

Response to Questions on Notice from House of Representatives Environment and Energy Committee Inquiry into modernising Australia's electricity grid

1. What is the value of the entire electricity market?

According to the Australian Energy Regulator, National Electricity Market (NEM) turnover in 2015-16 was \$11.7 billion. Total asset value of NEM transmission networks was \$19.5 billion and total asset value of NEM distribution networks \$68 billion (in 2016 dollar terms), as measured by the regulated asset base.

2. What is the average cost of a retail electricity bill in each state and territory?

According to the Australian Energy Market Commission (AEMC), the average representative residential electricity annual bill in 2016-17 (exc. GST, collected on 26 July 2016) was:

Table 1. Average representative residential electricity annual bill (exc. GST)

| | SEQ | NSW | ACT | VIC | SA | TAS | WA | NT | National average |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|------------------|
| 2016-17* | \$1,370 | \$1,317 | \$1,431 | \$1,107 | \$1,602 | \$1,920 | \$1,412 | \$1,765 | \$1,353 |

Source: AEMC Residential Electricity Price Trends report 2016

* The retail price in 2016-17 is calculated using actual offers where available. In all other instances, retail prices are projections based on expected trends in underlying costs or other assumptions.

Figures in Table 1 are for an average *market offer* bill in South East Queensland (SEQ), NSW, VIC and SA, an average *standing offer* bill in the ACT and TAS, and government-set prices for WA and the NT (both subsidised).

Standing offers are basic electricity contracts with terms and conditions set by law. Market offers can have different terms and conditions to standing offers, and are generally cheaper as they may feature discounts, fixed terms, fixed prices and different costs of electricity at different times of the day.

Residential electricity retail prices in WA and the NT, and standing offer prices in regional Queensland, the ACT and Tasmania are regulated. Victoria was the first to deregulate electricity retail prices in 2009, followed by SA in 2013, NSW in 2014 and south east Queensland in 2016.

3. What are the components of an average retail bill?

Electricity retail prices are made up of network costs (transmission and distribution), competitive market costs (wholesale and retail), and environmental costs.

- Wholesale costs include purchases from the spot market and financial hedging contracts, ancillary services, market fees and energy losses from transmission and distribution networks.
- Retail costs include those from retailing electricity and marketing to customers, as well as any return to the owners of the retailer for investing in the business.
- Network costs are associated with building and operating transmission and distribution networks, including a return on capital and metering costs.
- Environmental policy costs include the Renewable Energy Target and various state and territory feed-in tariff and energy efficiency schemes.

4. What has been the change in electricity prices in each state and territory over the last 15 years?

There are two major price reporting mechanisms for electricity pricing, these being: the Consumer Price Index (CPI) prepared by the Australian Bureau of Statistics (ABS), and the Australian Energy Market Commission (AEMC) Residential Electricity Price Trends Report. Actual prices paid by customers will vary due to a range of factors including jurisdiction, consumption, and type of contract (such as whether standing offer or market offer).

Since 1980, the ABS has published an electricity price index in the CPI for the state and territory capital cities. The CPI uses a matched sample approach in pricing electricity; this ensures measuring price change in electricity to constant quality. The electricity price index in the CPI, captures broad changes in the electricity market and is a measure of inflation for Australian households. In recent times, the electricity price index in the CPI has captured changes in the electricity market such as: the application and removal of the carbon price and the increase in investment (e.g. poles and wires) in some states.

Due to data limitations and ensuring pricing to constant quality, the ABS currently uses standing offers in the capital cities as an indicator for price movement in electricity prices. The ABS is currently investigating the composition of the electricity market and reliable data sources for pricing market offers.

Between 2001 and 2016, the change in electricity price index was:

Table 2. Percentage change in electricity price index (2001 – 2016, December quarter)

| | Sydney | Melbourne | Brisbane | Adelaide | Perth | Hobart | Darwin | Canberra |
|----------|--------|-----------|----------|----------|-------|--------|--------|----------|
| Dec-2001 | 43.1 | 52.7 | 50.3 | 48.1 | 63.7 | 51.6 | 68.6 | 55.8 |
| Dec-2016 | 120.7 | 121.5 | 145.9 | 118.5 | 121.6 | 103.7 | 128.1 | 114.2 |
| Increase | 180% | 131% | 190% | 146% | 91% | 101% | 87% | 105% |

Source: ABS All groups CPI

Figures in Table 2 are based on *standing offers* only. Residential electricity prices in WA and the NT are set by their respective governments.

