



# AIE Symposium - NSW Electricity Future 2020 and beyond

**Ross Fraser, Executive Chairman**

*facilitating a more sustainable future*

BRW. 2009   
**FASTstarters**

# NSW Electricity

What will it look like  
and  
How do we get there?

## ***Demand Side***

*Immediate and future actions by the  
Demand Side for a more sustainable future*

# Who is Energy Response?

- ▶ A 5 year old privately owned Australian company operating across Australia and New Zealand
- ▶ Our Mission is to extract untapped value from electricity markets using a range of existing assets and skills
- ▶ We are an open access aggregator of Demand Side Response (DSR) from electricity users
- ▶ We have significant expertise in electricity markets and have developed unique support systems
- ▶ Our Demand Side based products
  - ❑ Create value for end users of electricity who participate
  - ❑ Improve the efficiency of the electricity markets
  - ❑ Reduce overall costs and improve the reliability and security of electricity supply
  - ❑ Respond to effects of climate change and contribute to reduced carbon pollution

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# Objective of the Australian National Electricity Market (NEM)

*“To promote efficient investment in, and efficient use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, reliability, and security of supply of electricity ..... of the national electricity system”*

Source: NEL s.6. - Single objective for the electricity market  
Underlining by Presenter

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# New South Wales – Issues

- ▶ Reliant on electricity based mainly on coal
- ▶ Moving from winter to summer peaks
- ▶ Requirement to reduce carbon emissions
- ▶ Major upgrades of grid and distribution systems
- ▶ Growth in peak electricity demand 50% > average

Plus:

- ▶ Population growth from 7 to 10 million by 2020
- ▶ Impacts from climate change (more extremes)
- ▶ Inability to fund traditional supply approach
- ▶ Smart metering and smart grid
- ▶ Introduction of electric vehicles

# New South Wales – Options

- ▶ Base load electricity supply
  - **Energy efficiency (technology, end user education)**
  - Geothermal and nuclear generation
- ▶ Intermediate load electricity supply
  - **Demand management (retail price signals)**
  - Efficient gas generation
- ▶ Peaks (<40 hours per year, 25% of retail cost from price peaks, network peaks & reserve)
  - **Demand Side Response (DSR – 700MW potential)**
  - **Distributed generation (existing 500MW in NSW)**
- ▶ Correct use of fuel, eg, natural gas for vehicles?

