An industry perspective on best practice: Delta Electricity

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‘Energy crisis’ sees the NSW Electricity Commission formed in 1950 to provide an integrated reliable electricity supply network

- Five coal-fired power stations in Sydney
- Small chimney stacks
- Limited pollution controls & regulation
Demand drives planning for next generation of NSW generators:

- Large modern coal-fired fleet
- Located outside Sydney basin
- Close to coal supplies
- NSW supply network also expands
- Last Sydney station closes 25 Dec 1983
Changes in Demand

- Last 50 years sees peak demand grow nearly 5 fold and with a seasonal shift
  - ~3,290 MW in May 1967
    - Peak in winter
  - ~14,180 MW in Feb 2017
    - Peak now in summer
    - (14,744 MW in Feb 2011)
The Present

Five NSW Generators

Capacity: 10,240 MW
- Bayswater: 2,640 MW
- Liddell: 2,000 MW
- Mt Piper: 1,400 MW
- Eraring: 2,880 MW
- Vales Point: 1,320 MW

Munmorah (600 MW) - closed 2012
Wallerawang (1,000 MW) - closed 2014

NSW Area: ~810,000 km²
Some perspective

Germany

- 98 coal-fired generators
- Capacity: 48,500 MW
- 6 new stations since 2012 capacity of ~5,200 MW
- black & brown coal
- sulfur content 1% – 2%
Air Emission Sources in GMR

- EPA 2008 emission inventory
- Power station PM2.5 contribution in GMR (Greater Metropolitan Region) ~ 8.5%
- Legislation has been successful in driving down emissions

Vales Point Power Station

Vales Point B-Station

- commissioned 1978
- 2 x 660 MW Units
- 178 metre stack
- ESP control (99% efficiency)
- CEMS for NO$_x$, SO$_2$ and PM
- renewable biomass co-firing
Fabric filter baghouse installed in 2007: cost $55 million
99.9% efficiency with 10 fold reduction in dust emissions
Environmental Management

- CEMS real-time data (stack & ambient)
- strong legislation - POEO Act & Regs
- strong Regulator
- environment licence
- Community forum (social licence)
Legislated Reporting Requirements:

- Monthly publishing of data on web site ✓
- Annual EPL report for EPA (plus LBL fees) ✓
- Annual report for National Pollutant Inventory ✓
- Annual report for NGER ✓
- Vales Point coal has very low sulfur content
- Limits on sulfur (0.5%) and SO₂ emissions (600ppm)
- Daily coal sampling and CEMS monitoring
Central Coast Air Quality

- Wyee ambient air monitoring station ($\text{NO}_x$, $\text{SO}_2$ and $\text{PM}_{2.5}$)
- Data provided to EPA and community
- Central Coast air quality consistently very good
- Power station impacts negligible

Source: NSW EPA 2016 Air Quality Statement
Continual improvement through innovation

- NO$_x$ pollution reduction study
- NPI & stack emissions review
- Biochar co-firing research
- Vales Point Ash Dam solar farm
- Carbon capture pilot plant
- Build on 2002 IRTAPS work

CSIRO Carbon Capture Pilot Plant
Clean Air Summit

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