Purpose of this report

- To estimate future retail electricity prices and bill outcomes for representative residential consumers in each Australian state and territory. The key components are the electricity consumption of representative consumers, representative retail electricity prices and the electricity supply chain cost components.

- To identify the changes in the energy supply chain cost components that are driving residential electricity prices and bills for each Australian state and territory (excluding the Northern Territory* and Western Australia**), and nationally, from 2019-20 to 2022-23 (the reporting period).

- To explain the principal concepts and calculation methods that have been used to generate the results for the key components.

*Note that this figure does not include Northern Territory – See slide 3 for explanation.
**Note that this figure does not include Western Australia – See slide 4 for explanation
Explanations behind not including Northern Territory

• In previous years prior to 2019, the AEMC used the Territory Generation’s bundled wholesale load following price provided by the Department of Treasury and Finance (DTF) to perform the analysis. This price is no longer an accurate representation of wholesale costs in the DKIS due to the entry of independent generators to the Darwin-Katherine Interconnected System (DKIS). As such, publishing this price information would be misleading as an indicator of wholesale electricity prices and could undermine the integrity of future data reporting and analysis.

• Currently all commercial transactions in the Northern Territory’s electricity market occur through bilateral contracts between generators and retailers, and information related to these contracts is commercial in confidence. The DTF has informed the AEMC that there does not appear to be any price that can be used for publication without the risk of providing misleading information around the movement of wholesale prices in the DKIS or revealing information that could be detrimental to competition.
Explanations behind not including Western Australia

• This report does not include analysis on Western Australia’s electricity prices. Western Australian residential electricity prices are set by the State Government as part of the annual State Budget process.
• The Western Australian Minister for Energy has advised that the Western Australian Government considers a broad range of factors in determining household electricity prices, including the impacts on electricity consumers.
• Given the impacts of COVID-19, the Western Australian Government has put a freeze on price changes in 2020-21 and provided additional financial support to these electricity consumers throughout 2020. As these policy decisions cannot be accounted for in preparation of the Residential Electricity Price Trends report, the Western Australian Government has requested that Western Australia not be included in this report.
Agenda

Our approach
1. Overview of the approach

Results
2. Trends in national residential electricity prices and bills
3. Key drivers of trends in cost components by jurisdictions

Main assumptions
4. Electricity consumption and prices of representative customers
5. Electricity supply chain cost components
OUR APPROACH
Overview of the approach

- **Representative customer approach** — we have estimated 2020-21 retail bills for representative customers, i.e., for a constructed ‘typical’ customer with an assumed level of consumption.

- **Retail offers** — we have used retail offers obtained from Energy Made Easy and Victorian Energy Compare to estimate the jurisdictional average bill, weighted by retailer customer numbers.

- **Wholesale costs** — we calculate wholesale electricity purchase costs based on our own market modelling.

- **Environmental costs** are based on the information from the Clean Energy Regulator and jurisdictional data.

- **Regulated network costs*** are assumed to change in line with changes in the revenue allowances of TNSPs and DNSPs.

- **All results** are in nominal terms unless specified otherwise.

*Note that the latest PTRMs used in the analysis also include ElectraNet’s Eyre Peninsula contingent project and QNI minor contingent project. The cost of the Integrated System Plan 2020 projects are only included when it is considered by the AER through the determination process and/or contingency project. VNI Minor has been included in our wholesale market modelling but this has not been reflected in the transmission costs because it does not appear in the PTRM. In our opinion, this makes little to no difference to the overall results because of the relative size of VNI minor.
RESULTS
TRENDS IN NATIONAL ELECTRICITY PRICES AND BILLS
National annual residential bill expects to go down over the reporting period*

Annual nominal residential bill (weighted by customer numbers) is expected to decrease until FY2022 and increase in FY2023. Overall prices fall despite increase in FY2023.