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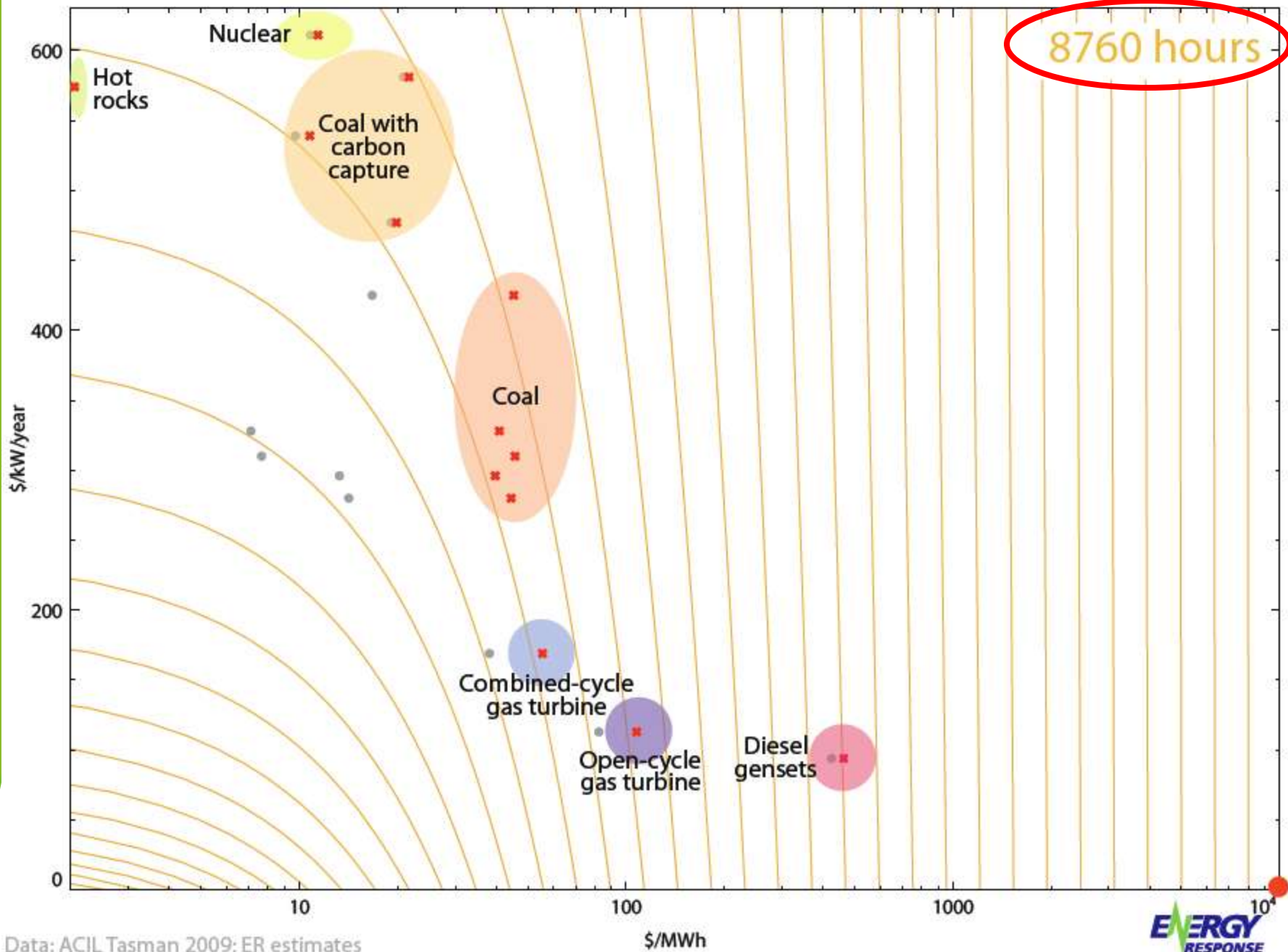
