

# What is going wrong with Australia's National Electricity Market?

Dr Hugh Saddler

International Solar Energy Society  
(ISES) Webinar, 26 April 2017

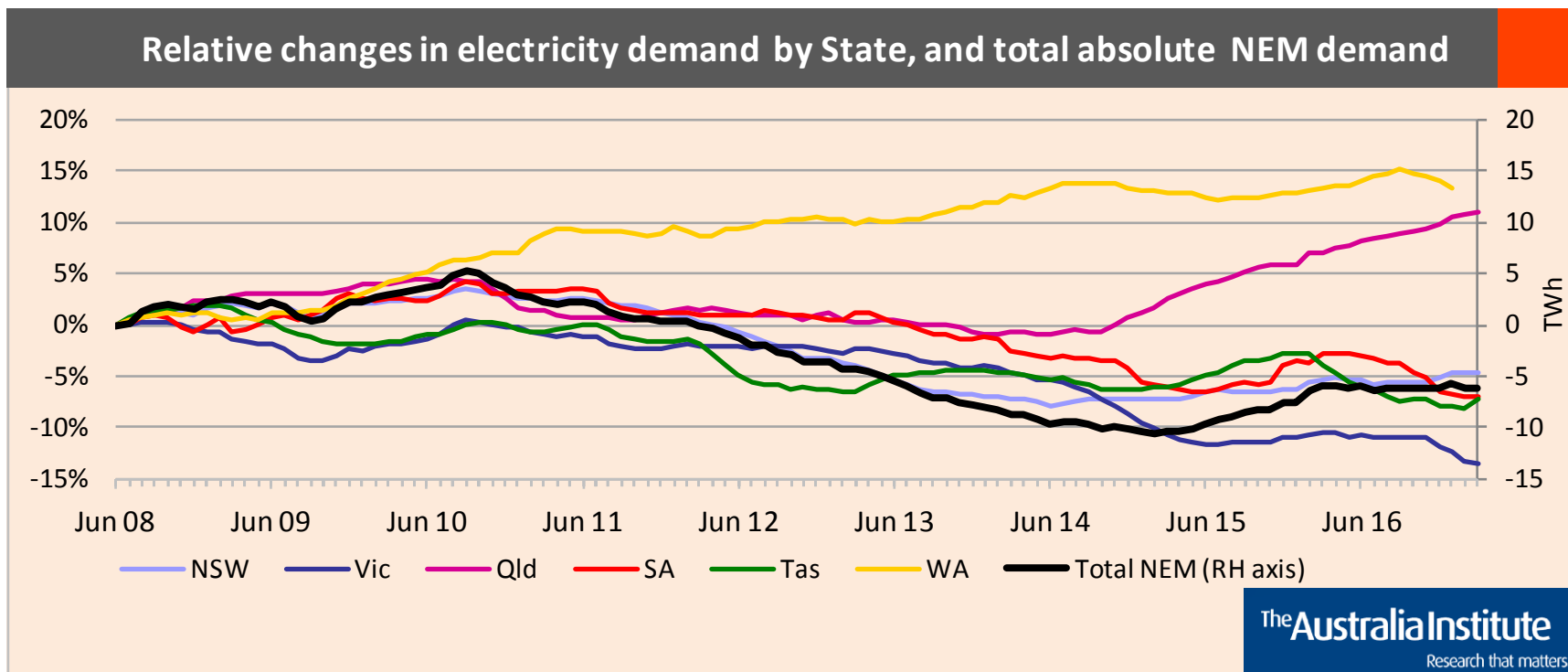
# The National Electricity Objective

to promote *efficient investment in*, and *efficient operation* and use of, electricity services for the long term interests of consumers of electricity with respect to – **price, quality, safety, reliability, and security** of supply of electricity; and the **reliability, safety and security** of the national electricity system.

