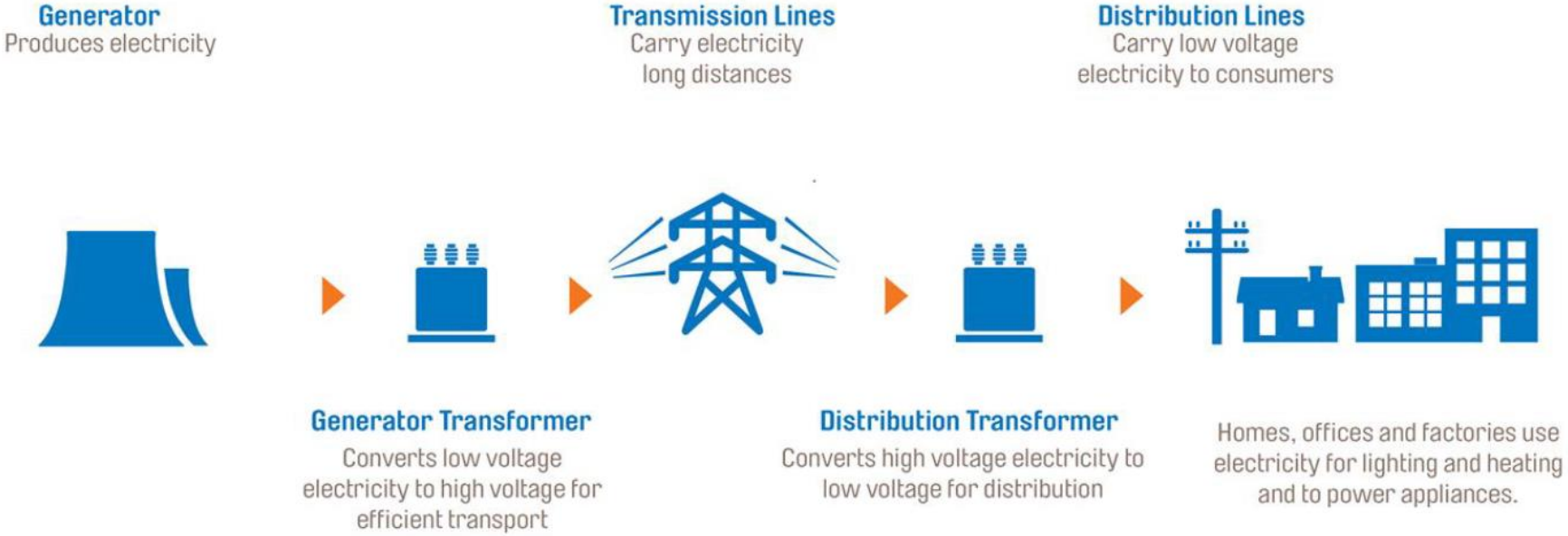
Renewables, energy security and policy certainty