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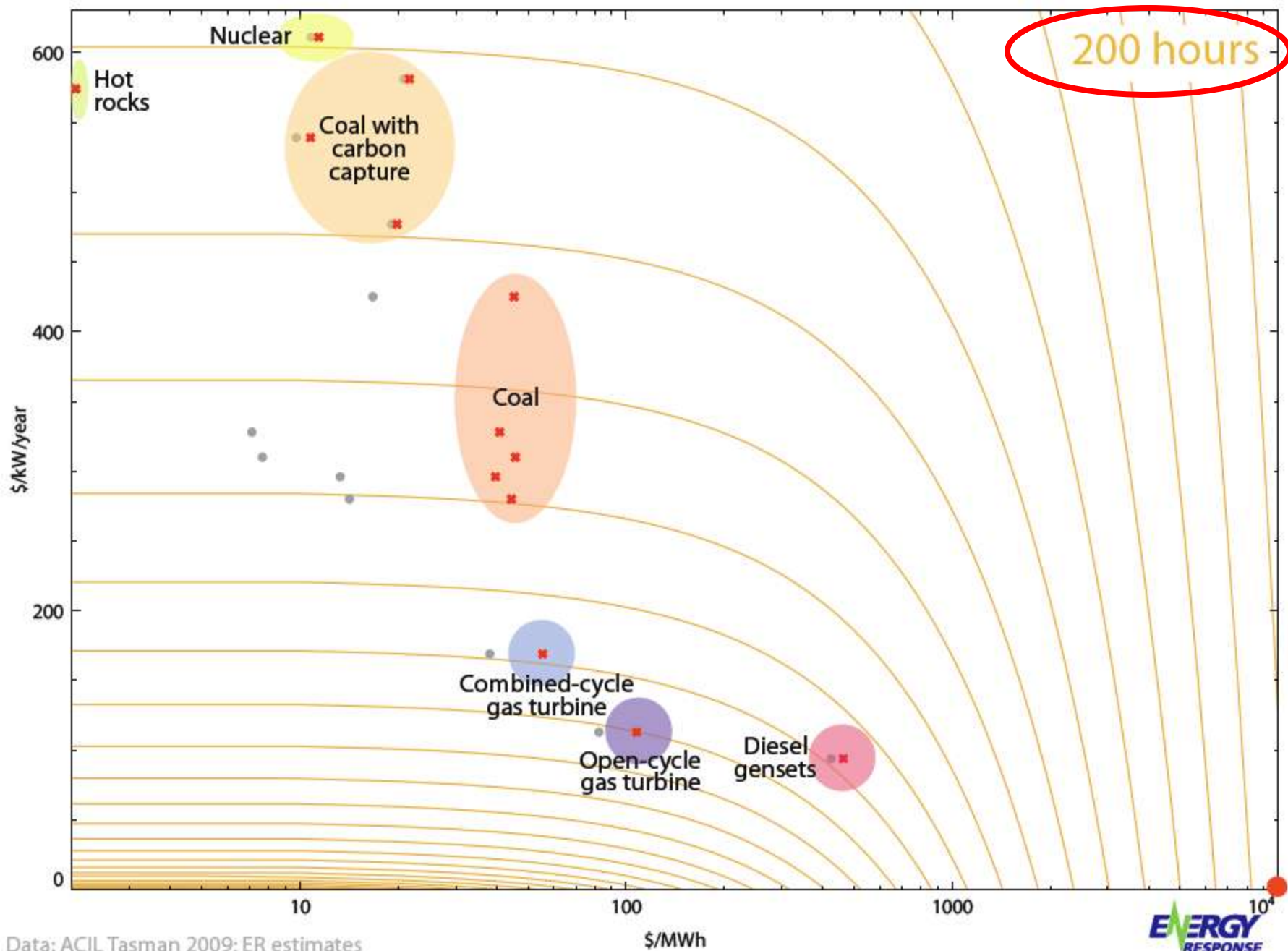