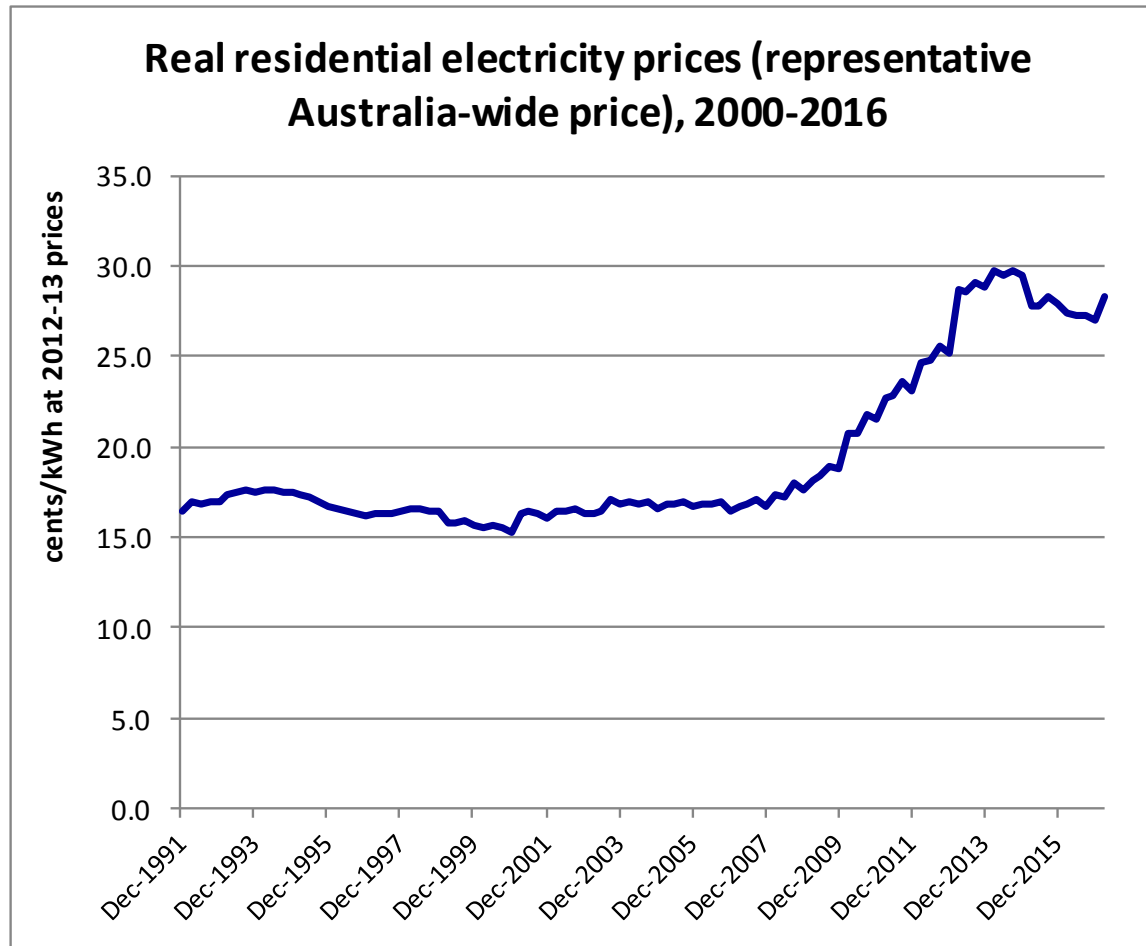
# Key features of the NEM, 2017

- Structured into five regions, with separate markets, with significant, with limited interconnection
- Total annual electrical energy consumption 186 TWh – excludes rooftop solar (5.4 TWh) and other embedded generation (data uncertain)
- Maximum coincident peak 2016 32.0 GW (sum of region peaks 36.1 GW)
- Supply mix:
  - Black coal 53.0%
  - Brown coal 22.3%
  - Gas (steam, CCGT, OCGT) 9.2%
  - Hydro 8.9%
  - Wind 6.6%

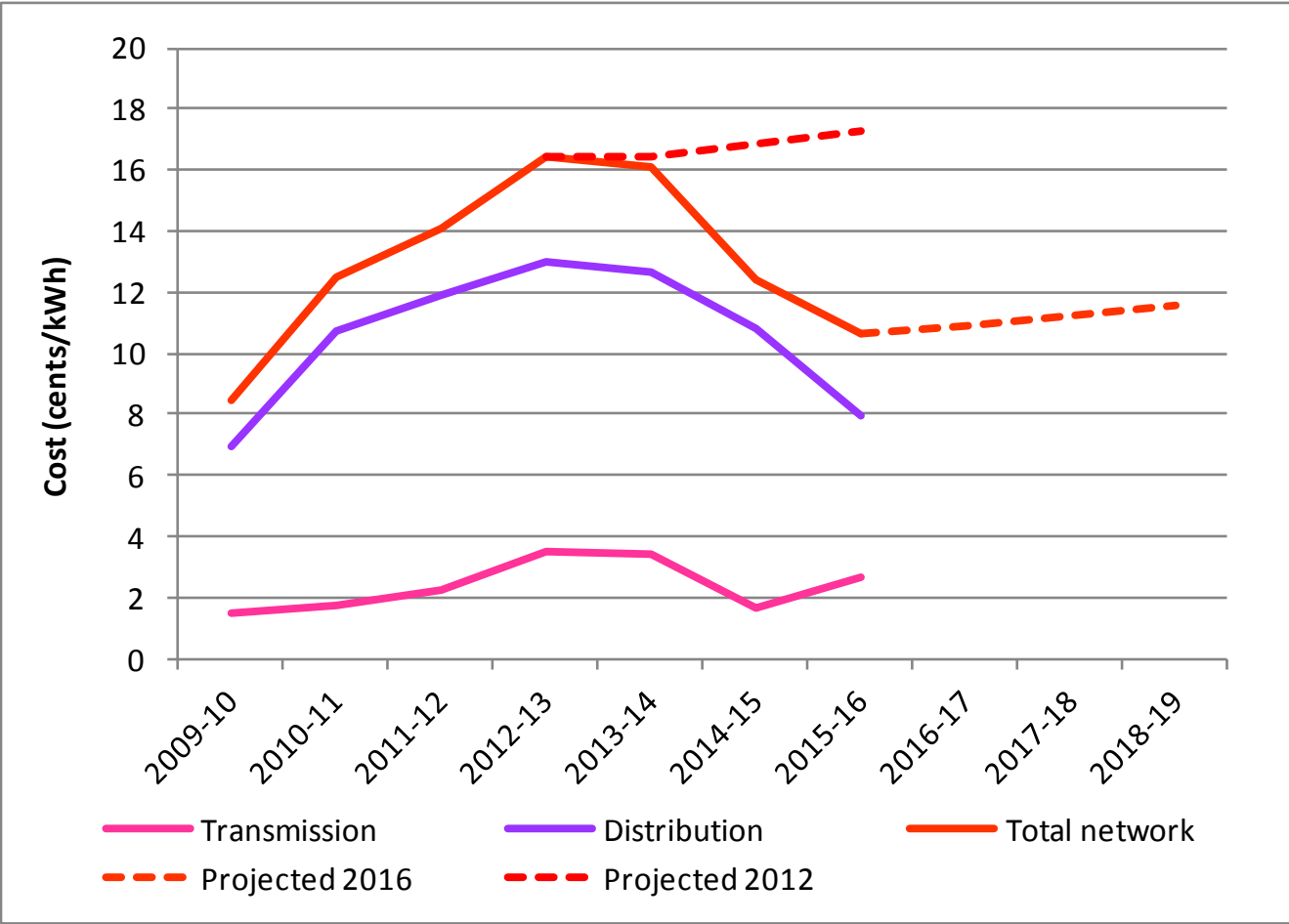
# Total demand for energy is neither increasing nor decreasing



