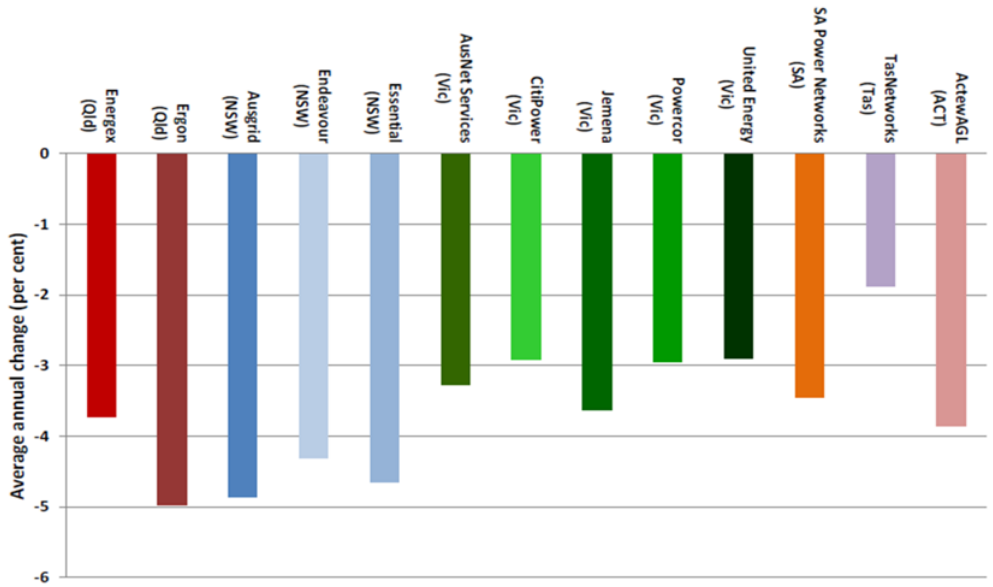
A COMPENDIUM OF FACTS AND RELEVANT REVIEWS RELATING TO AUSTRALIAN ENERGY NETWORKS

Network prices have declined

- Network prices across the National Electricity Market (NEM) have reduced by between 3% and 5% in the current round of AER decisions.

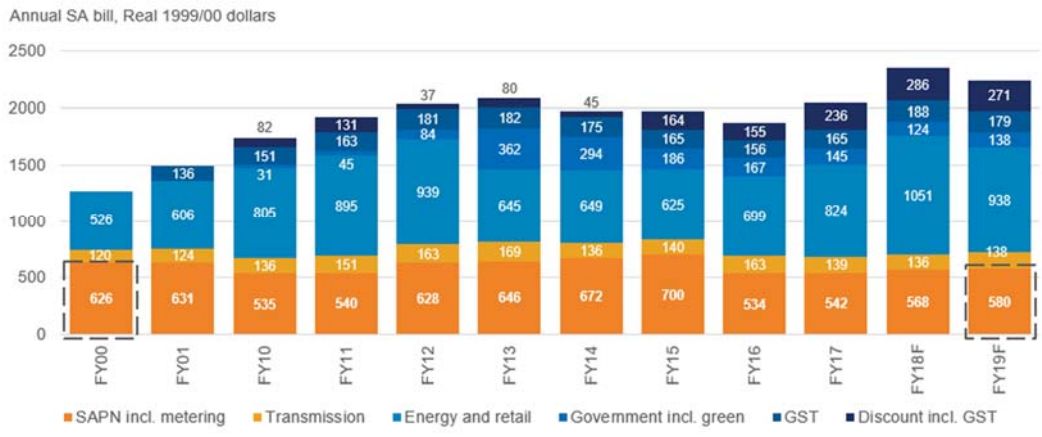
Figure 1: Change in network fees in current regulatory periods between 2013 and 2017 (average annual % decline), by DNSP



Source: AER 2017 distribution network service provider benchmarking report, figure 10 – Forecast impact of AER decisions on residential electricity charges (average annual % decline), by DNSP, page 25, 1 December 2017

- South Australian distribution network costs have declined in real terms since privatisation and now represent less than 26% of the annual bill.

