peaky' electricity demand.

What are the economic benefits and where is the proposal up to?

- The proposal is projected to yield a net economic benefit of $4 – 6 billion by 2030.
- Consultation ended in May 2013. The Decision Regulation Impact Statement being developed for ministerial decision.

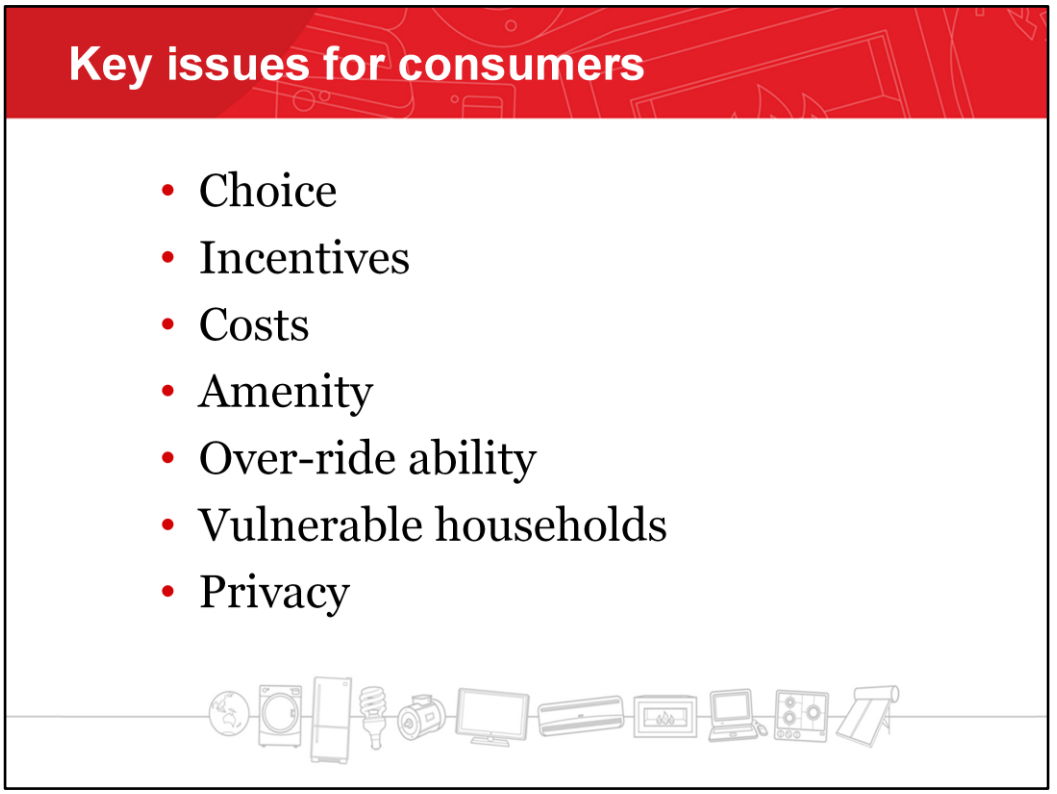


If the proposal is implemented, the result will be a supply of appliances that can contribute to lowering peak demand and, therefore, electricity pricing. It will also help to future-proof networks against future peak demand problems such as electric vehicle charging.

It is estimated that the net economic benefit of this proposal is in the order of $4 – 6 billion by 2030.

In developing this proposal, E3 held public consultations last year. Many submissions were received from manufacturers, network providers and consumers and received considerable support for the approach being proposed.

The Decision RIS is now being developed and will then be submitted for ministerial decision.



Key issues for consumers:

• Choice – this proposal introduces additional choice. Those who don't want to participate don't have to. Those who do will now be able to choose to.

• Incentives – these are likely to be attractive for consumers or utilities won't achieve the potential benefits. For example, Energex currently offers rebates of up to $500 for participation.

• Costs – likely to be very low for the consumer. Most costs will be met by the utility and all costs will be more than offset by the benefits.

• Amenity – comfort and convenience will not be affected for the majority of participants. Research has shown that almost all consumers are not aware of any change.

• Over-ride ability – over-ride is possible for all appliances except for air conditioners. To allow AC to have over-ride would defeat the purpose of the proposal.

• Vulnerable households – non-participants will also benefit from reduced network investment (lower bills).

• Privacy – data cannot be gathered from smart appliances because the communication link is one-way.