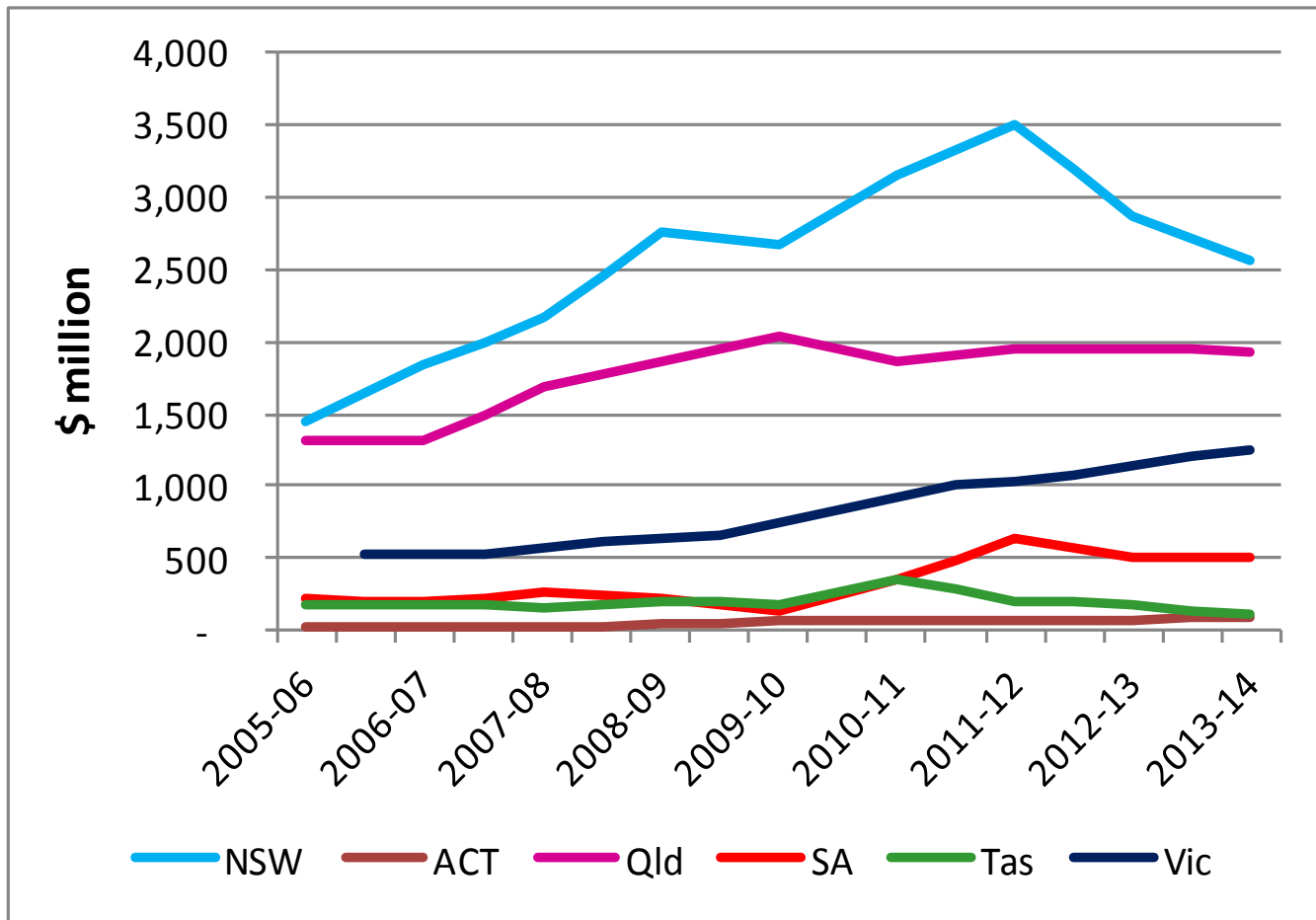
But retail prices have increased significantly