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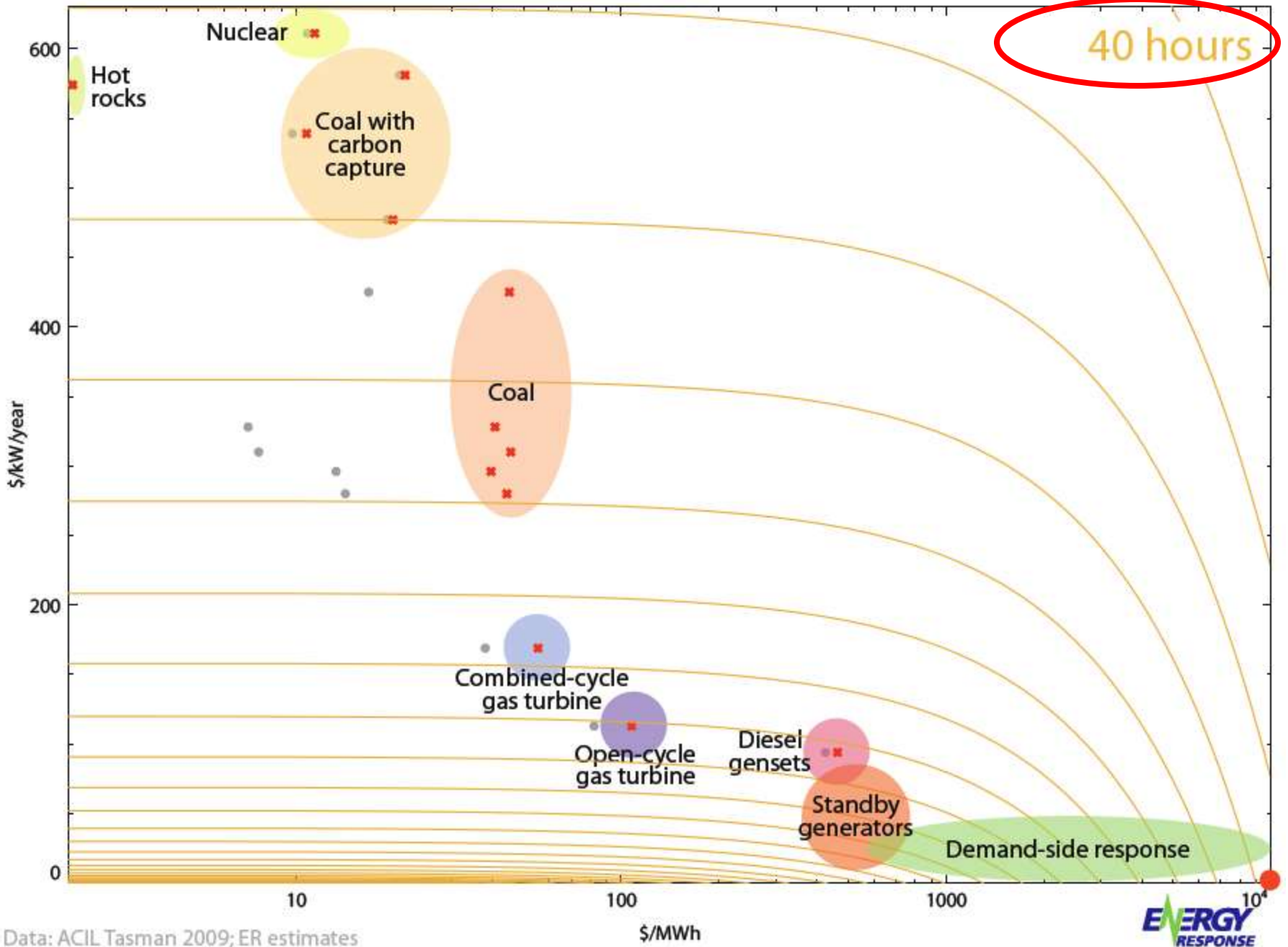
# DSR - An Imperative for NSW

