The Boomerang Paradox

How a nation's wealth is creating fuel poverty – and how to defuse the cycle

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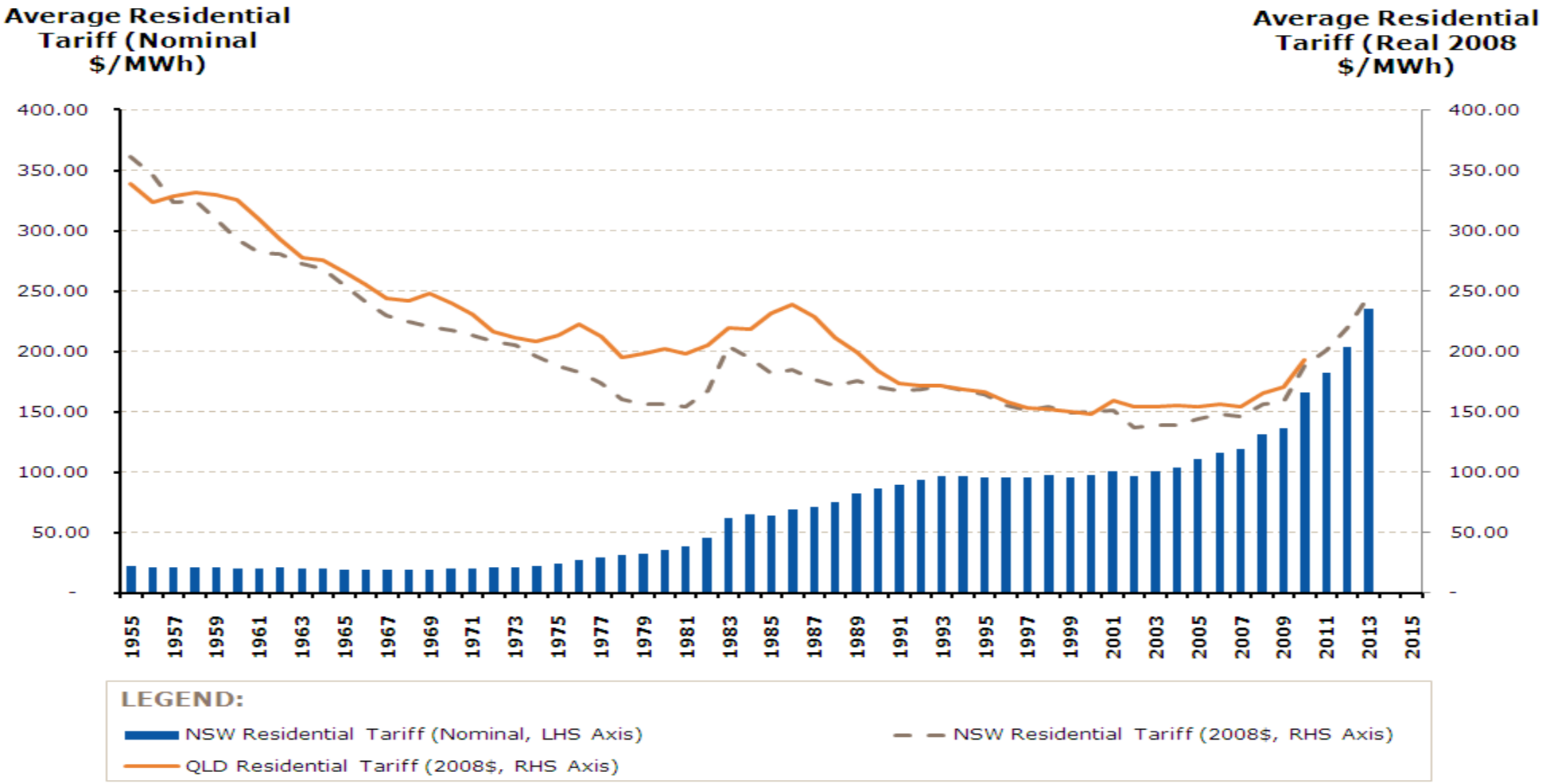
Agenda

- Current electricity prices
- Analysis of drivers of electricity price increases
  - Wholesale electricity costs
  - Network prices
- Outline of end-user scenarios modeled
- End user pricing results
- Distribution of income, energy consumption and hardship
- Policy implications

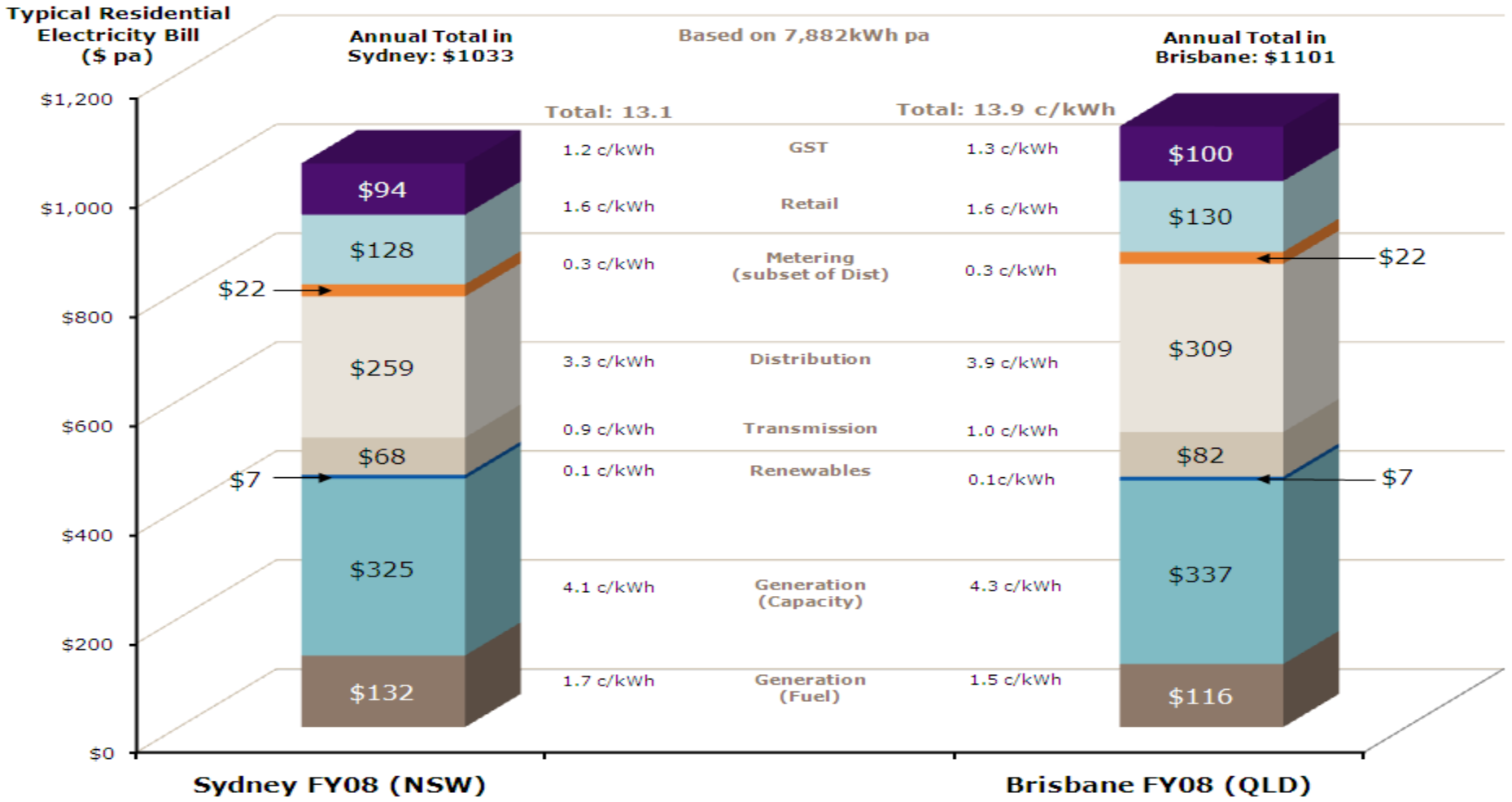
Energy Demand

- In 1955, average household demand was just 2MWh pa
- By 1970 this had doubled to 4MWh and virtually doubled again by 2008 to 7.8MWh in QLD and NSW
- More importantly, growth in household peak demand has been substantial:
  - Over the 10 years to FY10, Brisbane population had increased by 35% but peak demand had increased by 104%
  - Households with air conditioners had increased from 23% to 72% with 34% running two or more systems
- Residential Electricity Tariffs in the NEM are charged on an average rate, which masks the cost
  - Imagine the utilisation of car-parking lots if every single car park in the greater Sydney area was charged at the a single rate of $5 per hour, regardless of location, time or day…

