

RESIDENTIAL ELECTRICITY PRICE TRENDS REPORT

END-YEAR 2020

STRATEGY AND ECONOMIC ANALYSIS
21 DECEMBER 2020

AEMC

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
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Main assumptions

4. Electricity consumption and prices of representative customers
 5. Electricity supply chain cost components
-

OUR APPROACH



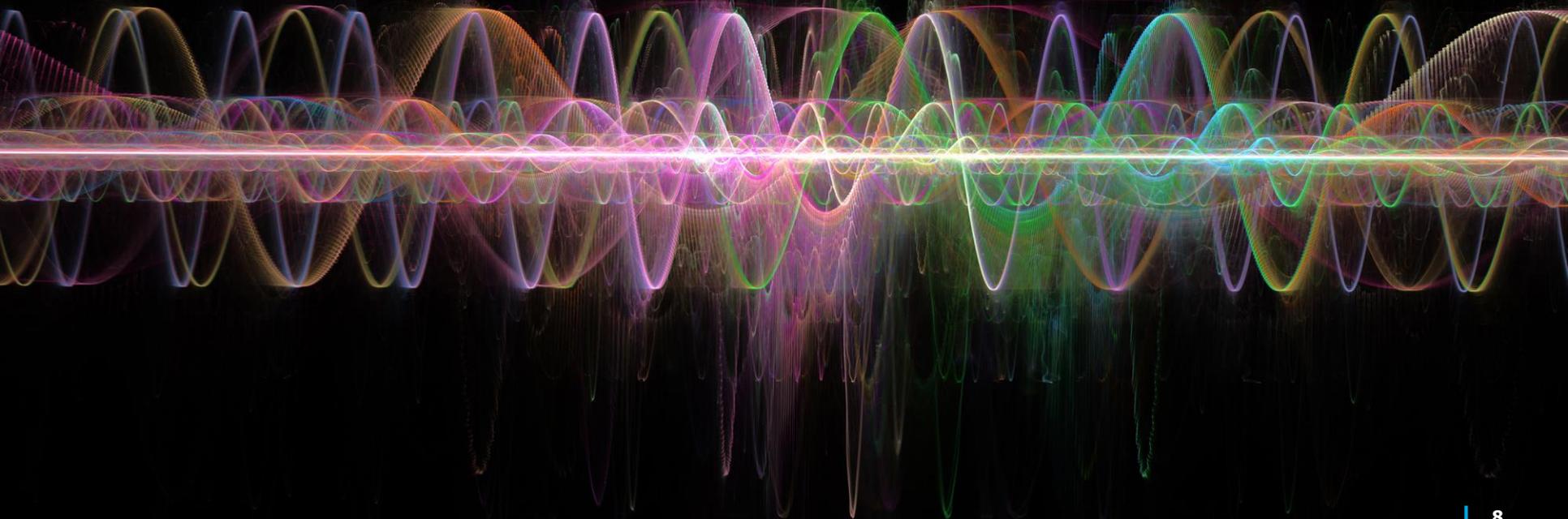
Overview of the approach

- **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



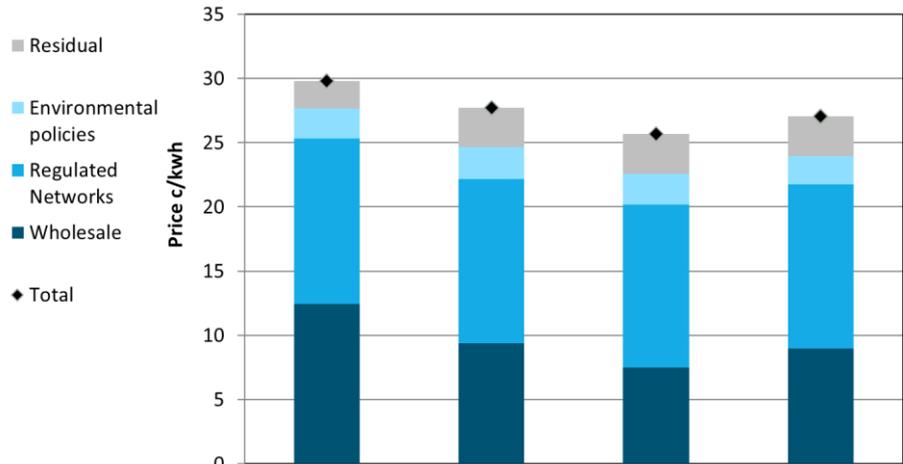
National annual residential bill expects to go down over the reporting period*

9%

\$117

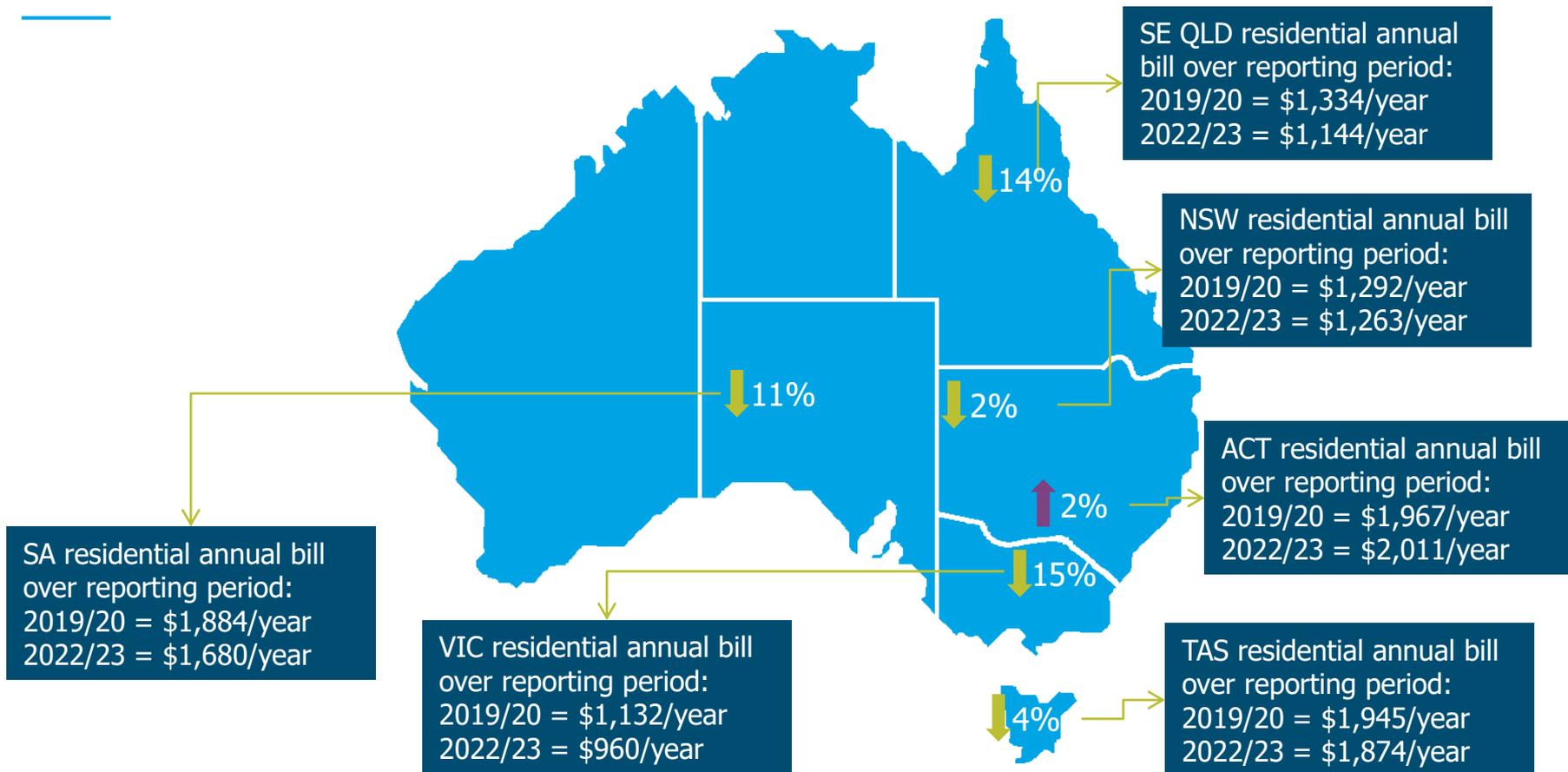
Annual nominal residential bill (weighted by customer numbers) is expected to decrease until FY2022 and increase in FY2023. Overall prices fall despite increase in FY2023.

*Note that this figure does not include Northern Territory and Western Australia – see slide 3 and 4 for explanation.



	2019/20 Base Year		2020/21 Current Year		2021/22		2022/23	
	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year
Environmental policies	2.29	\$104	2.52	\$116	2.40	\$111	2.15	\$99
LRET	0.78	\$36	0.76	\$35	0.62	\$28	0.44	\$20
SRES	0.87	\$39	0.97	\$44	0.98	\$45	0.92	\$42
Jurisdictional Schemes	0.45	\$21	0.61	\$29	0.61	\$30	0.60	\$29
Efficiency Schemes	0.19	\$8	0.18	\$8	0.19	\$8	0.19	\$8
Regulated Networks	12.91	\$579	12.77	\$572	12.66	\$569	12.78	\$575
Transmission	1.90	\$87	2.06	\$94	2.14	\$98	2.21	\$101
Distribution	10.02	\$448	9.75	\$436	9.70	\$435	9.75	\$438
Metering	0.99	\$43	0.96	\$42	0.82	\$37	0.83	\$37
Wholesale	12.43	\$556	9.39	\$421	7.50	\$338	8.99	\$403
Residual	2.16	\$98	3.05	\$138	3.10	\$140	3.15	\$143
Total	29.80	\$1,337	27.72	\$1,247	25.66	\$1,158	27.07	\$1,220