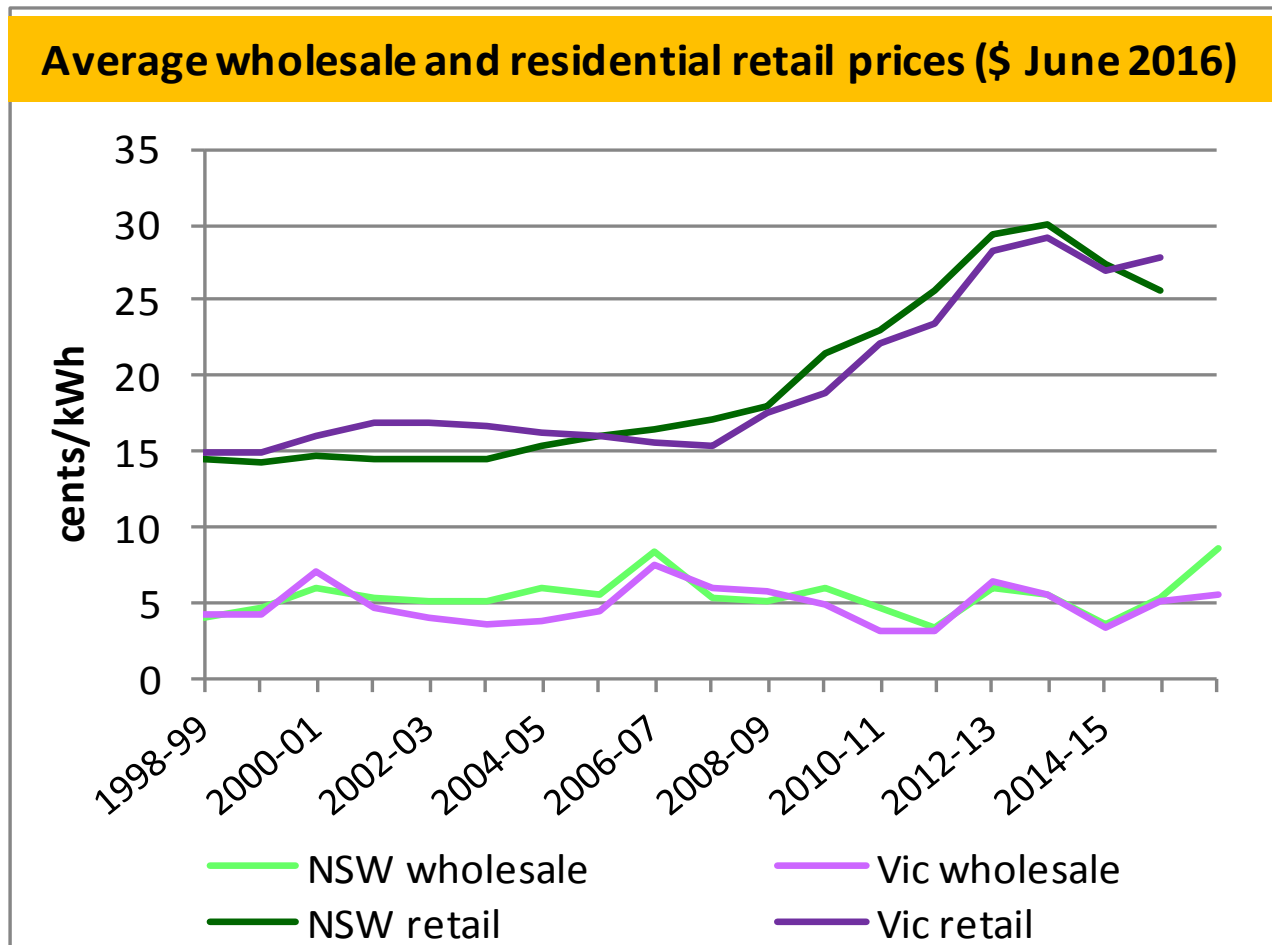
This was mainly caused by very large increases in network costs



# Net additions to regulatory asset base of regulated transmission and distribution businesses (nominal \$)



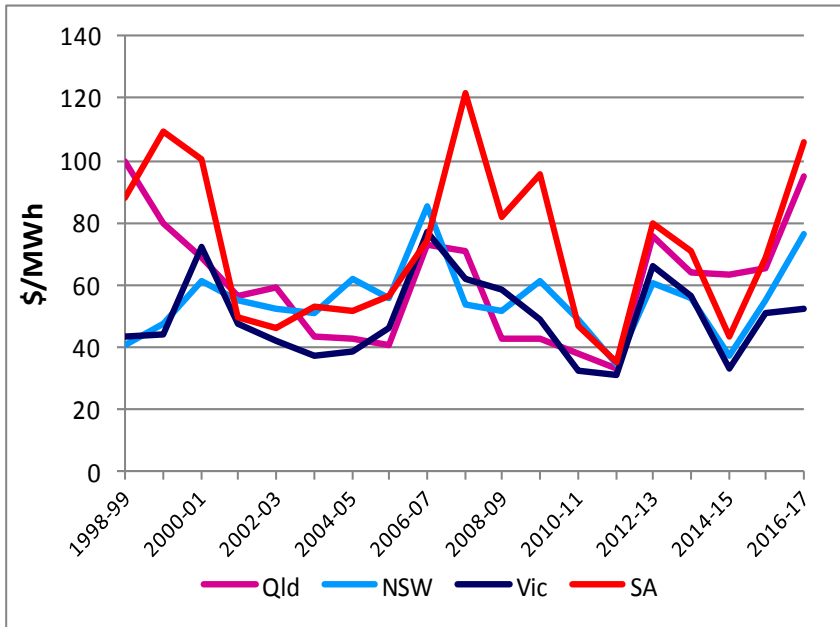
But in the last year wholesale prices have increased significantly



