What is going wrong with Australia’s National Electricity Market?

Dr Hugh Saddler

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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

![Graph showing average wholesale and residential retail prices (June 2016). The graph includes data for NSW wholesale, Victoria wholesale, NSW retail, and Victoria retail. The prices are measured in cents/kWh, and the time period covers from 1998-99 to 2014-15.]
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