Since 2010, the AEMC has also published annual residential electricity price trends reports. The AEMC reports provide information on the electricity supply chain components expected to affect the trends in residential electricity prices for each Australian state and territory and since 2013¹, have been reported for both standing and market offers. The AEMC Price Trends report is not meant to be used as a historical series, but as a forward looking report on trends. Therefore, there are some methodological features that limit the use of this data as an index of price over time.

5. How have the various components (for example, wholesale prices and networks costs) contributed to this change? In responding to the question, please account for regional network costs ('poles and wires') separately from costs associated with major network infrastructure.

Since 2009-10, the AEMC has estimated the electricity supply chain cost components expected to affect residential electricity prices in its Price Trends Report. A jurisdictional breakdown of costs from 2009-10 to 2016-17 is provided below. There is no data on the supply chain cost components prior to 2009-10.

AEMC data is not directly comparable with ABS data due to methodological differences, including type of offers and location. The AEMC reports on a state-wide basis whereas the ABS reports on capital cities.

¹ In December 2012, the COAG Energy Council issued updated Terms of Reference which expanded the scope of the AEMC's annual residential electricity price trends review to report on both standing and market offer prices (for jurisdictions where market offers are available).

According to the AEMC, between 2009-10 and 2013-14, national average residential² electricity prices increased by an average of 10.3 per cent a year in nominal terms (7.6 per cent in real terms),³ largely due to network costs. Over the period, total electricity network revenues increased across all states, particularly in Queensland, NSW and SA.

According to the AEMC, national average retail prices decreased between 2013-14 and 2015-16⁴ due to the repeal of the carbon price, decreased network costs, and changes in the AEMC's method of calculation⁵.

Table 3. Electricity supply chain cost components (national average, exc. GST)

| National | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Environmental policies | 5% | 5% | 6% | 17% | 15% | 7% | 8% |
| Regulated networks | 42% | 45% | 45% | 50% | 49% | 52% | 50% |
| <i>Transmission</i> | 7% | 8% | 7% | 9% | 8% | 7% | 9% |
| <i>Distribution</i> | 34% | 37% | 38% | 41% | 40% | 45% | 40% |
| Wholesale and retail | 53% | 50% | 49% | 33% | 36% | 41% | 42% |
| Total (c/kWh) | 19.38 | 22.4 | 25.9 | 27.11 | 28.56 | 25.68 | 24.71 |

SOURCE: AEMC Residential Electricity Price Trends report 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016

As Tables 4 – 11 show, the breakdown of cost components varies between jurisdictions.

Table 4. Electricity supply chain cost components (NSW, exc. GST)

| NSW | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Environmental policies | 3% | 1% | 5% | 17% | 15% | 6% | 8% |
| Regulated networks | 46% | 55% | 56% | 59% | 56% | 56% | 53% |
| <i>Transmission</i> | 8% | 8% | 9% | 12% | 12% | 8% | 13% |
| <i>Distribution</i> | 38% | 47% | 47% | 47% | 44% | 49% | 39% |
| Wholesale and retail | 51% | 44% | 40% | 24% | 29% | 37% | 39% |
| Total (c/kWh) | 18.55 | 22.74 | 25.4 | 27.86 | 28.75 | 22.1 | 20.21 |

Table 5. Electricity supply chain cost components (VIC, exc. GST)

| VIC | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Environmental policies | 1% | 3% | 5% | 19% | 16% | 7% | 7% |
| Regulated networks | 36% | 40% | 34% | 39% | 40% | 47% | 49% |
| <i>Transmission</i> | 5% | 6% | 5% | 5% | 5% | 5% | 7% |
| <i>Distribution</i> | 31% | 34% | 30% | 34% | 36% | 42% | 43% |
| Wholesale and retail | 63% | 58% | 61% | 42% | 44% | 46% | 44% |
| Total (c/kWh) | 19.2 | 22.87 | 28.8 | 27.66 | 28.82 | 28.47 | 27.30 |

² Prices for industrial users are commercially confidential and some very large users purchase electricity directly from the wholesale market.