*Note that this figure does not include Northern Territory and Western Australia – see slide 3 and 4 for explanation.
Trends in residential bills by jurisdiction over 3-year period

SE QLD residential annual bill over reporting period:
- 2019/20 = $1,334/year
- 2022/23 = $1,144/year

NSW residential annual bill over reporting period:
- 2019/20 = $1,292/year
- 2022/23 = $1,263/year

ACT residential annual bill over reporting period:
- 2019/20 = $1,967/year
- 2022/23 = $2,011/year

TAS residential annual bill over reporting period:
- 2019/20 = $1,945/year
- 2022/23 = $1,874/year

VIC residential annual bill over reporting period:
- 2019/20 = $1,132/year
- 2022/23 = $960/year

SA residential annual bill over reporting period:
- 2019/20 = $1,884/year
- 2022/23 = $1,680/year
RESULTS
KEY DRIVERS OF TRENDS IN COST COMPONENTS BY JURISDICTION
Significant drop in contract prices*

*Note that the contracts for 2022 and 2023 have relatively low liquidity, i.e., there are few trades on which these prices are based.
Drop in gas prices is also a contributor to lower wholesale prices

Source: AEMC analysis of ACCC data
Trends in QLD supply chain components

- Wholesale costs are expected to go down by 35 per cent (or $188) over reporting period.
- Regulated network costs* are expected to go down by 7 per cent (or $42) due partly by DUOS over recovery in 2018-19 to be returned to customers in 2020-21.
- Environmental costs are expected to go up by 34 per cent (or $29) over reporting due to the re-introduction of SBS** from 1 July 2020.
- Annual residential bill is expected to decrease by 14 per cent (or $190) over reporting period, driven by decrease in regulated network costs and wholesale costs.

* The regulated network tariffs in 2019-20 and 2020-21 come from AER annual pricing proposals and in 2021-22 and 2022-23 come from AER final distribution determinations.

** The Queensland Government funded the Solar Bonus Scheme (SBS) from 1 July 2017 to 1 July 2020.
What is driving a decrease in wholesale costs in QLD?
Trends in NSW supply chain components

- Wholesale costs are expected to go down by 12 per cent (or $57) over the reporting period.
- Regulated network costs* are expected to increase by 4 per cent (or $25) over the reporting period due to increase in transmission cost.
- Environmental costs are expected to go down by 13 per cent (or $12) over the reporting period driven by the LRET cost.
- Annual residential bill is expected to decrease by 2 per cent (or $29) over the reporting period.

* The regulated network tariffs in 2019-20 and 2020-21 come from AER annual pricing proposals and in 2021-22 and 2022-23 come from AER final determinations.
Total committed generation is only that category of generation sourced from AEMO that had reached financial close before the modelling was undertaken. Other new capacity may have been included as new generation within the modelling period. Since the modelling was undertaken, additional projects have been committed to across the NEM which would impact these results. Importantly, our modelling does not incorporate the recently announced NSW Roadmap, which seeks to underwrite the addition of 12 GW of renewable energy by 2030. Our modelling also does not incorporate the recent decision of the Federal Government in setting a target for electricity sector to deliver 1000 MW of new dispatchable energy to replace the Liddell power station before it closes down in 2023.
• Wholesale costs are expected to go down by 13 per cent ($108) in over the reporting period.
• Regulated network costs* are expected to increase by 15 per cent (or $78) over the reporting period due partly to previous under-recoveries and higher operating expenditure.
• Environmental costs are expected to go down by 8 per cent (or $26) over the reporting period due to LRET cost.
• Annual residential bill is expected to increase by 2 per cent (or $45) over the reporting.

* The regulated network tariffs in 2019-20 and 2020-21 come from AER annual pricing proposals and in 2021-22 and 2022-23 come from AER final determinations. Also note that the FiT schemes’ forecasts are provided by the ACT government.
Trends in VIC supply chain components

- Wholesale costs are expected to go down by 37 per cent (or $197) over the reporting period.

- Regulated network costs* are expected to decrease by 6 per cent (or $27) over the reporting period due to lower return on capital.

- Environmental costs are expected to go down by 11 per cent (or $10) over the reporting period driven by the LGC cost.

- Annual residential bill is expected to decrease by 15 per cent (or $172) over the reporting period.

* The regulated network tariffs in 2019-20 and 2020-21 come from AER annual pricing proposals and in 2021-22 and 2022-23 come from AER final and draft determinations.
Total committed generation is only that category of generation sourced from AEMO that had reached financial close before the modelling was undertaken. Other new capacity may have been included as new generation within the modelling period. Since the modelling was undertaken, additional projects have been committed to across the NEM which would impact these results.
Trends in SA supply chain components

- Wholesale costs are expected to go down by 41 per cent (or $349) over the reporting period.
- Regulated network costs* are expected to decrease by 1 per cent (or $11) over the reporting period due to lower return on capital.
- Environmental costs are expected to go down by 9 per cent (or $15) over the reporting period due to the LRET cost.
- Annual residential bill is expected to go down by 11 per cent (or $203) over the reporting period.

