# Energy and Regulatory Overview of New Zealand

Asia-Pacific Energy Regulators Forum

Washington, DC

1 & 2 August 2012

# Overview of the Authority

# Electricity Authority mandate

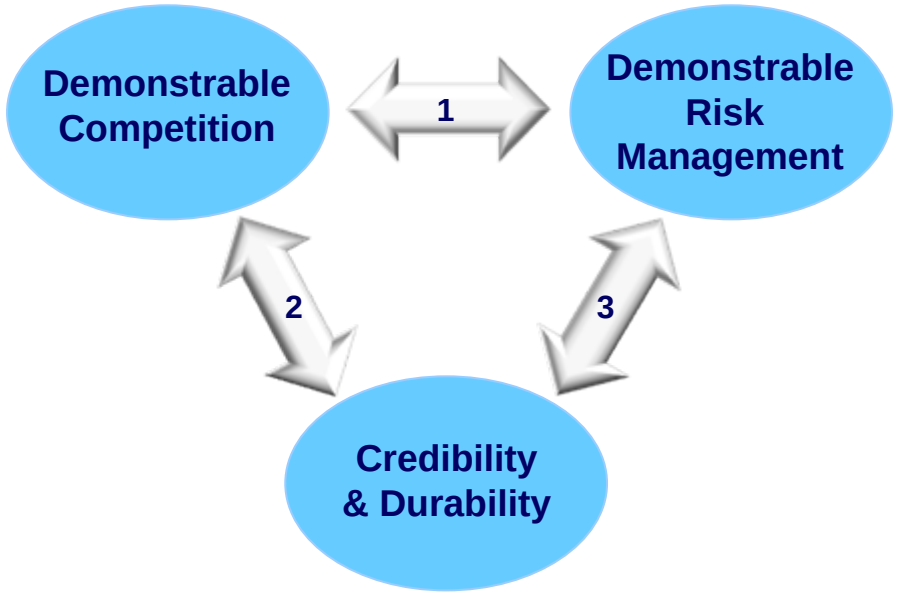
- The Authority was established on 1 November 2010, following a ministerial review into the performance of the electricity market
  - The Authority inherited many of the functions and staff of the previous regulator (the Electricity Commission)
- Unlike the Electricity Commission, the Authority is independent of the Government
  - Board members are appointed for 5-year terms by the Governor General, on the recommendation of the Minister, and cannot easily be dismissed
  - The Authority is only required to *have regard* to government policy statements; there is no requirement to *give effect* to them
- There is considerable stakeholder involvement in the Authority's work, via Advisory Groups

# EA functions and objectives

- Core functions of the Authority
  - Develop the Code (the market rules)
  - Enforce the Code
  - Contract for market operation services
  - Monitor market performance

- s15 of the Electricity Industry Act states the objective of the Authority is to
  - Promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers

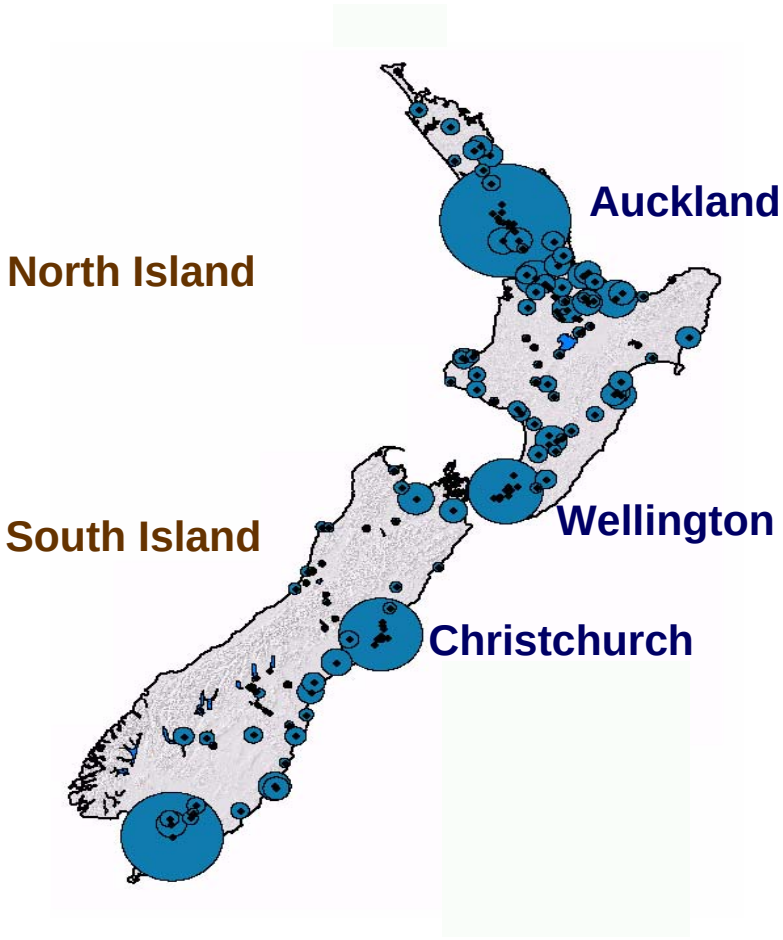
# Strategic framework



# Overall regulatory setting

| | Electricity Authority | Other agencies |
|---|---|---|
| **Competition** | Market monitoring<br>Pro-competition market rules | *ComCom*: prosecutes anti-competitive conduct through the courts and regulates natural monopoly segments through price control and information disclosure |
| **Reliable supply** | Market monitoring<br>Grid reliability standards<br>System operator objectives<br>Generation adequacy benchmarks<br>MDC and VC protocols | *ComCom*: approves grid investments and regulatory asset base for all lines companies<br>System operator: outage planning, scheduling, dispatch, monitors gen. adequacy, implements emergency management plan |
| **Efficient operation** | Market monitoring<br>Transmission pricing methodology<br>Distribution pricing principles<br>Distributor UoSAs | *ComCom*: approves grid owner's total allowable revenue, price/quality control regime applies to non-consumer owned distributors |
| **Social policy** | N.A. | *EGCC*: resolves consumer disputes about retailers<br>*MBIE (Energy team)*: low-fixed charge regulations<br>*Ministry of Social Policy*: generic income support, assist medically-dependent and vulnerable consumers |
| **Environmental** | N.A. | *EPA*: emissions trading scheme, carbon-related policies<br>*EECA*: programmes encouraging efficient use of electricity<br>*Councils*: resource consents |