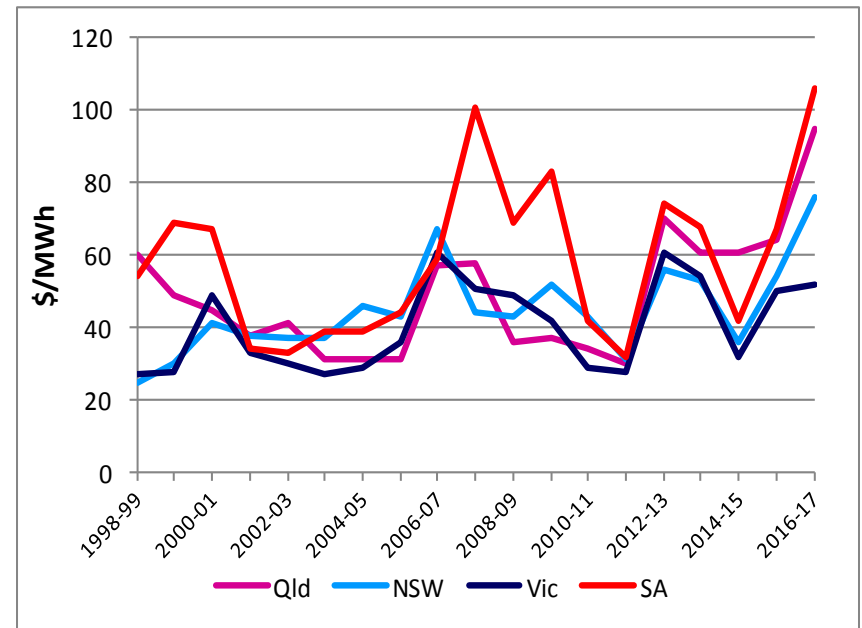


# Volume weighted annual average NEM spot prices, from Australian Energy Regulator

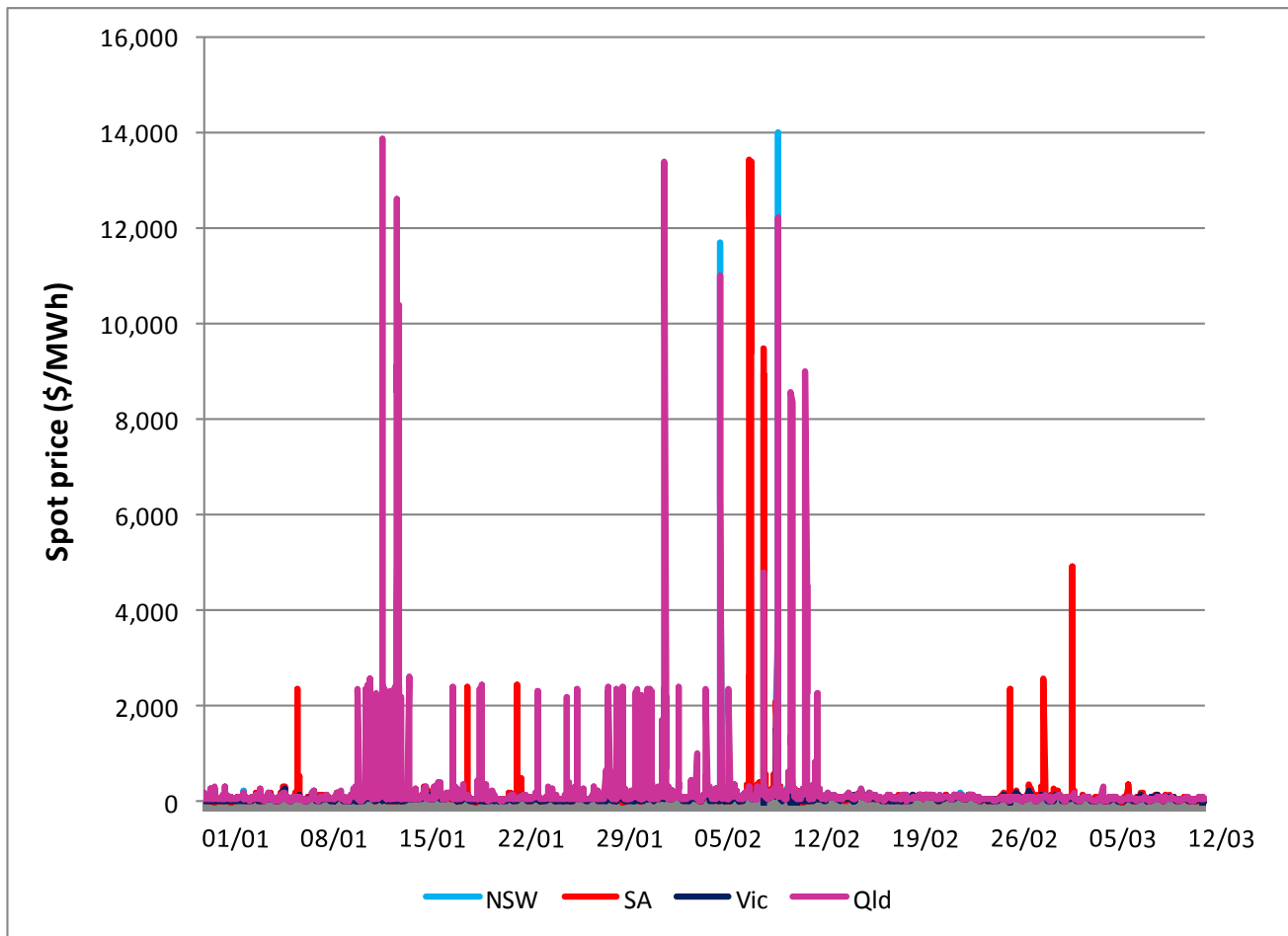
## Real 2016 \$



## Nominal \$

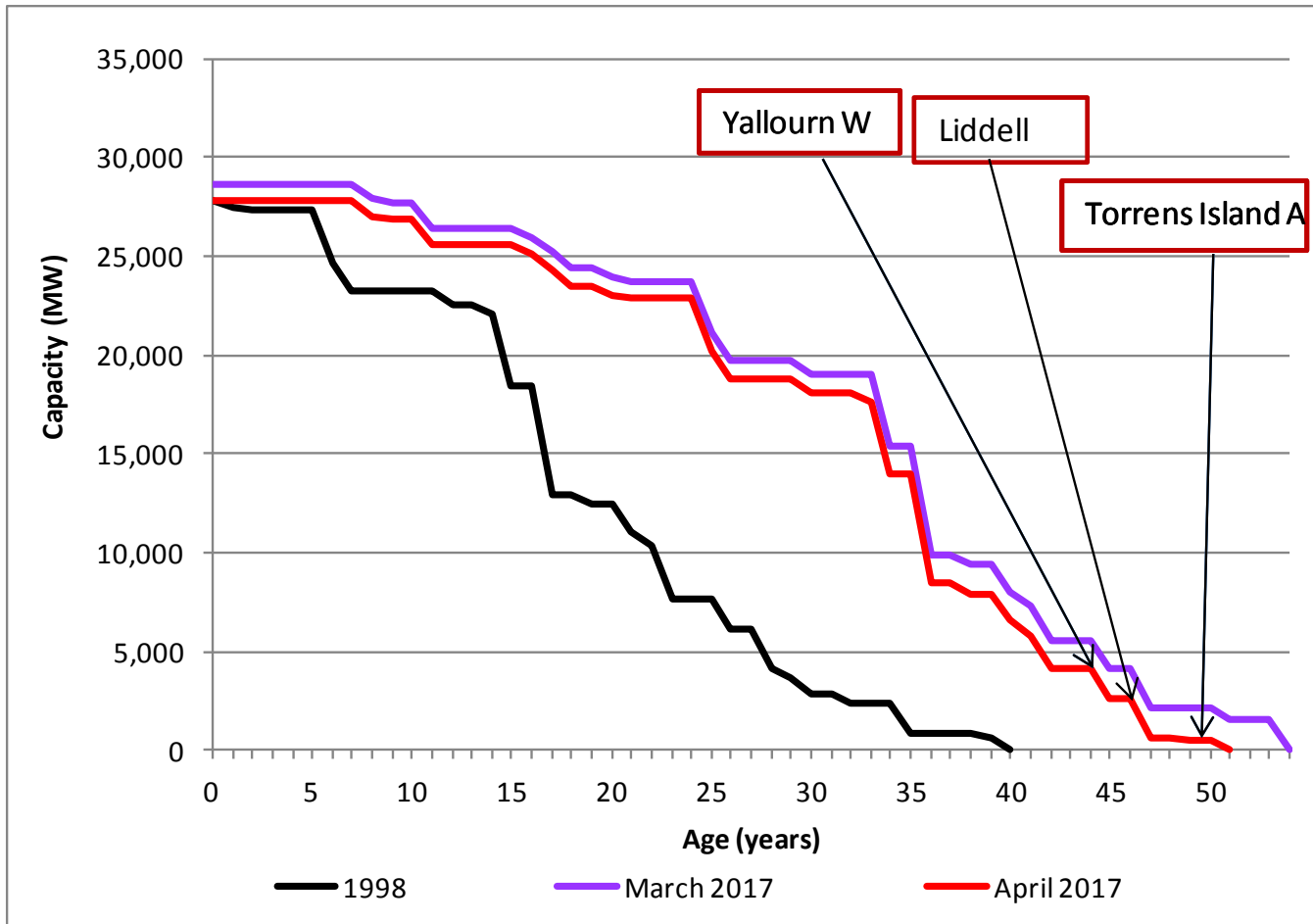