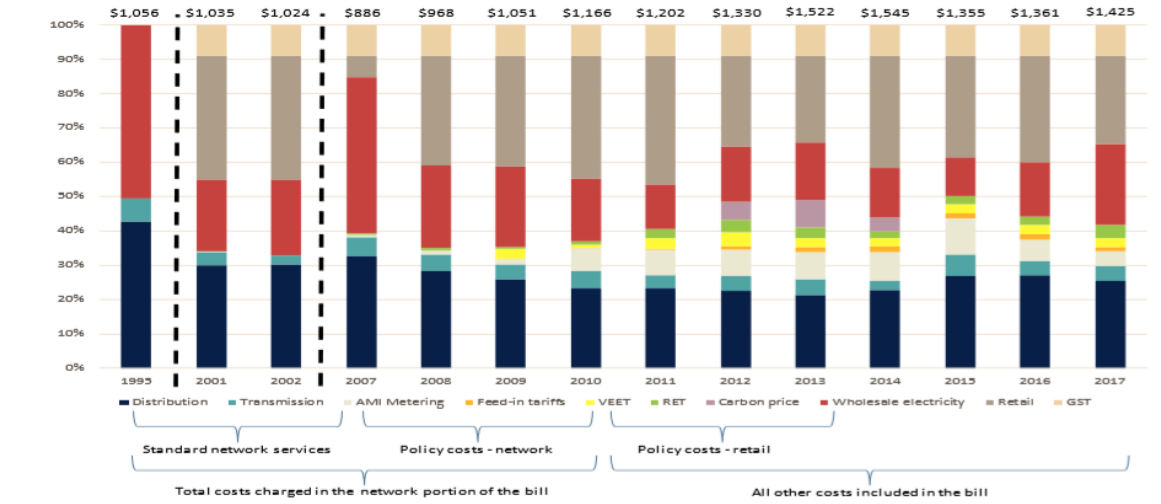
Figure 2: South Australian distribution network cost component of the annual bill ($1990-00)



Source: SA Power Networks 2020-2025 Draft Plan: Delivering better outcomes at a lower price, Page 12, August 2018

- Victorian distribution network costs have declined in real terms since privatisation and represent less than 25% of a residential retail bill.

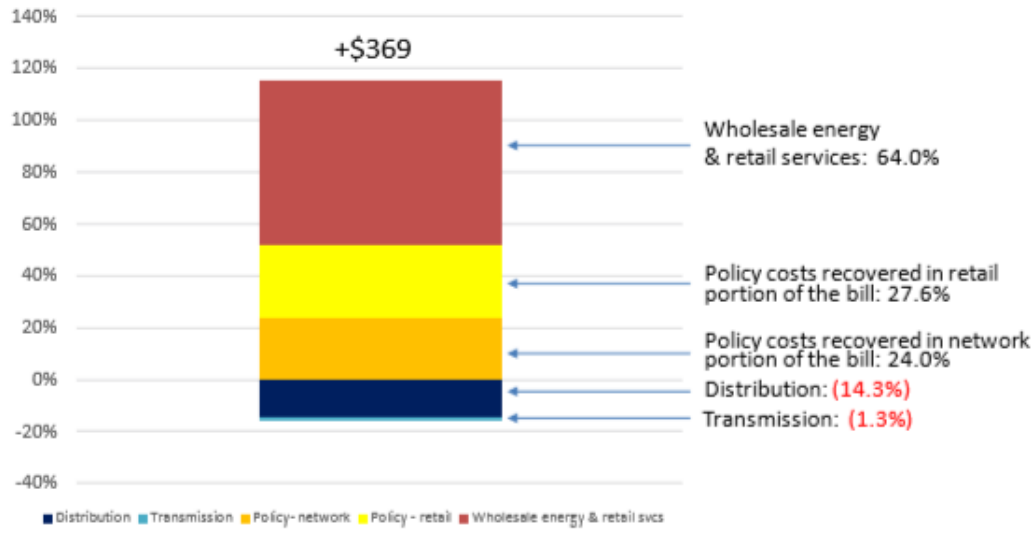
Figure 3: Composition (%) of the annual residential electricity bill in Victoria (4,000 kWh; no electric off-peak hot water), 1995, 2001 & 2002, and 2007 to 2017 (2016$)



Note: The figures at the top of each bar show the total annual bill for a residential electricity customer in Victoria without electric off-peak water heating that uses 4,000 kWh over the course of the year.