Current electricity prices

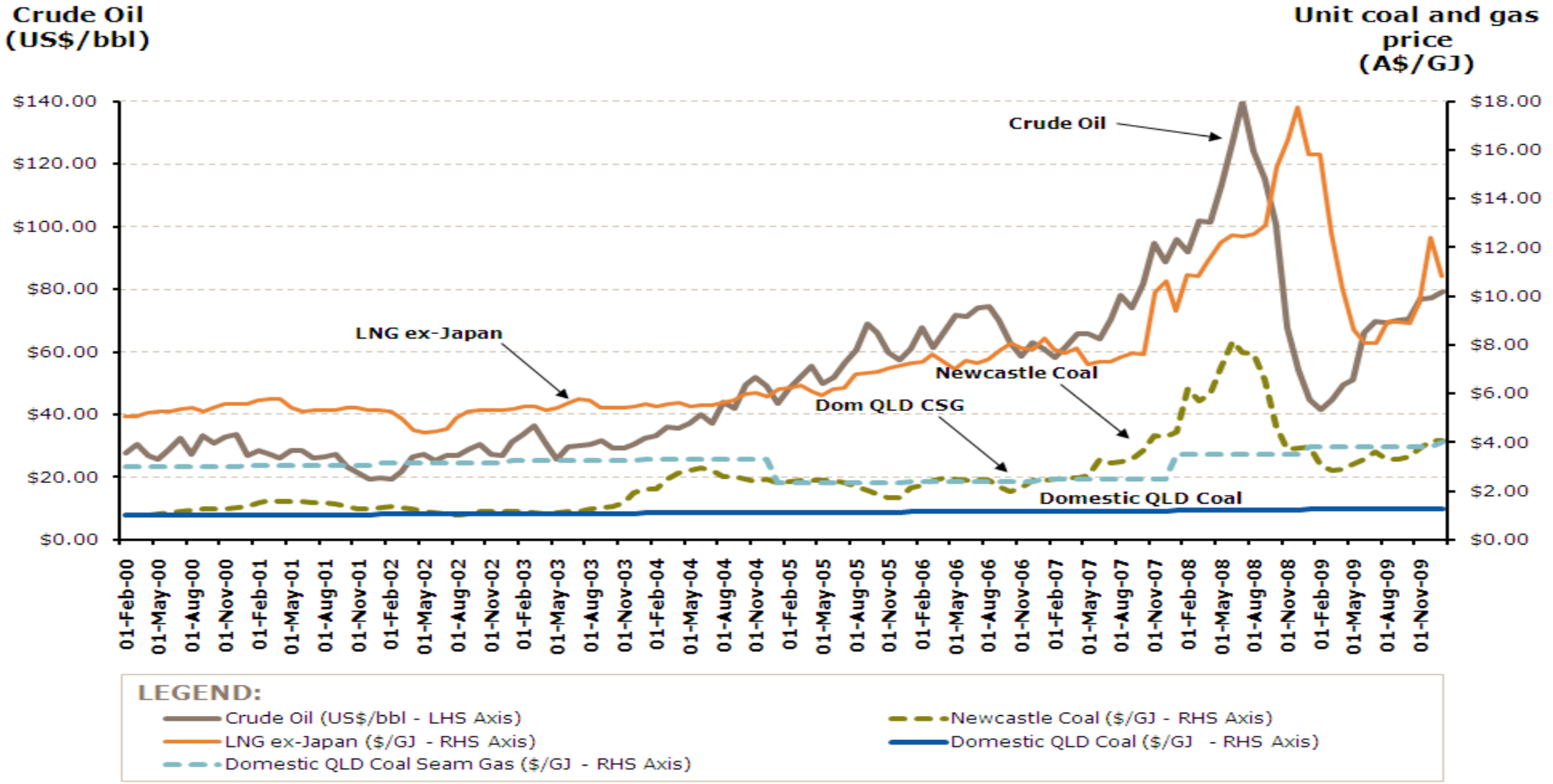


Composition of an electricity bill



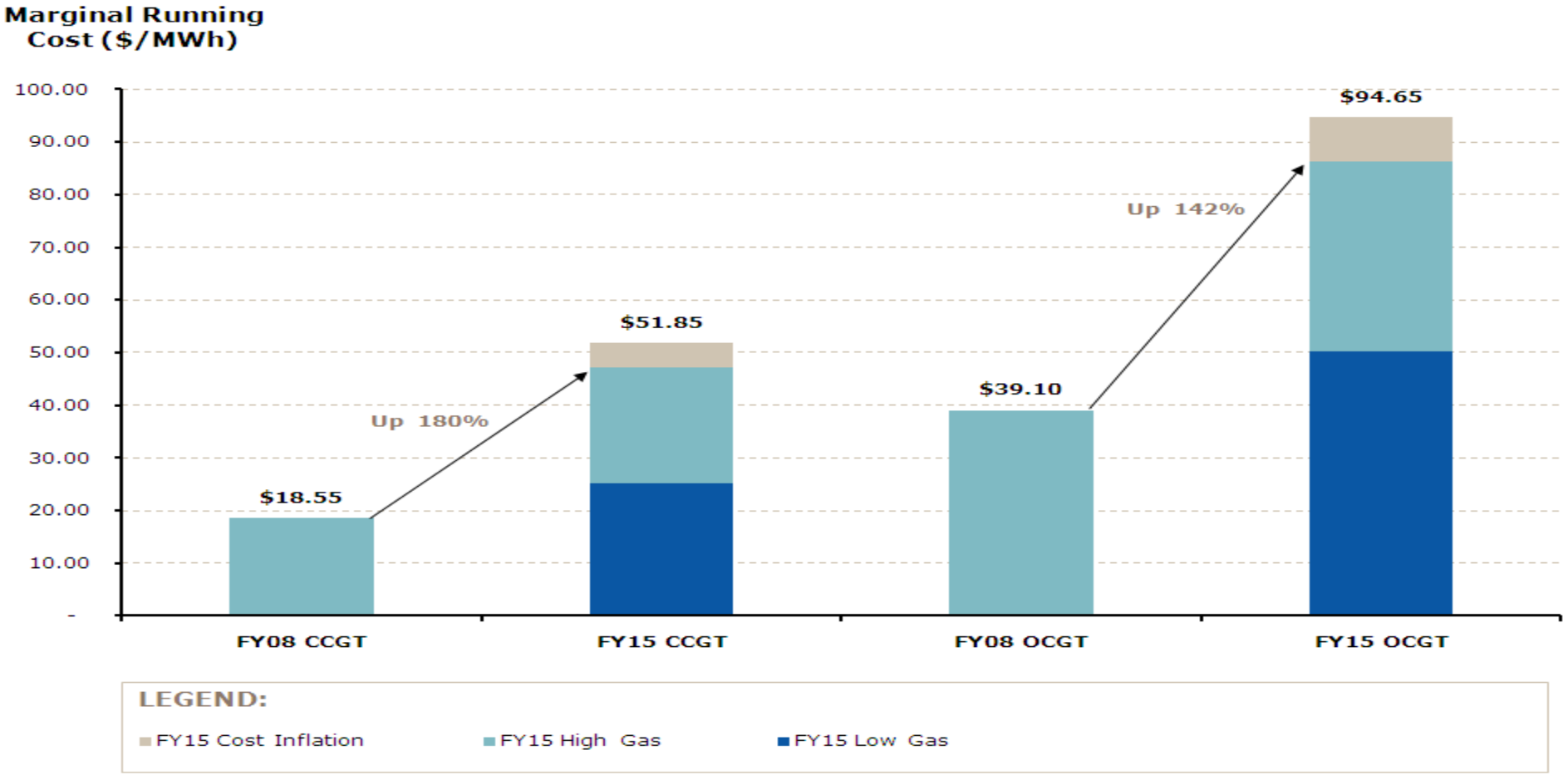
WEC Drivers: Commodity prices

