

Australian National Electricity Market Energy Security

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NEMMCO

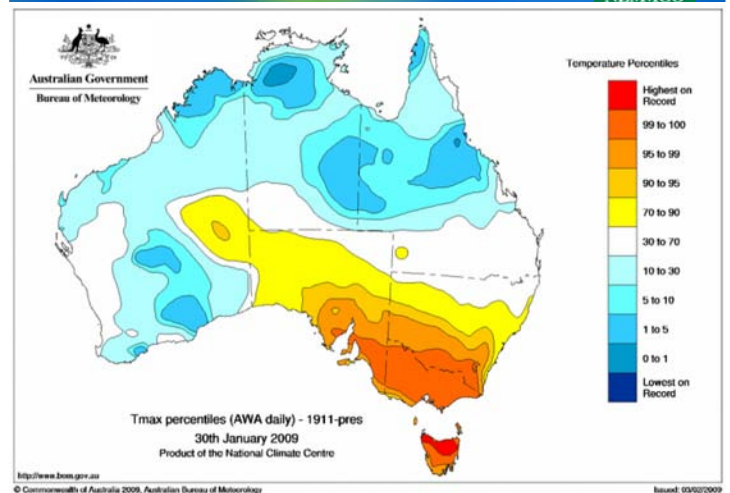
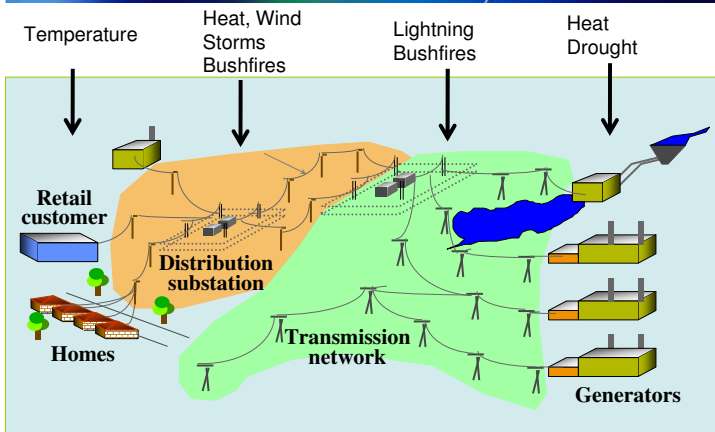
- National Electricity Market Overview
- Energy Security Challenges
- Response to Challenges



NEMMCO's functions:

- Management of the National Electricity Market (NEM) – covering Queensland, NSW and the ACT, Victoria, SA and Tasmania
- Responsibility for reliability and security of the power system

- Climate Change
- Changing Technology to Address CO₂
- Financial Crisis and Financial risks



Extreme Heat Incidents – Supply shortfalls

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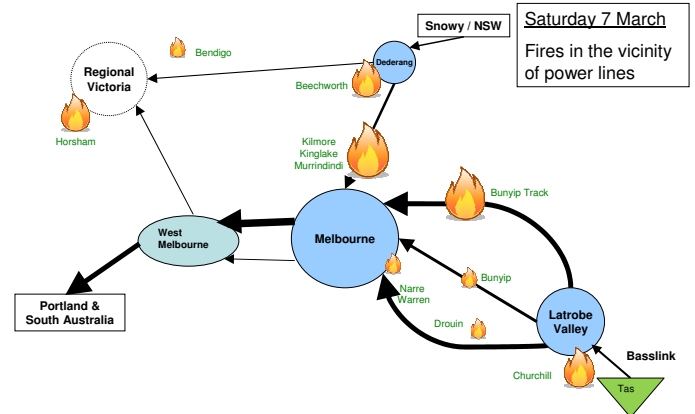
Thursday 29 and Friday 30 January 2009

- Demands reached record levels due to record temperatures
 - Victoria 10,446+MW (previous 9,818MW), SA 3,370+MW (Prev 3,151MW)
- Some Victorian generators reduced supply by 300-400 MW due to heat
- Basslink cable from Tasmania ran back from 500MW to 0 due to heat
- Insufficient supply to meet demand
- Load shedding of 400 - 500MW across Victoria and South Australia