Trends in residential bills by jurisdiction over 3-year period

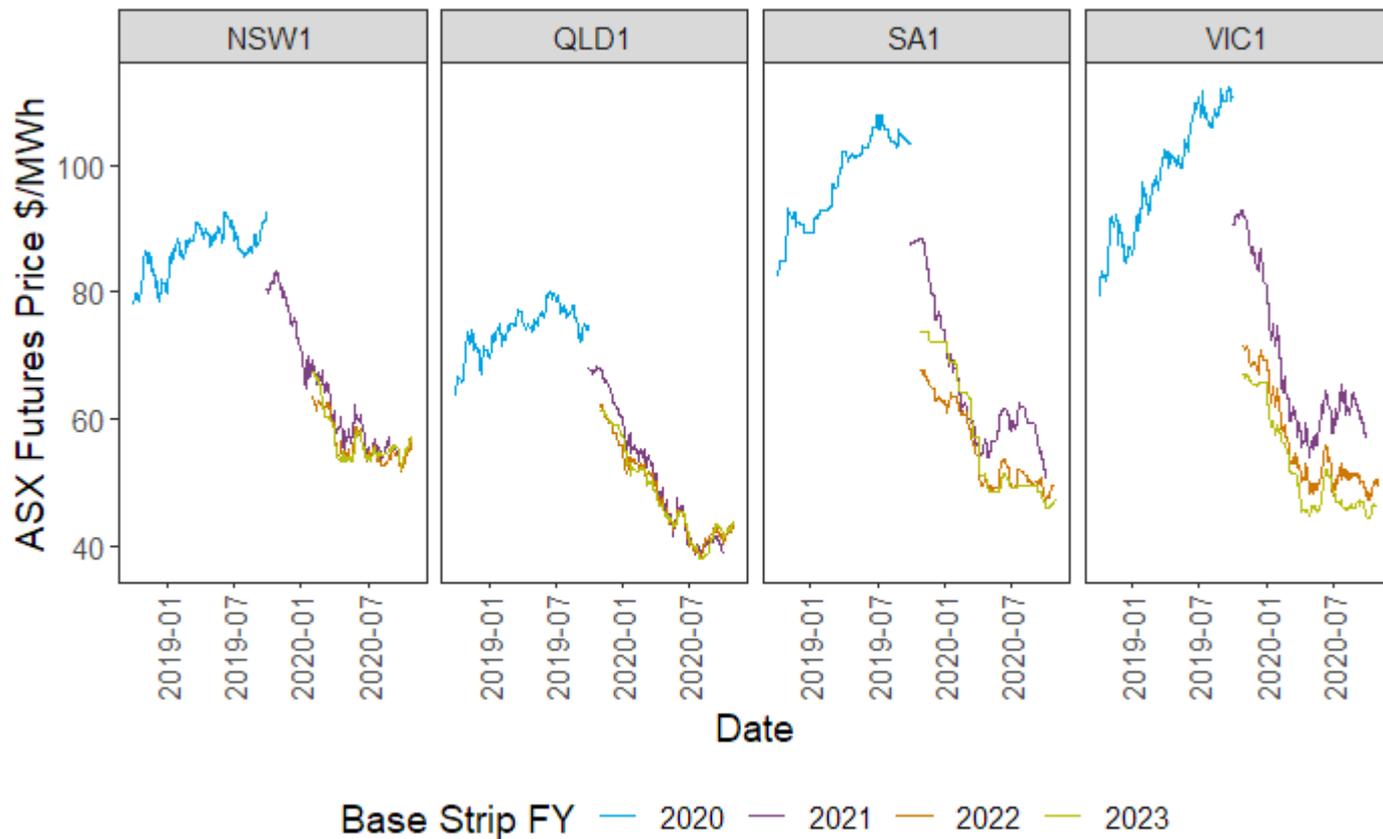


RESULTS

KEY DRIVERS OF TRENDS IN COST
COMPONENTS BY JURISDICTION

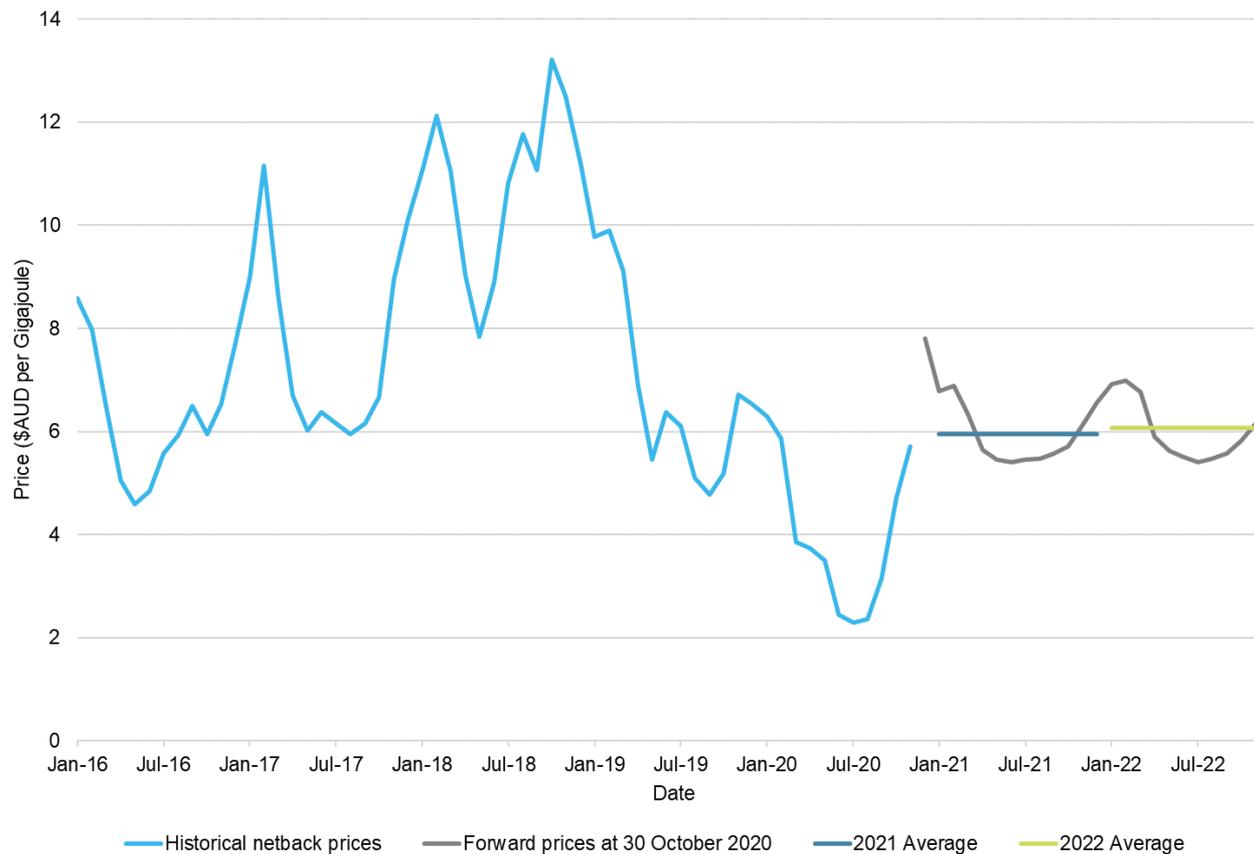


Significant drop in contract prices*



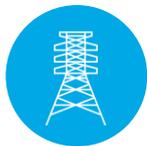
*Note that the contracts for 2022 and 2023 have relatively low liquidity, i.e., there are few trades on which these prices are based.

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.



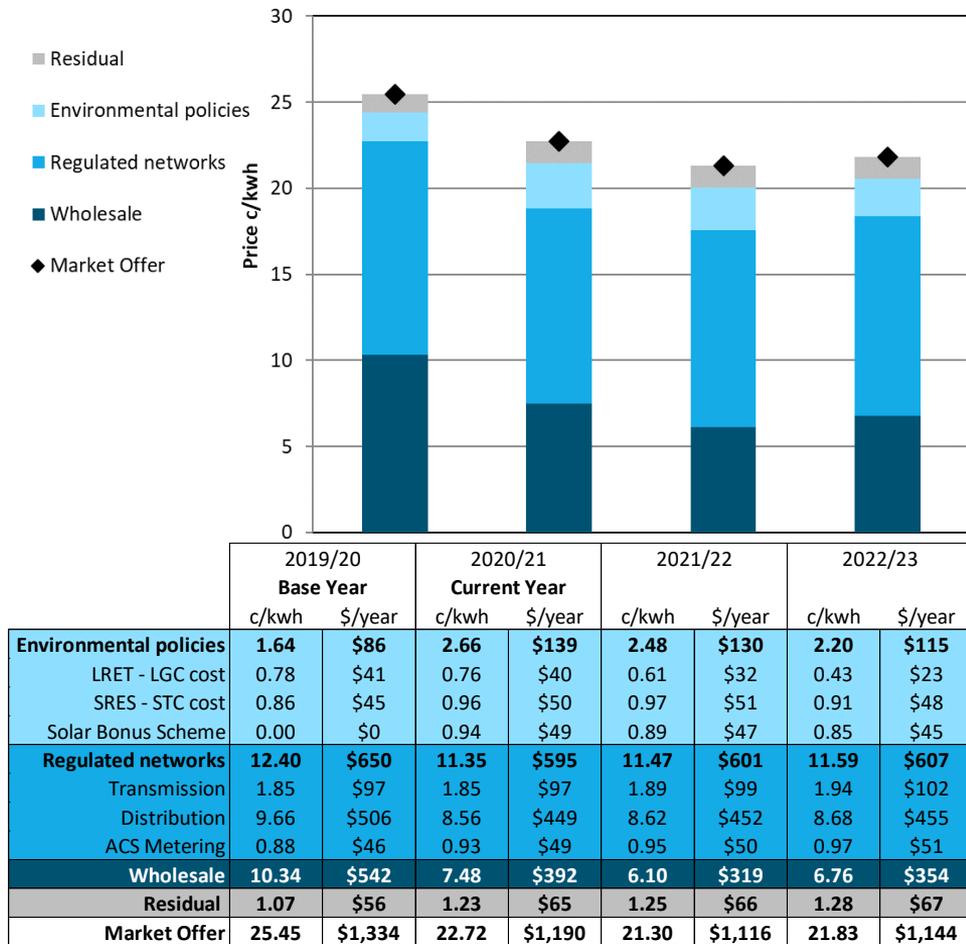
- Regulated network costs* are expected to go down by 7 per cent (or \$42) due partly by DUOS over recovery in 2018-19 to be returned to customers in 2020-21



- 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.