Source: Oakley Greenwood, Causes of residential electricity bill changes in Victoria, 1995 to 2017, 2017, p.7

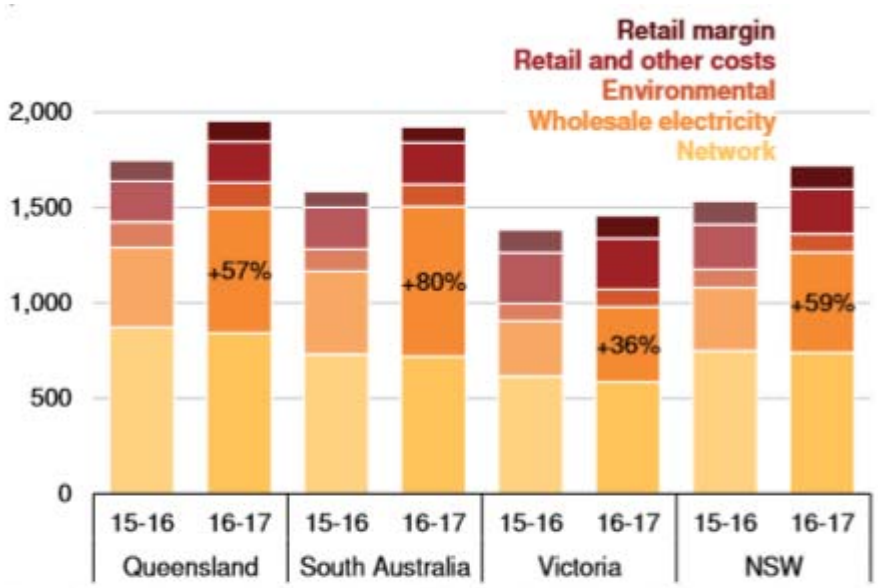
Figure 4: Contribution to change in the average residential electricity bill in Victoria from the privatisation of the distribution businesses to present, 1995 to 2017 (2016$, inclusive of GST)



Source: Oakley Greenwood, Causes of residential electricity bill changes in Victoria, 1995 to 2017, 2017, p.8

- The contribution of network charges to residential customers annual electricity costs has reduced and the contribution of wholesale electricity cost has increased.

Figure 5: Estimated contribution to residential customers' annual electricity costs ($2015-16)



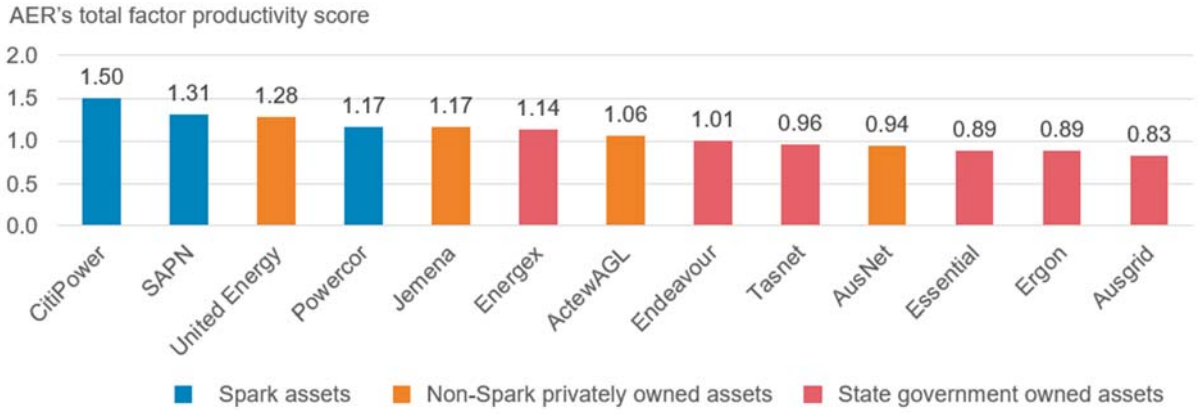
Notes: Tasmania, the other state in the NEM, is excluded from charts where data are unavailable. The wholesale electricity component of the household bill reflects household usage and retailer-generator contracts in each state. Some states use less electricity, and more gas, and have lower wholesale electricity costs.