# Overview of NZ electricity system

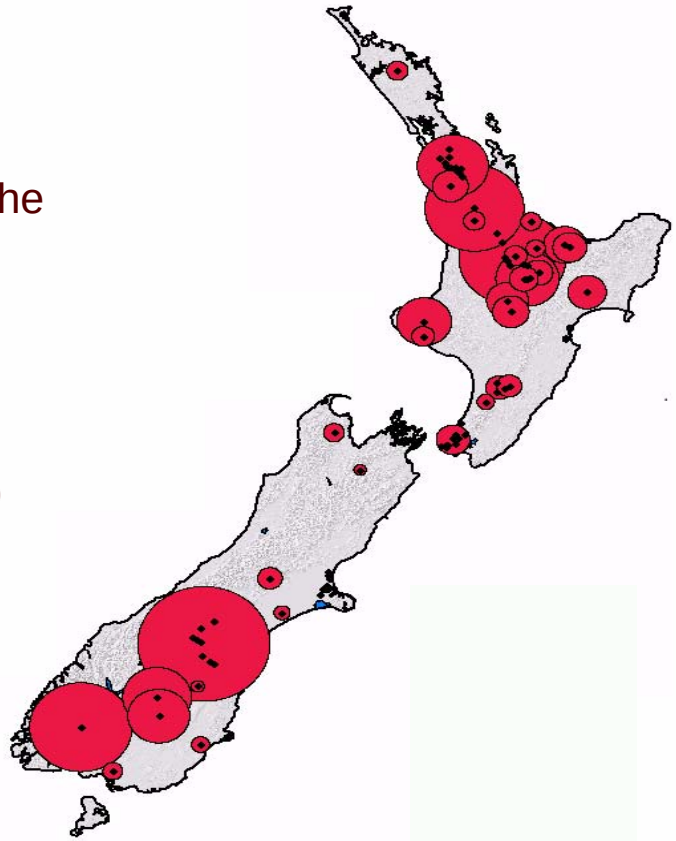



# Demand

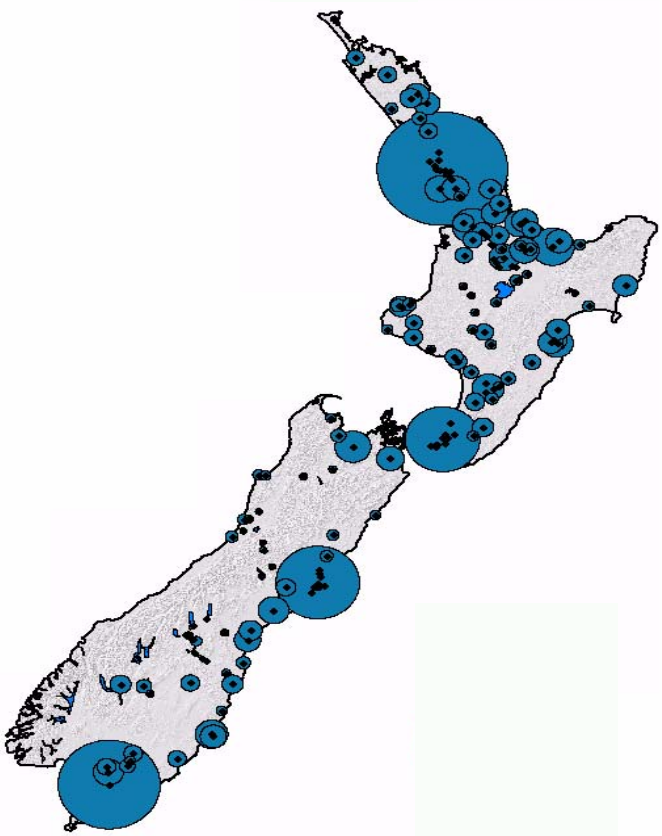
- 40,000GWh per year
- 2% growth rate since the 1970s
- Peak demand has reached 7,400MW (during winter)
- Minimum demand is about 2,600MW (during summer)
- 1.7 million residential customers, accounting for 34% of demand
- 250,000 commercial and industrial customers
- Rio Tinto aluminium smelter accounts for 15% of NZ demand

# Generation

- 9,000MW generation capacity
- 200 power stations, with 50 connected to the grid
- Average generation over 2008-2010
  - 56% hydro
  - 28% coal and gas (and 0.1% diesel)
  - 10% geothermal
  - 3.3% cogeneration
  - 2.9% wind
- Hydro generation is heavily reliant on regular rainfall in South Island catchments
  - Full hydro lakes = only 6 weeks electricity consumption