Global energy prices have increased substantially

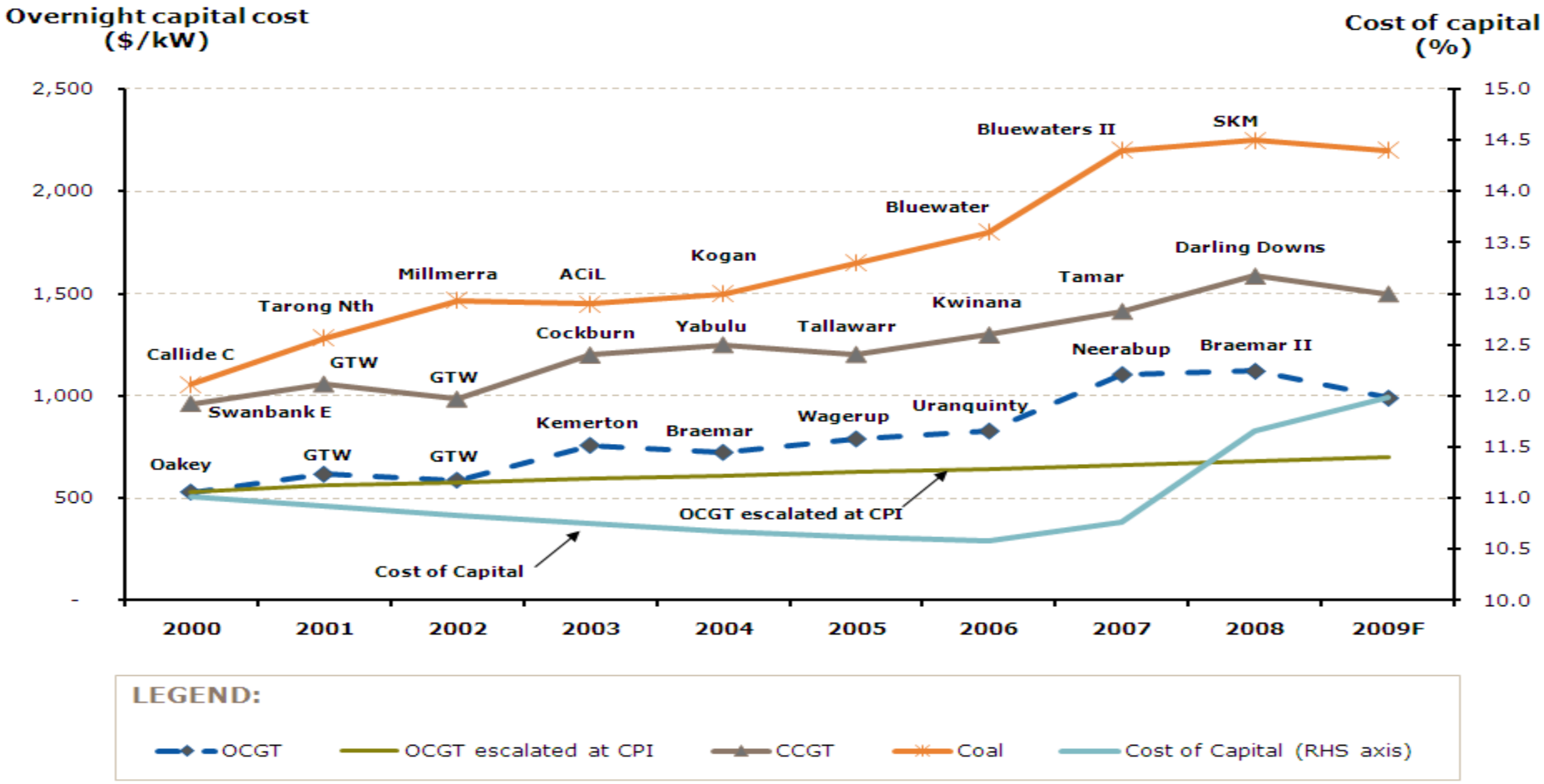


WEC Drivers

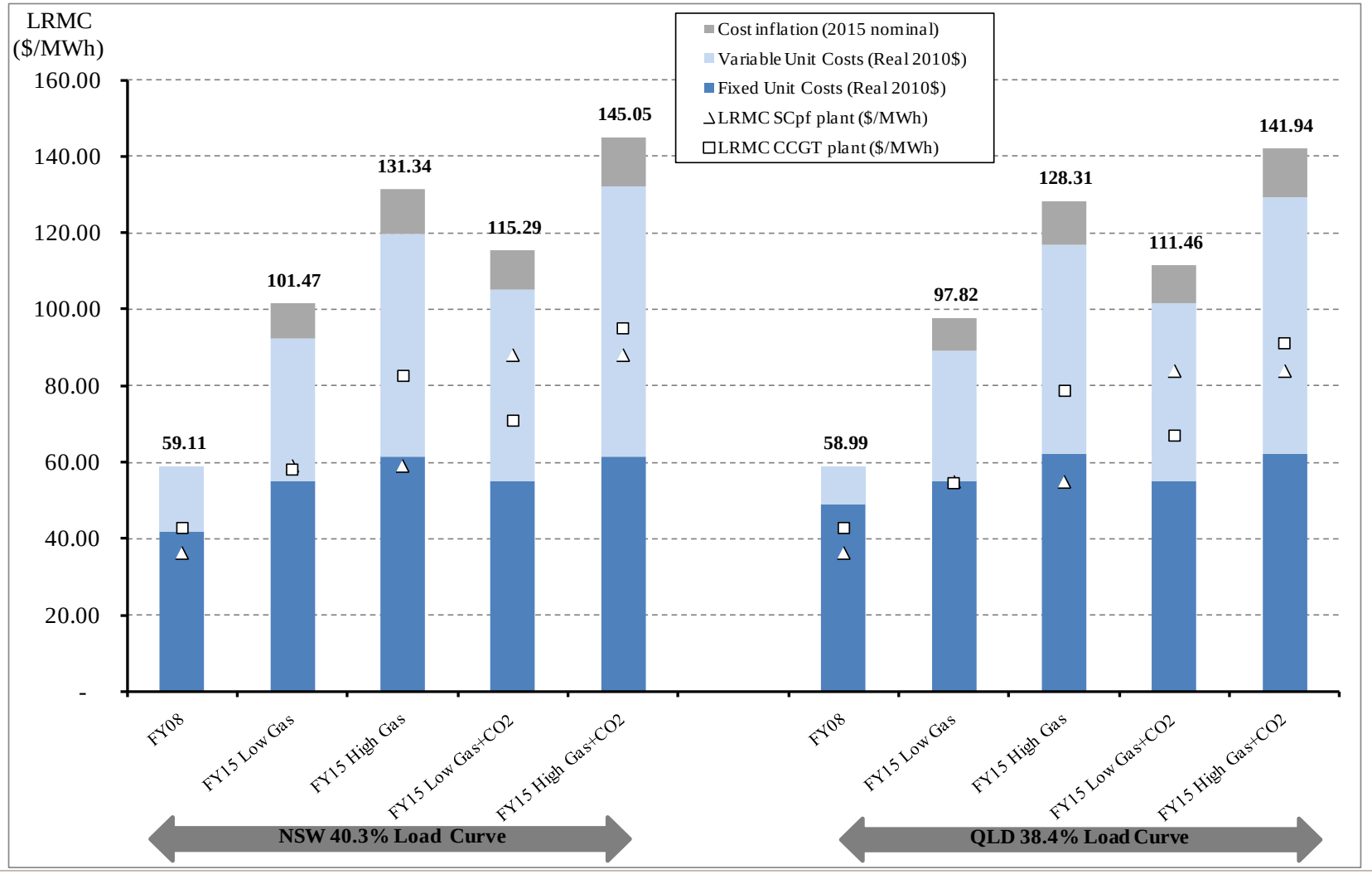
Extraction cost: $3.60/GJ. LNG netback price: $6.75/GJ.