Tim Nelson, Chief Economist, AGL Energy

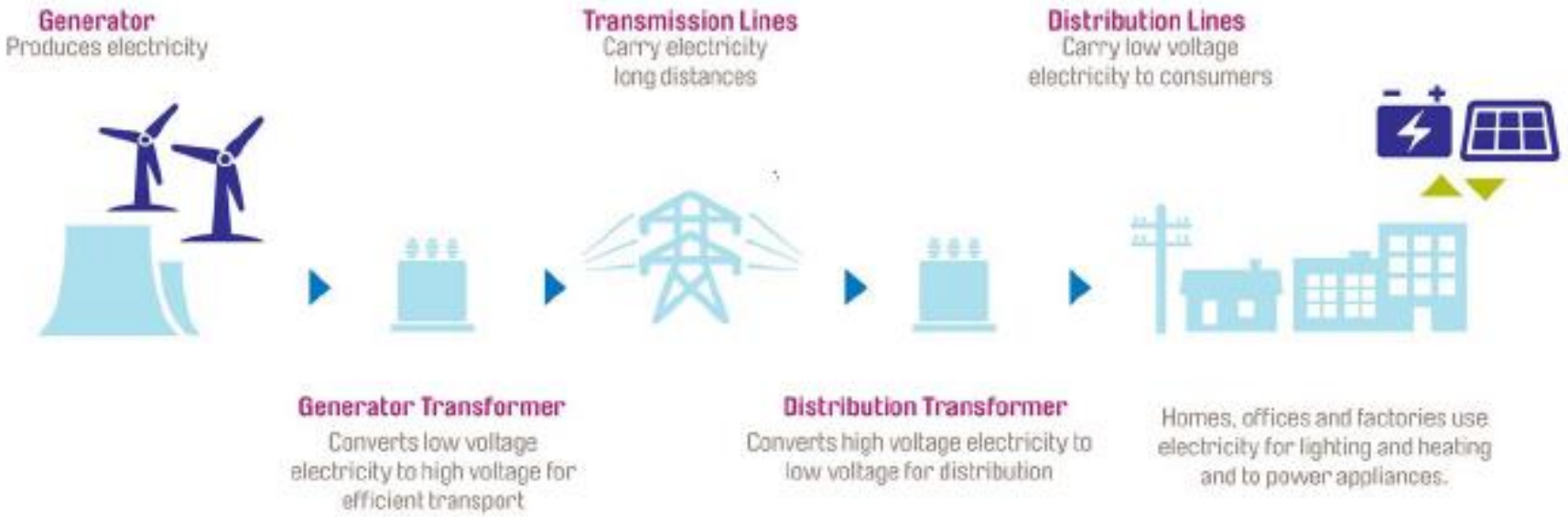
The energy system of yesterday

Large thermal power stations providing energy through one-directional transmission and distribution systems



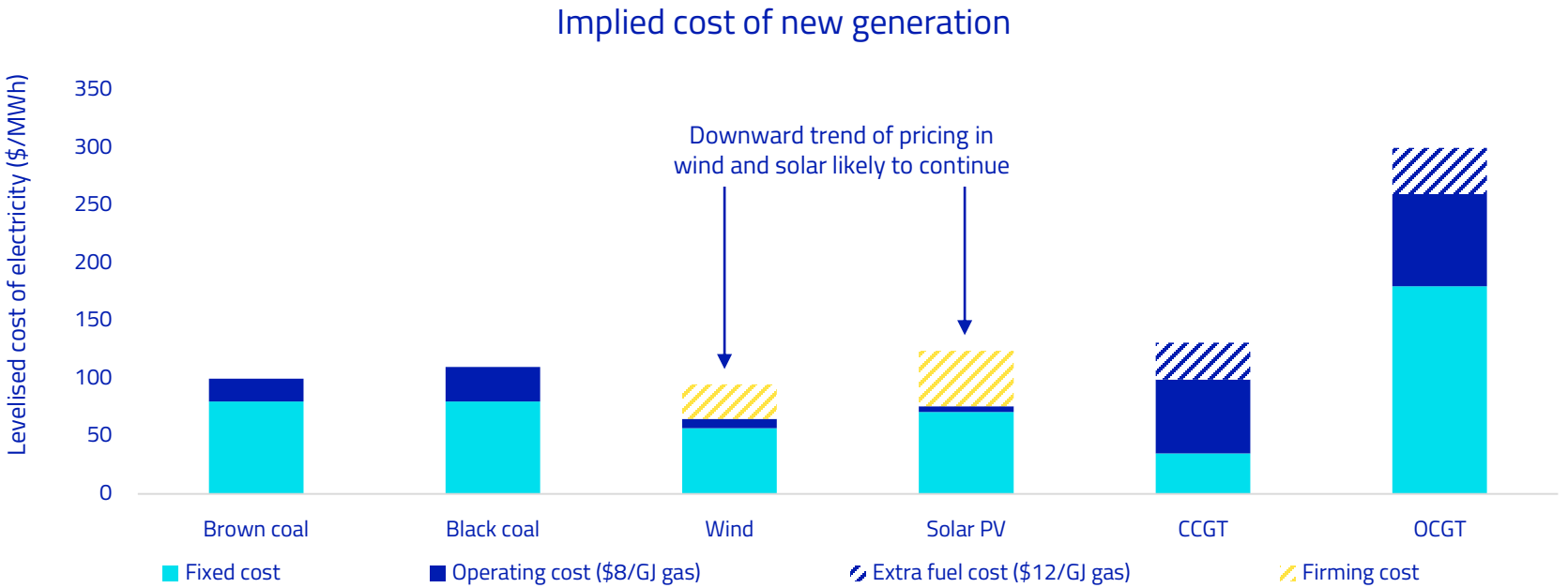
The energy system of tomorrow

Diverse large-scale and small-scale low-emissions generation supplied through an intelligent network



Cost of building and operating power stations

Renewables are increasingly cost-competitive with traditional 'thermal' sources such as coal and gas



Source: AGL estimates; assumes capacity factors of 40% for wind, 25% for solar, 75% for CCGT and 10% for OCGT; heat rates of 8 for CCGT and 10 for OCGT.

