Strategic Challenges facing the energy supply industry in Queensland

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Overview

- Upstream issues affecting the retail electricity market
  - Current Issues affecting supply of electricity
  - Current issues affecting demand for electricity
  - Supply side solutions
  - Demand side options

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Generation - Baseload

- Stanwell Corporation (1400MW)
- CS Energy (2350MW)
- Tarong Energy (1850MW)
- Intergen Partners (1270MW)
- Gladstone (1680MW)
- CS Energy Kogan Creek (750MW) (Oct 2007)

TOTAL 9300 MW (inc Kogan Creek)

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Generation – Intermediate & Peaking

- Intermediate Plant (260MW)
- Peaking (Approx 1900MW)
- Qld/NSW Interconnector (500MW)
- Directlink Interconnector (140MW)

TOTAL 2800MW

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Total Generation

Baseload **9300 MW (inc Kogan Crk)**

Interm/Peak **2800 MW**

TOTAL **12100 MW**

Less Generation affected

By Drought **1000 MW**

NET TOTAL **11100 MW**

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Issues Facing Generators

- Drought – generation affected
  - Tarong (700MW)
  - Tarong Nth (300MW)
- Carbon penalty
  - $25/tCO2-e
  - Bayswater NSW (SRMC) $16.84/MWh to $34.88/MWh
  - Delivered cost of electricity in NSW increases by 15%
  - ACIL Tasman estimates for NEMMCO
- Vertically integrated Generator/Retailers

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Issues Facing Networks

- Environmental constraints
- Urban congestion
- Demand Growth
  - population/economic growth
  - changing demand patterns – air con, appliances
- Changing customer expectations

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Issues Facing Retailers

- Demand Growth
  - population/economic growth
  - changing demand patterns – air con, appliances
- Demand Side Management
- Changing customer expectations
- Vertically integrated Retailer/Generators

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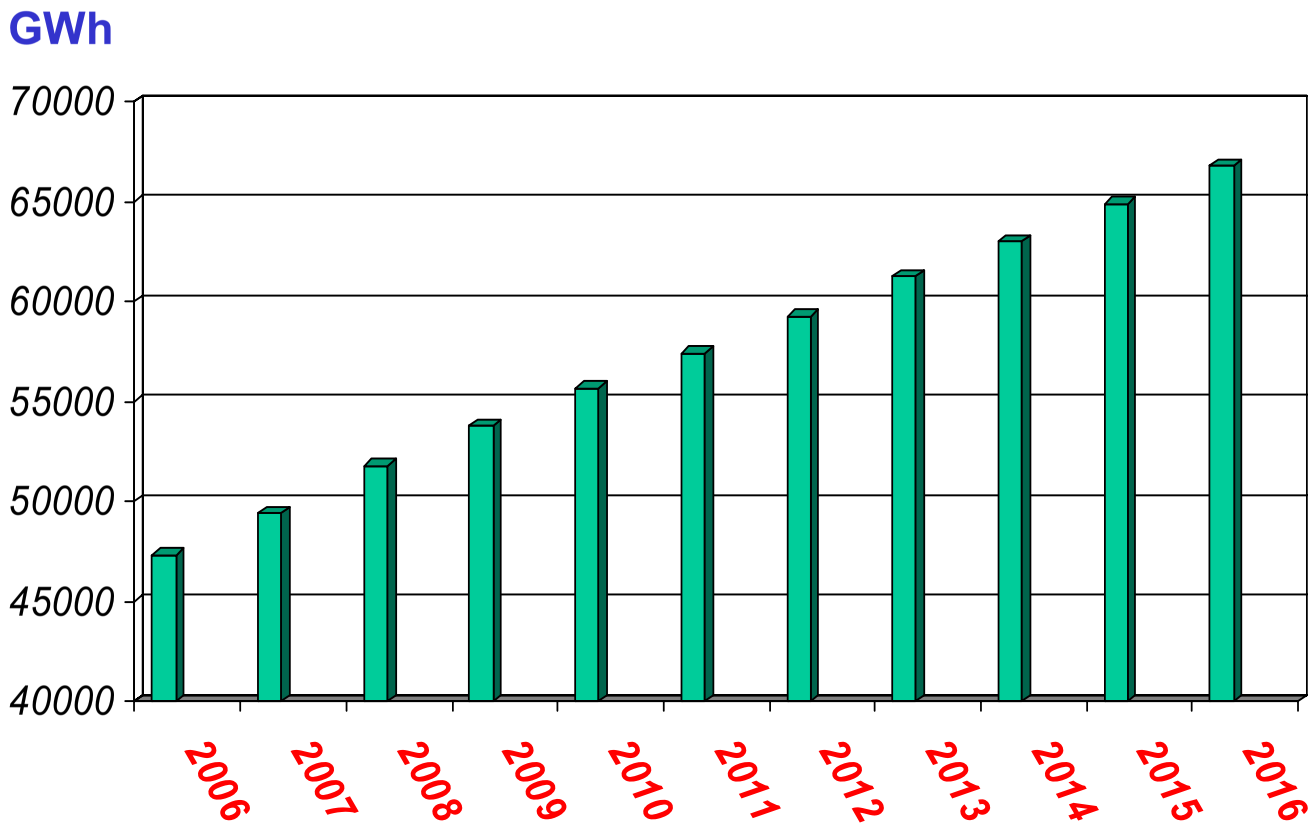
Queensland Energy Projections
(Medium Growth Projection)