WEC Drivers: Capital costs



WEC: Significant increases



20% Renewables: REC Price depends on Gas

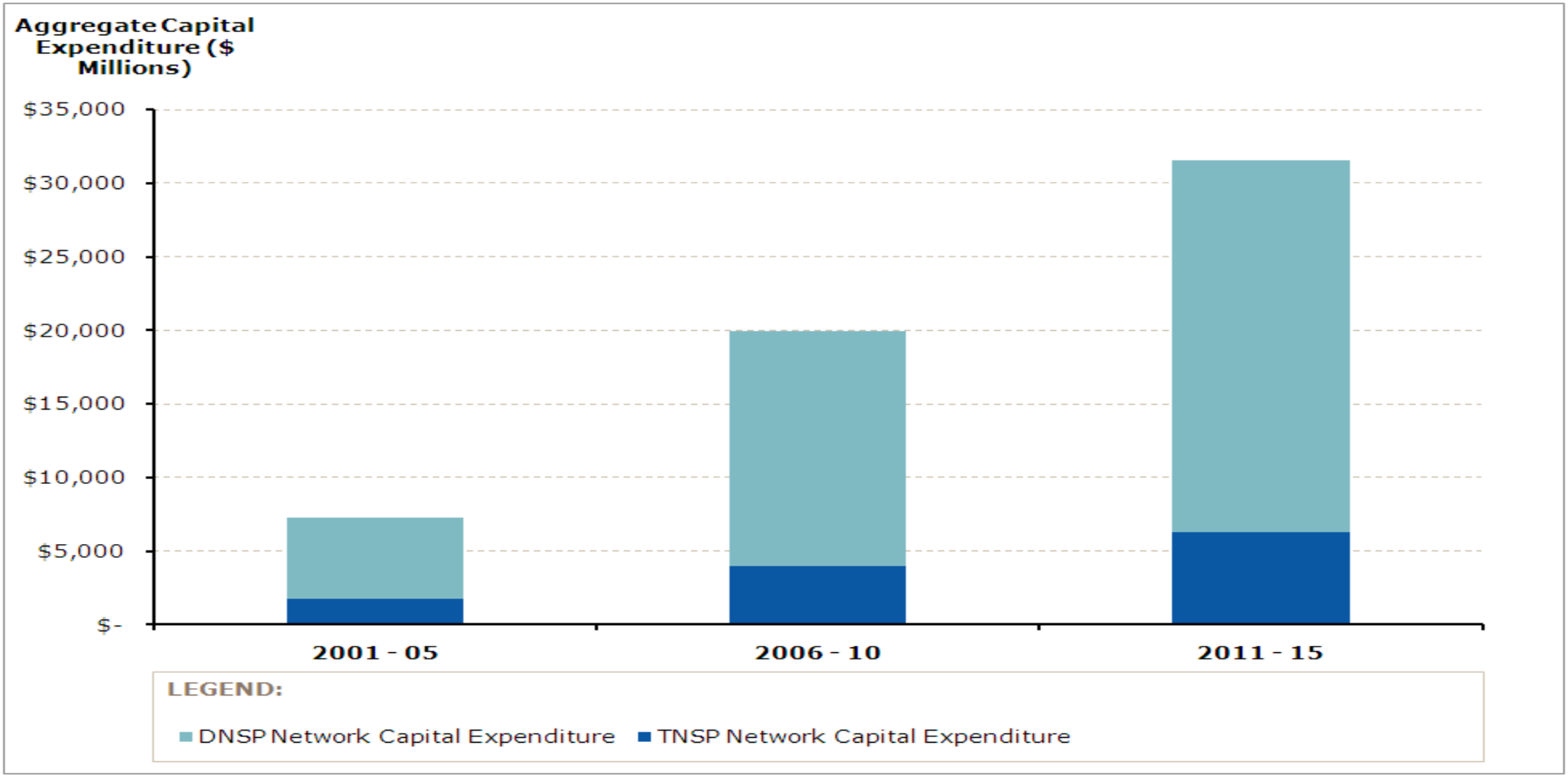
- The price at which long-run RECs will trade at depend critically on the entry cost of thermal plant

Household Demand = 7.882MWh	LRMC CCGT ($/MWh)	LRMC Wind ($/MWh)	REC ($/MWh)	REC Liability (%)	REC Costs ($/MWh)
	(A)	(B)	(C) = (B) – (A)	(D)	(C) X (D)
FY08 Base Case	42.92	75.00	32.08	3.14%	1.01
FY15 Low Gas Scenario	54.36	132.00	77.64	11.03%	8.56
FY15 High Gas Scenario	78.60	132.00	53.40	11.03%	5.89
FY15 Low Gas + CO2 Scenario	66.82	132.00	65.18	11.03%	7.19
FY15 High Gas + CO2 Scenario	91.07	132.00	40.93	11.03%	4.51

- As for the ‘true cost’ of renewables, the absolute differential is negligible
  - (See AGL Working Paper No. 18 – Wind Investment for details)