Source: Grattan analysis of ACCC (2017).

Source: The Grattan Institute, Mostly Working, Australia's Wholesale Electricity Market, July 2018, p. 3 and 8.

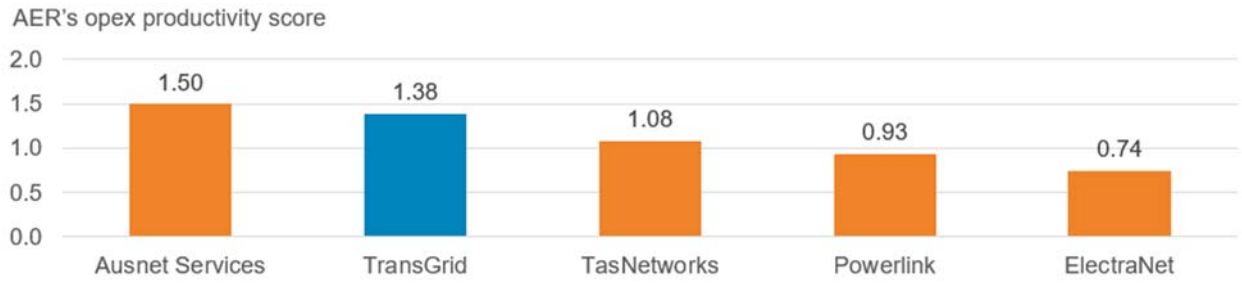
- Spark Infrastructure's electricity distribution and transmission network businesses are leaders in efficiency and reliability.

Figure 6: AER's distribution network efficiency benchmarking



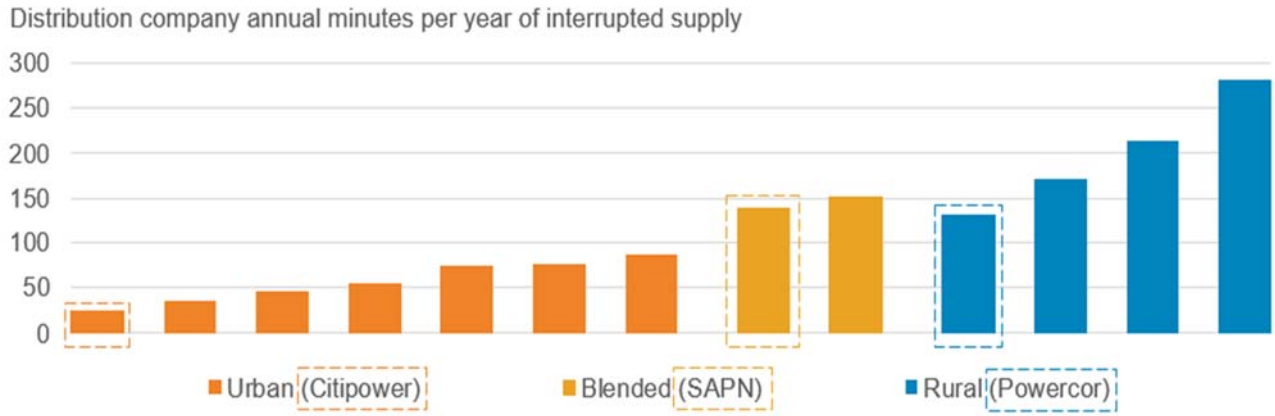
Source: AER 2017 distribution network service provider benchmarking report, Table 1 – Individual DNSP MTFP scores, rankings, change 2015 to 2016, page 9, 1 December 2017

Figure 7: AER's transmission network efficiency benchmarking



Source: Economic Insights report TNSPs – Economic benchmarking results for the AER 6 November 2017, Table 3.2 TNSP multilateral opex partial productivity indexes, 2006-2016, Page 21. Data used by AER in its transmission network service provider annual benchmarking report 2017 released on 1 December 2017

Figure 8: Citipower, SAPN and Powercor have each delivered industry leading reliability