Total Increase **41.2%**

Average Annual Compound Growth Rate **3.5%**

Source: NEMMCO Statement of Opportunities

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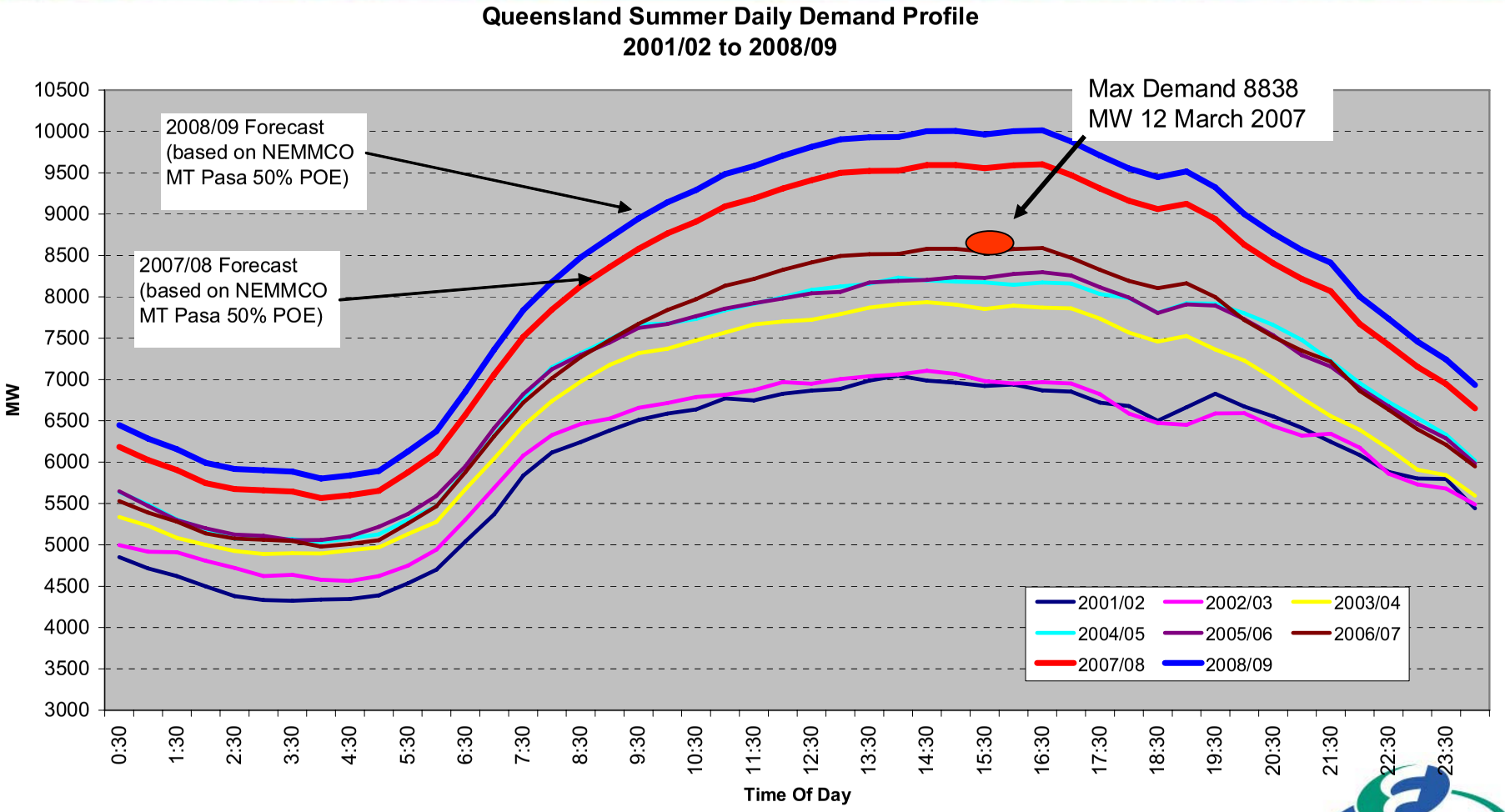
Impacts of Air Conditioning