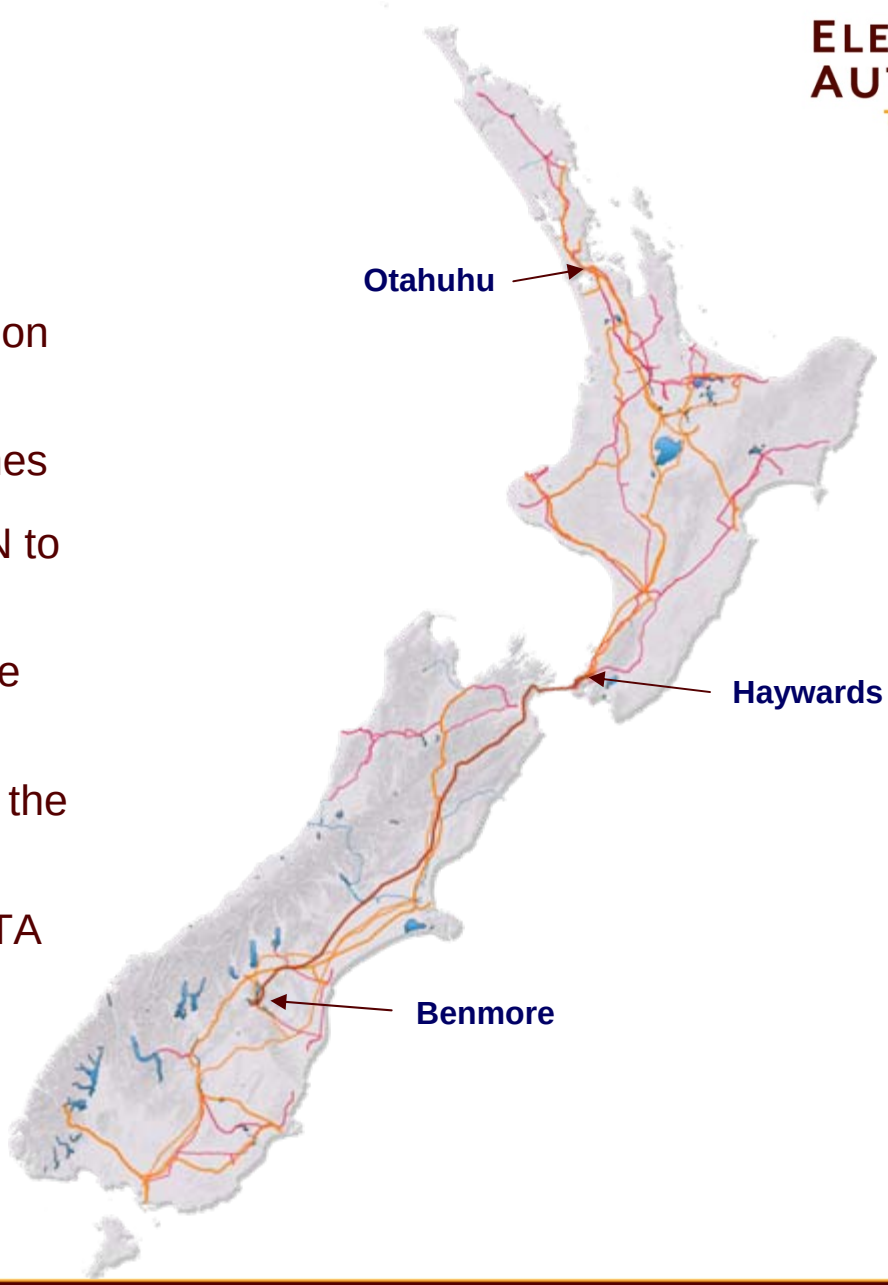
## Demand



## Generation

# Transmission

- 12,000km of transmission lines
- Mostly 220kV HVAC lines
- 350kV HVDC from BEN to HAY
- 64% of demand is in the North Island
- 60% of generation is in the South Island
- Losses from BEN to OTA approx. 5%

