Power of choice – giving consumers options in the way they use electricity

First Stakeholder Reference Group (SRG) meeting

SRG members

Commissioners

AEMC review team

8 June 2011
Sheraton on the Park

Welcome and objectives for today

Dr Brian Spalding, AEMC Commissioner and Chairman – Stakeholder Reference Group

Welcome and introductions

- AEMC review team and SRG Secretariat
- SRG members – wide cross section of interested stakeholders
  - Stakeholder expectations
- Terms of Reference for the SRG

Today's agenda and meeting objectives

To achieve a common understanding of:

- What is this review about ? (objectives)
- Why demand side participation ? (the potential benefits)
- What will this review consider ? (scope)
- What is the methodology for identifying and assessing market and regulatory arrangements to give consumers options in the way they use electricity?
- Issues identification process and issues for consideration in this review (*We are not looking for solutions as yet, this will follow analysis of issues and options*)

Power of choice – giving consumers options in the way they use electricity

What is this review about

- To identify opportunities for consumers to make informed choices about the way they use electricity, and to provide incentives for network operators, retailers and other market participants to invest efficiently to capture the value of flexible demand:
  - Alignment of incentives so that the value of demand response can be seen by consumers.

How will we test efficiency of recommendations

- We will test any proposals in terms of the contribution those arrangements make to the National Electricity Objective.

Deliverable for the review:

- Evidence-based report and implementation plan to the MCE.

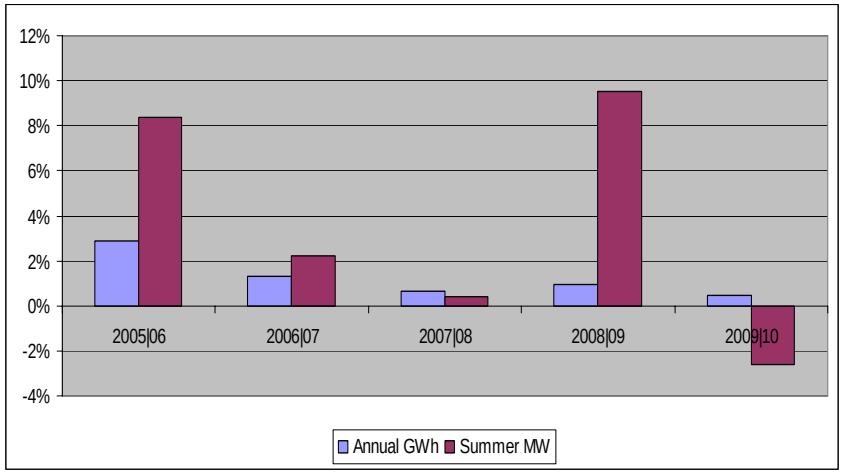
Background to demand side participation reviews

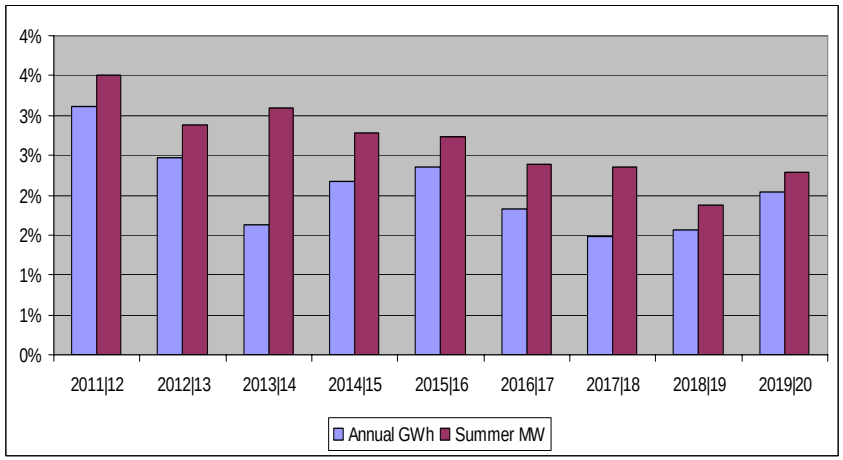
- Commission has considered demand side participation (DSP) in the NEM previously. That is,
  - the first review was in relation to ensuring that all of Commission's market reviews and Rule changes take DSP into account; and
  - the second review examined the National Electricity Rules (Rules) for any barriers to DSP.
- This review recognises that giving consumers options in the way they use electricity requires consideration of the entire electricity supply chain and goes beyond the Rules.

Why demand side participation?

- Peak demand is forecast to grow faster than demand for energy.
- This will feed through into the need for more investment in generation and expanded network capacity.
- Efficient demand side flexibility can be an alternative to traditional supply options.

Historical and forecast demand – year on year





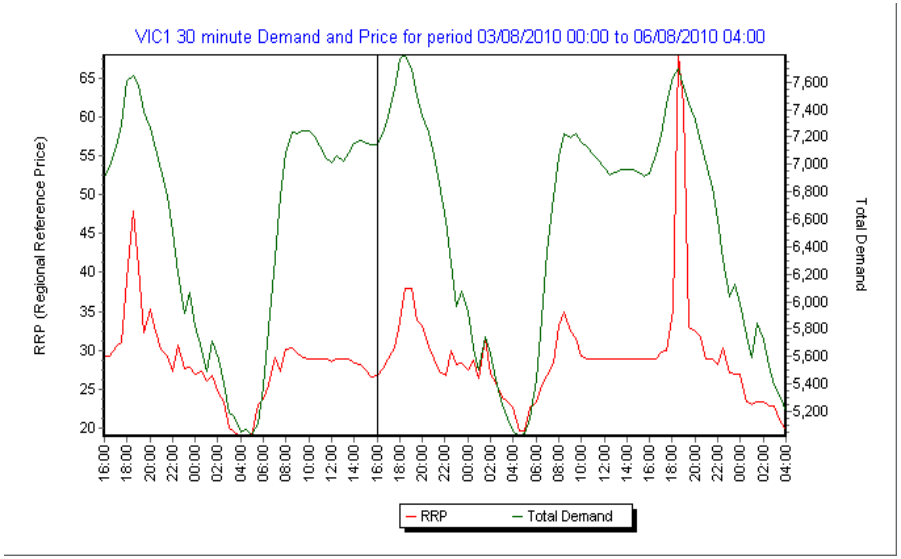
Growth in peak electricity demand 2.6% and energy demand 2.1% to 2020.