# Wholesale markets are becoming uncompetitive: daily maximum NEM spot prices, Jan. and Feb. 2017



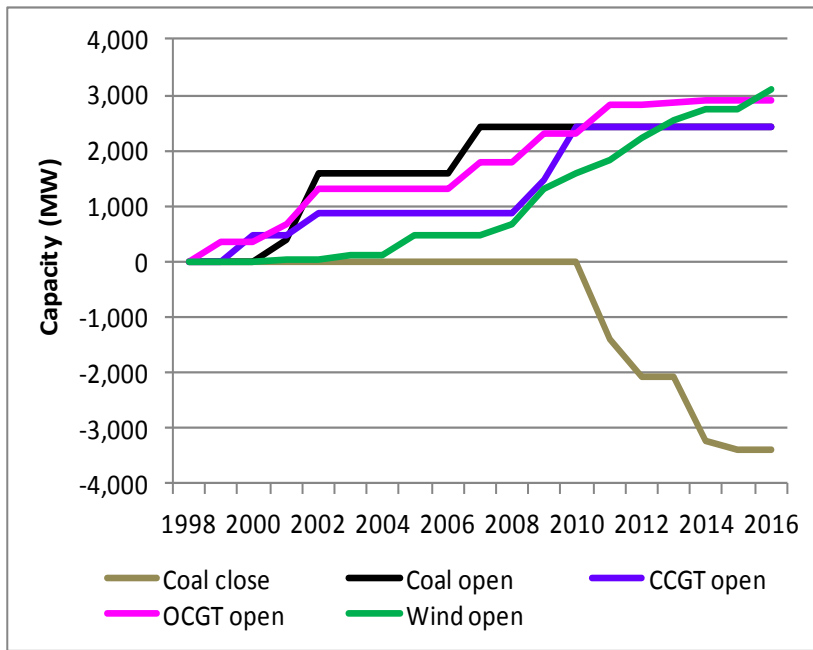
The inherited stock of power stations is becoming old, expensive and unreliable:

## Capacity of coal and CCGT power stations by age

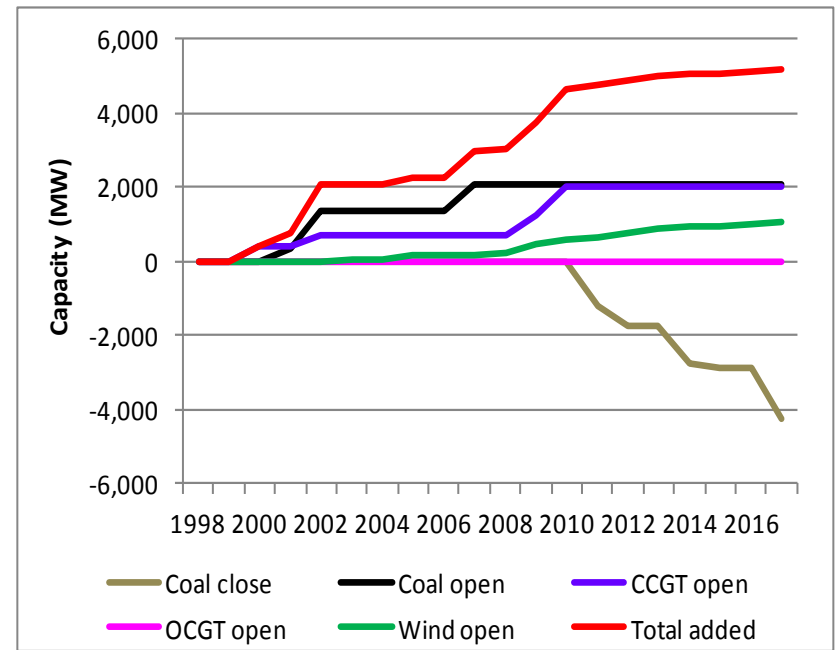


# No new power stations have been built under the NEM mechanism, except in Queensland

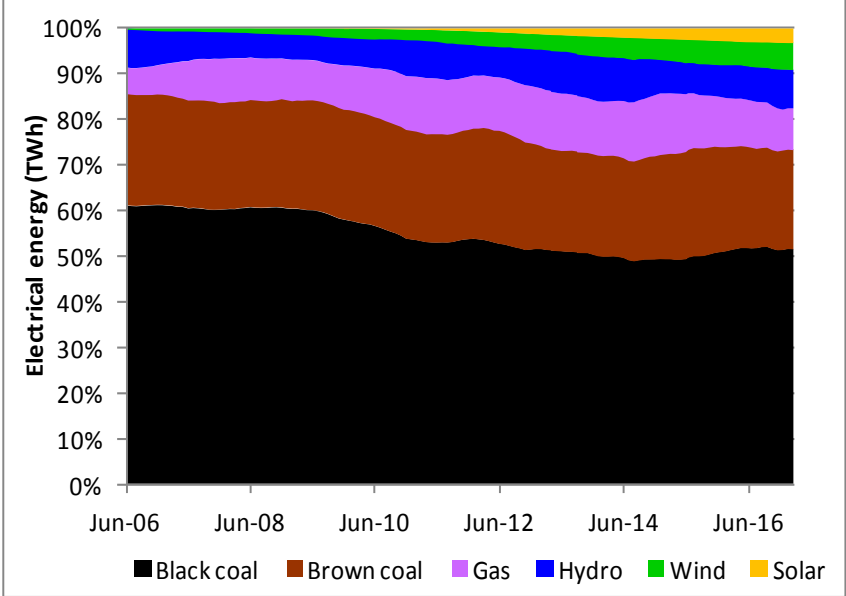
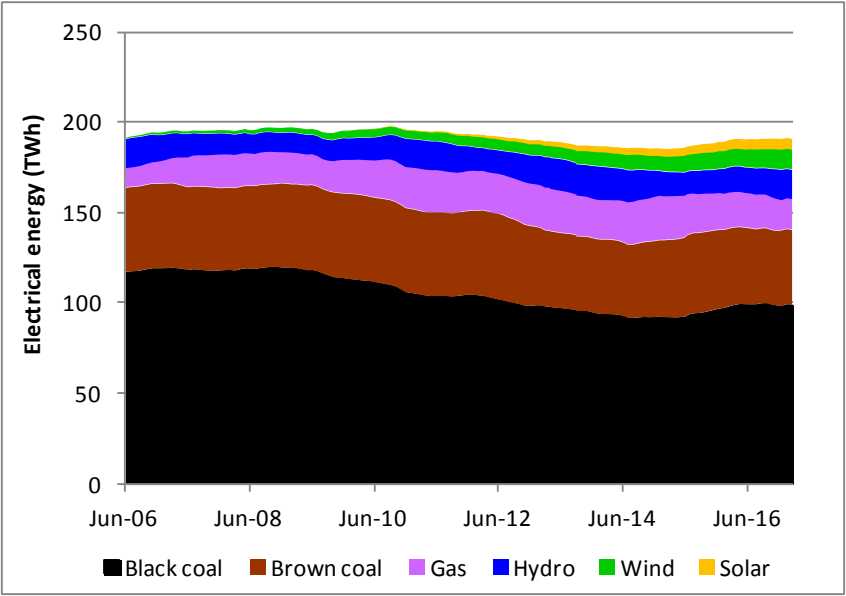
## Nameplate capacity