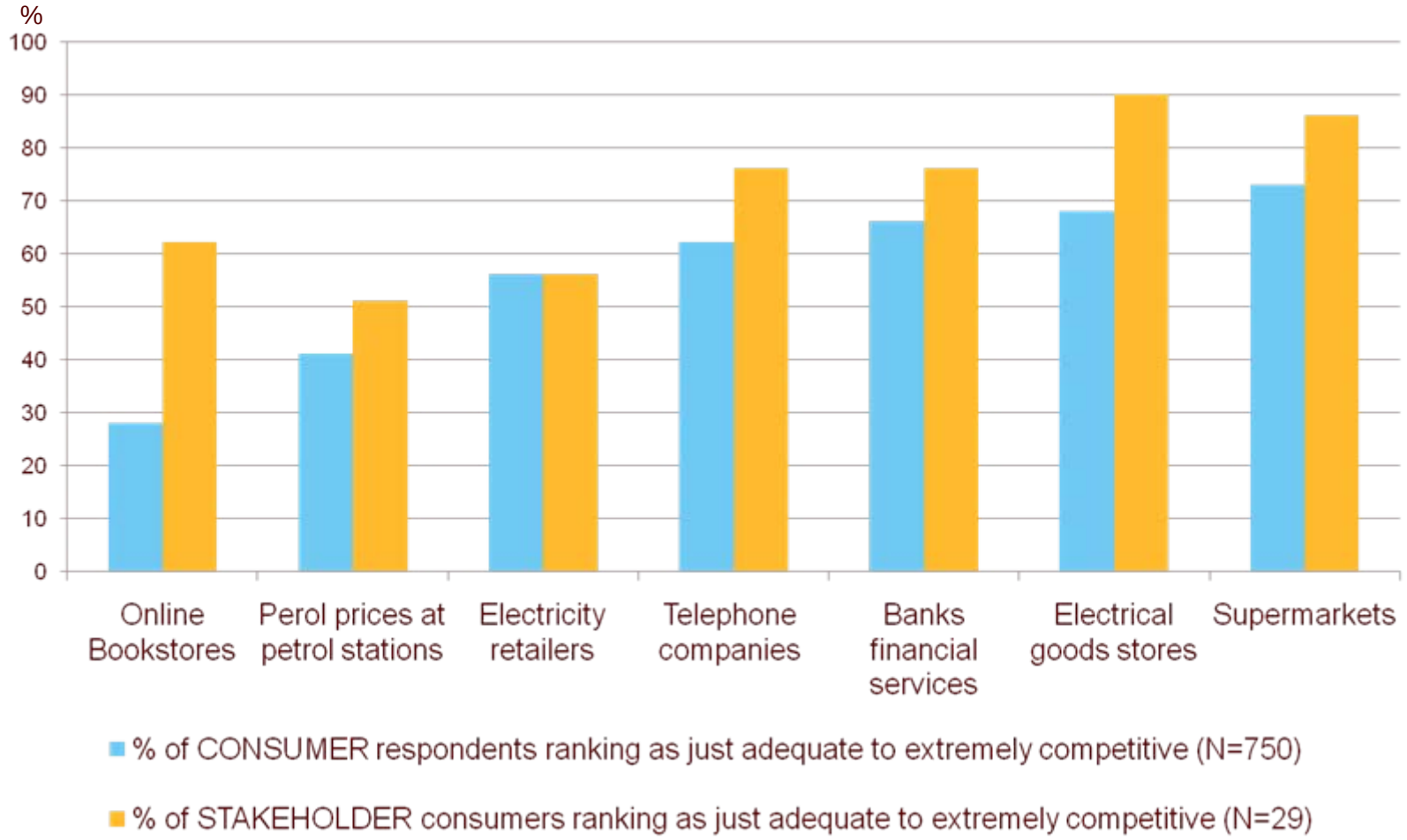


# Overview of electricity market arrangements

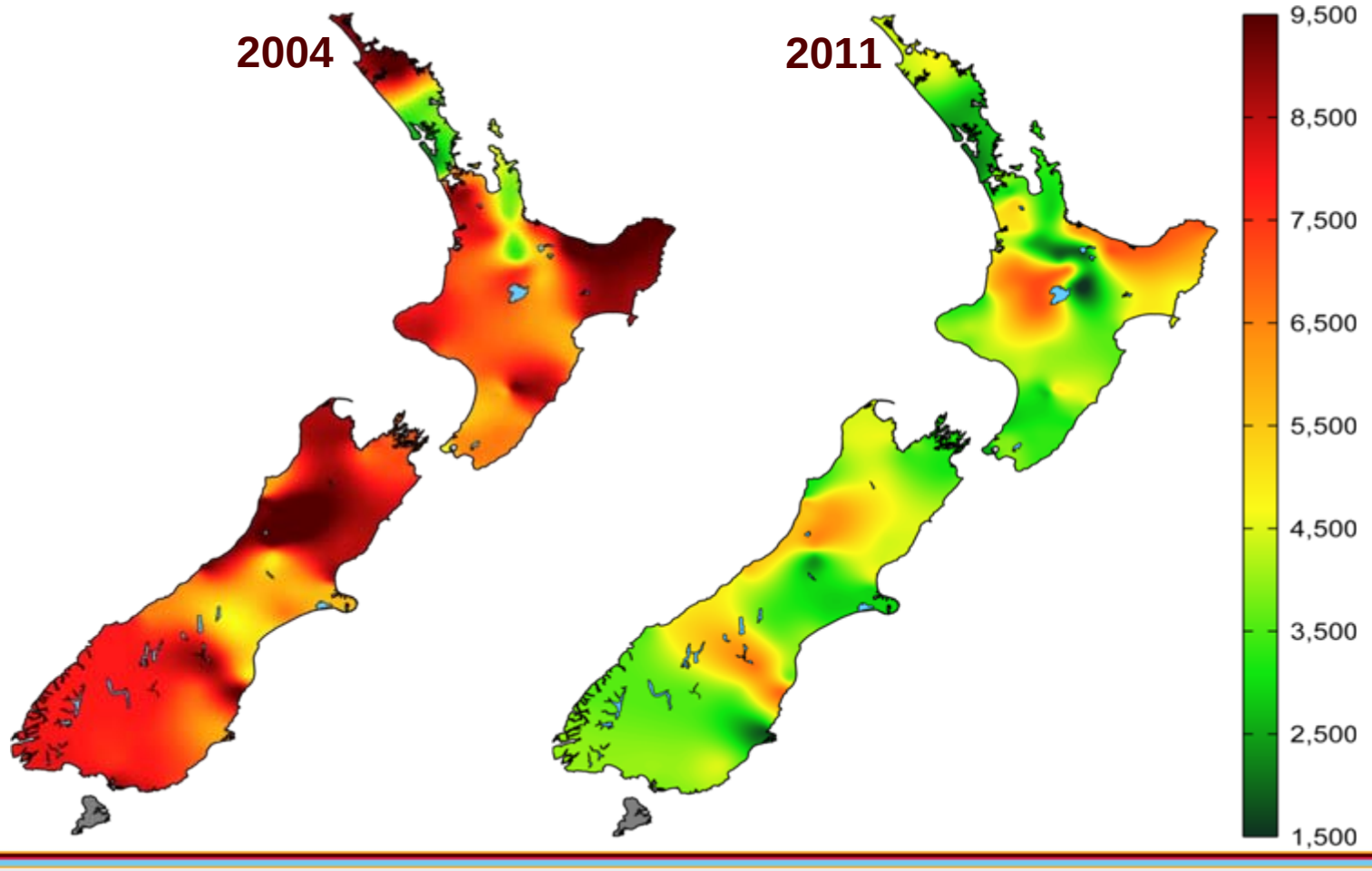
# Overview of retail electricity market

- The NZ retail electricity market
  - 18 retailers but six of them are different brands
  - The largest retailers are owned by the large generators
  - There are no price controls over retail tariffs
  - Two new retailers have entered the market in the last 12 months, and another party is considering doing so
- The Authority has run a very successful media campaign to encourage consumers to compare the benefits of switching electricity retailers
  - More than a third of residential electricity consumers have participated
  - Retailers have responded with pricing discounting and innovation
  - Customer switching has increased greatly (but that's not our aim)