Policy objectives for wholesale markets

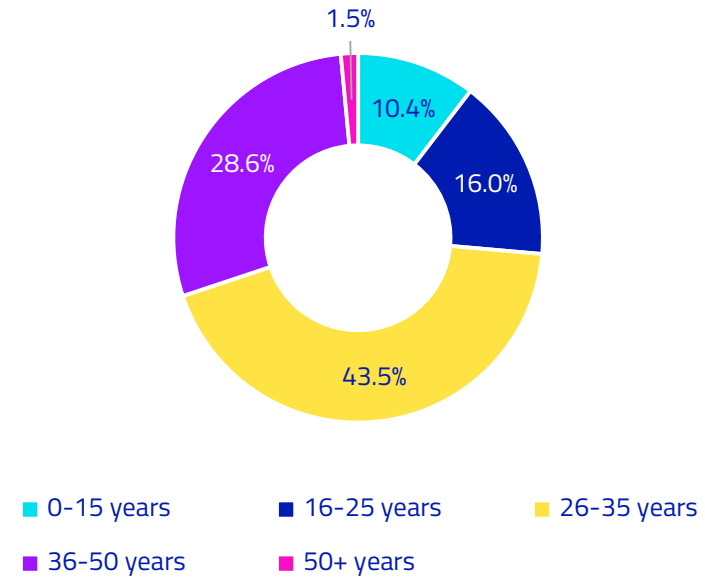
Assuming decarbonisation is a given, what other objectives are wholesale markets trying to achieve?

1. Allocative efficiency for dispatching existing generators
2. Ensuring requisite new investment
3. Reliability and security
4. Realistic political economy of energy pricing

Reducing emissions with an ageing capital stock

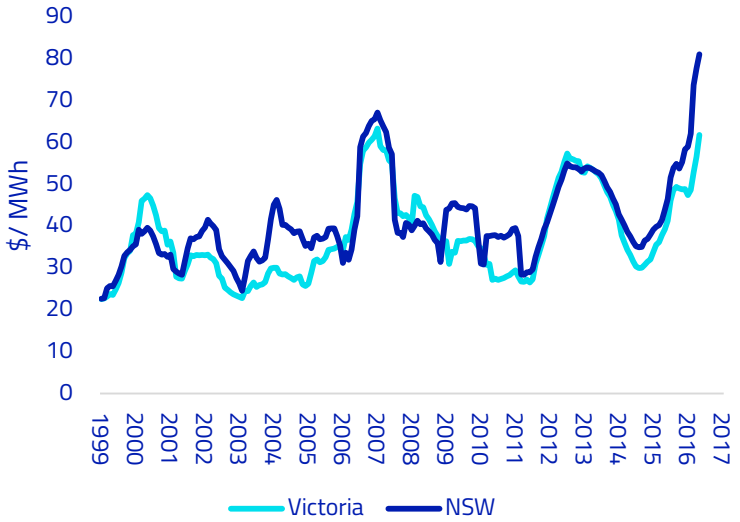
Led to a 'disorderly' transition to an increasingly low-emissions generation mix with prices increasing

NEM thermal generation fleet by age



Source: University of Melbourne, 2014

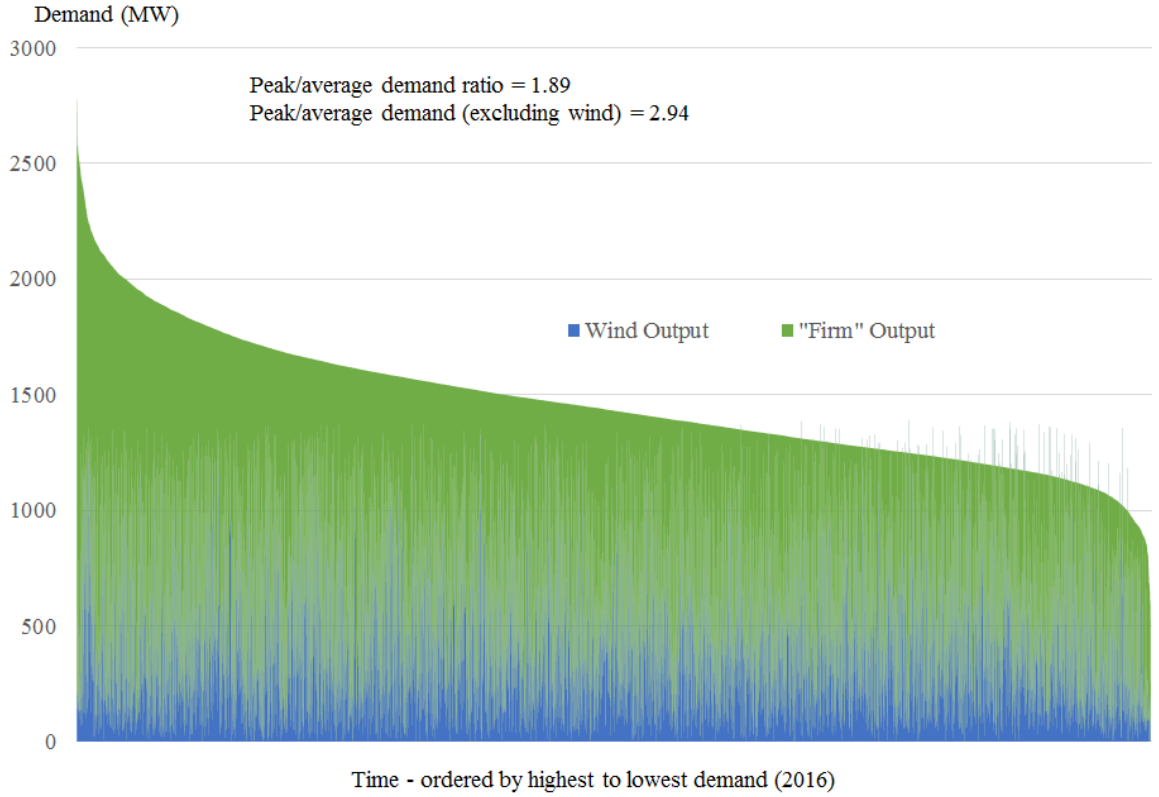
Rolling 12-month average electricity price since NEM formation