* The regulated network tariffs in 2019-20 and 2020-21 come from AER annual pricing proposals and in 2021-22 and 2022-23 come from AER draft distribution determinations.
Modelled hourly price
Increasing rooftop penetration driving minimum demand and negative prices

Total committed generation is only that category of generation sourced from AEMO that had reached financial close before the modelling was undertaken. Other new capacity may have been included as new generation within the modelling period. Since the modelling was undertaken, additional projects have been committed to across the NEM which would impact these results.
Trends in TAS supply chain components

- Wholesale costs are expected to go down by 18.6 per cent (or $138) over the reporting period.

- Regulated network costs* are expected to increase by 3 per cent (or $26) over the reporting period.

- Environmental costs are expected to go down by 11 per cent (or $18) over the reporting period.

- Annual residential bill** is expected to decrease by 4 per cent (or $70) over the reporting period, driven by wholesale costs and environmental costs.

* The regulated network tariffs in 2019-20 and 2020-21 come from AER from annual pricing proposals and in 2021-22 and 2022-23 come from AER final determinations.

** The Tasmania Economic Regulator put a cap on the annual growth of the standing offer prices according to the CPI for Hobart.
Limitations

- **Spot price modelling:**
  - Our spot price modelling assumes bidding behaviour mirrors historical bid profiles. We have calibrated bids so that our modelled spot prices align with current futures prices.
  - Nevertheless, the shape of our modelled prices – i.e., *when* high prices occur – is driven by historical bid profiles. Bidding behaviour may of course change, and this would affect our results.
  - The NSW Government’s Electricity Infrastructure Roadmap has not been taken into account.

- **Network costs:**
  - Our analysis takes into account relevant information from the latest available network revenue determinations.

- **Retail offers:**
  - We have assumed that the residual component of the bill, which is derived from the difference between September 2020 retail offers and the sum of the other cost components, remains constant in real terms.
  - In reality, the retail margin and retail costs may change over time, and this would affect our results.
## Estimated national prices on year ahead

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total retail price</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated price</td>
<td>28</td>
<td>27</td>
<td>25</td>
<td>26</td>
<td>26</td>
<td>30</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>Estimated price change</td>
<td>-1</td>
<td>-2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Estimated direction of trend</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>Actual price</td>
<td>29</td>
<td>26</td>
<td>25</td>
<td>28</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>Actual price change</td>
<td>-3</td>
<td>-1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>-3</td>
<td></td>
</tr>
<tr>
<td>Actual direction of trend</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>Network costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated price</td>
<td>14</td>
<td>14</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Estimated price change</td>
<td>0</td>
<td>-2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>Estimated direction of trend</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>Actual price</td>
<td>14</td>
<td>13</td>
<td>12</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Actual price change</td>
<td>-1</td>
<td>-1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>Actual direction of trend</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>Wholesale costs*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated price</td>
<td>5</td>
<td>10</td>
<td>11</td>
<td>7</td>
<td>8</td>
<td>11</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Estimated price change</td>
<td>5</td>
<td>1</td>
<td>-4</td>
<td>1</td>
<td>3</td>
<td>-1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Estimated direction of trend</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>Actual price</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Actual price change</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>-3</td>
<td></td>
</tr>
<tr>
<td>Actual direction of trend</td>
<td>Increase</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>Environmental costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated price</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Estimated price change</td>
<td>-2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Estimated direction of trend</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>Actual price</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Actual price change</td>
<td>-3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Actual direction of trend</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td></td>
</tr>
</tbody>
</table>

Note: * For 2014-15 and 2015-16, expected and actual wholesale and retail costs were combined and presented as ‘competitive market costs’. For 2016-17, 2017-18, 2018-19 and 2019-20 the comparison of actual and expected results are for wholesale costs only.  
** For 2019 report, the figures are estimated by excluding Northern Territory.  
^ For 2020 report, the figures are estimated by excluding Northern Territory and Western Australia.
MAIN ASSUMPTIONS
ELECTRICITY CONSUMPTION AND PRICES OF REPRESENTATIVE CUSTOMERS
Electricity consumption of representative customers

- Representative customers are defined by their electricity consumption characteristics, which are their total annual electricity consumption measured in kWh and how this consumption varies through the year, on a quarterly basis.
- Data provided by the AER from their 2017 Electricity Bill Benchmarks* are used to estimate the annual consumption value and quarterly breakdown for most jurisdictions.
- Equivalent values to the AER are provided by jurisdictions in South Australia.
- The AER benchmark values are based on a survey of around 8,000 households where participants are asked about their homes and the way in which they use electricity.