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Generation response

- $1.5 million/MW to build a coal fired power station
- Kogan Creek 750 MW costing $1.2 billion
- Demand growing by 300 MW pa
- Braemar 450 MW peaking capacity
- New base load station needed every 3 years

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Network Response

Capital Investment next 5 years:

- Ergon Energy $3.6 billion
- Energex $3.4 billion
- Powerlink $2.5 billion

TOTAL $9.5 BILLION

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Customers

- Higher reliability and quality expectations
- Rural customers - fewer people but load increasing
- More energy intensive and energy sensitive appliances – **consuming more**
- Conscious of energy costs
- Conscious of environmental impacts

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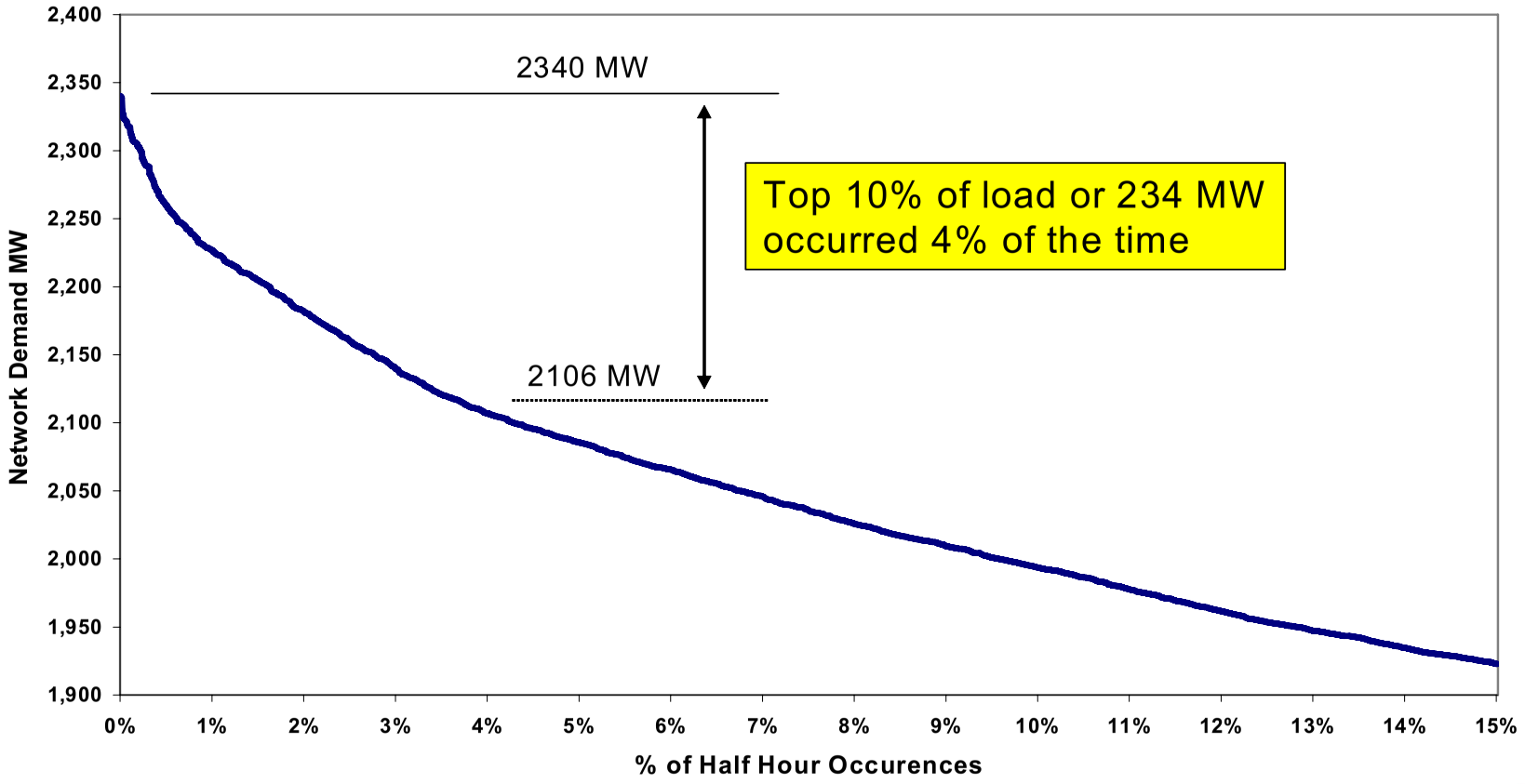
Customer-driven distribution demand (avg)