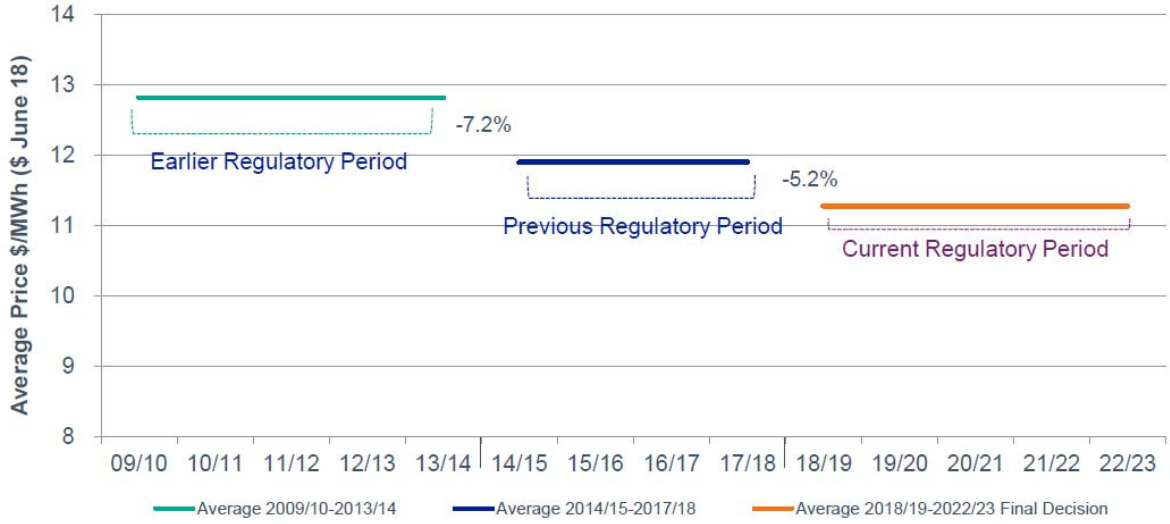


Source: AER 2017 distribution partial performance indicators 2012-2016.XLS – 'Reliability' tab. Data represents 'System Average Interruption Duration Index excluding MEDs excluding excluded outages'

Network prices are expected to continue to decline.

- TransGrid's proposal for the 2018 Regulatory period includes a 5.2% reduction in transmission network charges. The average transmission price is approximately 1c/KWh and represents less than 5% of an average bill.

Figure 8: Changes in TransGrid's network charges over time



Source: TransGrid data

- The proposals for the recently privatised NSW distribution networks (Ausgrid and Endeavour Energy) include proposed real price reductions.

Table 1: Proposed distribution network tariff changes (real, %)

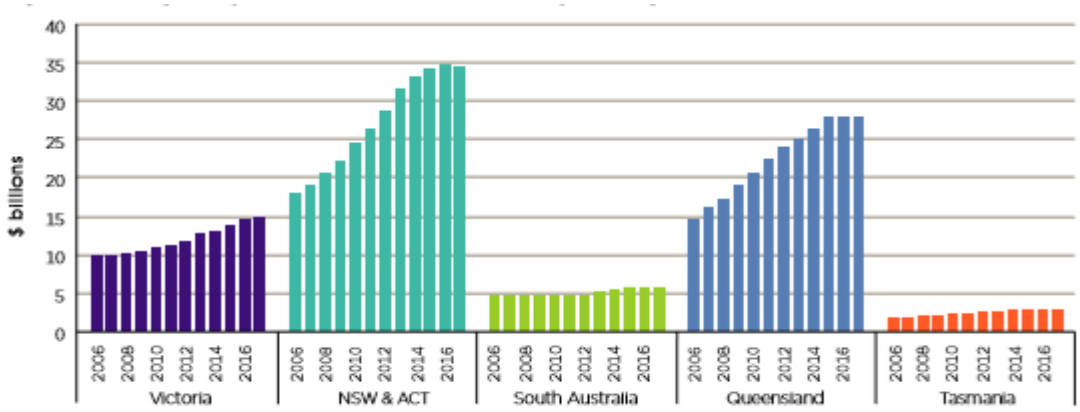
NSW DNSP	2019-20	2020-21	2021-22	2022-23	2023-24
Ausgrid	-5.7%	0.0%	0.0%	0.0%	0.0%
Endeavour	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
Essential	1.43%	1.43%	1.43%	1.43%	1.43%

Source: Ausgrid, Regulatory Proposal, April 2018, p. 60; Endeavour Energy Regulatory Proposal, April 2018, p. 6; Essential Energy, 2019-24 Regulatory Proposal customer Overview, April 2018, p. 6.