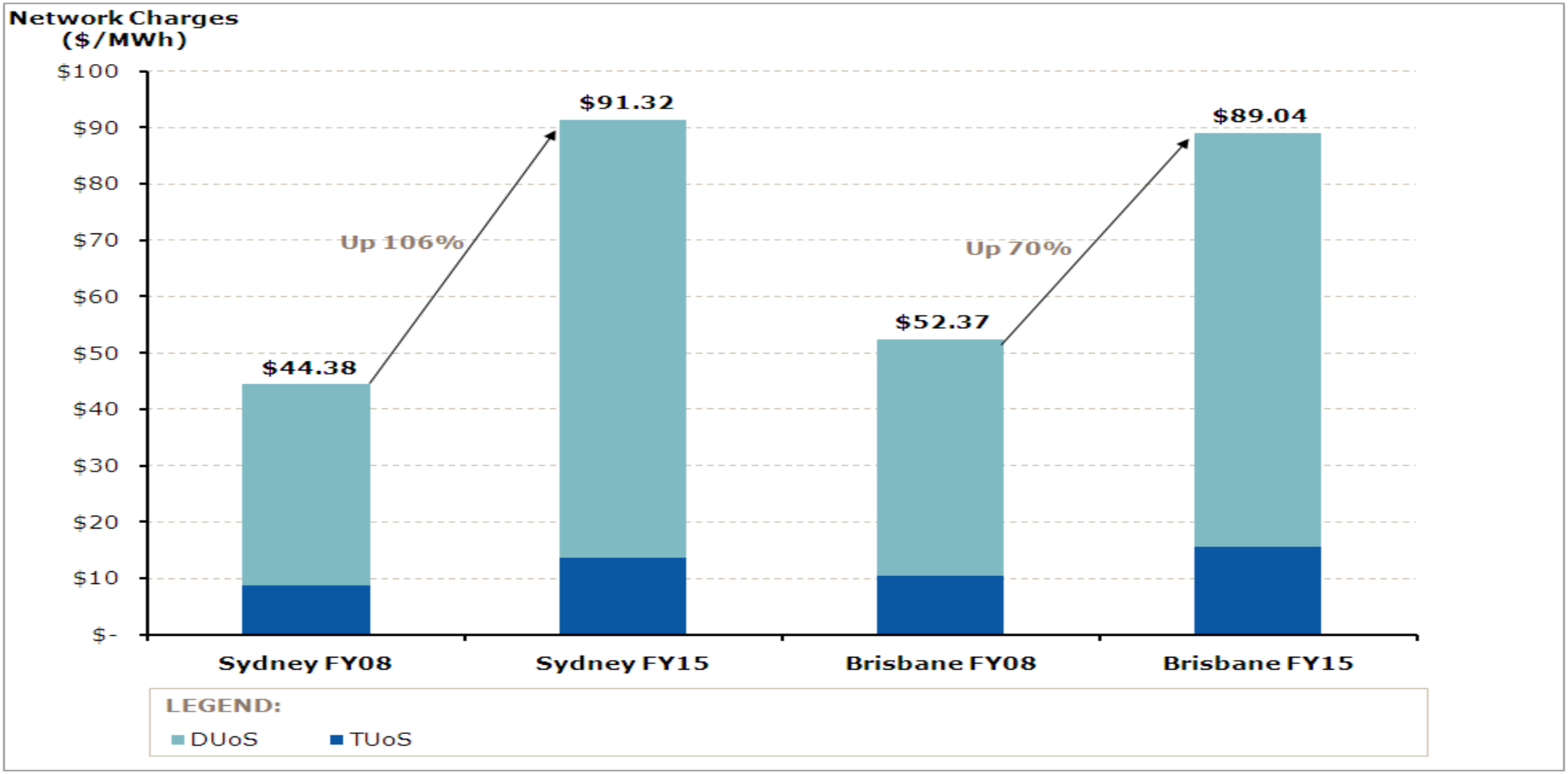
Drivers of higher network prices

Peak demand driving significant network capital expenditure



Drivers of higher network prices

Increased capex resulting in higher TUOS and DUOS



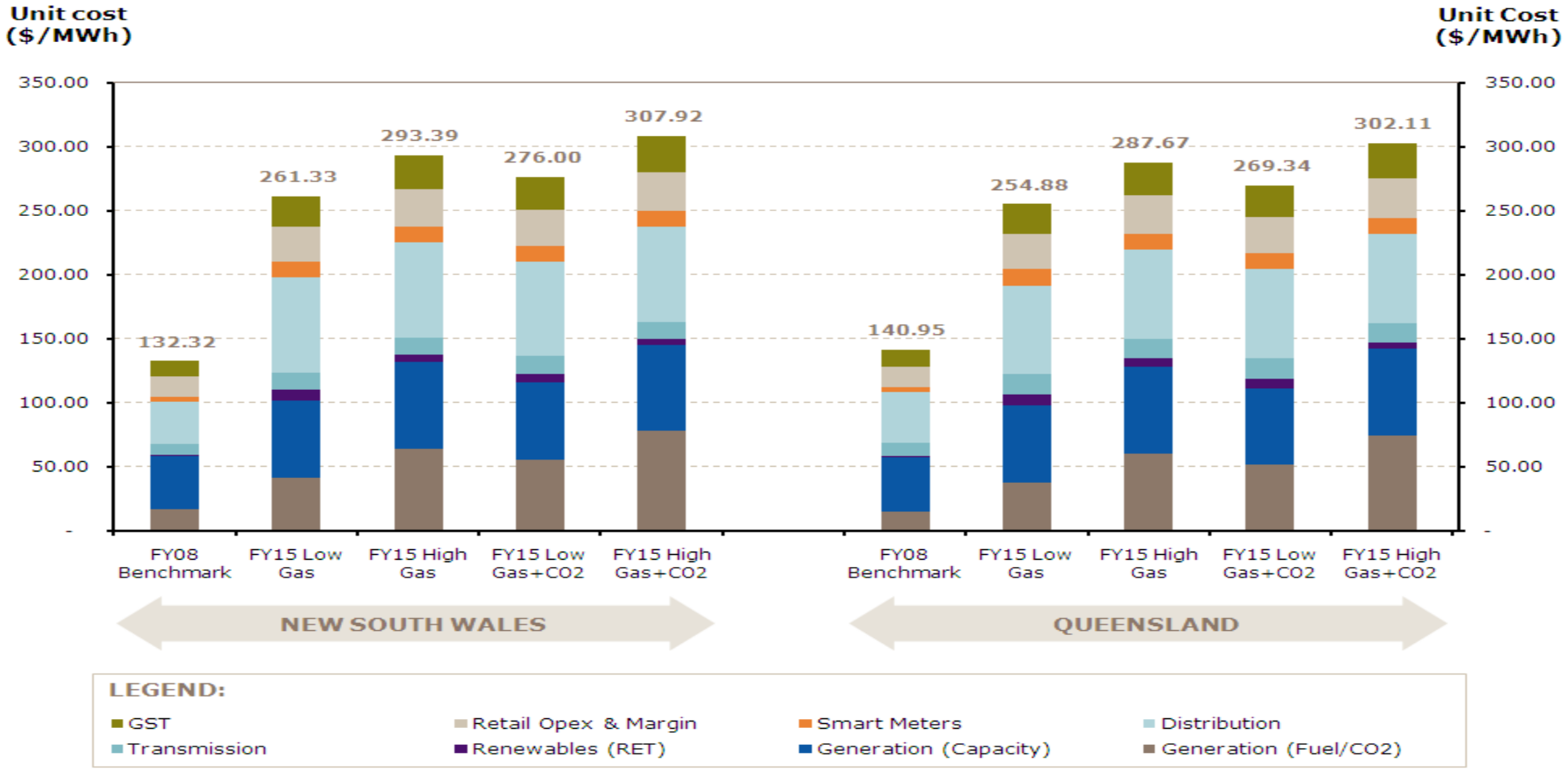
Scenarios

- 4 main scenarios modelled for Sydney and Brisbane
  - Captures variable assumptions on gas prices and carbon
  - Network spending 'locked in' for all scenarios
- Scenarios outlined in table below