- ▶ 25% of retail cost of electricity (25% of \$7.5bn pa)
  - Caused by events which occur for <40 hours per year
  - Cost to NSW electricity consumers of about \$1.9bn pa
- ▶ Three main areas where end users can respond
  - Wholesale peak price signals
  - Peak demands on networks
  - Provision of Reserve Capacity (for emergencies)
- ▶ We need less than 10% of the demand to respond
- ▶ But we need government policy and the right market rules
  - Direct DSR participation in NEM <0.5% of peak capacity
  - Direct DSR participation in WEM is 3.6% of peak capacity (doubling each year)





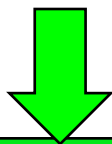
Data: ACIL Tasman 2009; ER estimates



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# Cost of responding to “Peaks”

## DSR compared with Traditional



### Incremental business case for Demand Side:

- *Setup cost of 1000MW of DSR = \$40 million*
- *Operating cost = \$50m pa*
- *Outcome = Savings of \$1.5 billion per year*
- *Reduction in GHG*

**NPV (10 years) = +\$10 Bn**

Compared with

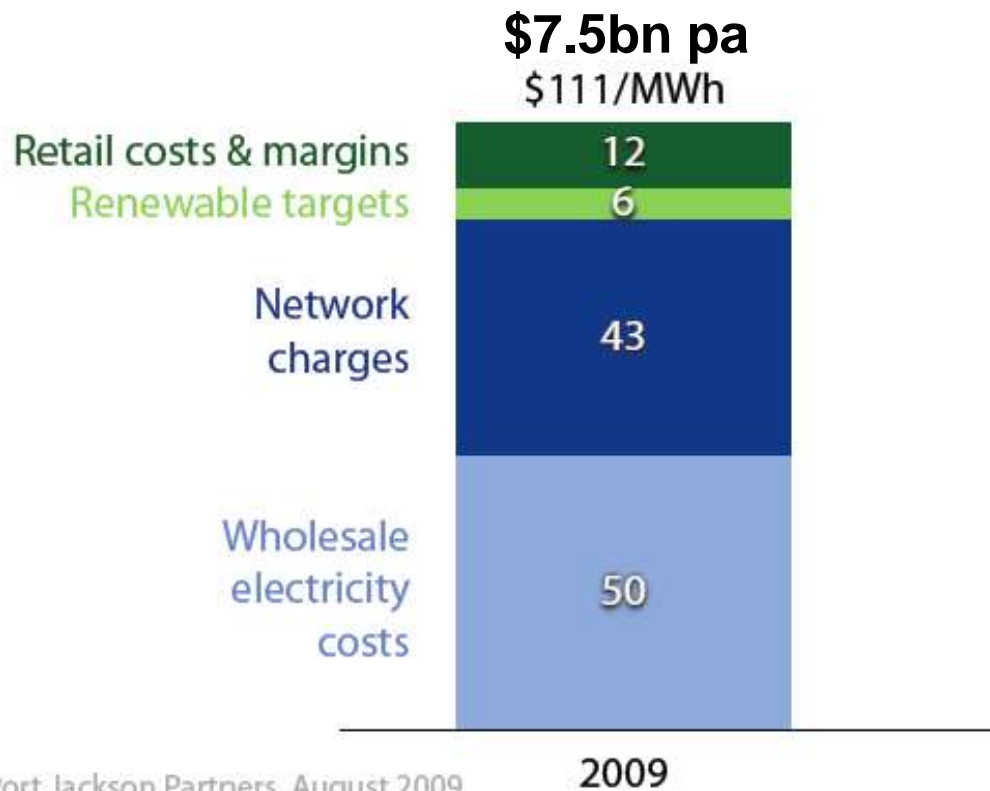


### Incremental business case for Supply Side:

- *Setup cost of 1000MW of peaking plant = \$900m*
- *Operating cost = \$60m pa*
- *Outcome = Continuing price increases*
- *Adds to GHG*

**NPV (10 years) = -\$1 Bn**

# NSW - Increasing electricity costs



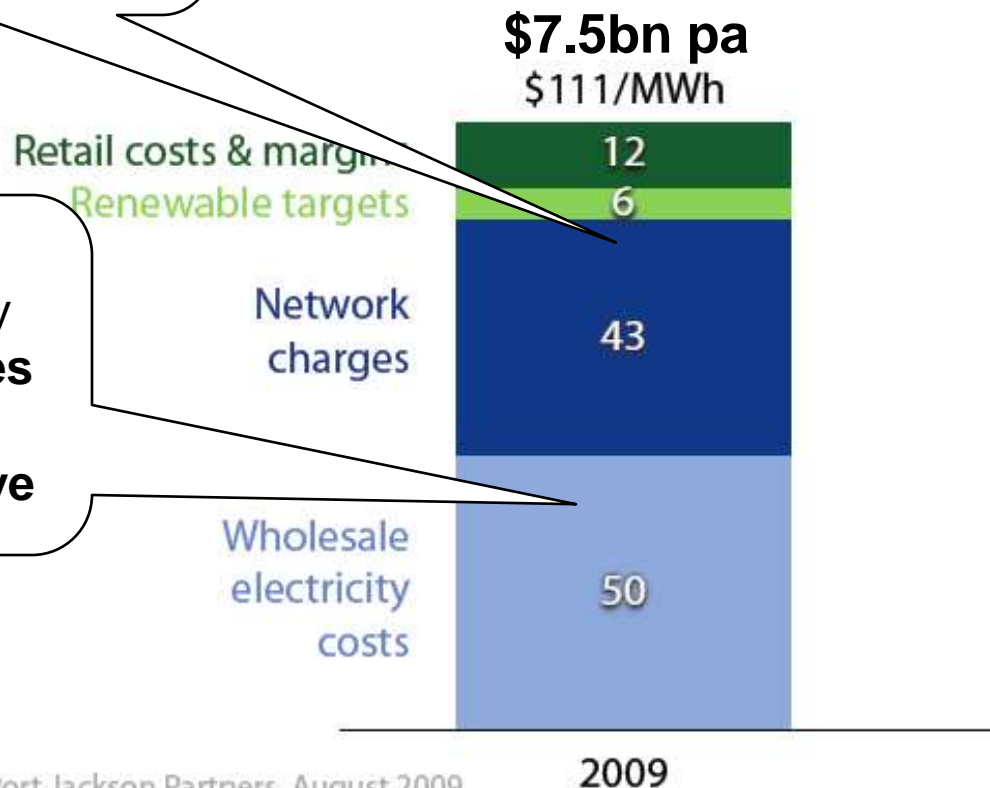
# NSW - Increasing electricity costs

Includes:

- cost of infrastructure  
**(incl 10% for <5h pa)**
- cost of metering

Includes:

- price of energy
- cost of hedges**
- prudentials**
- cost of reserve**



# Offsetting existing cost and cost increases

- ▶ Electricity costs have and will continue to increase significantly due to
  - More extreme weather conditions
  - Wholesale gas price rises
  - Cost of carbon reduction
  - Continuing tightening between supply and demand
  - Increasing network (infrastructure) constraints
  - “Peakiness” in electricity growing 50% above average

# NSW - Increasing electricity costs

**\$14.5bn pa**  
\$215/MWh

Includes:  
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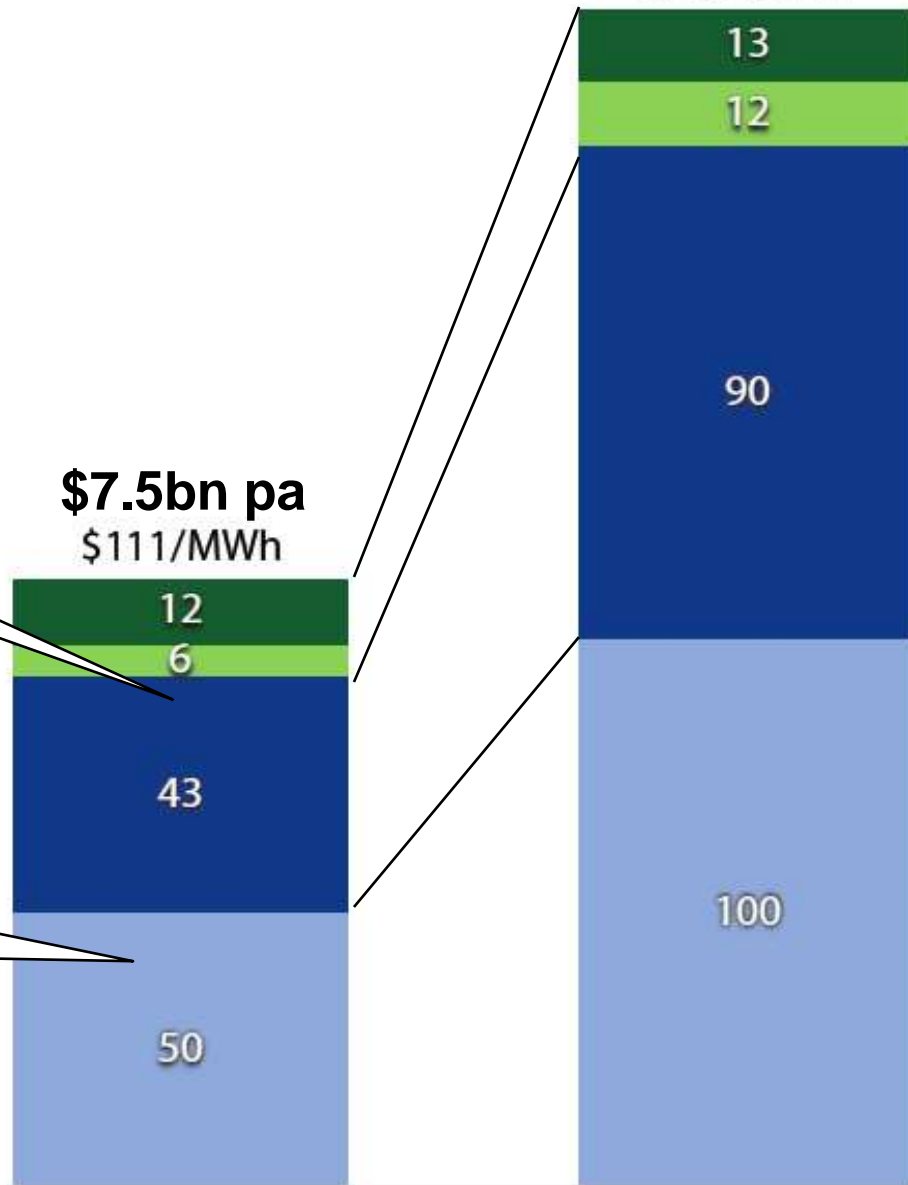
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Retail costs & margins  
Renewable targets