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Innovative Solutions - Generation

- Super-critical and Ultra Super-critical plant
- Clean coal
- Renewables
  - *Wind*
  - *Solar*
  - *Bio mass*
  - *Hydro*
  - *Geothermal*
- Nuclear?

NONE OF THESE IS CHEAP

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Innovative Solutions - Distribution

- Higher quality systems/relays/comms
- SCADA systems
- Embedded generation
- Network loss factor improvements
- Smart Meters

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Innovative Solutions - Retail

- Demand management
- Smart meters
- Energy efficiency
- Consumer education

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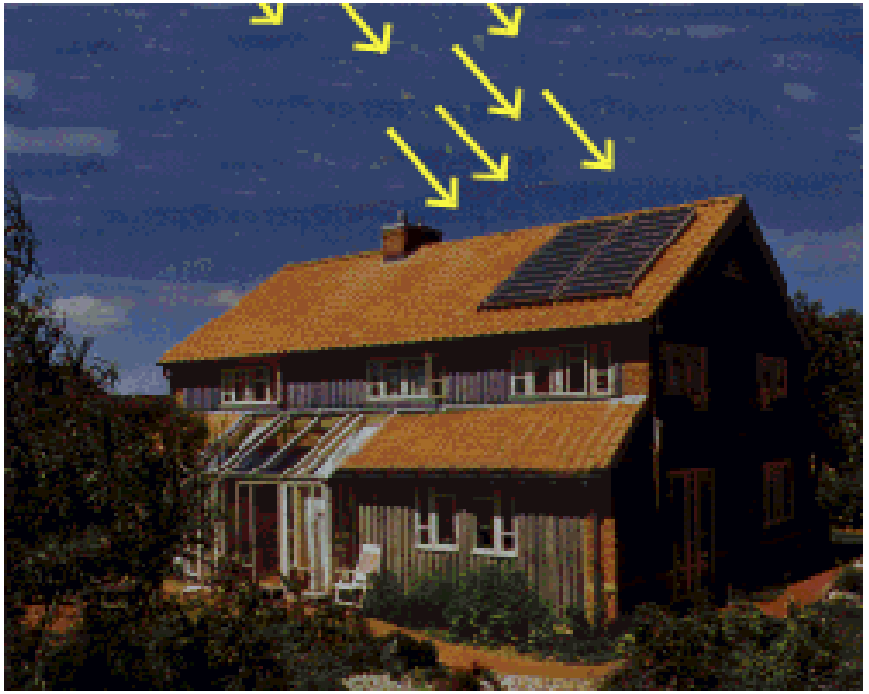
Innovative solutions

- Example—Solar Cities:
  - Change the shape of Magnetic Island demand
  - Reduce greenhouse gas emissions
  - Save customers money
  - Defer investment in the distribution network.



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Innovative solutions

- Example—Solar Cities:
  - renewable energy generation
  - energy efficiency
  - demand management
  - cost reflective pricing
  - two-way communication enabled smart metering.

Summary

- Energy will get more expensive
- Network charges will rise
- Customers consuming more
- Retailers will need to engage customers in sustainable solutions
- Generation/Distribution/Retail need to innovate

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