* At time of writing, the AER Electricity and Gas consumption benchmarks for residential customers 2020 has not been published and scheduled to be released in December 2020.
The same consumption levels have been used for the whole reporting period.

Table 3: Annual consumption of representative consumer – based on AER benchmark values

<table>
<thead>
<tr>
<th>JURISDICTION</th>
<th>MOST COMMON HOUSEHOLD TYPES</th>
<th>CONSUMPTION BY TYPE (KWH)</th>
<th>TOTAL ANNUAL CONSUMPTION (KWH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>2-person household, no mains gas, air conditioning, off-peak hot water and on a market offer</td>
<td>Tariff 11: 4,434</td>
<td>5,240</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tariff 33 (Controlled Load 2): 806</td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>2-person household; mains gas and on a market offer</td>
<td>4,215</td>
<td>4,215</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>2-person household, no mains gas, electricity water heating and on the regulated standing offer</td>
<td>7,151</td>
<td>7,151</td>
</tr>
<tr>
<td>Victoria</td>
<td>2-person household, mains gas and on market offer</td>
<td>3,865</td>
<td>3,865</td>
</tr>
<tr>
<td>Tasmania</td>
<td>2-person household, no mains gas, electric water heading and on the regulated standing offer</td>
<td>Tariff 31 (Lighting): 3,559</td>
<td>7,908</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tariff 41 (Heating): 4,349</td>
<td></td>
</tr>
</tbody>
</table>

Source: AER
The same consumption levels have been used for the whole reporting period.

### Table 4: Annual consumption of representative consumer – provided by jurisdictional governments

<table>
<thead>
<tr>
<th>JURISDICTION</th>
<th>MOST COMMON HOUSEHOLD TYPES</th>
<th>GENERAL CONSUMPTION (KWH)</th>
<th>TOTAL ANNUAL CONSUMPTION (KWH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Australia</td>
<td>2-person household; mains gas and on a market offer</td>
<td>5,000</td>
<td>5,000</td>
</tr>
</tbody>
</table>

**Source:** South Australia Government
Representative retail electricity prices

Prices for standing offers and market contracts

Consumption quantities of representative customers

Billing outcomes

Our analysis has used the lowest offer for each retailer
## Actual retail offers for 2019-20 and 2020-21

### Table 5: Sources of electricity pricing data

<table>
<thead>
<tr>
<th>JURISDICTION</th>
<th>OFFER</th>
<th>2019-20</th>
<th>2020-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW, ACT, SA</td>
<td>Standing Market</td>
<td>Retailer offers obtained from Energy Made Easy on 20 September 2019</td>
<td>Retailer offers obtained from Energy Made Easy on 11 September 2020</td>
</tr>
<tr>
<td>South East Queensland</td>
<td>Standing Market</td>
<td>Retailer offers obtained from Energy Made Easy on 20 September 2019</td>
<td>Retailer offers obtained from Energy Made Easy on 11 September 2020</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Standing Market</td>
<td>Aurora Energy approved standing offers prices from 1 July 2019</td>
<td>Aurora Energy approved standing offers prices from 1 July 2020</td>
</tr>
<tr>
<td>Victoria</td>
<td>Standing Market</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retail offers obtained from Victorian Energy Compare on 1 August 2019</td>
<td>Retail offers obtained from Victorian Energy Compare on 1 August 2019 and 15 October 2020</td>
</tr>
</tbody>
</table>

**Source:** AEMC and cited sources

**Note:** These offer prices include both variable and fixed charges. In previous years, Victorian price changes occur on a calendar year basis, unlike all other jurisdictions where price changes occur on a financial year basis. From 30 June 2021 onwards, Victorian price changes will occur on a financial year basis instead as approved by the Victorian government. Data used for estimating Victorian offer price in 2019-20 come from Victorian Energy Compare on 1 August 2019.
Process of calculating a jurisdictional average price

Step 1: Converting pricing into cents per kilowatt hour values

Step 2: Within a network distribution area, each retailer’s pricing (in c/kW) is weighted by their market share to get an average price for the distribution area.