³ Departmental analysis of AEMC Residential Electricity Price Trends report, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016 and ABS All groups CPI.

⁴ Departmental analysis of AEMC Residential Electricity Price Trends report 2013, 2014, 2015, 2016

⁵ AEMC estimates for 2013-14 are based on consumptions levels provided by jurisdictions. From 2014-15 onwards, consumption levels are based on the Australian Energy Regulator bill benchmarks.

Table 6. Electricity supply chain cost components (SEQ, exc. GST)

| SEQ | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|--------------|--------------|-------------|--------------|--------------|--------------|-------------|
| Environmental policies | 3% | 3% | 5% | 20% | 17% | 8% | 15% |
| Regulated networks | 53% | 55% | 50% | 53% | 50% | 53% | 46% |
| <i>Transmission</i> | 8% | 9% | 9% | 8% | 8% | 8% | 10% |
| <i>Distribution</i> | 44% | 46% | 41% | 44% | 42% | 45% | 37% |
| Wholesale and retail | 44% | 42% | 45% | 28% | 34% | 39% | 38% |
| Total (c/kWh) | 18.26 | 20.68 | 22.1 | 23.72 | 28.72 | 27.04 | 25.7 |

Table 7. Electricity supply chain cost components (SA, exc. GST)

| SA | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|
| Environmental policies | 2% | 3% | 4% | 20% | 16% | 11% | 11% |
| Regulated networks | 43% | 44% | 46% | 48% | 46% | 51% | 45% |
| <i>Transmission</i> | 9% | 10% | 10% | 10% | 8% | 9% | 10% |
| <i>Distribution</i> | 35% | 35% | 36% | 38% | 38% | 42% | 34% |
| Wholesale and retail | 55% | 52% | 49% | 32% | 38% | 38% | 45% |
| Total (c/kWh) | 20.98 | 23.99 | 29.9 | 31.27 | 32.66 | 31.77 | 29.75 |

Table 8. Electricity supply chain cost components (WA, exc. GST)

| WA | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|---------------------------------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|
| Environmental policies | 1% | 2% | 4% | 10% | 10% | 3% | 4% |
| Regulated networks | 34% | 36% | 37% | 46% | 37% | 48% | 50% |
| <i>Transmission</i> | 8% | 8% | 8% | 8% | 6% | 7% | 6% |
| <i>Distribution</i> | 26% | 28% | 29% | 38% | 31% | 41% | 44% |
| Wholesale and retail | 66% | 62% | 59% | 44% | 53% | 48% | 46% |
| WA (c/kWh, exc. subsidy) | 20.03 | 22.02 | 24.1 | N/A | 33.76 | 27.96 | 29.18 |
| Residential price with subsidy | 20.96 | 21.03 | 26.2 | 25.00 | 26.04 | 25.23 | 26.38 |

NOTE: For 2012-13, the Tariff Equalisation Charge (the subsidy) is accounted for as a component of distribution charges.

Table 9. Electricity supply chain cost components (TAS, exc. GST)

| TAS | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|
| Environmental policies | 1% | 3% | 3% | 3% | 13% | 4% | 4% |
| Regulated networks | 54% | 48% | 54% | 48% | 52% | 59% | 58% |
| Wholesale and retail | 45% | 49% | 43% | 49% | 36% | 37% | 38% |
| Total (c/kWh) | 18.17 | 20.75 | 26.2 | 28.97 | 24.72 | 21.29 | 21.71 |

Table 10. Electricity supply chain cost components (NT, exc. GST)

| NT | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Environmental policies | 0% | 2% | 0% | 10% | 8% | 4% | 3% |
| Regulated networks | 38% | 34% | 35% | 34% | 38% | 41% | 46% |
| Wholesale | 62% | 64% | 65% | 56% | 54% | 55% | 50% |
| NT (c/kWh, exc. subsidy and retail) | 20.68 | 23.77 | 21.3 | 26.08 | 28.35 | 29.53 | 29.18 |
| Residential price with subsidy | 18.31 | 19.23 | 21.7 | 23.19 | 25.9 | 29.4 | 26.35 |

NOTE: The subsidy for the NT cannot be separated from the cost of retail services. Table 10 therefore represents NT prices excluding subsidy and retail costs.