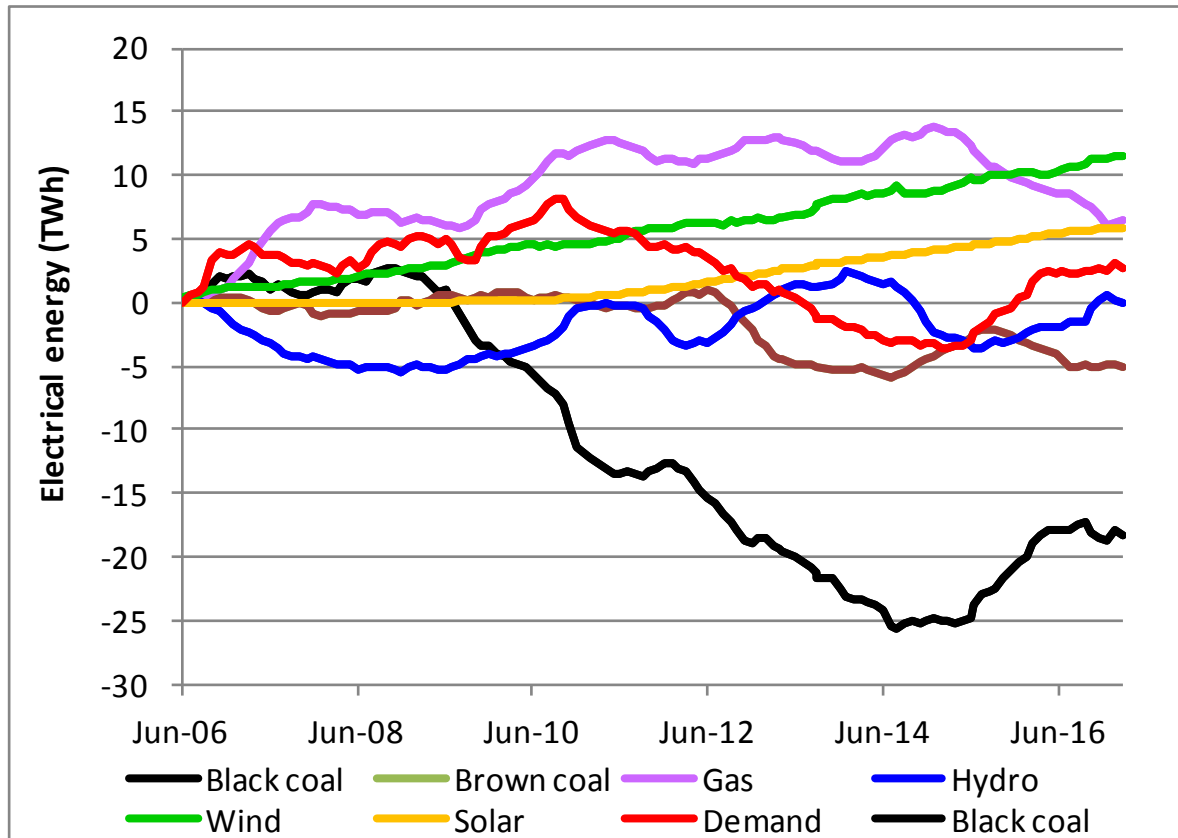
## Capacity adjusted by representative capacity factors



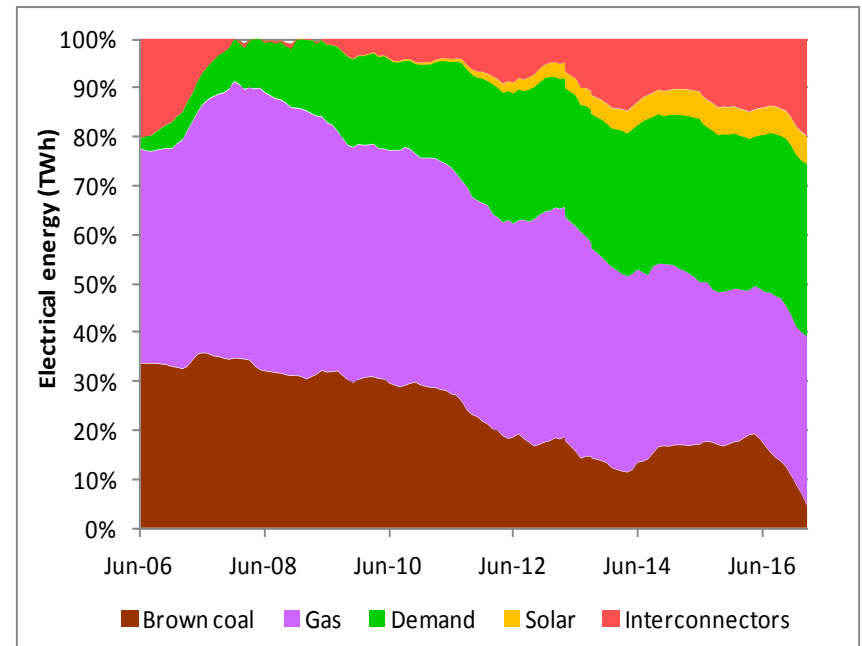
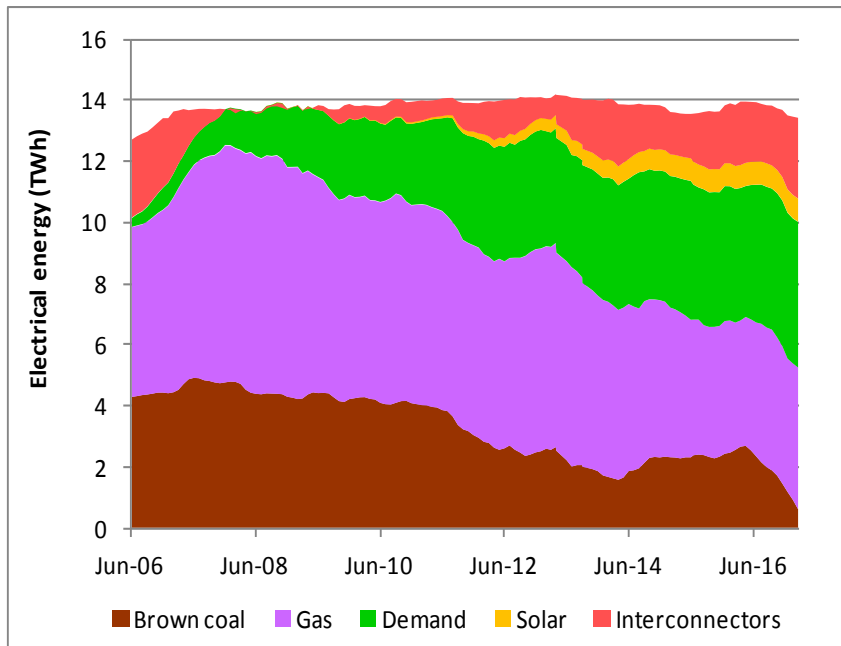
# Electricity supplied in the NEM by fuel source



# Changes in electricity supply and demand in the NEM



# Electricity supplied in the South Australia by source



# Changes in electricity supply and demand in South Australia