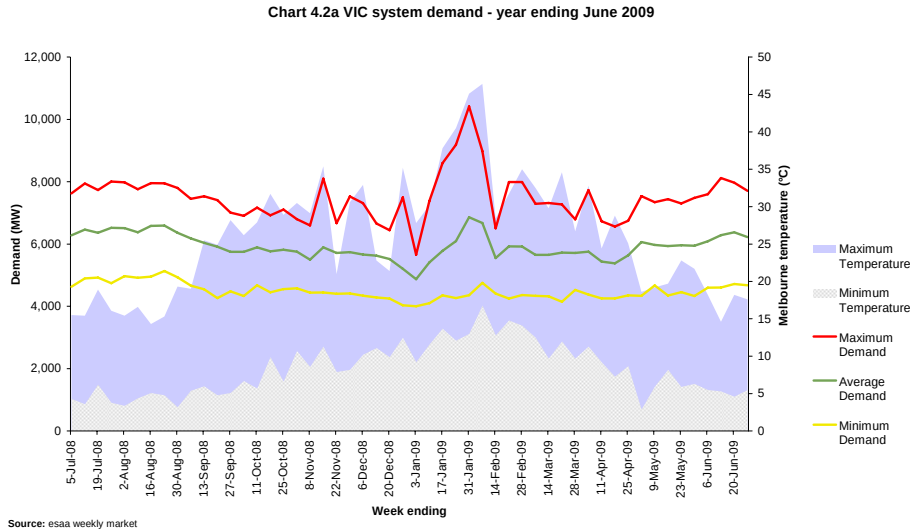
$38bn investment is required in networks over the next years (IRG report).

Generation investment under a moderate emission reduction scenario is estimated at $33bn - $37Bn to 2020 (*esaa* – IRG report).

Source: ESOO table 4.4 & 4.5

Variation in electricity demand: intra-day / annual

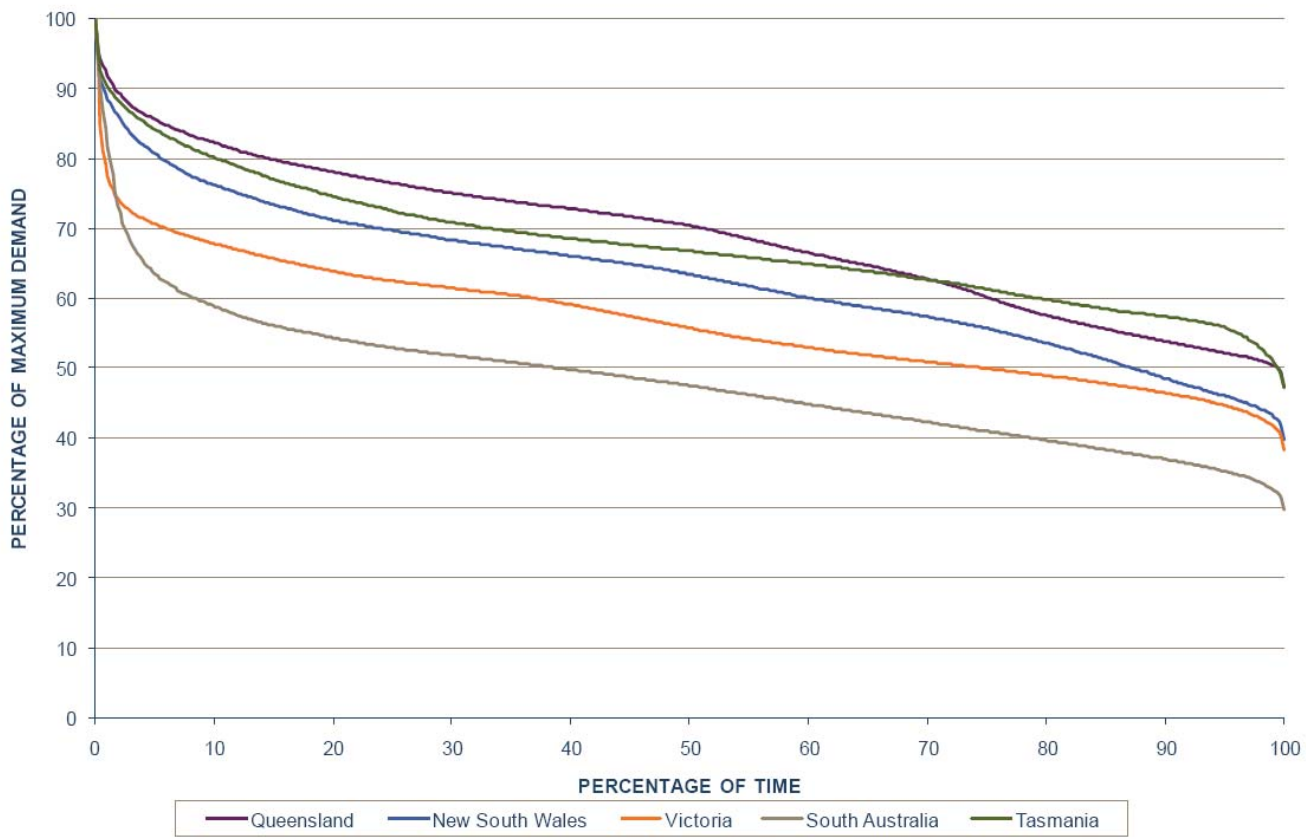




Peak energy use results in higher spot prices and requires investment in generation.