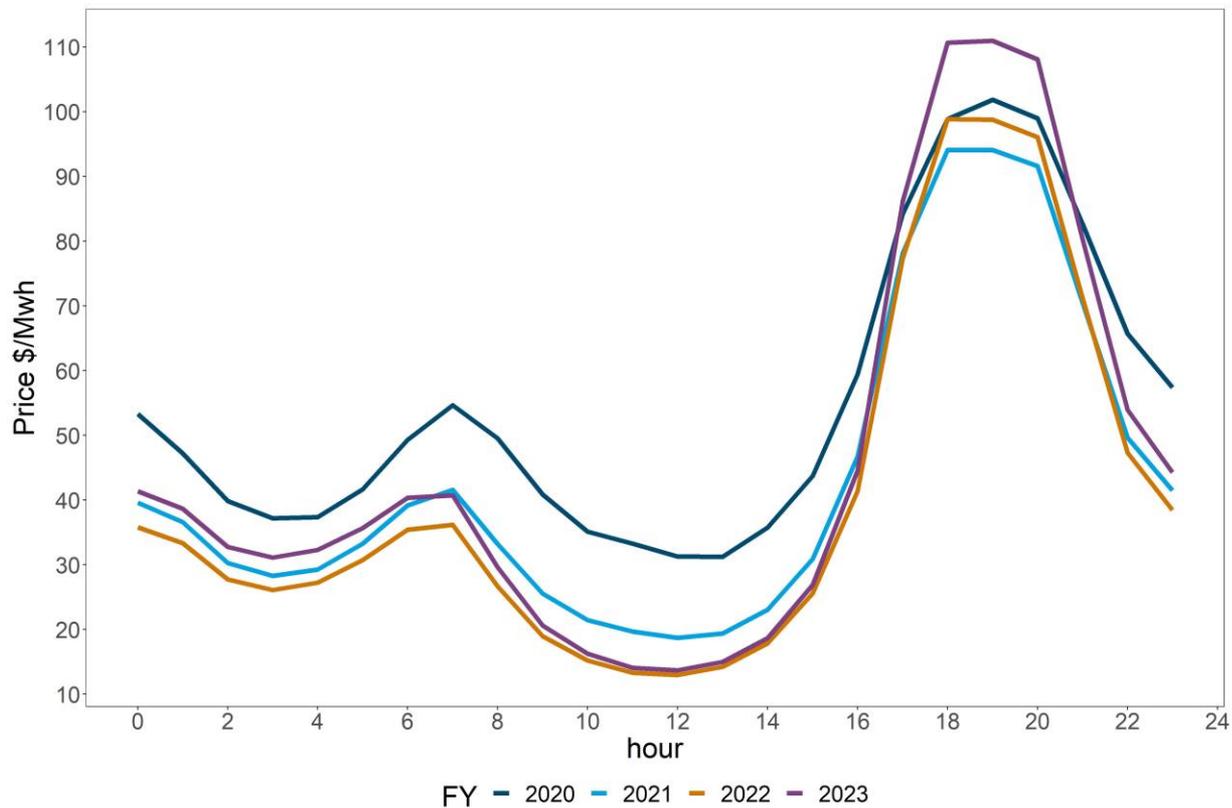
- Annual residential bill is expected to decrease by 14 per cent (or \$190) over reporting period, driven by decrease in regulated network costs and wholesale costs.



* 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.



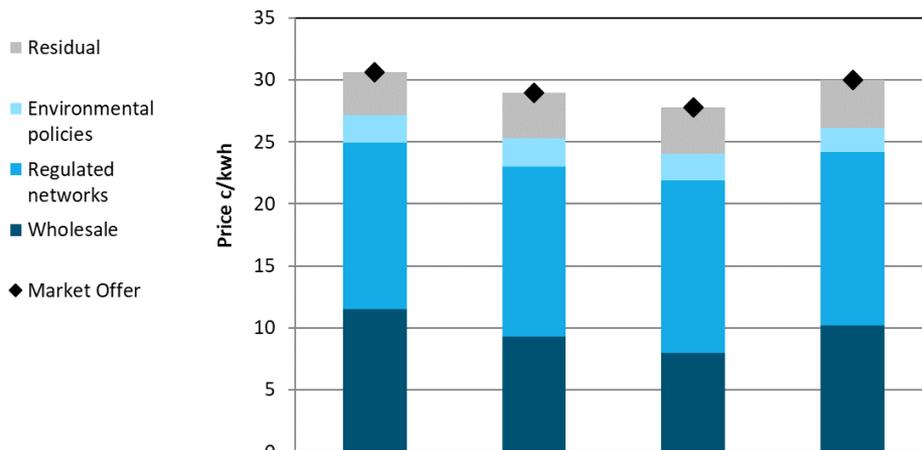
- Regulated network costs* are expected to increase by 4 per cent (or \$25) over the reporting period due to increase in transmission cost.



- Environmental costs are expected to go down by 13 per cent (or \$12) over the reporting driven by the LRET cost.



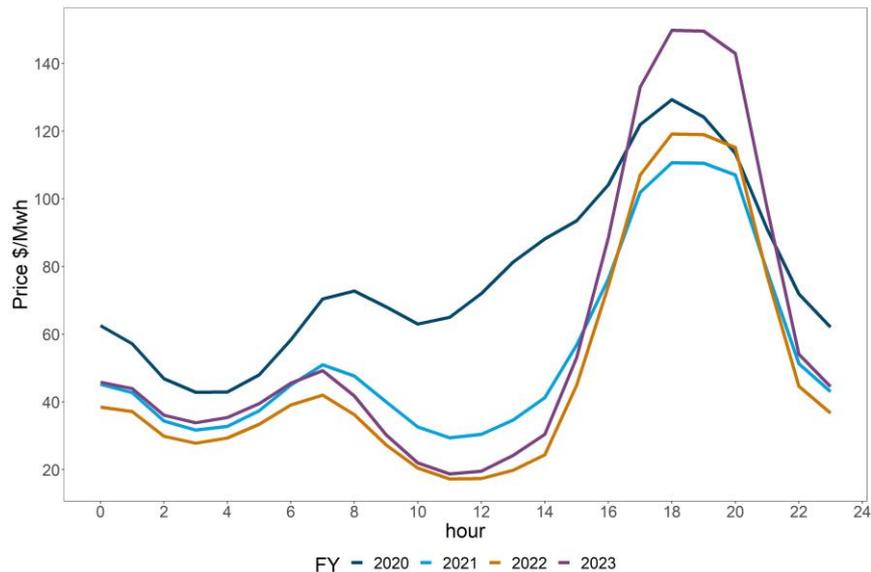
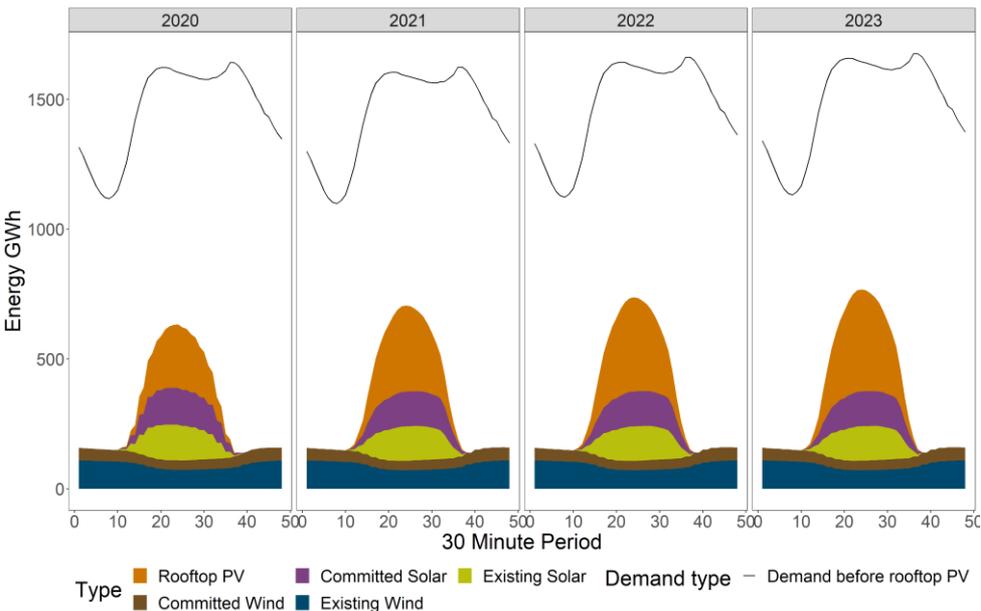
- Annual residential bill is expected to decrease by 2 per cent (or \$29) over the reporting period.



	2019/20 Base Year		2020/21 Current Year		2021/22		2022/23	
	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year
Environmental policies	2.21	\$93	2.28	\$96	2.14	\$90	1.92	\$81
LRET - LGC cost	0.78	\$33	0.75	\$32	0.61	\$26	0.43	\$18
SRES - STC cost	0.86	\$36	0.96	\$41	0.97	\$41	0.91	\$39
Climate Change Fund	0.36	\$15	0.38	\$16	0.38	\$16	0.38	\$16
Energy Saving Scheme	0.21	\$9	0.18	\$8	0.18	\$8	0.20	\$8
Regulated networks	13.42	\$566	13.71	\$578	13.88	\$585	14.02	\$591
Transmission	2.17	\$91	2.43	\$102	2.57	\$109	2.68	\$113
Distribution	10.63	\$448	10.65	\$449	10.68	\$450	10.73	\$452
ACS Metering	0.63	\$26	0.64	\$27	0.63	\$26	0.60	\$25
Wholesale	11.50	\$485	9.27	\$391	8.00	\$337	10.16	\$428
Residual	3.50	\$148	3.72	\$157	3.79	\$160	3.86	\$163
Market Offer	30.65	\$1,292	28.98	\$1,222	27.81	\$1,172	29.96	\$1,263

* 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.

What is driving a decrease in wholesale costs in NSW?



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.

Trends in ACT supply chain components



- Wholesale costs are expected to go down by 13 per cent (\$108) in over the reporting period.



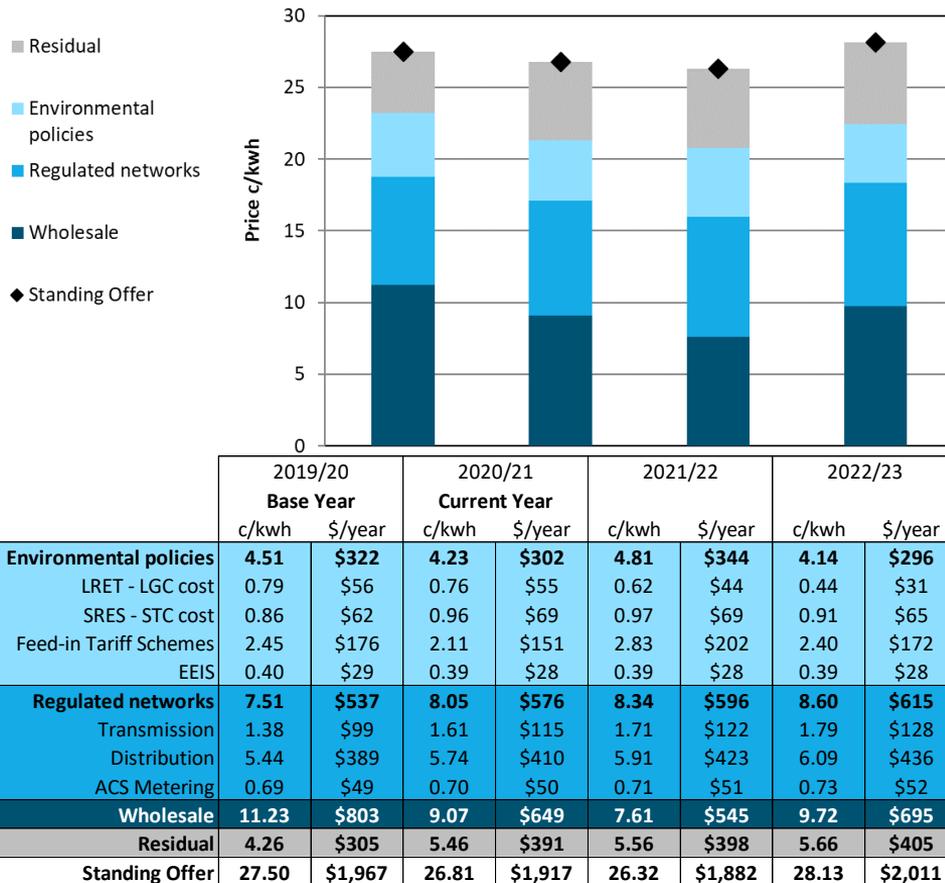
- Regulated network costs* are expected to increase by 15 per cent (or \$78) over the reporting period due partly to previous under-recoveries and higher operating expenditure.