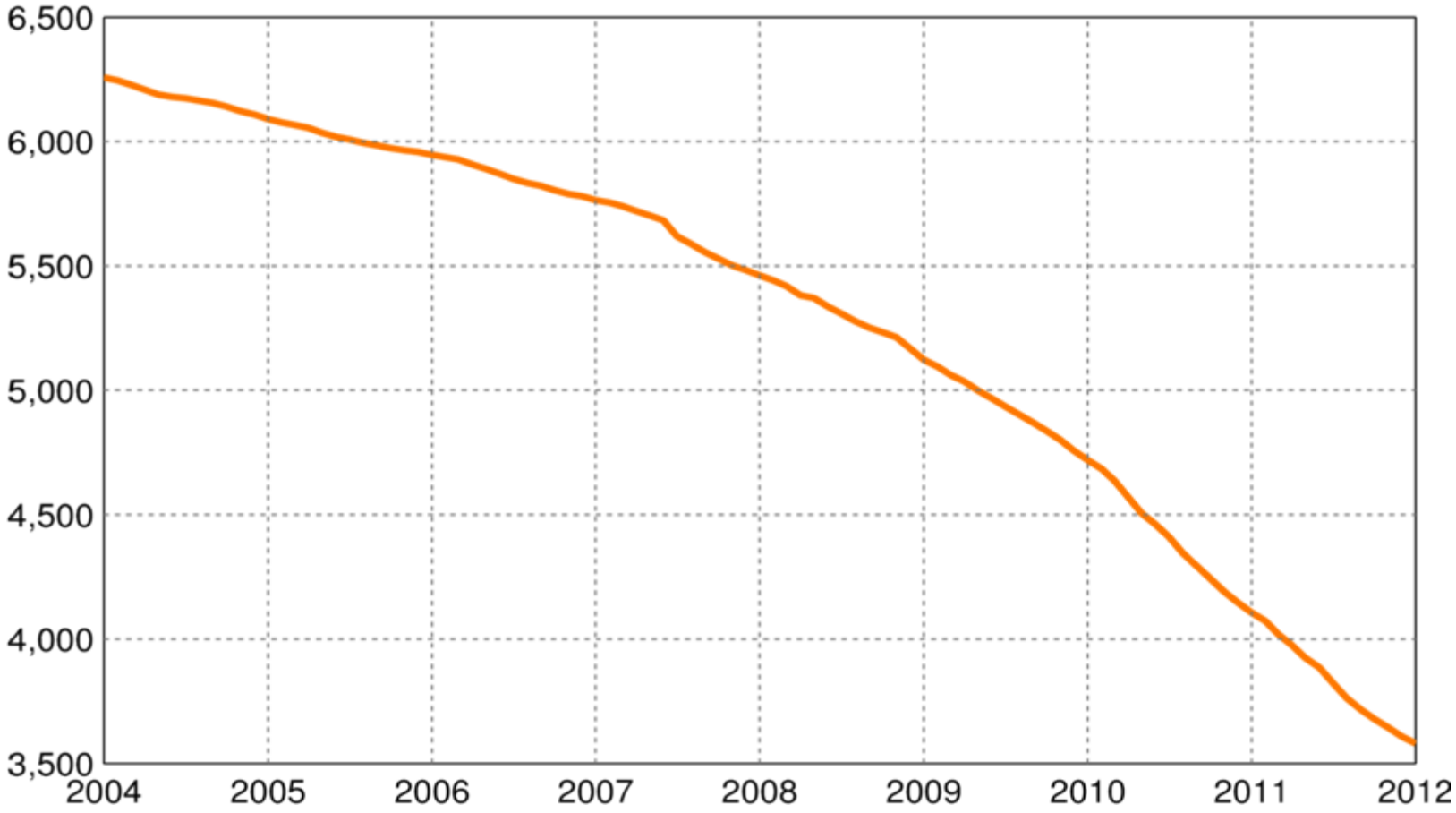
# Survey on comparative competition



# Big reductions in retailer concentration



# Weighted-average of regional scores



# Overview of metering developments

- The NZ metering market
  - Legacy (non smart) meters being rapidly displaced by smart meters
  - We now have 750,000 smart meters out of a total of 2 million meters
  - Retailers (not lines companies) are leading the way in deploying smart meters in a competitive metering market
  - Retailers contract with metering equipment providers (MEP) who own the meter and back office systems
  - Significant debate occurring about smart grids and who should deploy smart meters whilst retailer roll-out occurs

# Overview of spot electricity market

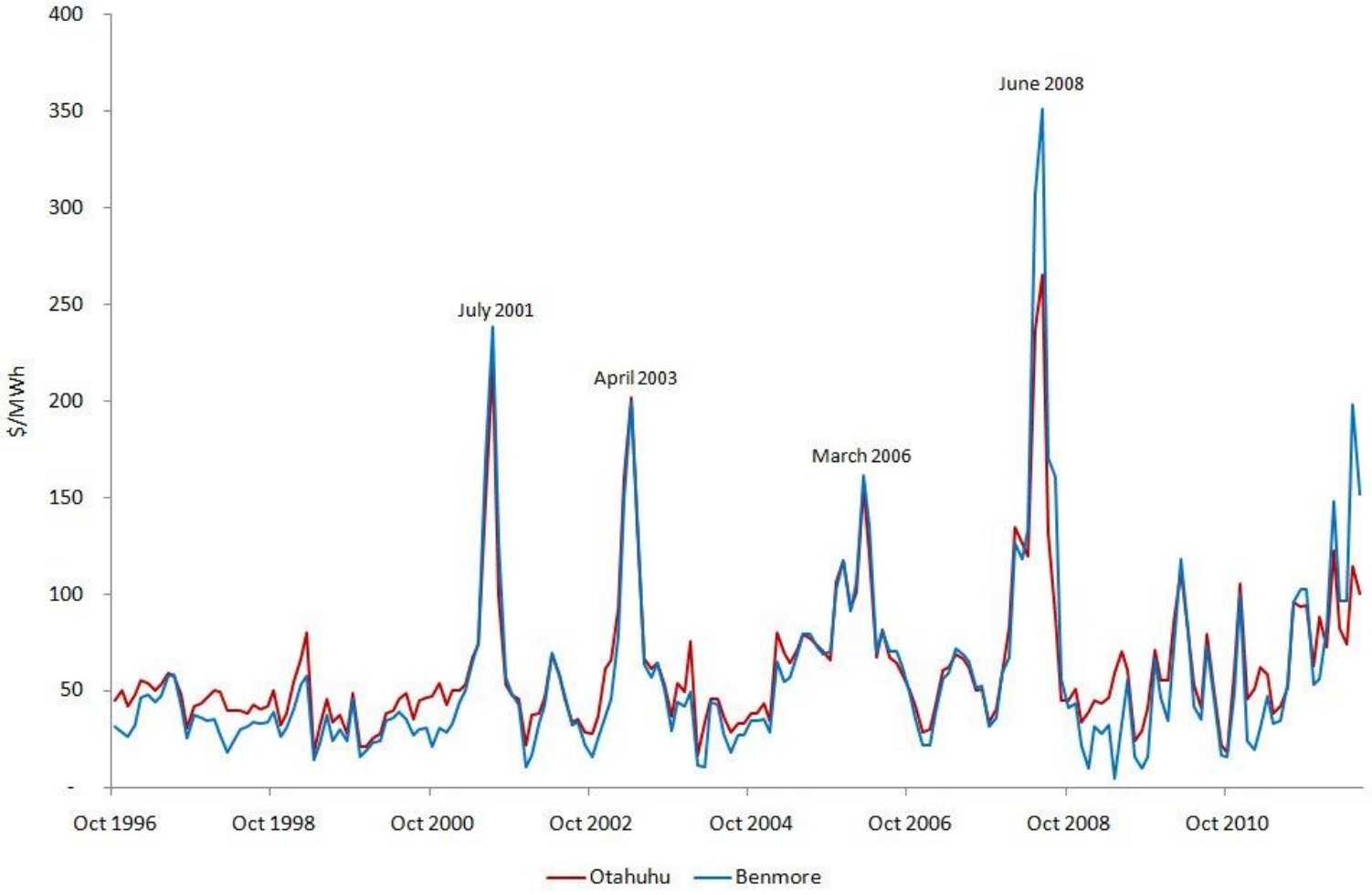
- NZ spot market
  - Trading occurs at 250 nodes across the grid, for half-hourly trading periods
  - Settlement prices are based on marginal dispatched offer prices and metered demand and are published day-after trading
  - Energy and reserves are co-optimised; there are no capacity obligations
  - Scarcity prices apply in the extremely rare situation where widespread emergency load shedding occurs
  - A $10k/MWh price floor and a $20k/MWh price cap
  - Otherwise, there are no price caps but there is some price suppression due to system operator's tendency to cancel the reserves market during stress periods

# Participants in spot market

- Consumers
  - 10 directly connected consumers (DCCs) buy electricity from the spot market
  - Several DCCs have embedded generation
  - Note: many commercial and industrial consumers pay floating retail tariffs

- 95% of generation capacity is from five generators
  - 21% Contact Energy (listed)
  - 25% Genesis Energy (SOE)
  - 23% Meridian Energy (SOE)
  - 19% Mighty River Power (SOE)
  - 07% TrustPower (listed)