Source: Electricity Supply Association of Australia, AEMO

Electricity demand duration curves - summer



In Vic, 25% of demand occurs less than 2.5% of the time.

Assets deployed to meet peak demand.

Stakeholder concerns that assets utilised inefficiently.

Source: ESOO 2009 p. 10-3

Consultation process for this review

How the Commission proposes to engage with stakeholders

Rory Campbell, Senior Director

Process overview

Timetable for the review

First SRG meeting	June 2011
Issues Paper	July 2011
SRG meeting x 2	TBA
Directions Paper	November 2011
Public Forum	TBA
SRG meetings x2	TBA
Draft Report	May 2012
Public Forum	TBA
SRG meetings x2	TBA
Final Report	September 2012

Objective and common terms ?

Achieving a common understanding of the objective and terms to be used in this review

Kamlesh Khelawan, Director

Objective and deliverables of the review

Objective of the review

– This review aims to identify opportunities for consumers to make informed choices about the way they use electricity, and to provide incentives for network operators, retailers and other market participants to invest more efficiently to capture the value of flexible demand.

Approach for the review:

– We will identify market and regulatory arrangements that facilitate and promote the participation of both supply and demand side options in achieving economically efficient demand-supply balance in the national electricity market.

Deliverable for the review:

– Evidence-based report and implementation plan to the MCE on conditions required for economically efficient investment in, and use of DSP (including energy efficiency and distributed generation). The report will discuss the projected scope of DSP and its potential impact on network and generation investment.

Definitions to be used in this review

Demand side participation (DSP)

Ability of consumers to make decisions about the quantity and timing of their electricity use that reflects the value that they obtain from using electricity services. This can include such measures as peak shifting, electricity conservation, fuel switching, utilisation of distributed generation and/or energy efficiency.

Distributed generation in DSP context

Generation located on consumer premises that may or may not be connected to a distribution network. This excludes standalone and scheduled generators and generation connected to the transmission network

Energy efficiency

Energy efficiency is defined as either using the same amount of energy to produce increased outcomes or using less energy to produce the same outcomes *(Prime Minister's Task Group on Energy Efficiency).*

Definitions to be used in this review (cont.)

Market conditions

- Market conditions are characteristics that need to be present in the national electricity market to enable all participants (i.e. consumers, retailers/aggregators, network operators, generators, and others) in that market to make and implement informed decisions while recognising that it is the consumer who makes the final consumption decision.

Market and regulatory arrangements

- Market and regulatory arrangements are the measures that facilitate the market conditions. Such arrangements include all energy market and regulatory arrangements that impact on the electricity supply chain (i.e. National Electricity Law, National Electricity Rules, other national and jurisdictional rules, regulations, government policy initiatives, information, commercial arrangements and transactions, organisational culture and capability, technology and systems and market behaviours).

What this review will consider ?

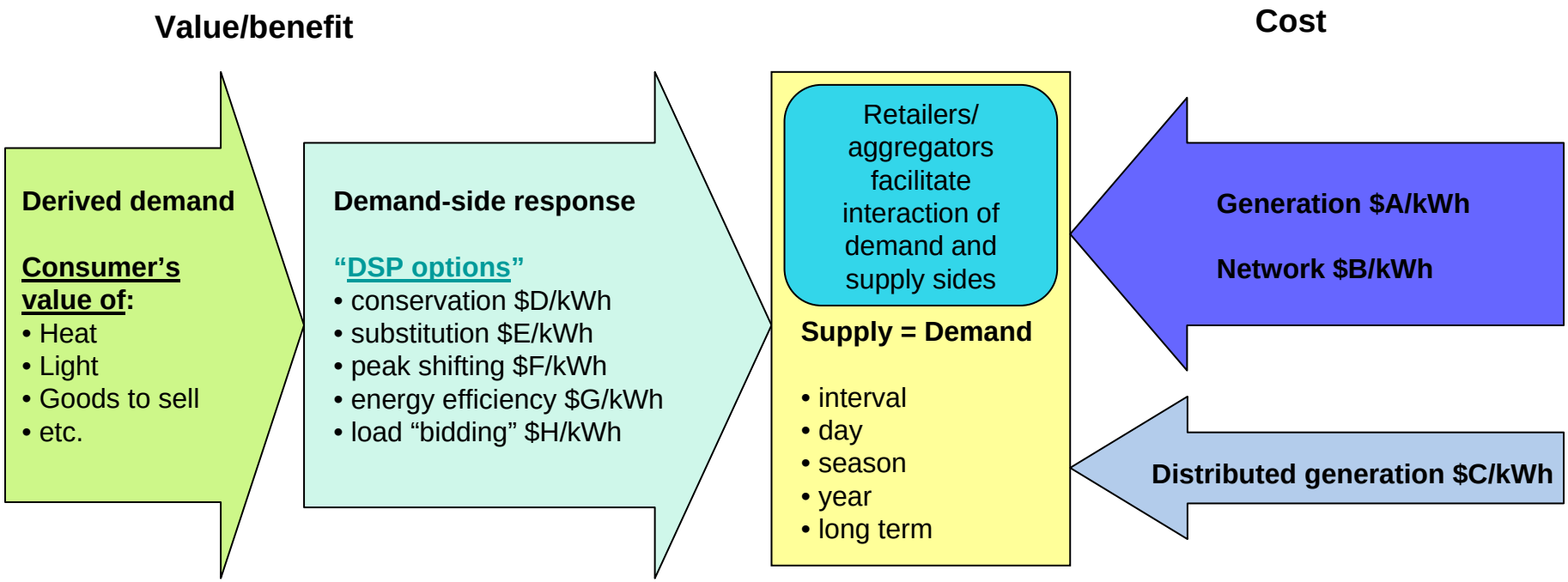
Theoretical approach and achieving clarity on matters to be considered and those to be excluded from this review.