- Environmental costs are expected to go down by 8 per cent (or \$26) over the reporting period due to LRET cost.

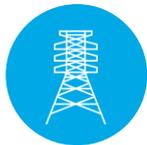


- Annual residential bill is expected to increase by 2 per cent (or \$45) over the reporting.



* 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.



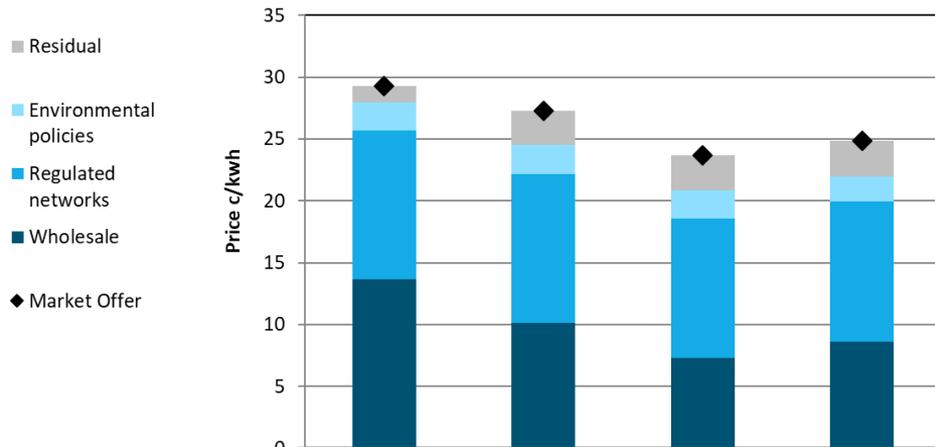
- Regulated network costs* are expected to decrease by 6 per cent (or \$27) over the reporting period due to lower return on capital.



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



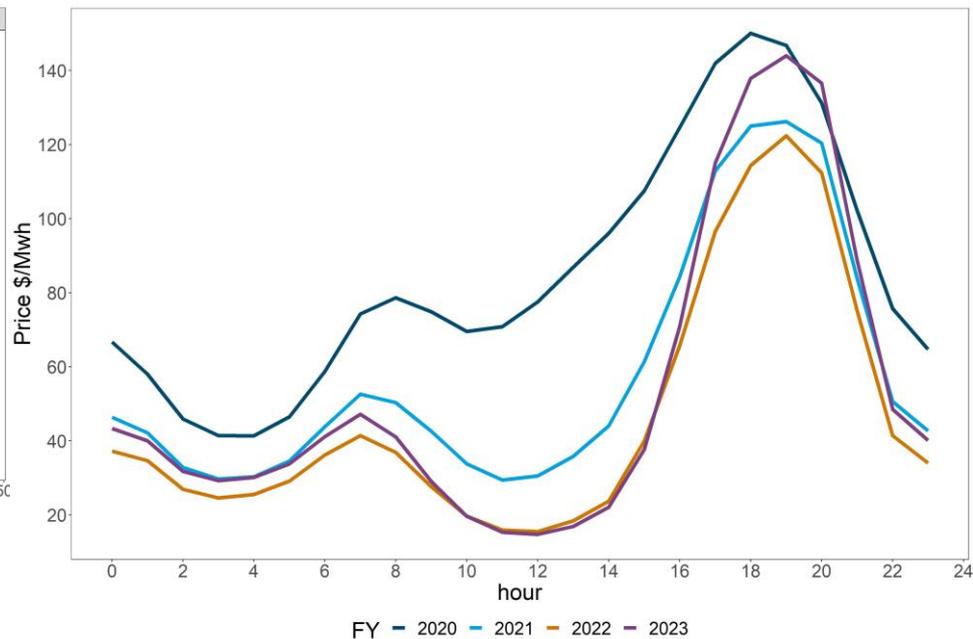
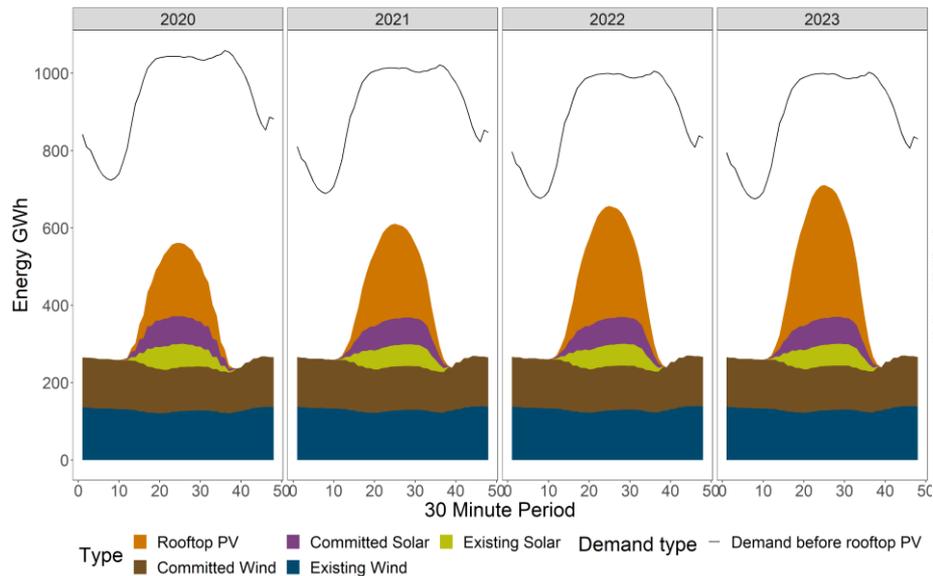
- Annual residential bill is expected to decrease by 15 per cent (or \$172) over the reporting period.



	2019/20 Base Year		2020/21 Current Year		2021/22		2022/23	
	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year
Environmental policies	2.28	\$88	2.37	\$92	2.27	\$88	2.02	\$78
LRET - LGC cost	0.77	\$30	0.75	\$29	0.61	\$24	0.43	\$17
SRES - STC cost	0.86	\$33	0.96	\$37	0.97	\$37	0.91	\$35
Feed-in Tariff Schemes	0.39	\$15	0.39	\$15	0.40	\$16	0.41	\$16
VEU	0.26	\$10	0.27	\$10	0.29	\$11	0.27	\$10
Regulated networks	12.02	\$464	12.01	\$464	11.29	\$436	11.33	\$438
Transmission	1.21	\$47	1.37	\$53	1.37	\$53	1.38	\$53
Distribution	9.15	\$354	9.06	\$350	8.78	\$340	8.79	\$340
ACS Metering	1.66	\$64	1.58	\$61	1.13	\$44	1.16	\$45
Wholesale	13.68	\$529	10.12	\$391	7.29	\$282	8.59	\$332
Residual	1.30	\$50	2.78	\$108	2.84	\$110	2.89	\$112
Market Offer	29.28	\$1,132	27.29	\$1,055	23.68	\$915	24.83	\$960

* 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.

What is driving a decrease in wholesale costs in VIC?



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.



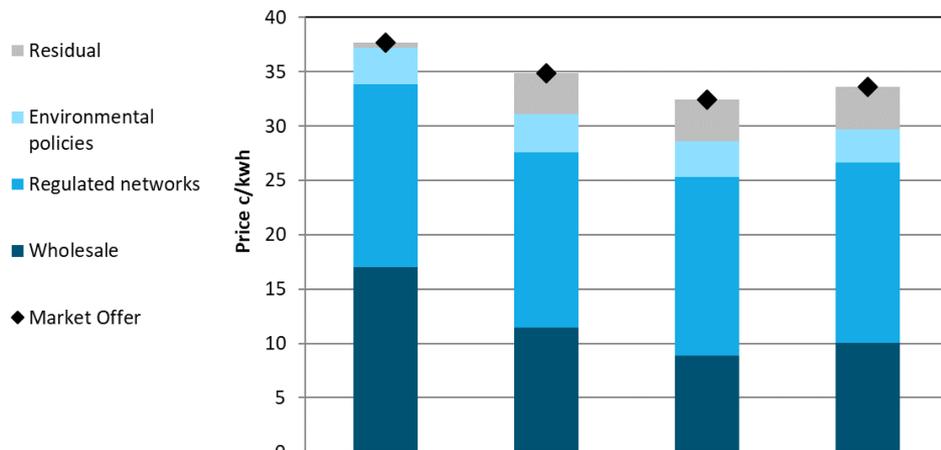
- Regulated network costs* are expected to decrease by 1 per cent (or \$11) over the reporting period due to lower return on capital.



- Environmental costs are expected to go down by 9 per cent (or \$15) over the reporting period due to the LRET cost.



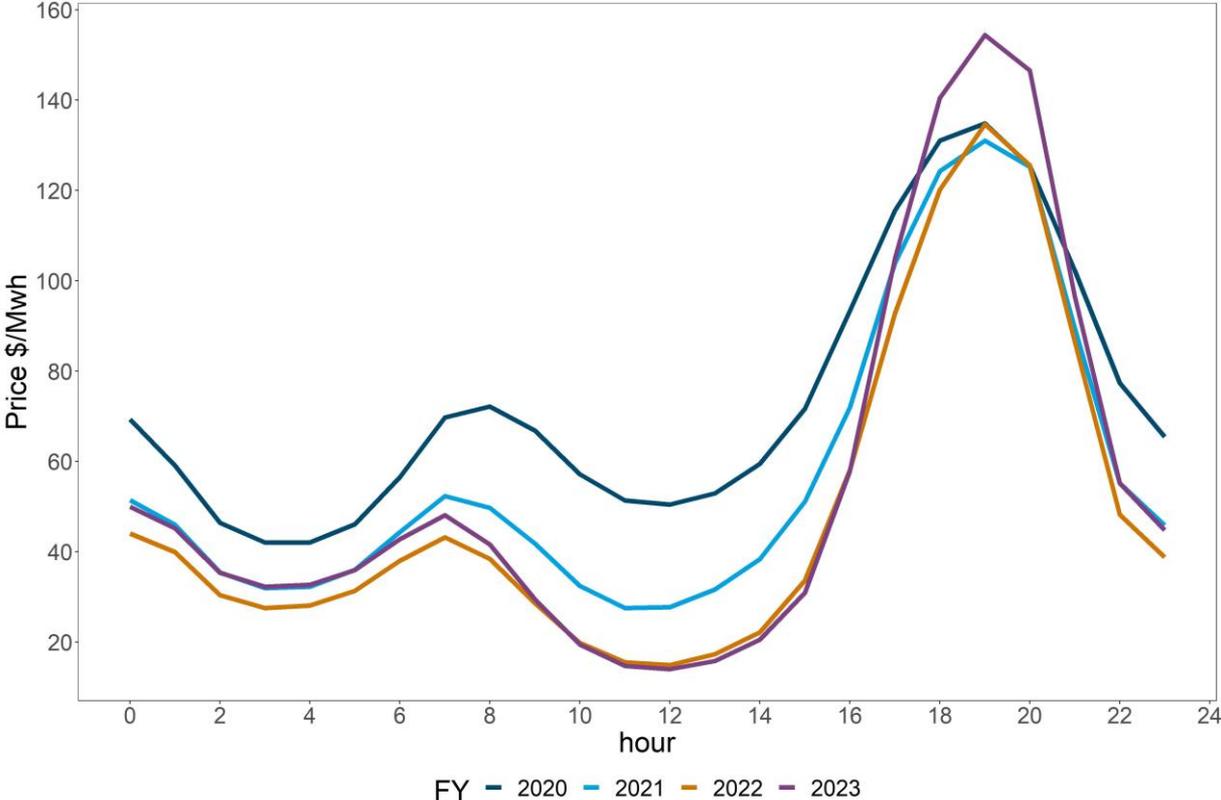
- Annual residential bill is expected to down by 11 per cent (or \$203) over the reporting period.