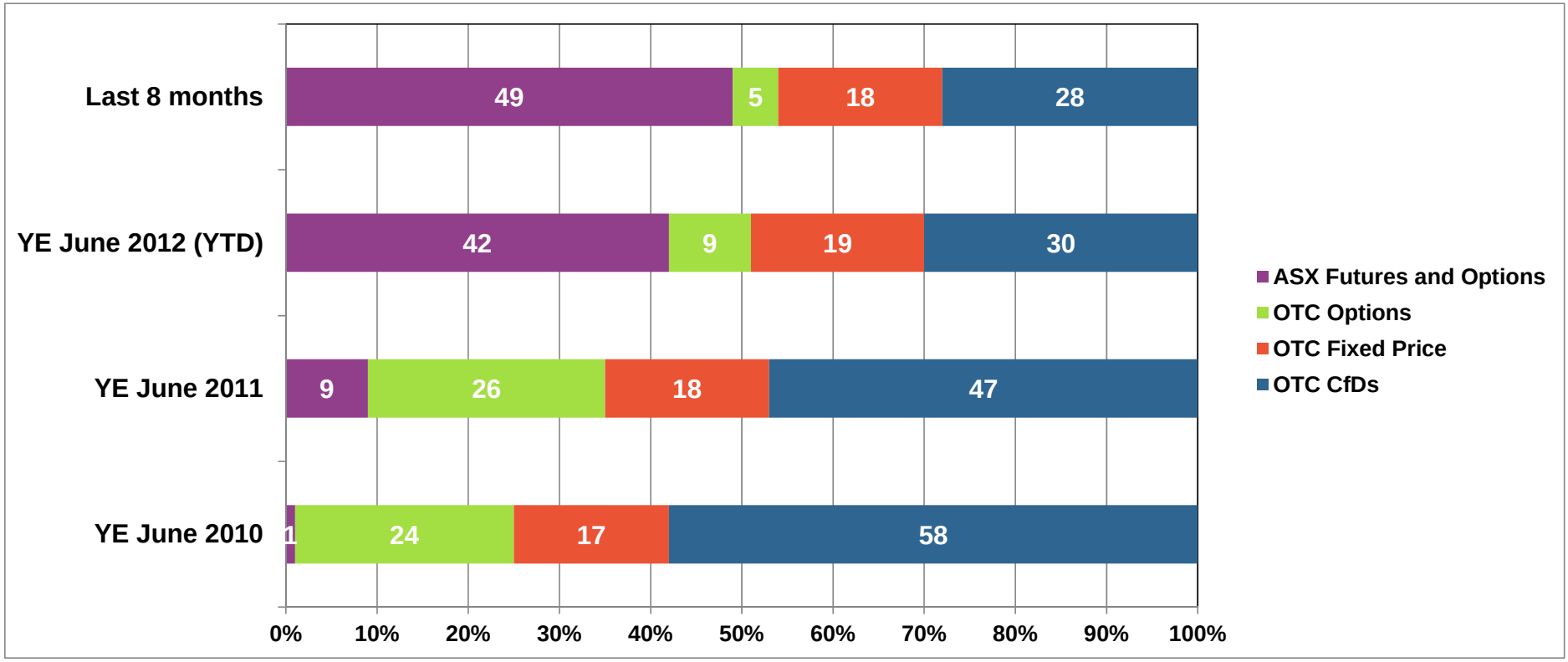
# Monthly average spot prices



# Overview of hedge market

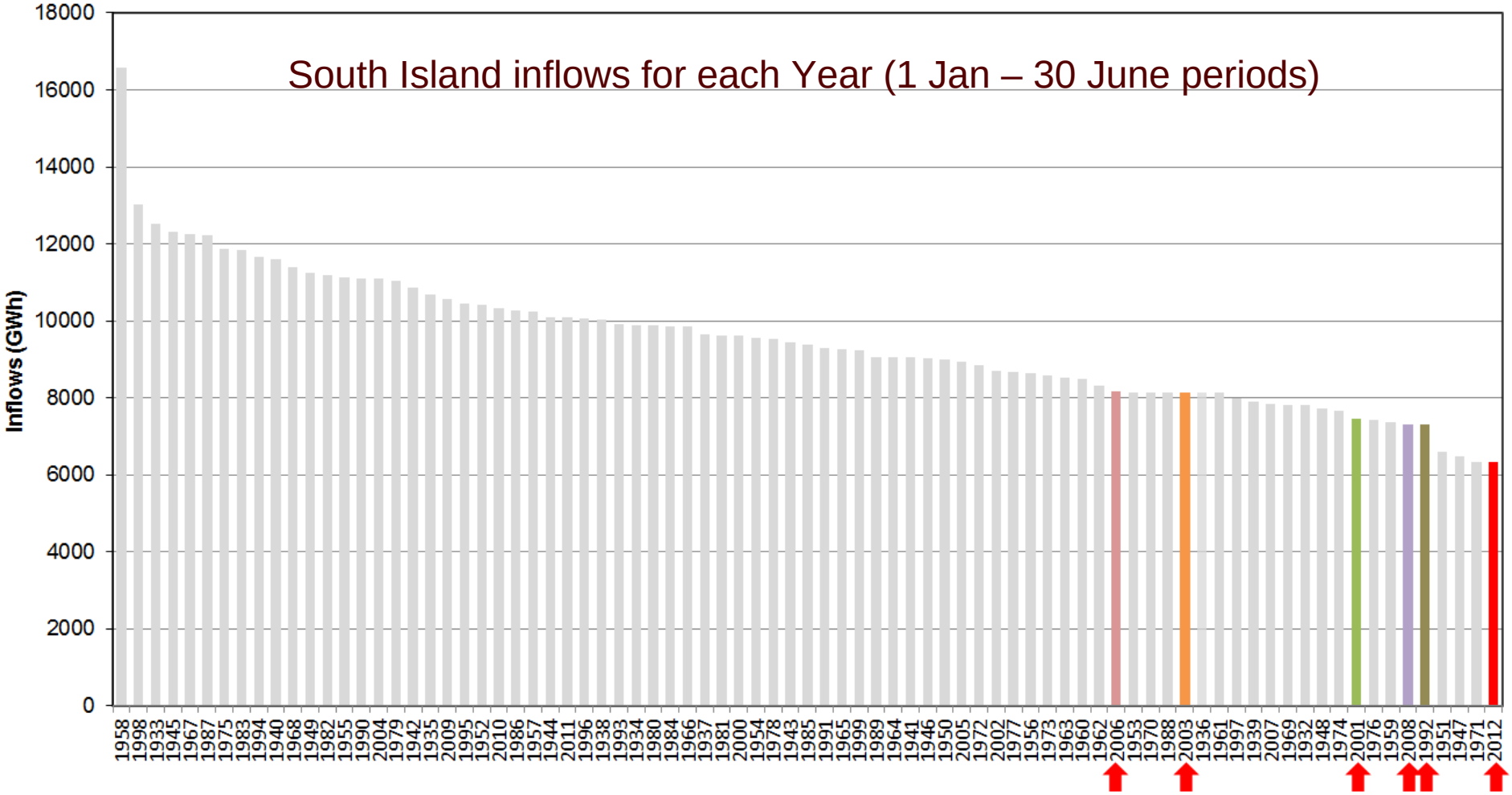
- The hedge market in NZ comprises
  - An OTC market for forwards contracts, where large consumers typically seek competitive bids via open tenders
  - A futures market, operated by the Australian Securities Exchange (ASX). Futures are offered at the Otahuhu and Benmore nodes
- The ASX futures market started in 2009 and has grown rapidly