Ben Woodside, Senior Economist

Nature of demand for electricity

- The demand for electricity is a “derived demand”
  - It is not required for direct consumption, but because it can be used to produce something useful (e.g. heat, light, other goods).
- Value to a consumer is a function of the value to them of whatever they are using it for, that is:
  - Demand of residential consumers determined by their own value (for heat, light, refrigeration etc); and
  - Demand of non-residential consumers determined by value of goods they are selling.
- This will impact on the flexibility of consumer demand and choices.

Efficient demand and supply balance



DSP more efficient if cost of supply higher than value of derived demand.
Price signal is necessary but not sufficient for DSP – info provision, transaction costs, technology also determine consumer response

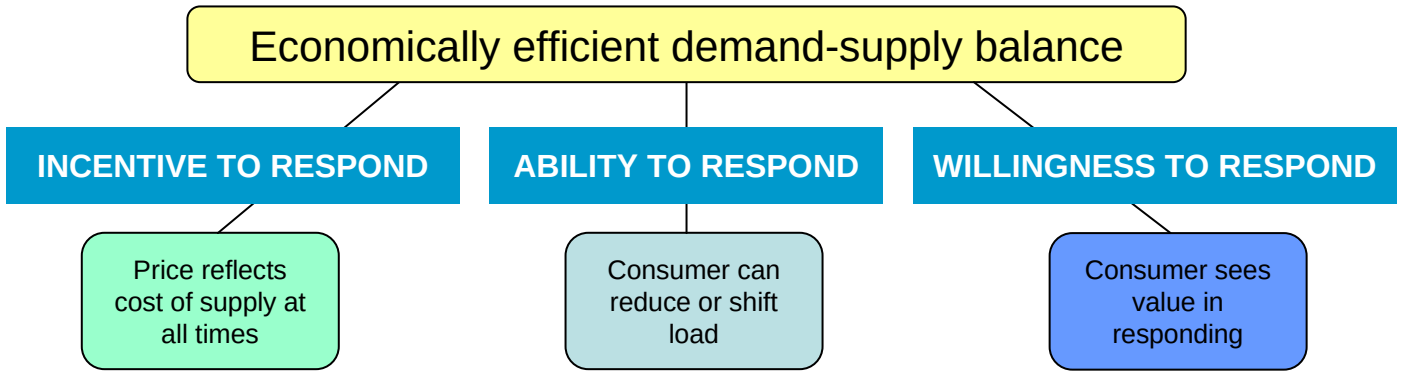
Note: DSP outcomes/options do not constitute an exhaustive list. Further outcomes to be defined by work and stakeholder responses

Scope - defining economically efficient demand-supply balance (1)

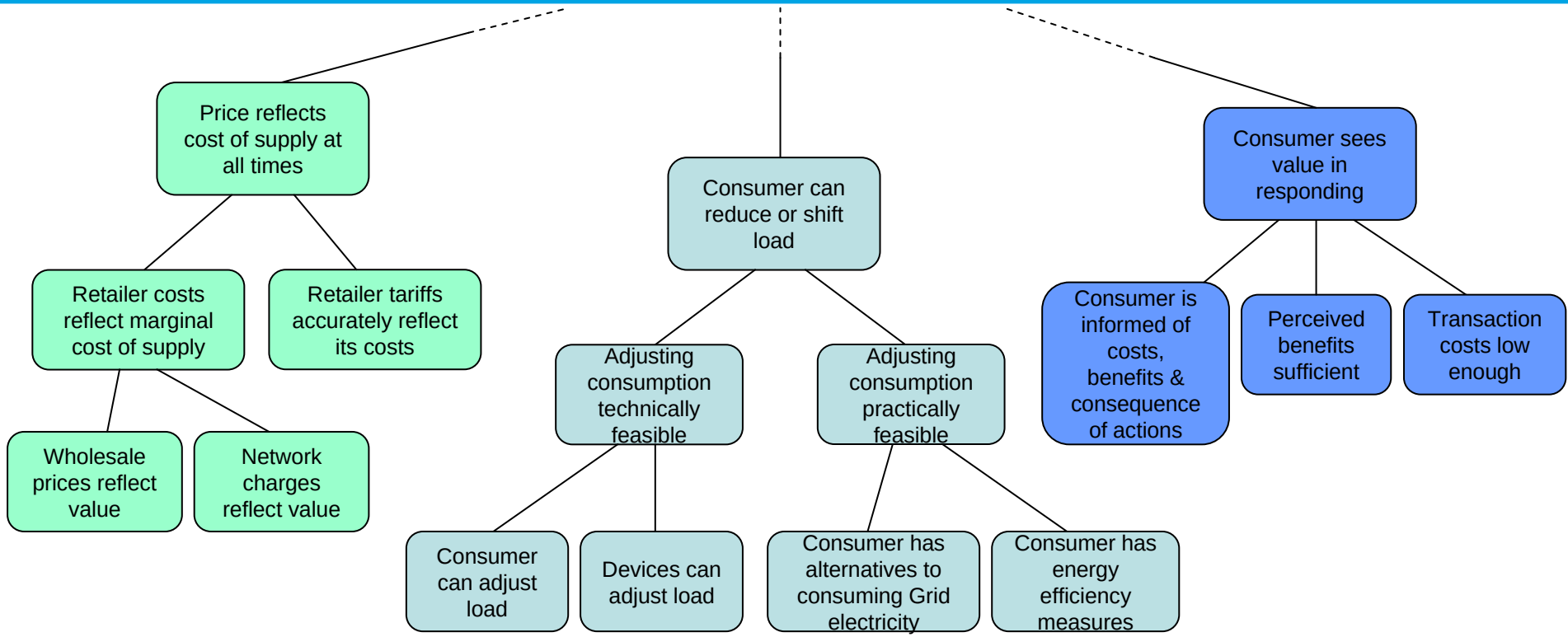
This Review seeks to identify market conditions that facilitate and promote participation of both supply and demand side options in achieving an **economically efficient demand-supply balance** in the electricity market.