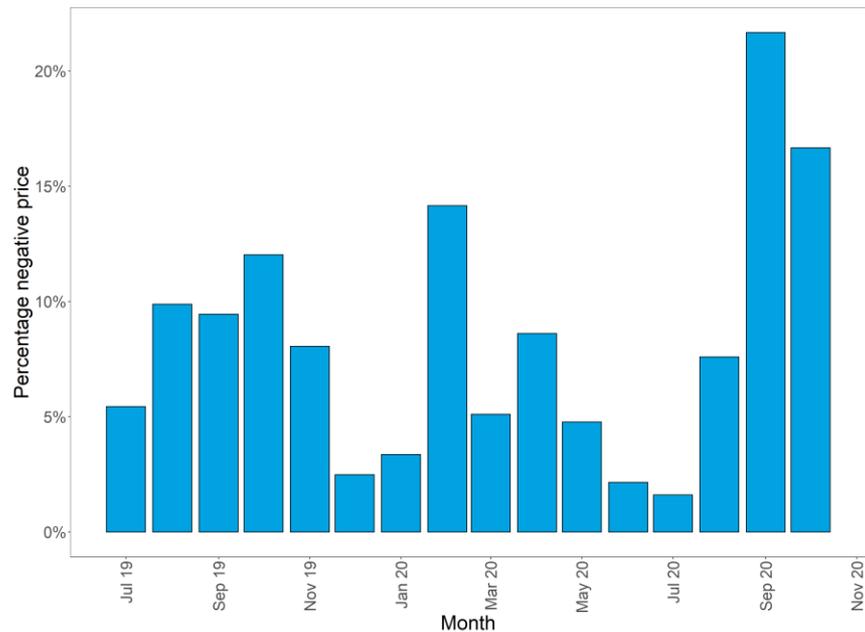
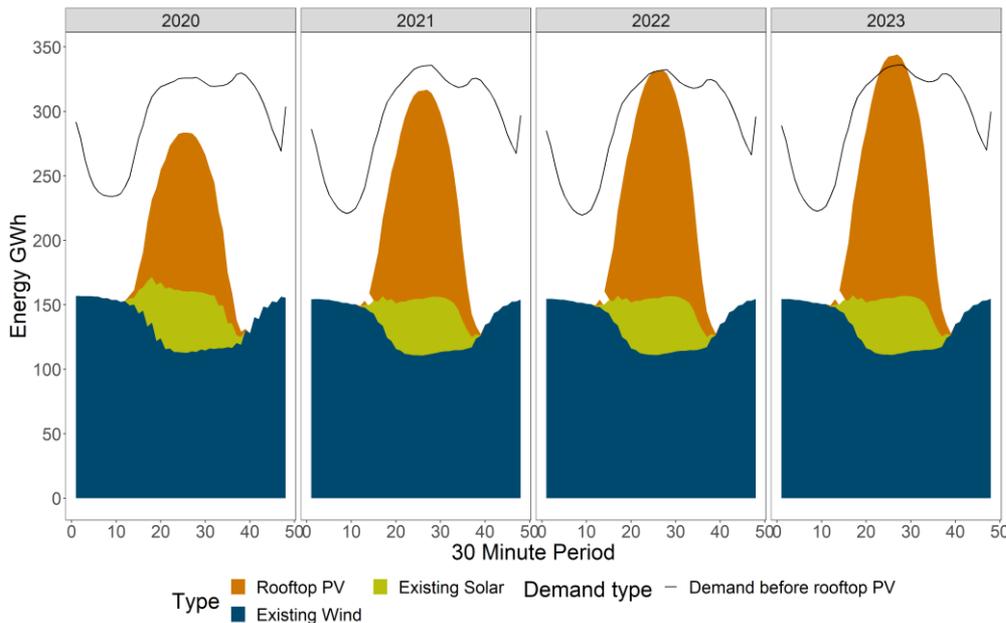
	2019/20 Base Year		2020/21 Current Year		2021/22		2022/23	
	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year	c/kwh	\$/year
Environmental policies	3.37	\$169	3.46	\$173	3.32	\$166	3.07	\$154
LRET - LGC cost	0.81	\$40	0.79	\$39	0.64	\$32	0.45	\$22
SRES - STC cost	0.86	\$43	0.96	\$48	0.97	\$48	0.91	\$46
Feed-in Tariff Schemes	1.45	\$73	1.46	\$73	1.46	\$73	1.46	\$73
REES	0.25	\$13	0.25	\$13	0.25	\$13	0.25	\$13
Regulated networks	16.82	\$841	16.18	\$809	16.39	\$819	16.60	\$830
Transmission	3.25	\$163	3.39	\$170	3.54	\$177	3.70	\$185
Distribution	12.89	\$645	12.33	\$617	12.39	\$619	12.44	\$622
ACS Metering	0.68	\$34	0.46	\$23	0.46	\$23	0.46	\$23
Wholesale	17.02	\$851	11.44	\$572	8.89	\$445	10.04	\$502
Residual	0.46	\$23	3.76	\$188	3.83	\$191	3.89	\$195
Market Offer	37.68	\$1,884	34.84	\$1,742	32.42	\$1,621	33.61	\$1,680

* 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

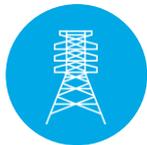


Increasing rooftop penetration driving minimum demand and negative prices



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.



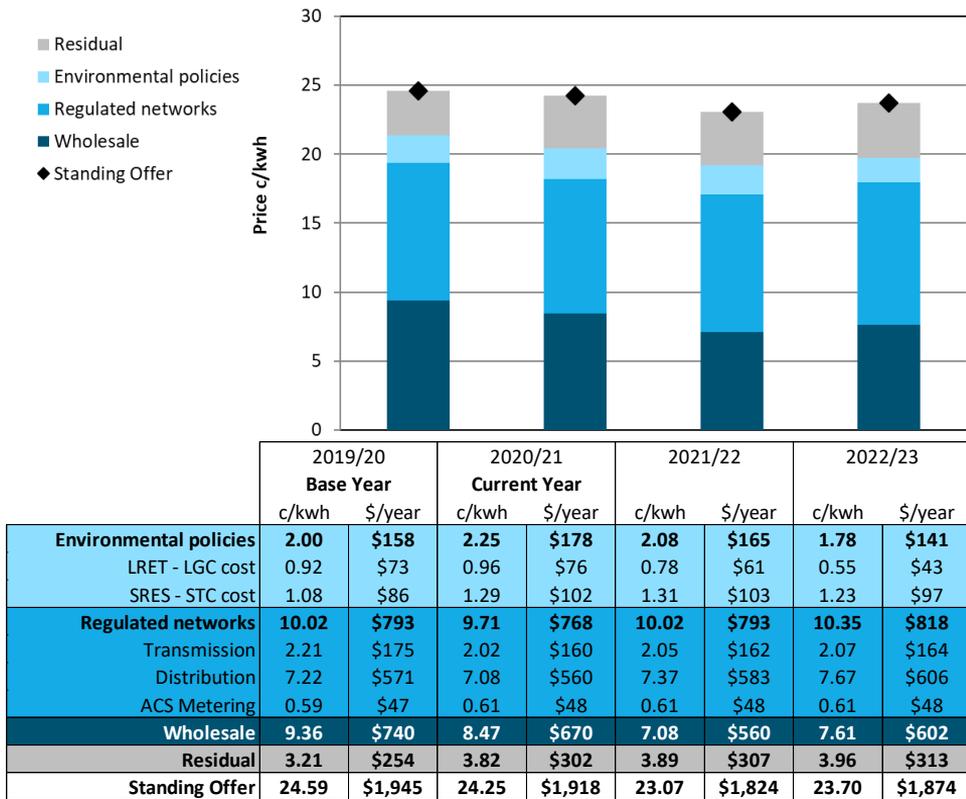
- Regulated network costs* are expected to increase by 3 per cent (or \$26) over the reporting period.