# Futures trading has grown very fast and now accounts for half of all hedge contracts traded

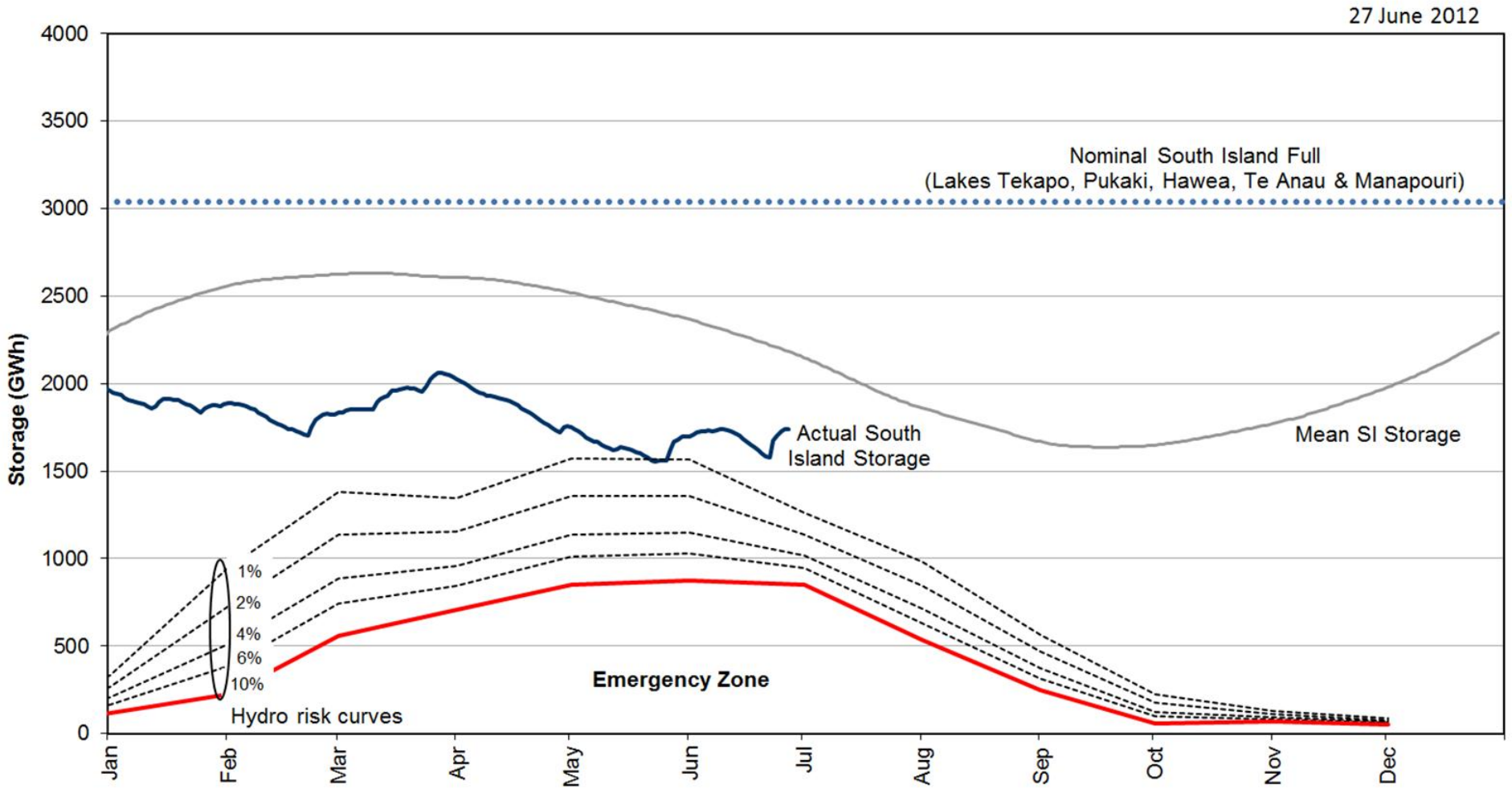


# Hydrology is a key driver in NZ

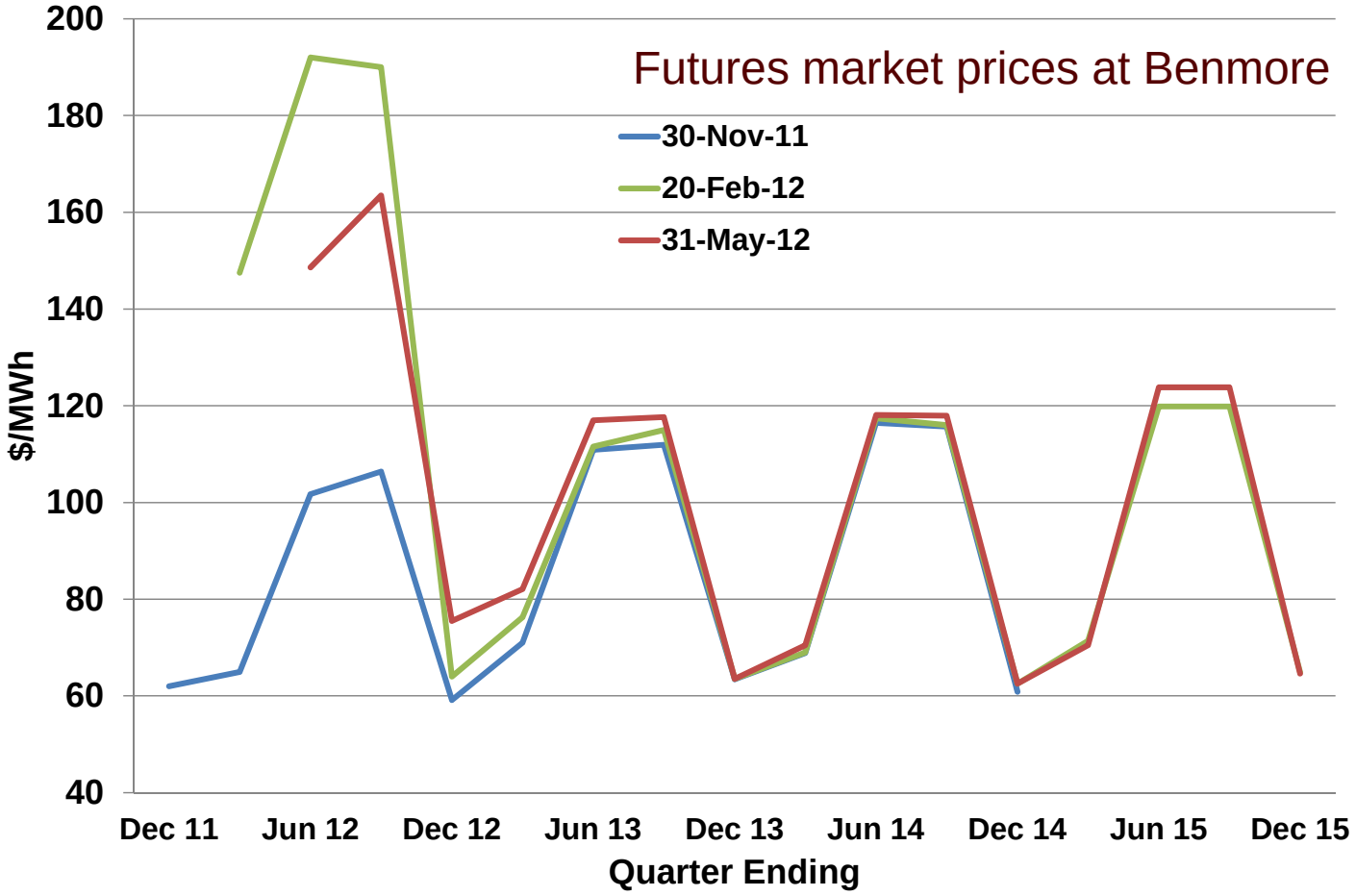
# 2012 inflows are the worst on record and many dry spells have occurred in last 12 years

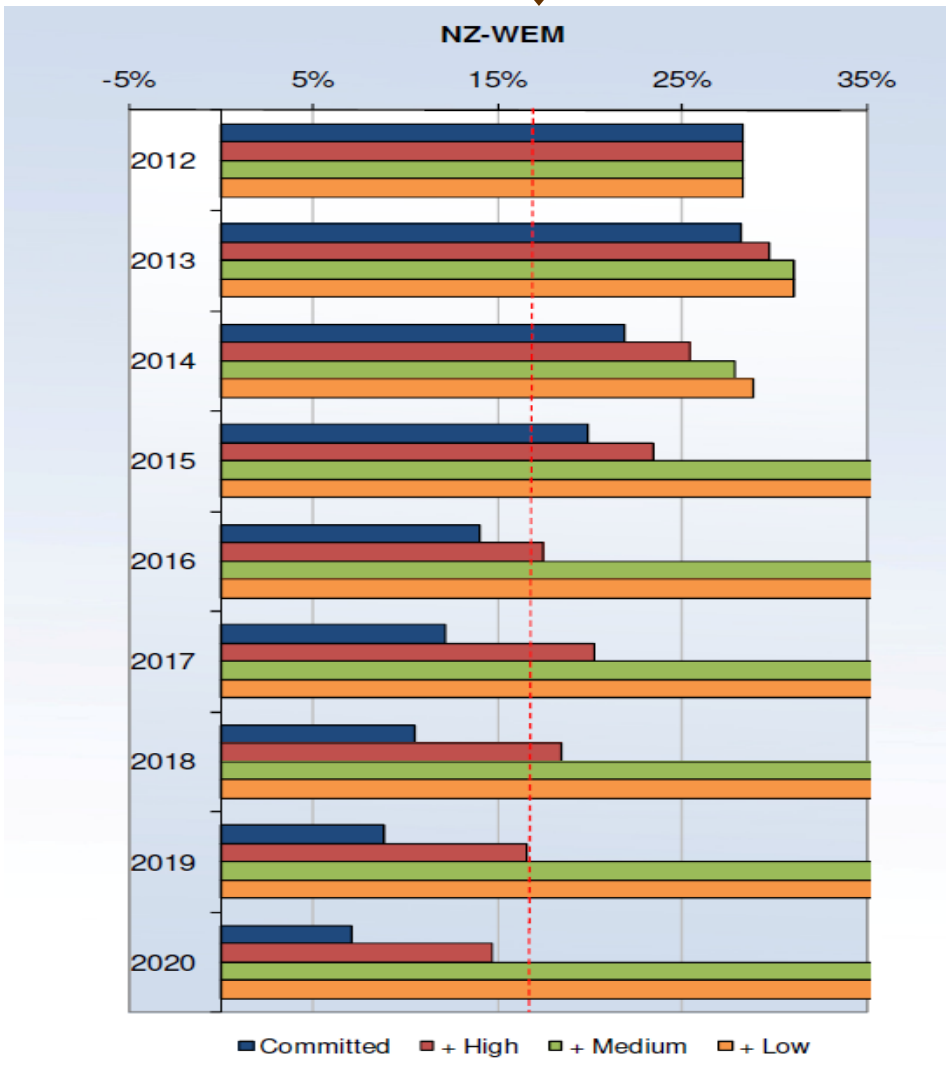


# But SI lake levels have been managed prudently in 2012



# Hydro situation driving near term futures prices but long-dated futures pretty steady






NZ Winter Energy Margin (WEM) threshold = 17%

**The Base Case scenario indicates there is plenty of committed energy available until 2016**

Source: Annual Security Assessment 2012, prepared by the system operator.

# In summary - key policy issues for Authority

- Further improve competition throughout electricity market, but esp. for ancillary services
  - '6 of 11' top priority market development projects are focused on enhancing competition
- Further 'bed in' new arrangements for improving management of scarcity situations
  - Stress testing and scarcity pricing regimes
  - Reserves management during times of system stress
- Complete major review of transmission pricing
  - Considering market-based or market-like charges, exacerbator pays, beneficiary pays and postage stamp options

# Discussion