Network charges

Wholesale electricity costs

**\$7.5bn pa**  
\$111/MWh



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Retail costs & margins  
 Renewable targets

Network charges

Wholesale electricity costs

\$7.5bn pa  
 \$111/MWh

\$13.0bn pa  
 \$193/MWh

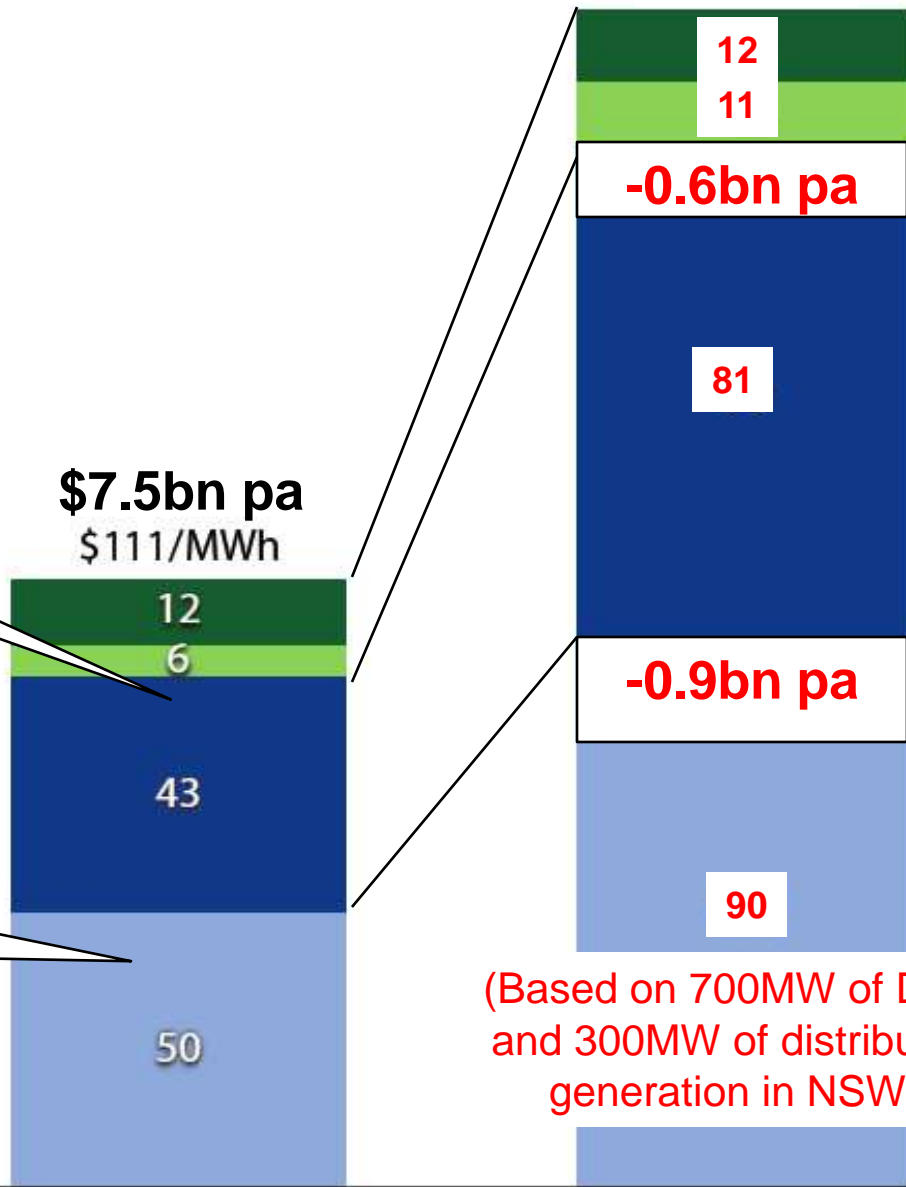
-0.6bn pa

-0.9bn pa

(Based on 700MW of DSR and 300MW of distributed generation in NSW)