- 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

National average prices and costs	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019/20	2020-21
Source of estimated prices and costs	2013 report	2014 report	2015 report	2016 report	2016 report	2017 report	2018 report	2019 report
Source of actual prices and costs	2014 report	2015 report	2016 report	2017 report	2018 report	2018 report	2019 report**	2020 report^
Total retail price								
Estimated price	28	27	25	26	26	30	29	28
Estimated price change		-1	-2	1	1	3	-1	0
Estimated direction of trend		Decrease	Decrease	Increase	Increase	Increase	Decrease	Decrease
Actual price	29	26	25	28	30	30	30	28
Actual price change		-3	-1	3	2	0	1	-3
Actual direction of trend		Decrease	Decrease	Increase	Increase	Decrease	Increase	Decrease
Network costs								
Estimated price	14	14	12	12	12	14	13	13
Estimated price change		0	-2	0	0	1	0	-1
Estimated direction of trend		Decrease	Decrease	Increase	Increase	Increase	Decrease	Decrease
Actual price	14	13	12	14	13	13	13	13
Actual price change		-1	-1	1	0	0	0	-1
Actual direction of trend		Decrease	Decrease	Increase	Decrease	Increase	Decrease	Decrease
Wholesale costs*								
Estimated price	5	10	11	7	8	11	10	11
Estimated price change		5	1	-4	1	3	-1	1
Estimated direction of trend		Increase	Increase	Decrease	Increase	Increase	Decrease	Increase
Actual price	10	11	10	10	12	12	12	9
Actual price change		0	0	0	2	0	0	-3
Actual direction of trend		Increase	Decrease	Decrease	Increase	Increase	Increase	Decrease
Environmental costs								
Estimated price	4	2	2	2	2	2	2	2
Estimated price change		-2	0	0	0	0	0	0
Estimated direction of trend		Decrease	Decrease	Increase	Decrease	Decrease	Increase	Decrease
Actual price	4	2	2	2	2	2	2	3
Actual price change		-3	0	0	0	0	0	1
Actual direction of trend		Decrease	Increase	Decrease	Decrease	Increase	Decrease	Increase

Source: AEMC 2013, 2014, 2015, 2016, 2017, 2018 and 2019 Residential Electricity Price Trends reports.
 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

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

Source: AER

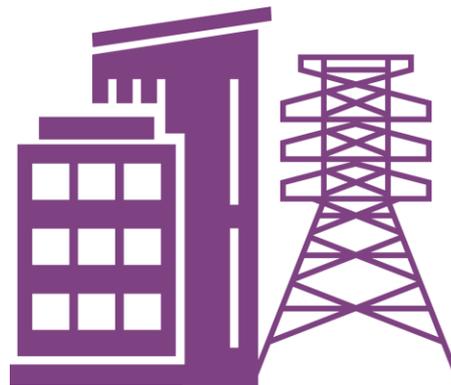
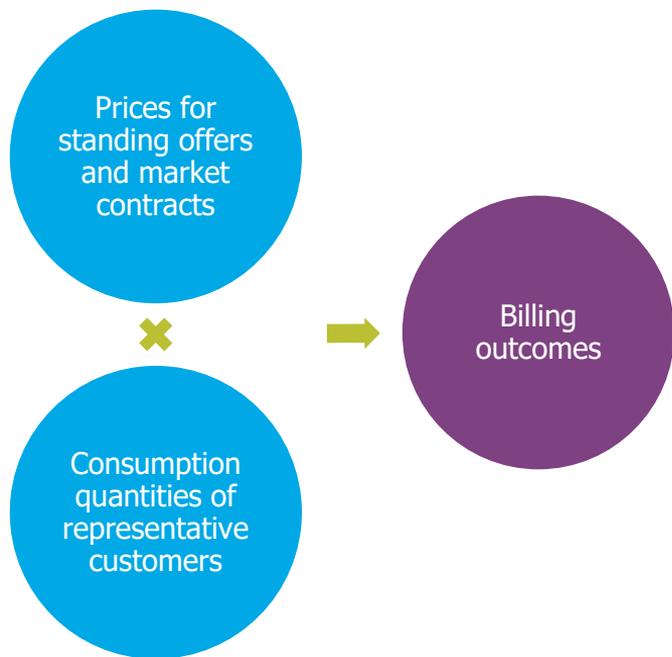
The same consumption levels have been used for the whole reporting period

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

JURISDICTION	MOST COMMON HOUSEHOLD TYPES	GENERAL CONSUMPTION (KWH)	TOTAL ANNUAL CONSUMPTION (KWH)
South Australia	2-person household; mains gas and on a market offer	5,000	5,000

Source: South Australia Government

Representative retail electricity prices



Our analysis has used the lowest offer for each retailer

Actual retail offers for 2019-20 and 2020-21

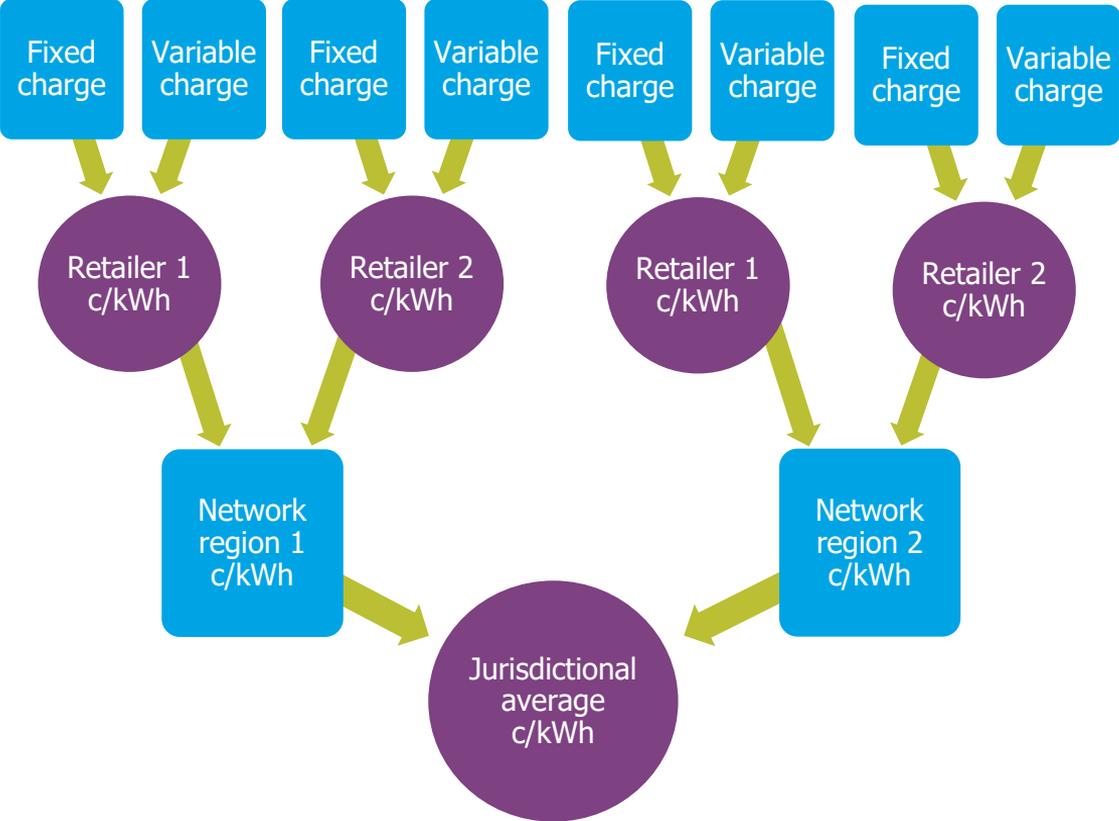
Table 5: Sources of electricity pricing data

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

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/kWh) 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

	2019/20		2020/21		2021/22	2022/23
Transmission						
New South Wales/ACT						
South Australia						
South East Queensland						
Tasmania ^						
Victoria	CY 2019	CY2020	CY 2020	CY2021		
Distribution & Metering						
New South Wales/ACT						
South Australia						
South East Queensland						
Tasmania^						
Victoria	CY 2019	CY2020	CY 2020	CY2021		

Key:

	Annual pricing proposal
	Final decision
	Constant in real terms
	Draft decision

^ These network service providers are both the transmission and distribution businesses.

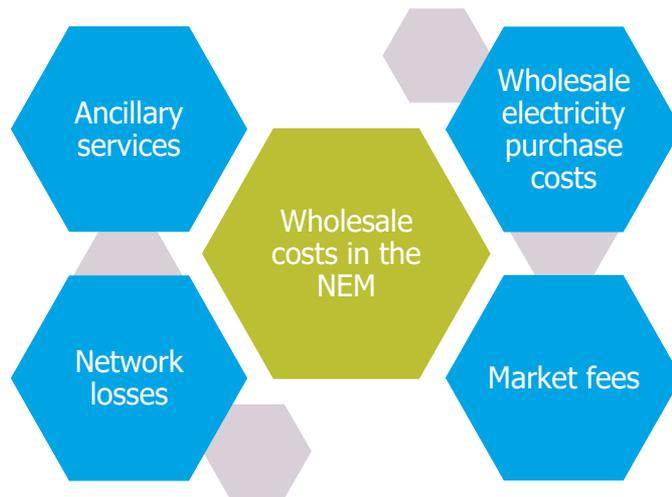
Victorian Electricity Distribution Price Review 2022-2026

- 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.