Theoretically, efficient demand-supply balance is achieved if demand side is fully active in market - i.e. if:

1. consumers face the price that reflects underlying value of resources at all times;
2. they are able to adjust their consumption in response to that price; and
3. consumers see value in responding (taking into account transaction costs).



Scope - factors required for economically efficient demand-supply balance



The consumer's decision is always optimal, based on prices, information and transaction costs they face

What this review will/will not consider - summary

In scope:

- All market conditions that impact on DSP. Key areas we are looking at are:
  - Market frameworks to maximise value to consumers from services enabled by new technologies (such as smart grids and load control capability), including the National Electricity Rules;
  - Effectiveness of regulatory arrangements for energy efficiency, such as retailer obligation schemes; and
  - Efficient operation of price signals, including tariff setting process, and incentives for operating and capital expenditure.

Out of scope:

- Economic regulation frameworks - WACC or merits review process. The AER is conducting a review following its first cycle. The AEMC will wait for this work to be completed.
- Reliability and security standards for the NEM. There is an established process for setting these and any changes should be made as part of that process.
- Review of reliability planning and service standards for networks (jurisdictional arrangements) – AEMC has completed comprehensive review of these mechanisms and recommendations are currently under consideration by the MCE.
- Specific consideration of a mandated v non-mandated rollout and metering contestability of smart meters. These matters are subject to separate COAG/MCE processes.
- Technical generator and network (losses) efficiency.
- Gas markets.

Other work relevant to this review

- MCE outcomes of the National Smart Meter Program;
- Australian Government's Smart Grid, Smart City initiative;
- Australian Government's response to the Prime Minister's Task Group on Energy Efficiency;
- Jurisdictional reviews of energy efficiency schemes;
- AER review of economic regulation frameworks;
- MCE Standing Committee of Officials review of customer protection and safety arrangements under National Energy Customer Framework;
- MCE response to AEMC advice on cost-recovery of mandated smart metering infrastructure; and
- Any MCE statements of policy principles on smart meters.

Identifying the necessary arrangements ?

The methodology for identifying the market and regulatory arrangements to give consumers options in the way they use electricity

Ben Woodside, Senior Economist

Methodology for identifying market and regulatory arrangements

- Identify the market conditions necessary to facilitate efficient DSP;
- Identify the market and regulatory arrangements needed to support those market conditions; and
- Establish that the costs of implementing the identified market and regulatory arrangements will be less than the benefits that they deliver.

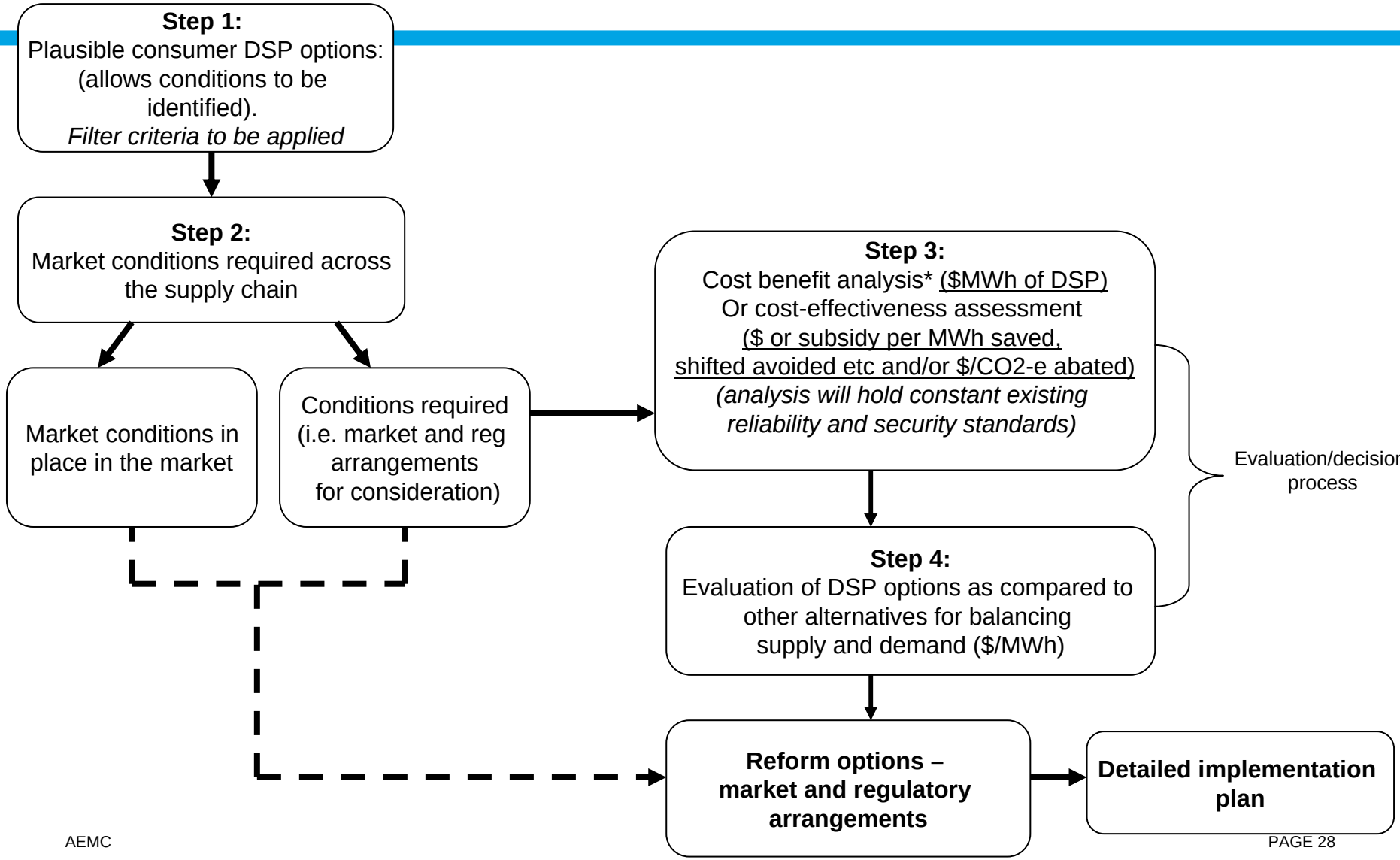
  Note – the Commission **will not** recommend which DSP options or activities should be undertaken, but **will** recommend market and regulatory arrangements that will **facilitate and promote** those options or activities on a commercial basis should consumers or participants choose to do so.