Source: AEMO

Renewables are variable in nature

Requires investment in 'lower capacity factor' capital stock (e.g. hydro, OCGT)



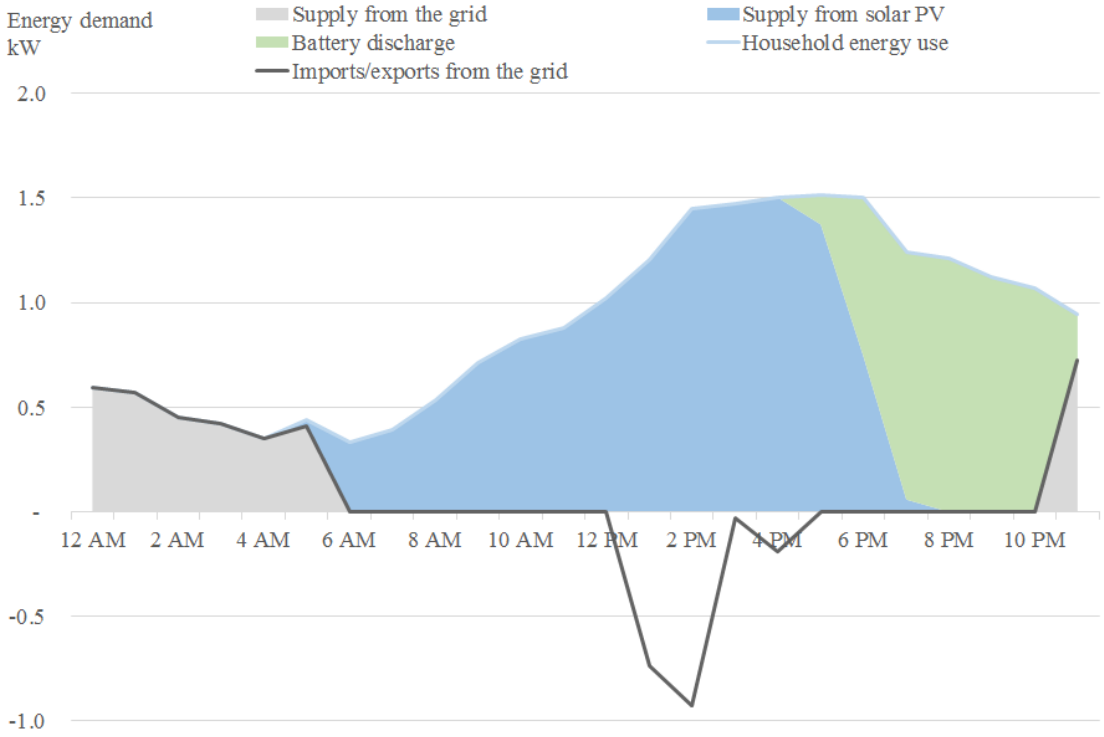
Policy recommendations

Assuming an EIS or CET drives investment, what else is required to achieve wholesale market policy objectives?