2009

2015



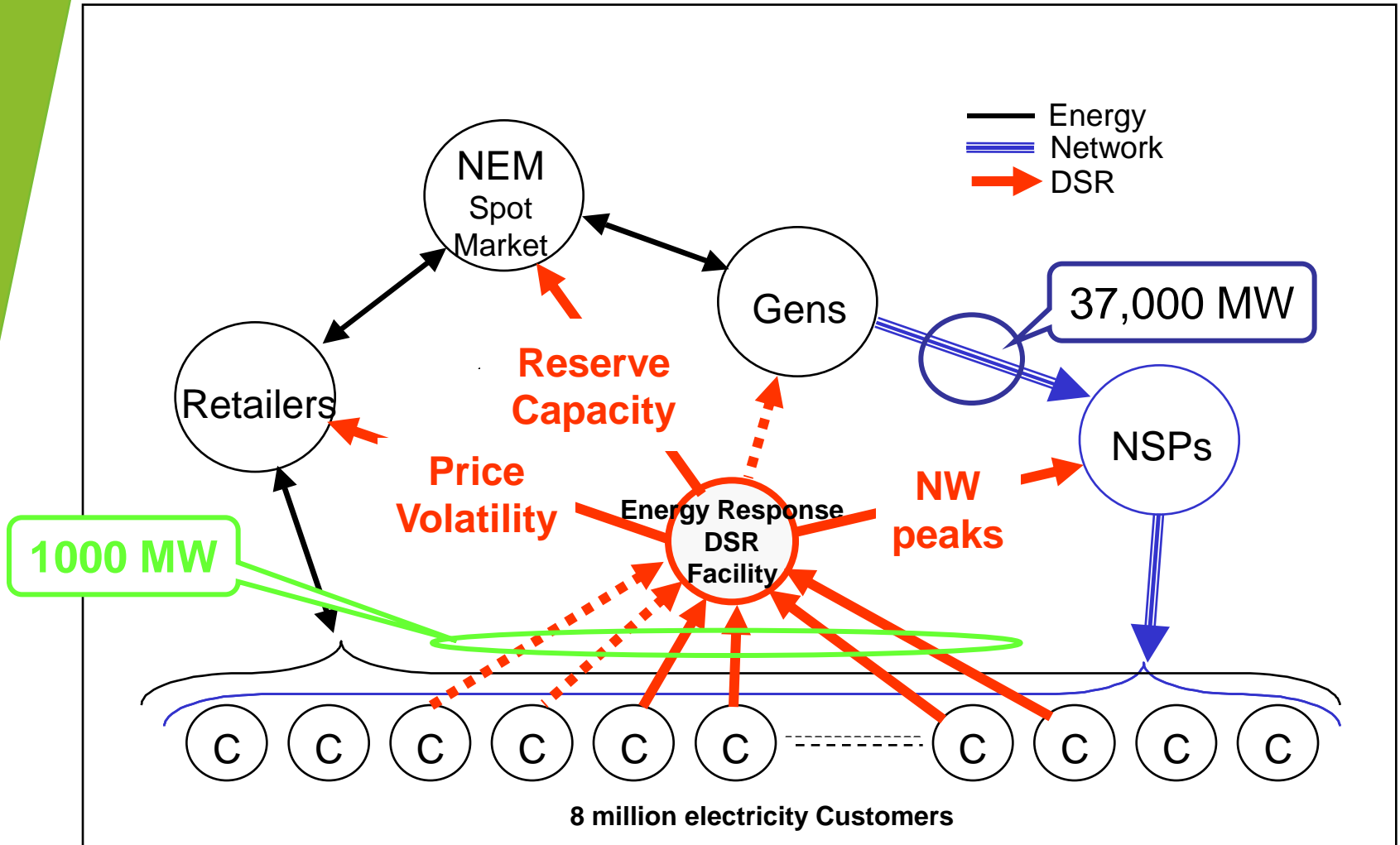
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  - “Peakiness” in electricity growing 50% above average
- ▶ Demand Side Response
  - Will offset rises significantly (about 10 to 20% of total bill for DSR providers plus another 5% overall)
  - Only item on the MCE, AEMC and AER agenda that will restrain price rises
  - Reduction in carbon emissions

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# NEM with Energy Response



## Acknowledgements:

1. ABARE “Energy in Australia 2010”
2. Business Spectator, Keith Orchison, May 2010
3. NEM and WEM market data
4. Port Jackson Partners
5. Energy Response market research

# Questions?

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