Table 11. Electricity supply chain cost components (ACT, exc. GST)

| ACT | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Environmental policies | 4% | 5% | 10% | 22% | 20% | 11% | 13% |
| Regulated networks | 39% | 44% | 43% | 40% | 38% | 42% | 43% |
| <i>Transmission</i> | 7% | 7% | 8% | 8% | 7% | 11% | 13% |
| <i>Distribution</i> | 32% | 37% | 35% | 32% | 32% | 31% | 30% |
| Wholesale and retail | 57% | 51% | 47% | 38% | 42% | 47% | 44% |
| Total (c/kWh) | 14.73 | 16.2 | 17 | 20.77 | 21.71 | 20.08 | 18.44 |

6. What is the market share of the four largest generators? What is the market share of the four largest retailers?

Table 12. Market share of four largest electricity generators and electricity retailers in each jurisdiction

| | Queensland | | NSW & ACT | | Victoria | | South Australia | | Tasmania | |
|--------------------------|----------------------------|------------------------|----------------------------|------------------------|----------------------------|------------------------|----------------------------|------------------------|----------------------------|------------------------|
| | Market share Generation | Market share Retail | Market share Generation | Market share Retail | Market share Generation | Market share Retail | Market share Generation | Market share Retail | Market share Generation | Market share Retail |
| Origin | 8.8 | 35.7 | 26.2 | 34.1 | 5.8 | 20.6 | 19.2 | 20.1 | | |
| EnergyAustralia | 0.0 | 5.4 | 11.6 | 28.7 | 25.9 | 19.2 | 8.5 | 9.9 | | |
| AGL | 1.0 | 18.7 | 31.9 | 22.7 | 32.4 | 23.0 | 53.3 | 47.9 | | |
| Engie (Simply) | 0.0 | 0.1 | 0.0 | 0.9 | 11.0 | 8.4 | 12.0 | 9.0 | | |
| Snowy Hydro (Red / Lumo) | 0.0 | 2.6 | 21.3 | 4.0 | 23.4 | 15.9 | 5.3 | 5.4 | | |
| Hydro Tas (Momentum) | 0.0 | 0.0 | 0.0 | 0.5 | 0.8 | 3.6 | 0.3 | 1.4 | 100.0 | |
| Alinta | 4.1 | 0.0 | 0.0 | 0.3 | 0.1 | 2.8 | 0.0 | 4.9 | | |
| Other state-owned | 66.4 | 32.8 | 0.0 | 5.5 | 0.0 | 0.0 | 0.0 | 0.0 | | 100.0 |
| Other private | 19.7 | 4.8 | 9.0 | 3.4 | 0.6 | 6.5 | 1.4 | 1.4 | | |

Source: Australian Energy Regulator (AER), based on unpublished data reported by energy retailers to the AER under National Energy Retail Law obligations (QLD, NSW, SA, Tasmania and ACT) and Essential Services Commission 'Victorian Energy Market report 2015-16' (VIC). The AER does not track data for WA or NT.

Additional notes:

Retail data

Data is for small customer numbers at 30 June 2016, with 'small customers' as defined under the National Energy Retail Law and Victorian retail legislation.

Generation data

Available capacity as published by Australian Energy Market Operator for summer 2016-17.

7. What is the average return on equity of the four largest generators? What is the average return on capital of the four largest retailers?

The department, the Australian Energy Regulator, the Australian Energy Market Commission, and Australian Bureau of Statistics do not monitor rates of return of businesses that participate in Australia's energy markets. Most energy businesses do not publish the performance measures required to calculate average return on equity or average return on capital. Where energy businesses do report on their business performance, the report may reflect their wider portfolio and not just their generation or retail interests.