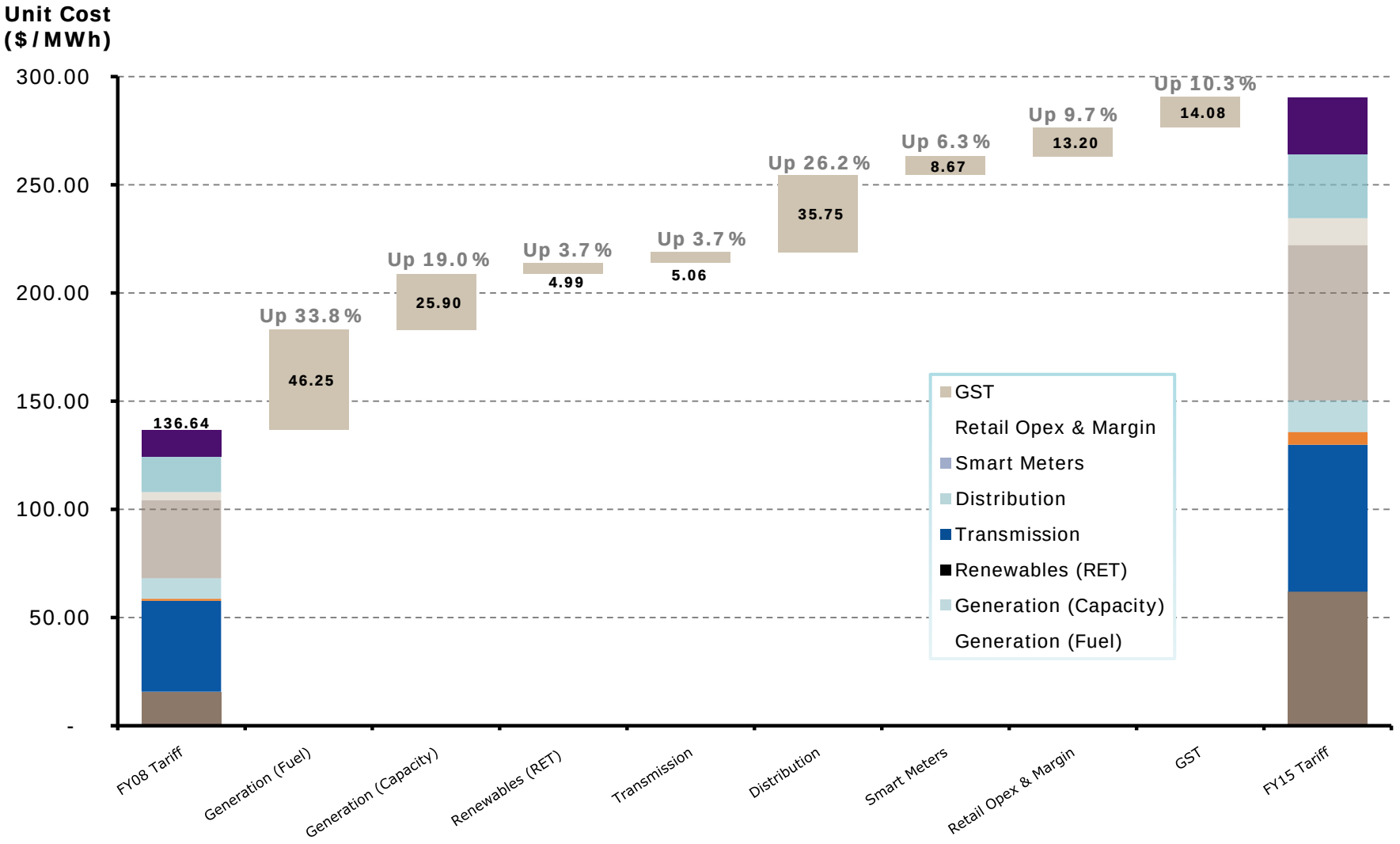
2015 Scenario	Gas Price ($/GJ)	Carbon Price ($/tonne)
Low Gas	$3.60	$0
High Gas	$6.75	$0
Low Gas +CO2	$3.60	$32.06
High Gas +CO2	$6.75	$32.06