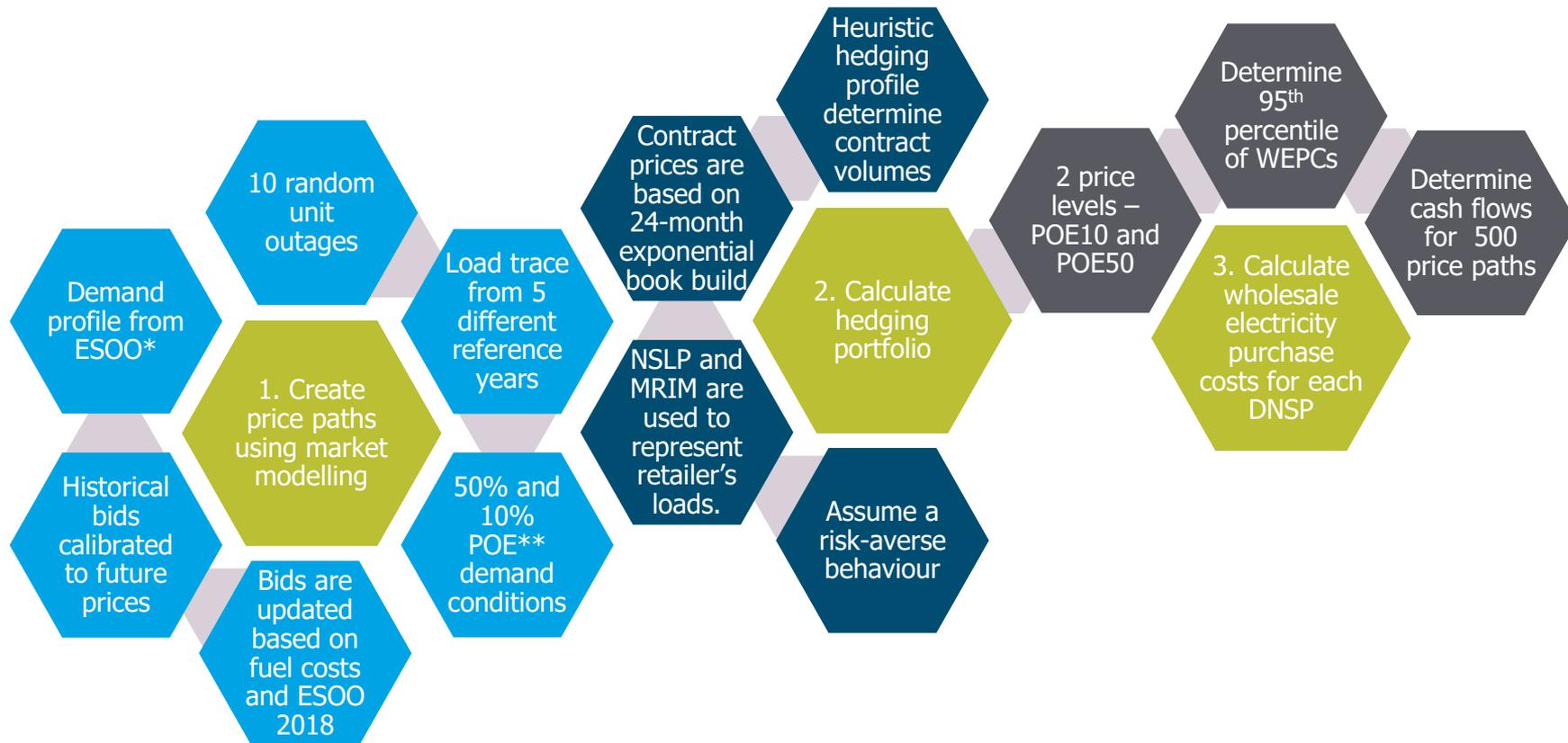
Wholesale electricity purchase costs

1. Create price paths using market modelling

2. Calculate hedging portfolio

3. Calculate WEPCs for each DNSP

Wholesale electricity purchase costs – Main assumptions

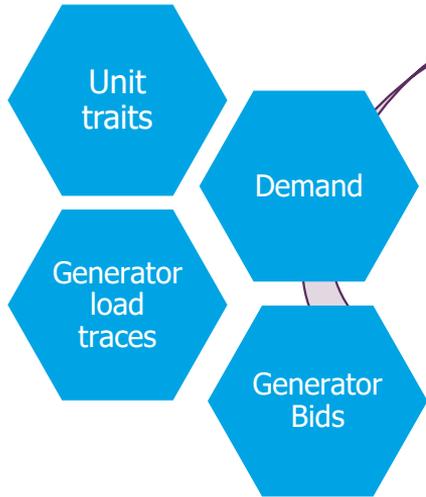


*Electricity Statement of Opportunities

**Probability of Exceedance

1. Create price paths using market modelling

Initial inputs to market model



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

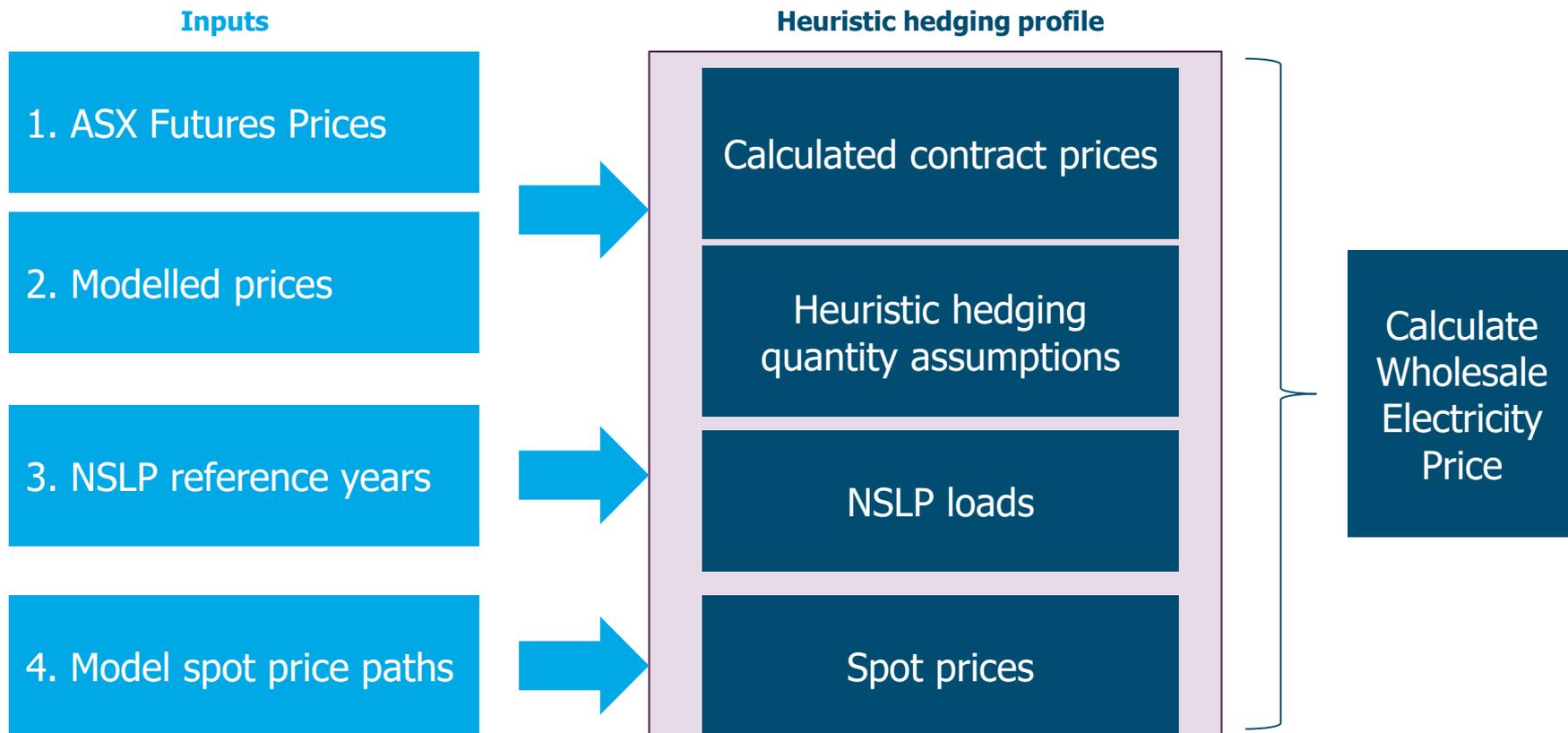
Short-term run:

- 30 minute intervals
- Solve for optimal dispatch and resulting prices

• Prices
• Dispatch

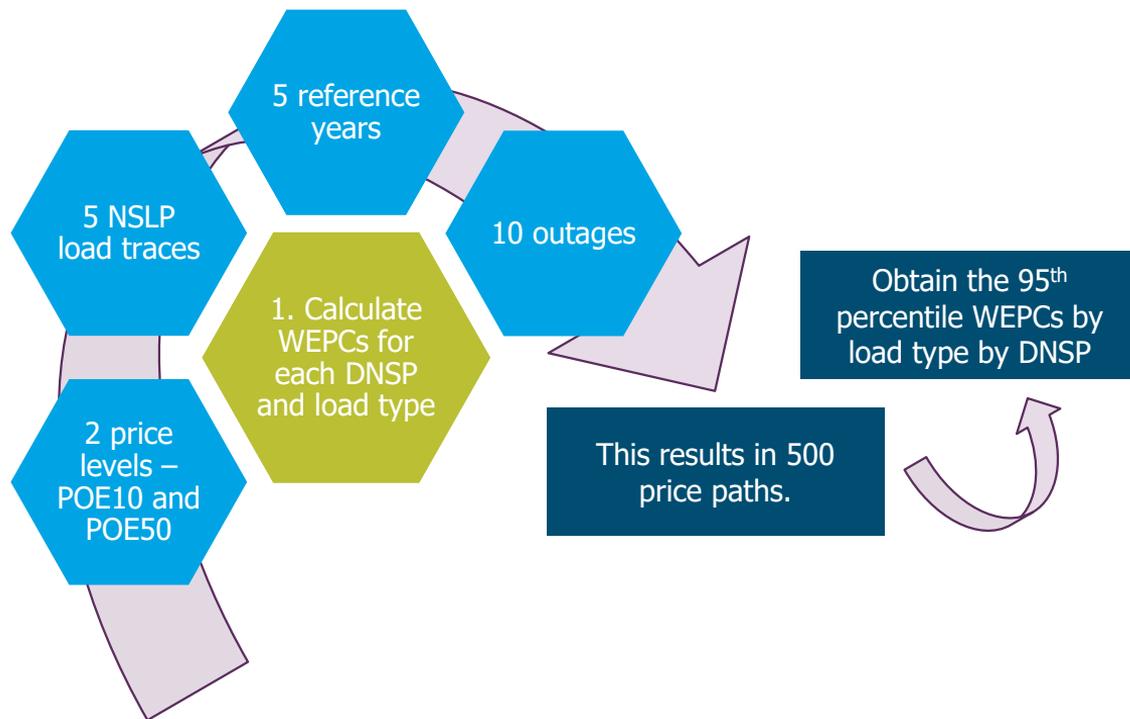
Calibrate results to ASX forward curve

2. Calculate optimal hedging portfolio

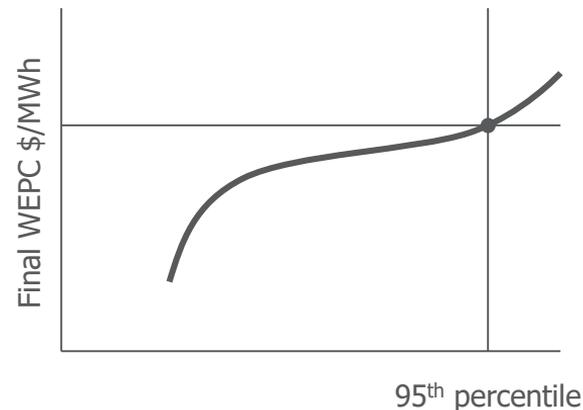


3. Calculate wholesale electricity purchase costs for each DNSP

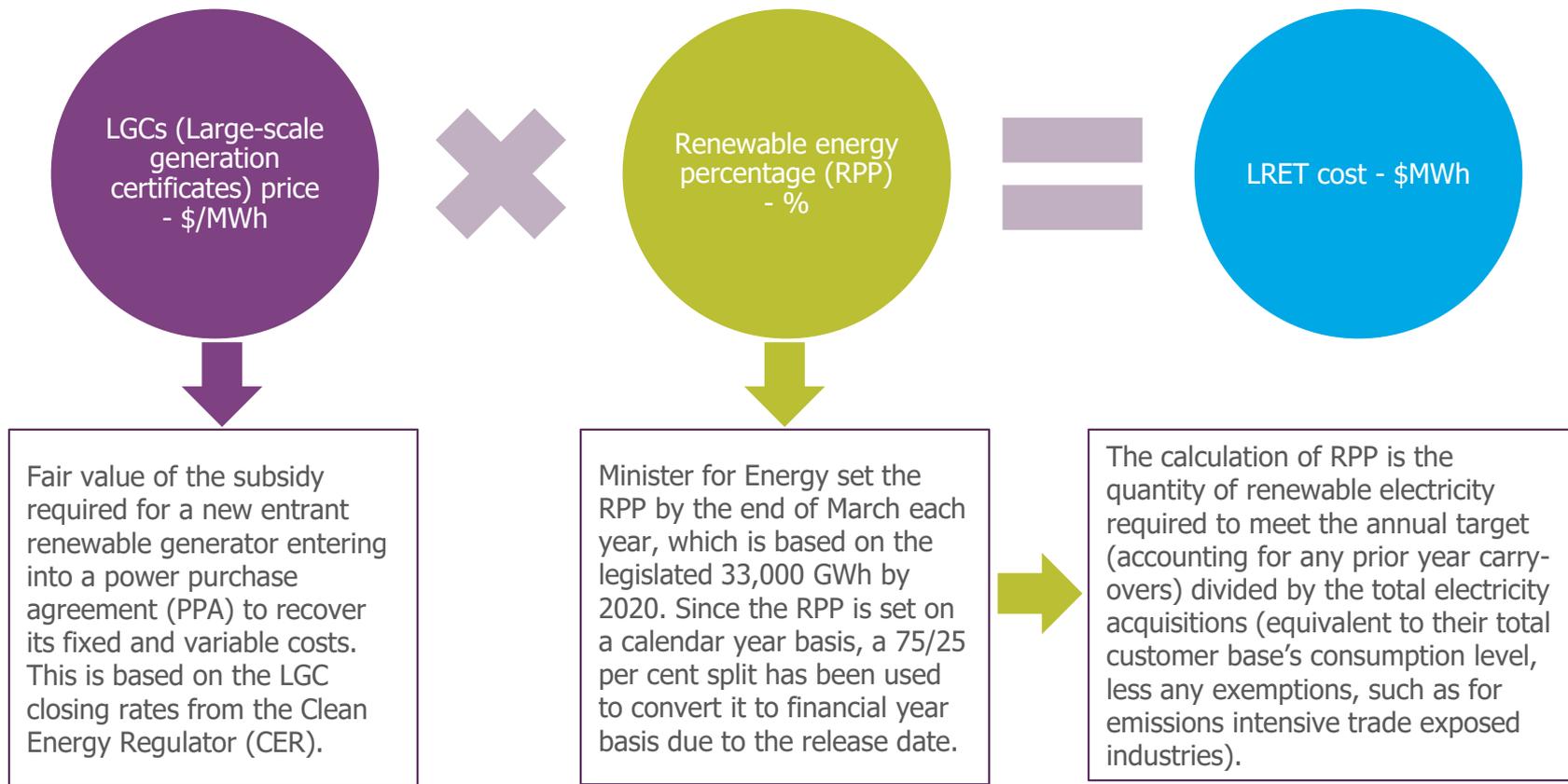
Step 1



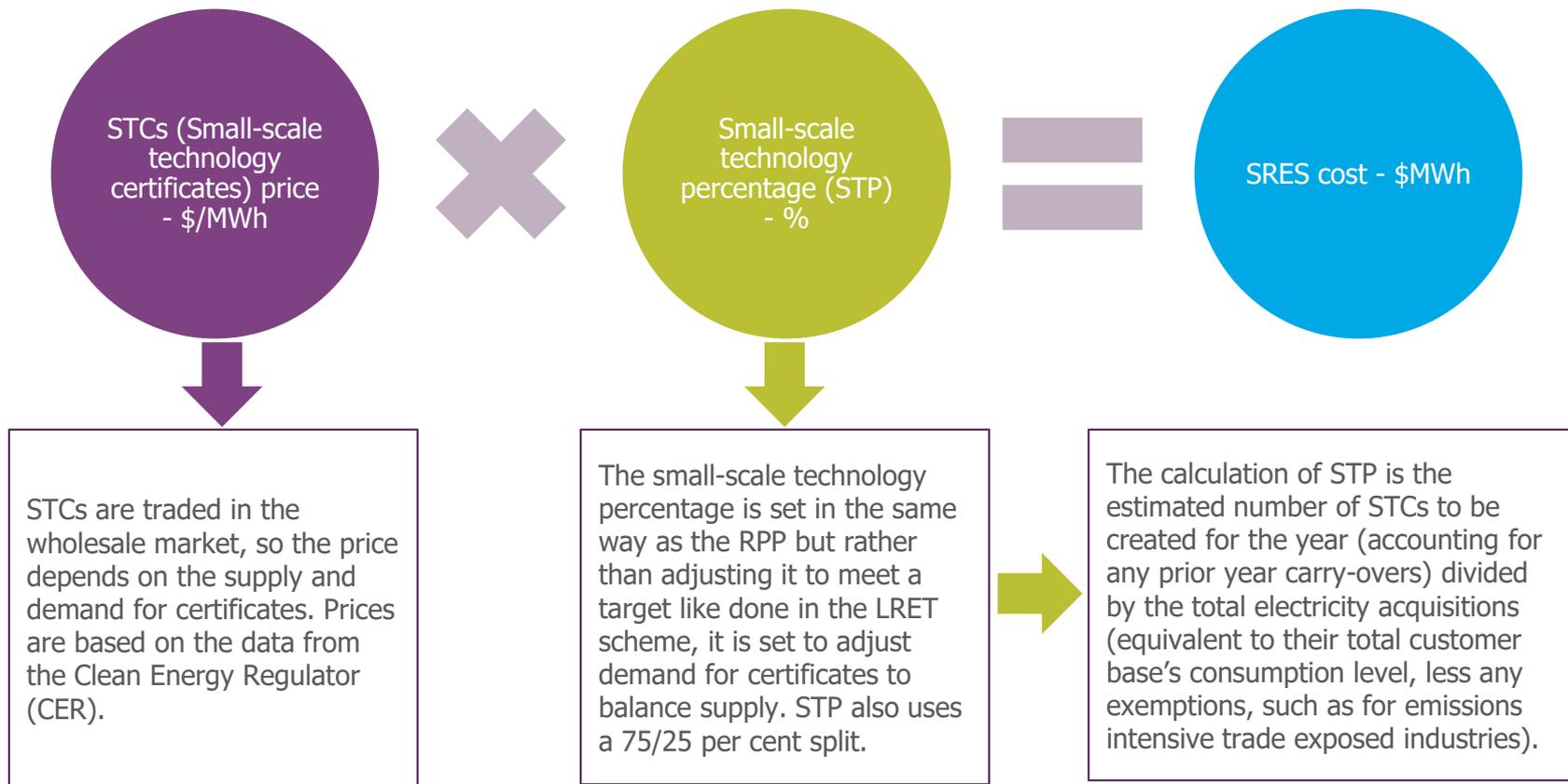
Step 2



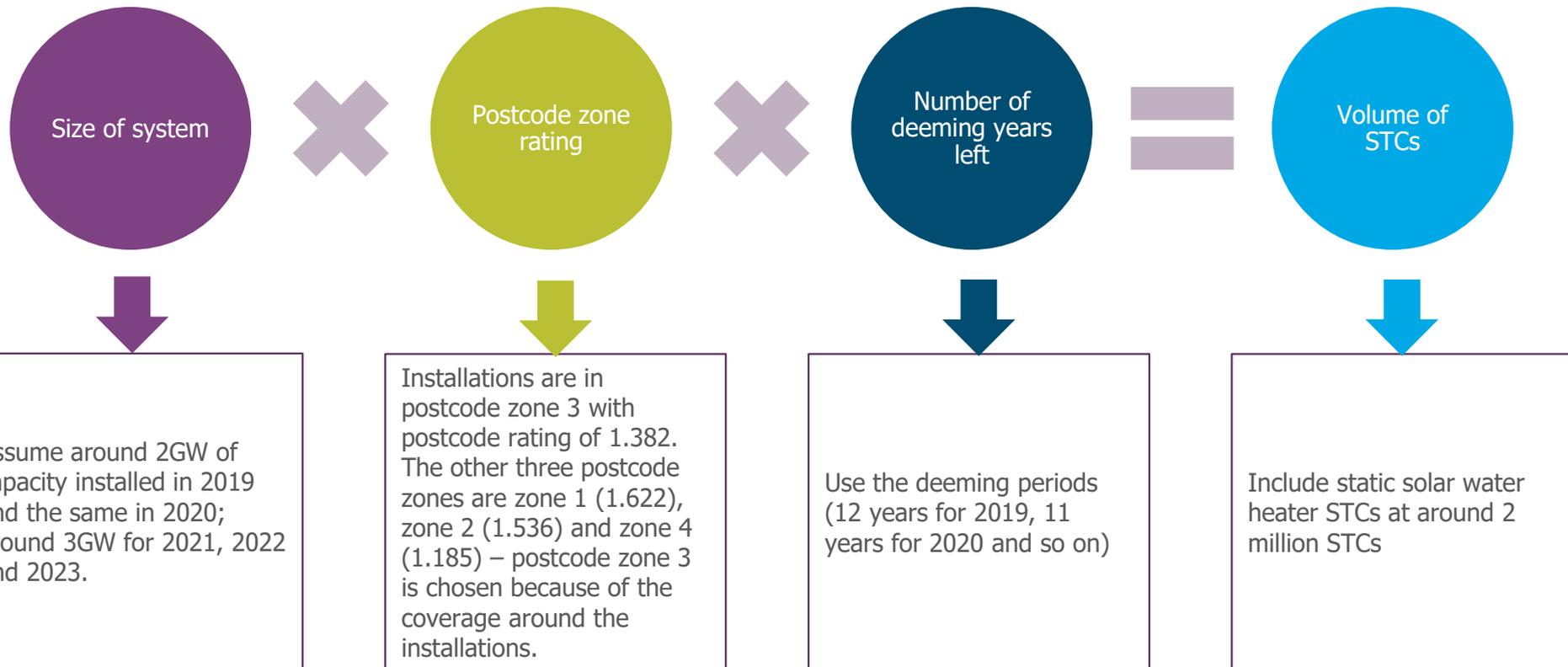
Environmental costs – Renewable energy target - LRET



Environmental costs – Renewable energy target - SRES



Environmental costs – Renewable energy target – SRES - STCs

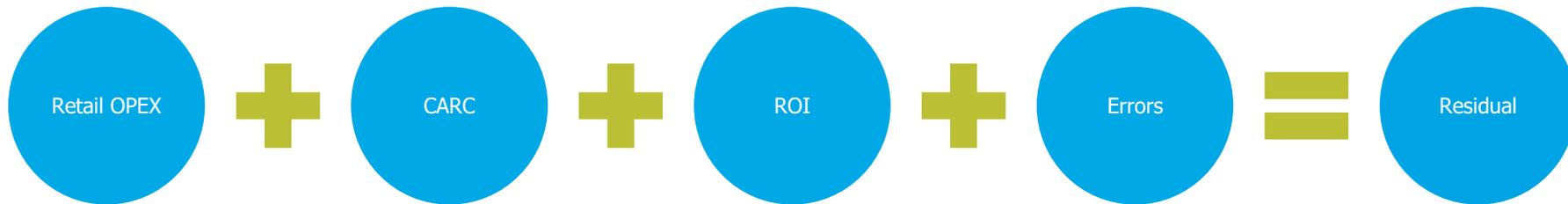


Residual component or retail cost

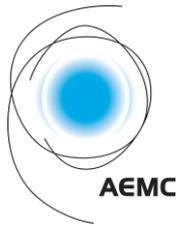
Method of deriving the residual component from the retail offer price



Representation of residual component*



*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