Criteria	Achieved by current NEM 'energy-only' market	Policy recommendation
Efficient dispatch	Yes	None
New investment	No	Ensure climate policy incentivises complementary 'firm' capacity
Security and reliability	No	Establish supplementary markets (e.g. inertia, reserve generator)
Real political economy of pricing	No	Rule-based mechanism for ensuring advanced knowledge of impending generator closure

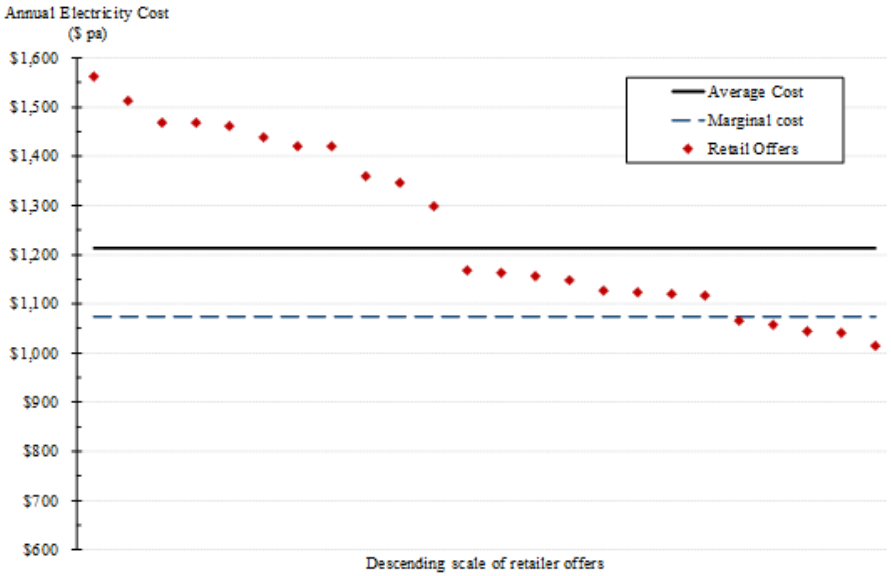
Renewables behind the meter

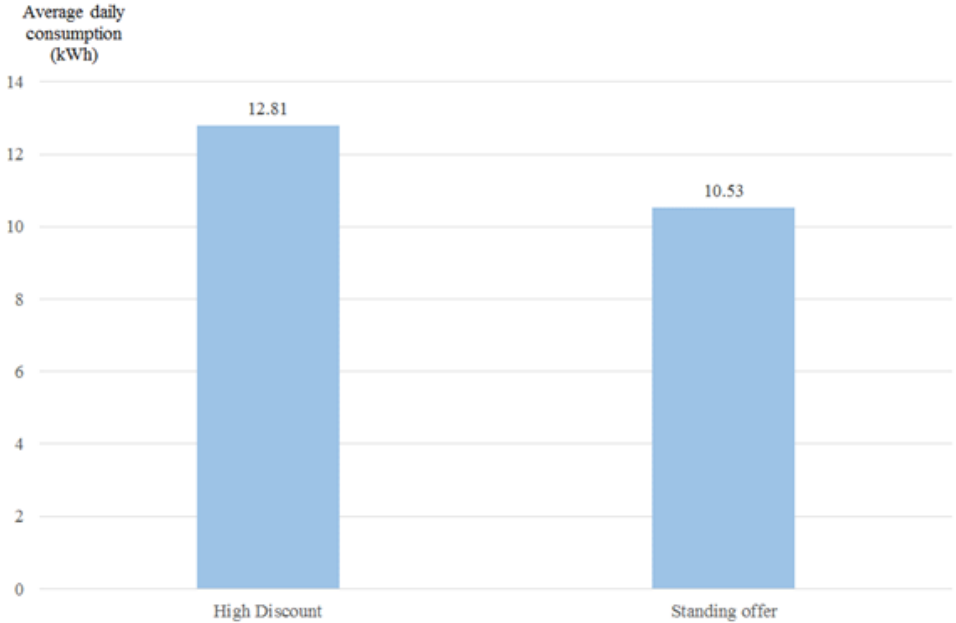
It is critical that networks introduce cost reflective tariffs to ensure optimal deployment of new technologies



The importance of retail competition

Retail competition is providing significant benefits to consumers





AGL research

Presentation based upon research by AGL economists

1. The changing nature of the Australian electricity industry
2. Electricity market design in a decarbonised energy system
3. Access rights and consumer protections in a distributed energy system
4. Price dispersion in Australian retail electricity markets

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Contact

Tim Nelson
Chief Economist
tanelson@agl.com.au
@tanelsonaus

agl.com.au

131 245

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