End user pricing scenarios

Increases under all scenarios of @ 100%

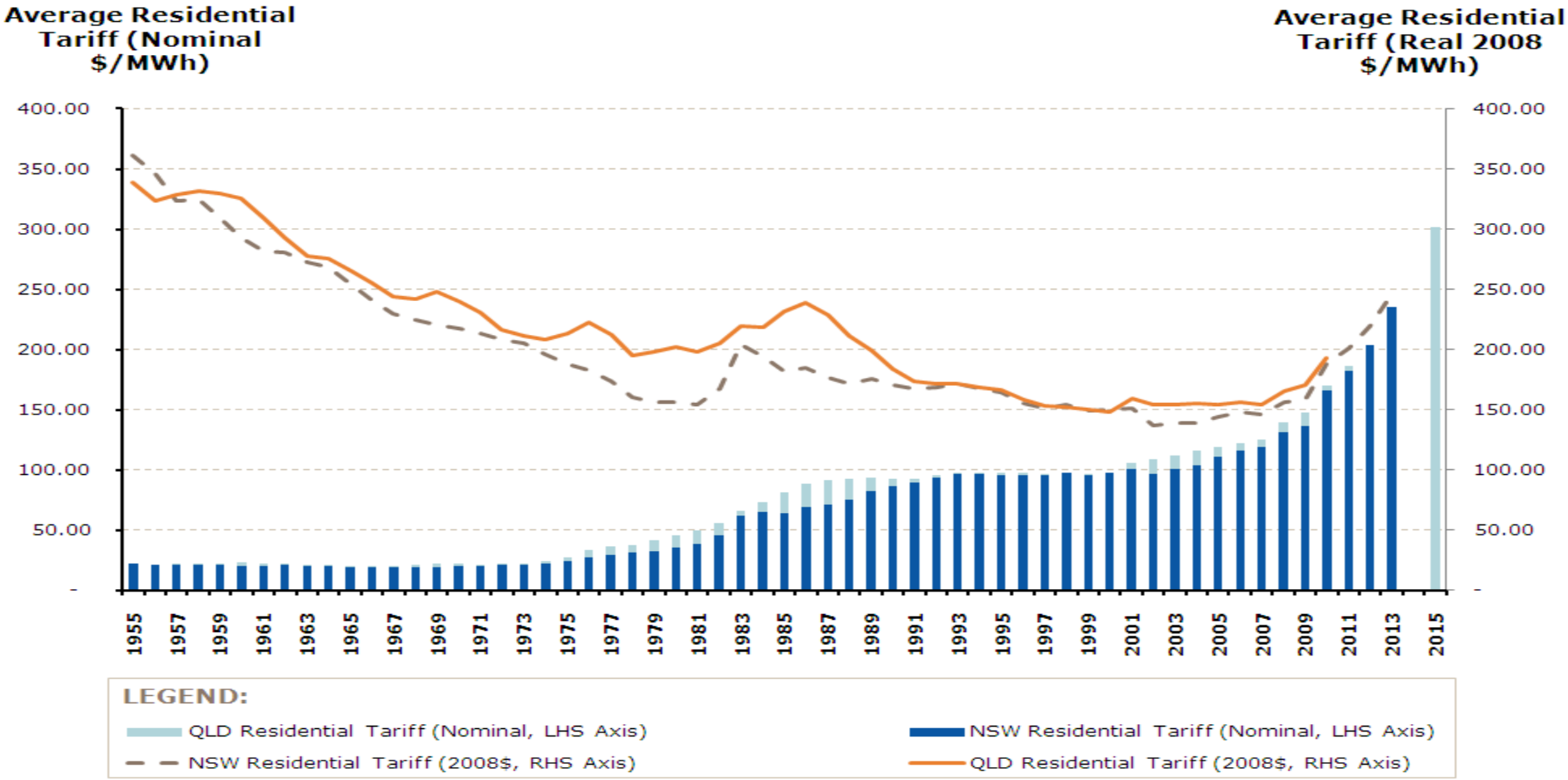


Composition of price increases



Electricity prices in 2015

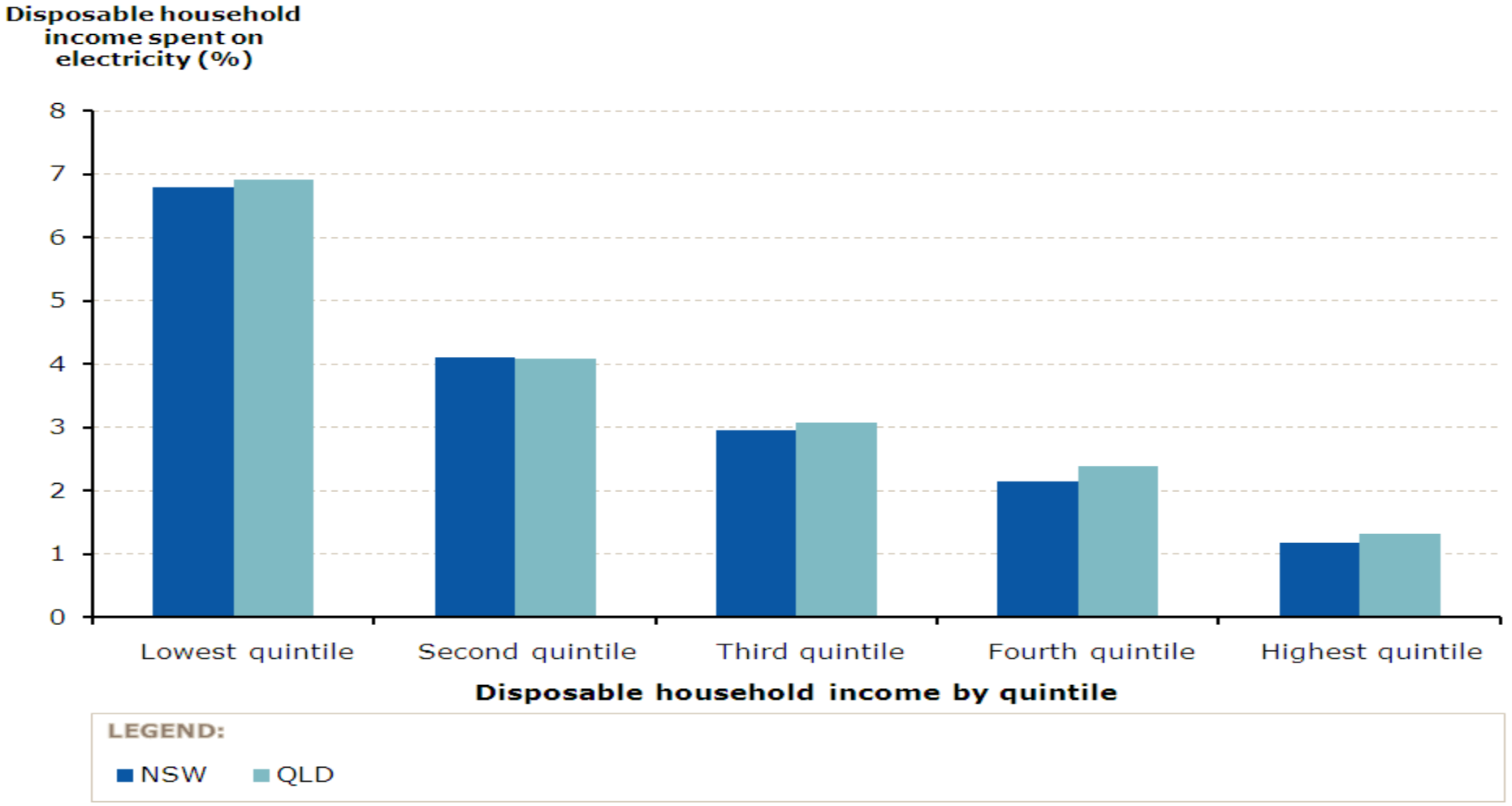
Highest they have been in 50 years



What is fuel poverty?

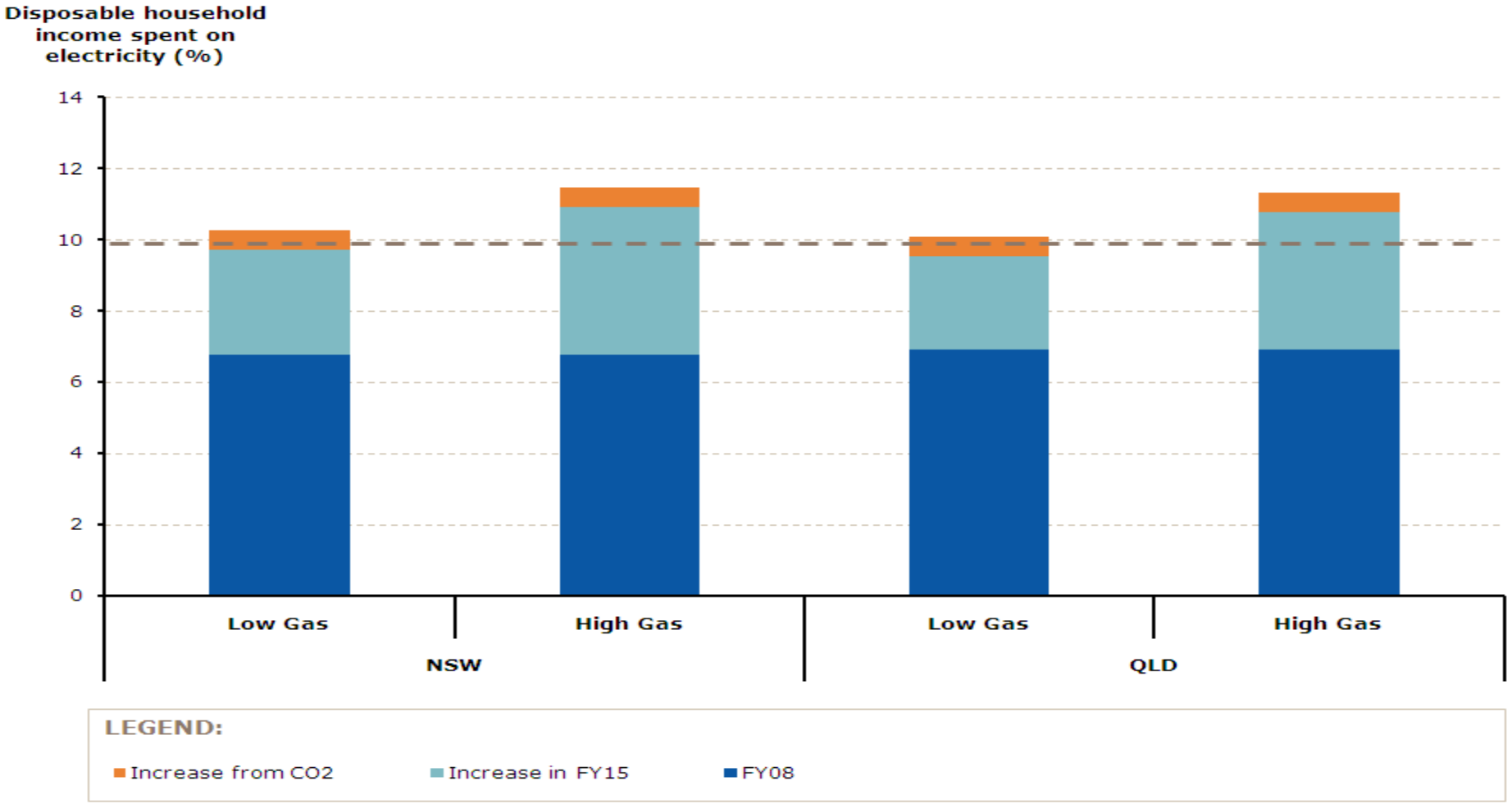
- A consumer is said to be experiencing fuel poverty if they spend more than 10% of income on energy to maintain an adequate household.
- In the UK, this is defined specifically as expenditure to maintain an adequate level of warmth within the dwelling. This definition requires researchers to estimate expenditure on energy rather than use actual energy expenditure per household.
- Rather than estimating household expenditure given ambient temperature targets, the analysis utilises actual energy consumption spending and real incomes to determine the proportion of household income spent on energy.