Assessing the arrangements for efficiency

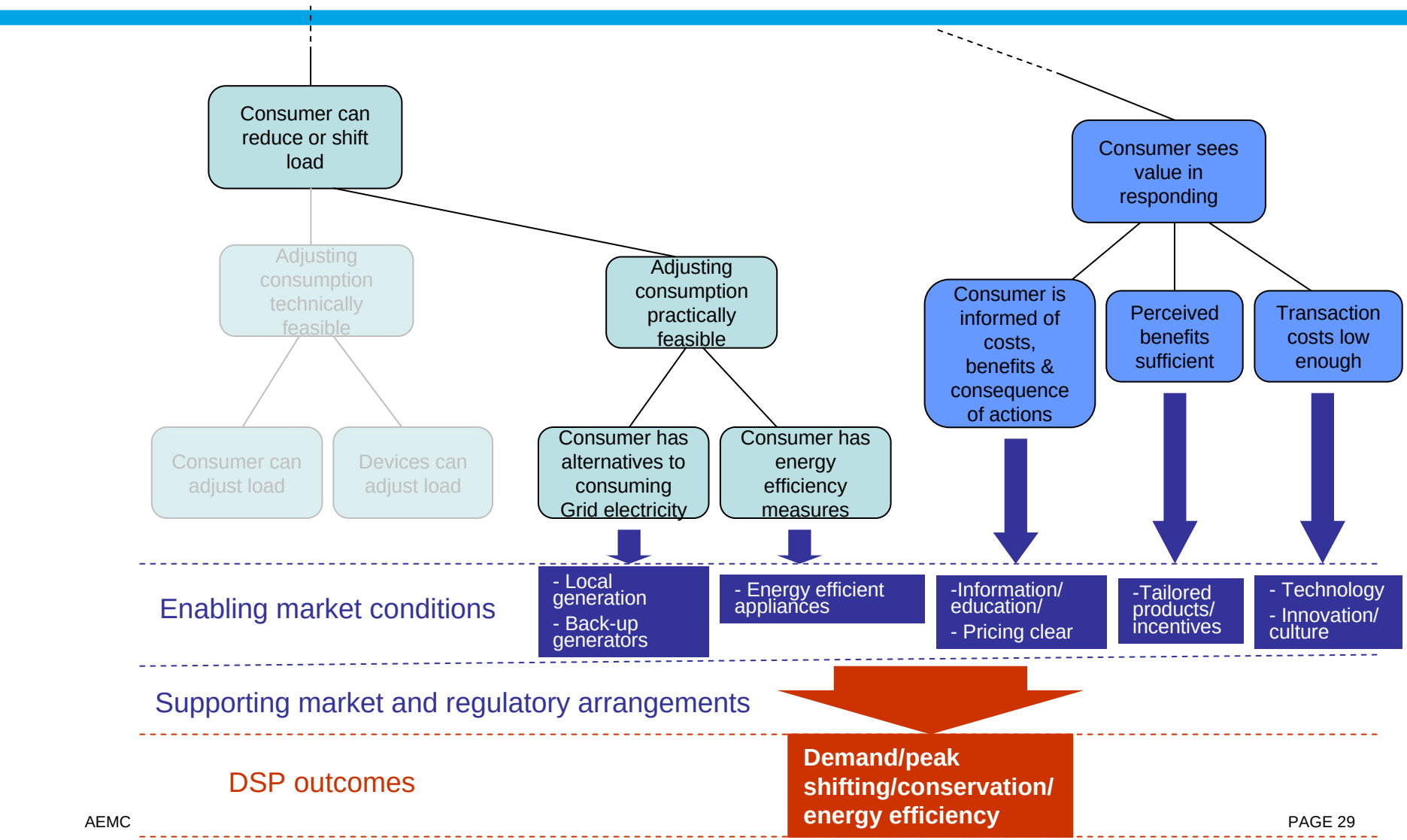
Market and regulatory arrangements must contribute to the National Electricity Objective.

- Given their derived demand for energy services, consumers decide what level of energy services gives them the most value while recognising the costs they face in obtaining these energy services.
- Optimal use of resources from societal viewpoint is when DSP is an alternative to traditional supply options. Hence:
  - assessment will be based on price outcomes for energy services from investment in DSP as alternatives to traditional supply options – **minimising the total costs of energy services imposed on consumers**
- Price signal is **necessary but not sufficient** for DSP
  - info provision, transaction costs, technology will also determine consumer response.
- Current settings for reliability, security, quality and safety of supply will apply to DSP options (impact of reliability and security arrangements and value customers place on reliability to be noted).