Step 3: The average retail pricing for each distribution network is weighted by the proportion of customers to get an average retail price per jurisdiction.
MAIN ASSUMPTIONS
ELECTRICITY SUPPLY CHAIN COST COMPONENTS
Regulated network costs

Regulated network costs are estimated using Annual Pricing Proposals produced by the distributed network service providers (DNSPs) before each new financial year (or calendar year for Victorian network businesses). These proposals are to be approved by the AER and set out the overall network use of service (NUOS) charge for each tariff class. This can be broken down into the:

- transmission use of service charge (TUOS)
- distribution use of service charge (DUOS)
- metering charges (capital and non-capital)
- jurisdictional scheme costs (if applicable).

We assume the representative consumer in each jurisdiction still has a Type 6 accumulation meter owned by a DNSP.
Regulated network costs – Network tariff sources and regulatory periods

Summary of approaches for estimating network costs

<table>
<thead>
<tr>
<th></th>
<th>2019/20</th>
<th>2020/21</th>
<th>2021/22</th>
<th>2022/23</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transmission</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New South Wales/ACT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South East Queensland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasmania ^</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td>CY 2019</td>
<td>CY2020</td>
<td>CY 2020</td>
<td>CY2021</td>
</tr>
<tr>
<td><strong>Distribution &amp; Metering</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New South Wales/ACT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South East Queensland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasmania^</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td>CY 2019</td>
<td>CY2020</td>
<td>CY 2020</td>
<td>CY2021</td>
</tr>
</tbody>
</table>

Key:
- **Annual pricing proposal**
- **Final decision**
- **Constant in real terms**
- **Draft decision**

^ These network service providers are both the transmission and distribution businesses.
Victorian electricity distribution businesses must submit its revenue proposal to the AER for a 5-year regulatory period. They must do this before the start of the regulatory period.

The previous regulatory period is between 1 January 2016 and 31 December 2020. The current regulatory period is between 1 July 2021 and 30 June 2026. Due to the change in the timing of the annual Victorian electricity and gas network prices changes from a calendar year basis to a financial year basis, there is a gap of 6 months between the previous and the current regulatory periods. On 2 November 2020, Victorian electricity distribution businesses submitted to the AER the final annual pricing proposal for HY2021.

We will estimate the DUOS, TUOS and metering charges between 1 July 2019 and 30 June 2021 using the pricing proposals published on the AER. These pricing proposals are expressed in terms of calendar year. We will take the average between the charges for 2019CY and 2020CY for DUOS. TUOS and metering charges in 2019-20 and 2020CY and 2021CY for DUOS, TUOS and metering charges in 2020-21.

For the growth rates for DUOS and metering charges between 2021FY and 2026FY, we will use the PTRM model (2022-26) published by the DNSP in the 2021-26 Draft Determination. For the growth rates for TUOS between 2021FY and 2026FY, we will use the PTRM model (2017-22) published by the TNSP in the 2017-22 Final Determination.
Wholesale electricity costs in the NEM

Ancillary services are those services used by the market operator to manage key technical characteristics of the power system, such as frequency control. Based on AEMO’s historical 2019/20 to 2020/21 ancillary service settlement data, we have used 3-year moving average to interpolate results in future years.

Estimated transmission and distribution loss factors were based on AEMO’s 2019/20 and 2020/21 loss factor data, except for Tasmania where the factors were obtained from the Tasmania Energy Regulator’s (TER) retail pricing determination.

There are many steps in the process of calculating wholesale electricity purchase costs. In subsequent slides we will examine these in details.

Market fees are charges to market participants to cover the operational expenditures of AEMO. AEMO’s estimated market fees have been used for the reporting period. The actual NEM fees for 2018-19 and 2019-20 are $0.44/MWh and $0.50/MWh respectively. The fee is then estimated to increase to 8% for 2020-21 and 12% for each of the forward 4 years.
Wholesale electricity purchase costs

1. Create price paths using market modelling
2. Calculate hedging portfolio
3. Calculate WEPCs for each DNSP
Wholesale electricity purchase costs – Main assumptions

1. Create price paths using market modelling
   - Historical bids calibrated to future prices
   - Demand profile from ESOO*
   - Bids are updated based on fuel costs and ESOO 2018
   - Load trace from 5 different reference years
   - 50% and 10% POE** demand conditions