Disposable income spent on electricity



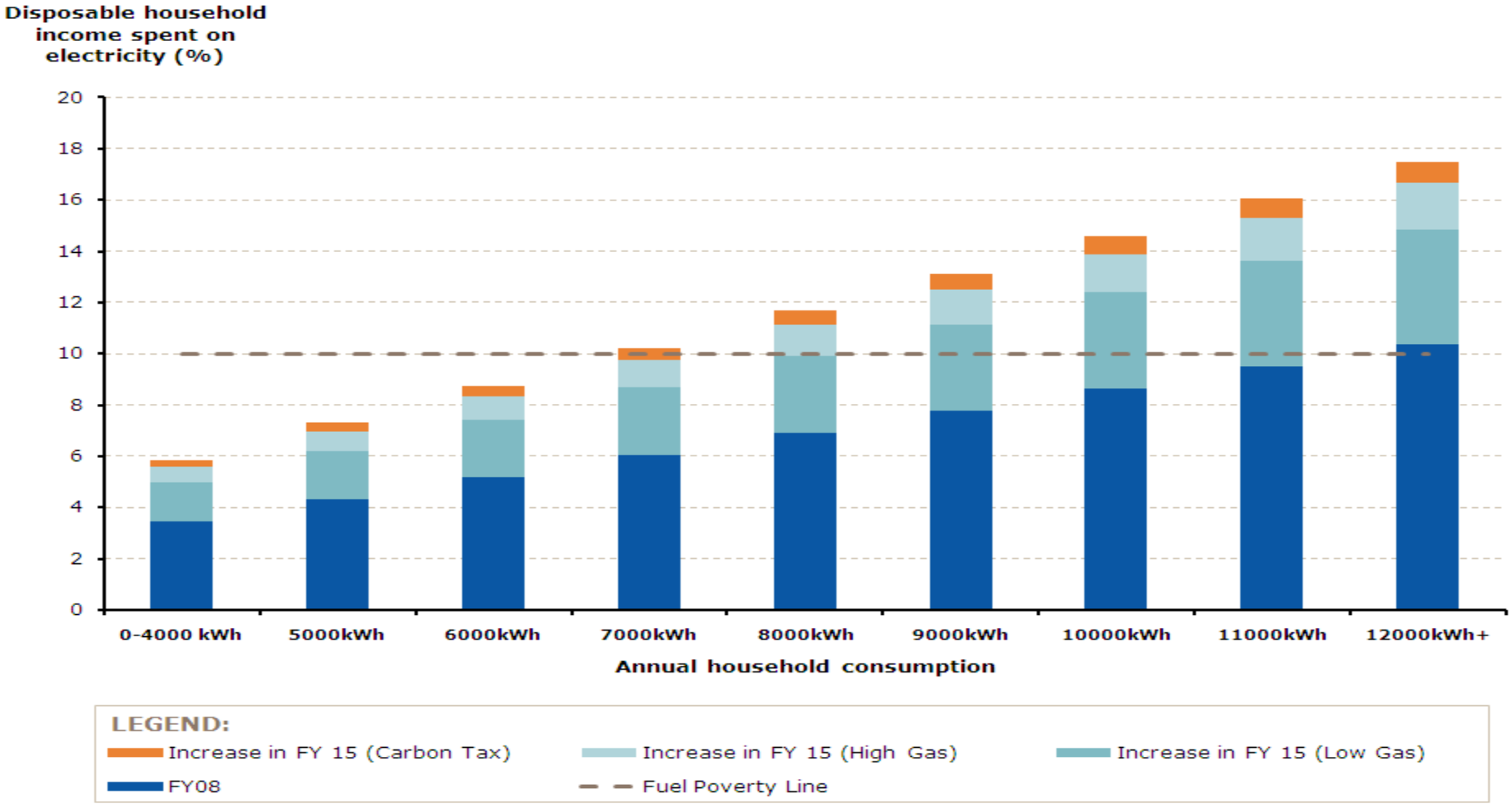
Lowest quintile – fuel poverty....

Households likely to experience fuel poverty



Lowest quintile – fuel poverty....

Higher use and low income households – up to 18%



Households in fuel poverty…

- For vast majority of households, energy affordability will only marginally decline
- Based upon the forecast electricity price scenarios in this analysis, around 6.6% of households could be in 'fuel poverty'
- Approximately 344,000 households in NSW and QLD alone
- Critical that policy makers turn their attention to these households rather than focusing on all consumers

State	FY08 Households*	Forecast annual growth rate^	FY15 Households	Fuel Poverty ratio	Est. households in Fuel Poverty FY15
NSW	2,977,603	1.25%	3,247,401	6.60%	214,000
QLD	1,670,789	2.33%	1,963,234	6.60%	130,000
TOTAL	4,648,392		5,210,635		344,000

* Source: ESAA (2009). ^Equivalent to the average annual growth rate between FY04-FY08.

GST Receipts...

- It is entirely predictable that GST receipts will increase dramatically, holding other expenditure constant (savings clipped)
  - In our analysis, GST shifts from $12/MWh to about $25/MWh
  - In FY08, NSW & QLD consumers paid c.$410 million in GST, and if escalated at CPI would amount to $488 million by FY15
  - In FY15, our forecast range is $880 - $1041 million
  - This represents a GST windfall of $400 - $550 million
- A funding source therefore exists to deal with this problem (in fact, if the entire windfall was directed to fuel poverty, it would grossly over-correct the problem)
- Assistance needs to be targeted: direct retailers to apply rebates to household accounts, sculpted to reflect seasonality
- Bill smoothing should also become the norm to reduce seasonality shock, and if interval meters exist, monthly billing for vulnerable households

Policy implications in the paper

1. Agreement by all levels of Governments to direct some component of incremental GST revenue generated from higher electricity prices to additional assistance for electricity customers in the lowest income quintile.
2. Agreement by all levels of Governments that assistance (in the form of rebates etc) provided to customers should be sculpted and paid directly on the customer's bill to ensure customer hardship is minimised.
3. Availability of 'essential service credit' to allow households to upgrade their appliance stock
4. Development of a *Shared Responsibility* model with energy appliance retailers to ensure that customers in hardship are provided with discount finance on the most energy efficient appliances.

Policy Implications – energy sector specific...

- Roll-out smart meters - with charges via consumption as best general proxy for 'ability to pay' and avoid aggravating the problem
- Shift to time-of-use pricing as the default tariff with 'opt-out' ability
- Shift from price regulation to electricity price monitoring where:
  - competition is demonstrated to be adequate;
  - Suitable hardship policies exist to protect our most vulnerable households; and
  - a "re-regulate" lever exists if outcomes are at odds with reasonable expectations
- Price monitoring (vs. price regulation) is critical to achieving an equitable market; where wealthy houses with air conditioning and pool pumps aren't being subsidised by fuel poor households
- Market prices and smart meters are critical to encouraging innovation and technology development to max. energy efficiency

So what does all this mean....

- Prices are increasing irrespective of whether prices are regulated or whether we shift to price monitoring (as in Victoria)
  - Market prices tend to prices increase gradually without the correctional shocks of regulated markets
- For most households, energy affordability will only decline marginally
  - But for a small number of vulnerable households, assistance is required
- It is critically important that hardship policies are redesigned and enhanced to prevent hardship from becoming a significant problem
  - AGL's Policy blueprint is supported by other stakeholders
- The primary drivers of price increases are networks and fuel costs
  - It is NOT being driven by renewable energy
  - It is NOT carbon pricing