Overview of assessment process and methodology



Methodology summary with an example – peak/off-peak shift



MCE or other government policy principles or objectives

- We recognise that there may be certain outcomes desired by governments that fail the cost/benefit (NEO) test outlined above – e.g. for addressing externalities.
- These may be expressed as MCE policy principles or jurisdictional policy (i.e. energy efficiency schemes/initiatives):
  - Under these circumstances, we propose to apply a cost effectiveness assessment (CEA). Consideration will need to be given to range of policies for review.
  - That is, determine the 'least cost" arrangements to achieve stated objectives (i.e. $ or subsidy/MWh saved, shifted, capex avoided etc and/or $/t$CO_2$-e abated).
  - Consideration will also be given to incorporating arrangements into the NEM framework should this be found to be more efficient.
  - CEA will be undertaken as part of Step 3 above.
  - In addition, these policies will be examined for a notional carbon price that would make them meet the efficiency test as described in Step 3 and 4.

Methodology - issues

- Ability to quantify benefits likely to be challenging
  - risks in comparing existing studies based on diverse approaches
  - assessment may need to be largely qualitative
- Where quantification is possible, choice of discount rate will be important given long-term nature of DSP benefits
  - propose to use a reasonable range based on review of relevant literature/studies
- No reliable method for measuring/forecasting consumer response
- Access to useful data may be difficult, e.g. due to confidentiality reasons

Investigations to support review

The information and evidence we propose to collect to support this review

Lisa Nardi, Senior Advisor

Establishing the imperatives and high-level potential for DSP

1. Consolidated report of drivers for DSP in electricity market

- *Overview of issues driving push for greater uptake of DSP (i.e. climate change policies, supply/demand balance etc)*
- *What does demand and supply of electricity look like now and in the future (ESOO etc)*
- *What are the drivers of demand for electricity – consumption patterns across sectors of the economy (sector consumption profiles (ABS/ABARE/ABS))*
    - *Australia vs OECD, IEA findings*
    - *Informational gaps*
- *Overview of electricity supply and efficiency of asset utilisation.*
- *At a high level, what are the opportunities for DSP and EG – some quantitative information about what's happening in the market (e.g. evidence by AER reports, AEMO, and company information (Adelaide Brighton, One Steel, consumer research information/reports/data required).*

Establishing whether electricity prices reflect underlying value of resources to meet demand at all times

2. Consolidated report of investigation into the efficient operation of price signals in the electricity market and identification of any technical and administrative barriers

– *Investigation of whether electricity prices to customers reflect the costs of supplying electricity, and if not, the reasons for prices not being cost reflective (across the supply chain)*

- *Covariance between demand and prices, relationship between price and supply availability and wholesale market stress and network stress*

– *Investigation of the potential for efficient price signals to promote efficient consumer DSP via enhancing consumers' ability to make informed choices concerning their use of electricity services.*

– *Consideration of measures that do not require interval/smart metering to achieve efficient outcomes*

– *Based on above, outline of issues current in the market.*

3. Stocktake and review of energy efficiency policies and programs

- *stocktake of energy efficiency policies and programs.*
- *assessment of effectiveness and cost efficiency of measures/policies identified in stocktake.*
- *outline of energy efficiency policy/program considered as best practice to promote efficient DSP in the NEM. Guiding principles to be applied, as with potential for such measures to be integrated in electricity market frameworks.*

Note: range of reports already in existence. Most recent Grattan institute and Productivity Commission.

4. Consolidated report Services enabled by smart grid technology (completed KEMA)

Evidence and analysis of arrangements to support efficient DSP in the electricity market over time

5. Identification of market and regulatory arrangements to support plausible and foreseeable DSP options/outcomes in the electricity market.

- *Stocktake of all existing and planned DSP pilots, trials, innovation activities by businesses, networks, retailers etc*
- *Summary of outcomes, evidenced by case studies and consumer behaviour and response outcomes (reasonable expectations on penetration rates).*
- *Utilising information above, identification of conditions required across the electricity supply chain to enable plausible DSP options.*
- *Identification of conditions in place and those which would be required to be put in place to enable DSP and DG options.*
- *Identify market and regulatory arrangements to support market conditions.*
- *Assessment of costs and benefits (as per assessment framework and methodology for the review) of implementing market and regulatory arrangements required.*
- *Evaluation of relative net benefits of plausible DSP options as compared to other alternatives for balancing supply and demand (incl. under carbon price scenarios).*

Likely issues for evidence and analysis

- Access to and obtaining robust real time measurable data/information on DSP (inc Energy Efficiency outcomes). Some agencies/businesses may be reluctant to provide information. AEMC team to actively engage with relevant bodies so that consultants are able to access such information (or provided to the AEMC for use by consultants where appropriate).
- Expertise and ability of consultants to collate information required and undertake analysis.
- Cost allocation on a time-of-use basis, especially for network businesses.
- Current level of DSP and experience may be commercial-in-confidence.
- Review timeline in the context of work required and the timelines of other complementary work.

Issues for consideration for DSP

In this section we will outline how we propose to go about identifying the issues that need to be considered as part of this review.

Note, at this stage we are not seeking to resolve those issues, which comes at a later stage in the review.

Lisa Nardi, Senior Advisor

The process for identifying issues

- As discussed, to identify the scope of potential market and regulatory arrangements, we need to consider what it is that the consumer may wish to do first!
- What are the:
    - actions consumers may choose to undertake regarding how and when they use electricity (i.e. plausible or foreseeable DSP options)?
    - conditions that need to be in place for consumers to make a decision to undertake such a DSP option?
    - the range of issues associated with the identified conditions?
    - grouping issues by categories. e.g. information/education, technology and communication, commercial, regulatory etc (both within and external to electricity market).
- Next stage of the review will be to examine the market and regulatory arrangements required to achieve the market conditions

Examples of plausible or foreseeable DSP options?

Examples of what it is that the consumers may want to do in relation to the way they use energy:

- Electricity conservation (use less, e.g. switch off standby equipment)
- Shift from peak to off-peak use (e.g. electric hot water, washing)
- Uptake of energy efficiency measures (e.g. more efficient equipment/processes)
- Generate own energy (e.g. standby power, solar pvs)
- Fuel switching/substitution (e.g. use gas or solar thermal)
- Sell energy or load back to the market (e.g. co-generation)
- Other?