2. Calculate hedging portfolio
   - Heuristic hedging profile determine contract volumes
   - Contract prices are based on 24-month exponential book build
   - NSLP and MRIM are used to represent retailer’s loads.
   - Assume a risk-averse behaviour

3. Calculate wholesale electricity purchase costs for each DNSP
   - Determine 95th percentile of WEPCs
   - 2 price levels – POE10 and POE50
   - Determine cash flows for 500 price paths

*Electricity Statement of Opportunities
**Probability of Exceedance
1. Create price paths using market modelling

Initial inputs to market model

- Unit traits
- Demand
- Generator load traces
- Generator Bids

Results from market model are used to optimise and create the final price paths

Medium-term run:
- Solve for marginal cost of water for hydro units
- Create random unit outages

Short-term run:
- 30 minute intervals
- Solve for optimal dispatch and resulting prices

Calibrate results to ASX forward curve

- Prices
- Dispatch
2. Calculate optimal hedging portfolio

**Inputs**

1. ASX Futures Prices
2. Modelled prices
3. NSLP reference years
4. Model spot price paths

**Heuristic hedging profile**

- Calculated contract prices
- Heuristic hedging quantity assumptions
- NSLP loads
- Spot prices

Calculate Wholesale Electricity Price
3. Calculate wholesale electricity purchase costs for each DNSP

**Step 1**

1. Calculate WEPCs for each DNSP and load type
   - 5 reference years
   - 10 outages
   - 5 NSLP load traces
   - 2 price levels – POE10 and POE50

This results in 500 price paths.

**Step 2**

Obtain the 95th percentile WEPCs by load type by DNSP

Final WEPC $/MWh

95th percentile
Environmental costs – Renewable energy target - LRET

LGCs (Large-scale generation certificates) price - $/MWh

Renewable energy percentage (RPP) - %

LRET cost - $MWh

Fair value of the subsidy required for a new entrant renewable generator entering into a power purchase agreement (PPA) to recover its fixed and variable costs. This is based on the LGC closing rates from the Clean Energy Regulator (CER).

Minister for Energy set the RPP by the end of March each year, which is based on the legislated 33,000 GWh by 2020. Since the RPP is set on a calendar year basis, a 75/25 per cent split has been used to convert it to financial year basis due to the release date.

The calculation of RPP is the quantity of renewable electricity required to meet the annual target (accounting for any prior year carry-overs) divided by the total electricity acquisitions (equivalent to their total customer base’s consumption level, less any exemptions, such as for emissions intensive trade exposed industries).
Environmental costs – Renewable energy target - SRES

STCs (Small-scale technology certificates) price - $/MWh

Small-scale technology percentage (STP) - %

SRES cost - $/MWh

STCs are traded in the wholesale market, so the price depends on the supply and demand for certificates. Prices are based on the data from the Clean Energy Regulator (CER).

The small-scale technology percentage is set in the same way as the RPP but rather than adjusting it to meet a target like done in the LRET scheme, it is set to adjust demand for certificates to balance supply. STP also uses a 75/25 per cent split.

The calculation of STP is the estimated number of STCs to be created for the year (accounting for any prior year carry-overs) divided by the total electricity acquisitions (equivalent to their total customer base’s consumption level, less any exemptions, such as for emissions intensive trade exposed industries).
Assume around 2GW of capacity installed in 2019 and the same in 2020; around 3GW for 2021, 2022 and 2023.

Installations are in postcode zone 3 with postcode rating of 1.382. The other three postcode zones are zone 1 (1.622), zone 2 (1.536) and zone 4 (1.185) – postcode zone 3 is chosen because of the coverage around the installations.

Use the deeming periods (12 years for 2019, 11 years for 2020 and so on).

Include static solar water heater STCs at around 2 million STCs.
Residual component or retail cost

Method of deriving the residual component from the retail offer price

\[
\text{Wholesale energy} + \text{Network} + \text{Environmental policies} + \text{Residual} = \text{Retail offer}
\]

Representation of residual component*

\[
\text{Retail OPEX} + \text{CARC} + \text{ROI} + \text{Errors} = \text{Residual}
\]

*Note that CARC refers to customer acquisition and retention cost, ROI refers to return on investment and OPEX refers to operating expenses.
Office address
Level 15, 60 Castlereagh Street
Sydney NSW 2000
ABN: 49 236 270 144

Postal address
GPO Box 2603
Sydney NSW 2001

T (02) 8296 7800