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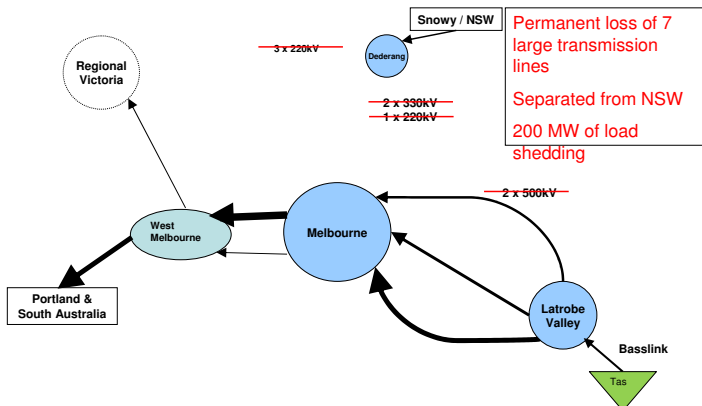
Bushfires - Sat 7 February 2009

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Sunday 8 February 2009

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Climate Change - Response

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Addressed by routine power system risk management

- System is designed and operated to cover for the loss of any item at any time
- System is vulnerable when multiple events occur especially at times of stress
- Routine assessment of energy adequacy out 2 years
- Regular power system emergency exercises
- Actively participate in AG's Trusted Information Sharing Network

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Climate Change - Response

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Further Developments

- Improved forecasting of demand and supply under extreme heat
- Increasing flexibility Market Operator to recruit "supply" under low reserve conditions
- Stronger approach to national transmission planning

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2. Challenge - Changing Technologies

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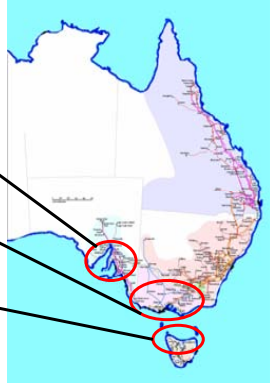
- Required to reduce CO₂ emissions
 - moving from Coal to low emission technology
- Need to ensure the transition does not impact reliability of supply
- Need to accommodate new technologies
 - greater amounts of Wind generation

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Increasing Wind generation

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- South Australia**
800MW operating
1,900MW planned
- Victoria**
100MW operating
2,000MW planned
- Tasmania**
140MW operating
320MW planned
- NSW, QLD**
30MW operating
2,450MW planned



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Response to Changing Technologies

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Policy level

- Moderate CO₂ reduction targets
- Compensate coal fired generators

Operational level

- Modeling of operational impacts out 2 years
- Improved wind generation forecasting

Market Design

- Market design changed to permit the semi-dispatch of wind generators
- AEMC review of NEM design in context of CPRS and ERET

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Australian Wind Energy Forecasting System (AWEFS)

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- Forecasting wind generation is a challenge
- Project financed by Australian Government
- Forecast timeframes from dispatch (5 minutes ahead) to medium term reserve assessment (2 years ahead)
- Collection and analysis of information to support research organisations



3.Challenge - Financial Risks

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➤ Financial Crisis

- Refinancing risks for key NEM participants
- Financing difficulties for required new investment
- Financial risks from the NEM design exacerbated by financial crisis

➤ Market design risks

- Energy only market requires volatile pricing
- Gross pool results in large settlement amounts
- Separate settlement of spot and financial contracts results in circular cash flows
- Length of settlement cycle (33 days) results in large credit support
- Very short timeframes to deliver cash or credit support
- Defaults will lead to rapid need to transfer customers (RoLR)

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Response to Financial risks

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- Regularly assess future supply adequacy out to 10 years (SOO)
- Regular desk top exercises of financial failures and RoLR
- Reviewing the retailer of last resort process
- Offset spot and financial transactions (reallocations)
- Provide flexible arrangements for Retailers

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Energy Security Challenges

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➤ Climate Change

- Mainly managed by routine processes

➤ Changing Technology to Address CO₂

- Addressed by policy, operational and NEM design

➤ Financial Crisis and Financial risks

- Regular monitoring and increased flexibility

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