The above is not an exhaustive list – what are some other plausible DSP responses that consumers could choose to undertake?.

Examples of market conditions required to give consumers options?

Access to information
(education and participation)

Price/product options (e.g. time of use, flat, real time tariff options, cash back)

Technology/communications capability
(metering/communication tools, load control Devices, storage)

Access to Infrastructure
(energy efficient appliances/ building improvements)

What other conditions are required?

How may access to information help ?

- Information and education is a key condition for enabling consumer choices and response (participation)
- Informs and raises awareness to manage electricity consumption – how and when
- Improves knowledge and understanding of impacts of electricity consumption -
  - Energy cost as a proportion of total household costs – concerns about the level of their bill
  - Information is seen to be difficult to obtain and complex
  - Costly to obtain - constraints on time, resources and ability to process information

The role of efficient pricing options ?

- Consumers can and do response to price signals – but when conditions are right.
- Efficient pricing allows consumers to make informed choices about the quantity and timing of electricity consumption
- Prices which do not reflect cost of supply may result in inefficient decisions being made.
- Innovation of end-use pricing becoming important as consumers interest in bills increasing.

Role of appropriate products and incentives ?

- Products and incentives are likely to form an integral part of participation of consumer response
- Appropriate products and incentives to facilitate response may require retailers, aggregators and others to consider:
  - innovative business service models – incentives to consider DSP (customer churn as an example)
  - alignment of incentives between parties (need for understanding business operations of both retailers and network businesses for example)
  - access to consumers and their information (i.e. consumption data),
  - appropriate systems (billing requirements/data centres/ability to control loads)
  - ability to develop innovative commercial products (pricing offers, rebates, free stuff (e.g. bonus frequent flyer points etc)).
  - ability to develop innovative commercial contracts – appliance switching rights/customer protection/safety.

Infrastructure to support DSP ?

- Building insulation standards can improve efficiency of energy use, can allow appliance, such as air conditioner cycling
- Higher efficiency appliances can reduce energy use and costs over life of appliance
- Mandatory appliance rating and minimum standards

Type of technology/communication capability required?

- Metering to allow consumers to understand their consumption and impact on costs
- Communication to provide such information in an effective manner
- Load control devices to be able to change when and how energy is used
- Metering, systems and processes to support export capability

Questions ?

- Do you consider that the process we have outlined above will assist us and stakeholders to identify the market conditions necessary to facilitate and promote DSP?
- Is there anything else we need to consider in focusing stakeholders on DSP issues?
- What are you views on the different way in which consumers may wish to use energy?
- What market conditions need to be in place to assist consumer in making efficient decisions?

Stakeholder presentations - issues

Invited stakeholders present their views on the issues in relation to DSP

Stakeholder presentation – 15 minutes/5 minute comment/questions

- Public Interest Advocacy Centre – Carolyn Hodge
- Australian Alliance to Save Energy – Mark Lister
- Total Environment Centre – Tyson Vaughan
- Energy Response – Dr Paul Troughton
- AGL Energy – Alex Cruickshank
- SP Ausnet – Charles Popple
- General discussion

Next steps

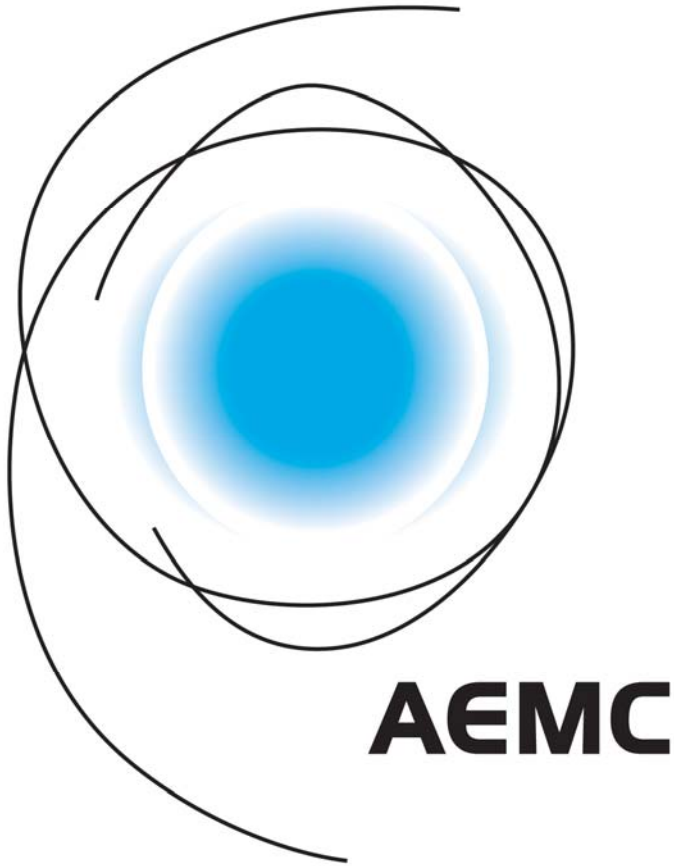
Issues paper and directions paper

Closing remarks

Dr Brian Spalding, AEMC Commissioner, SRG Chairman

Next steps

- AEMC staff to draft Issues paper for consultation taking into account comments from the Stakeholder Reference Group
  - Objective, scope, and timetable for review
  - Methodology for the review for comment
  - Examples of DSP options and issues as a way of focusing stakeholder on options and issues that need to be considered
- AEMC staff to engage consultants for expert investigations
- 15 July - Publish Issues Paper for consultation
- 6 week consultation period – submissions close 26 August
- Reconvene Stakeholder Reference Group in September to consider issues raised
- Reconvene Stakeholder Reference Group in October to consider initial directions
- Publish Directions Paper in November 2011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