Private network businesses have not over-invested

- In NSW, Queensland and Tasmania there has been significant over-investment in state-owned networks.

Figure 10: Regulatory asset base (RAB) from 2006 to 2017, by NEM region, real $2016–17

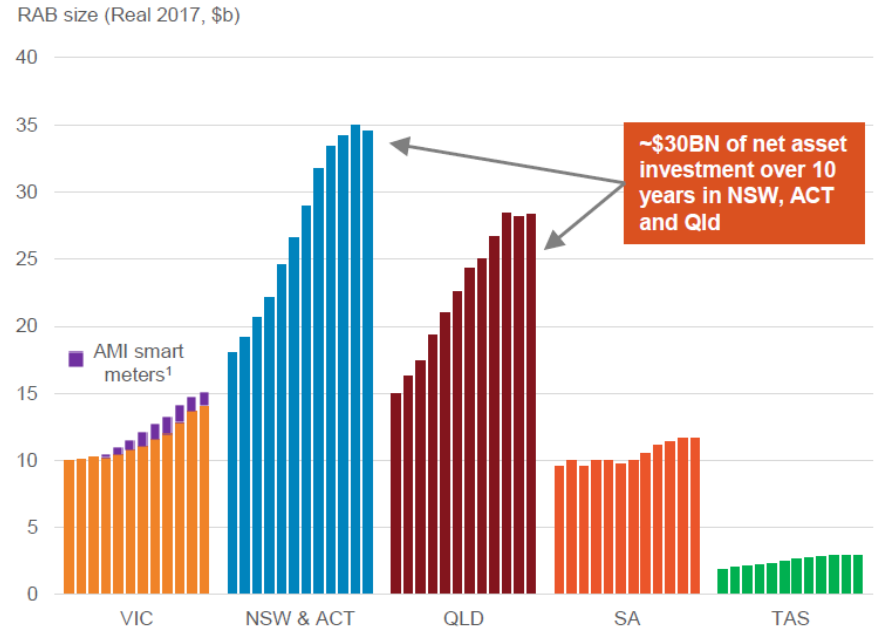


Source: AER economic benchmarking, Regulatory Information Notice responses.

Source: ACCC, Retail Electricity Pricing Inquiry, Final Report, June 2018, p. 159.

- The RAB growth in Victoria over the last 8 years included capital expenditure on the roll-out of advanced interval meters (AMI).

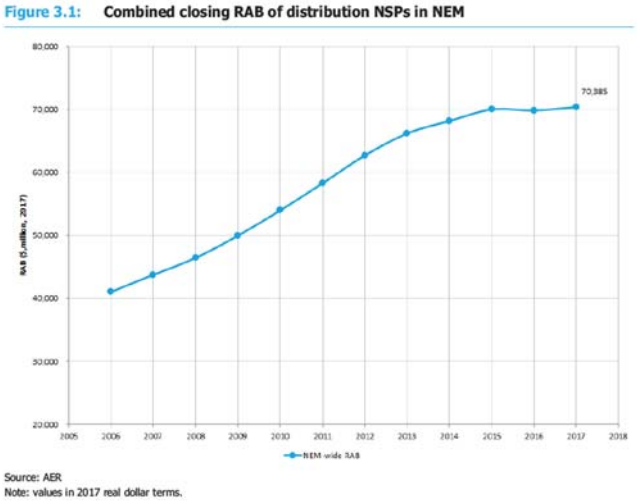
Figure 11: RAB from 2006 to 2017, by NEM region, real $2016–17 with AMI identified



Source: Spark Infrastructure HY2018 Investor Presentation available at https://sparkinfrastructure.com/investor-centre/reports-and-presentations

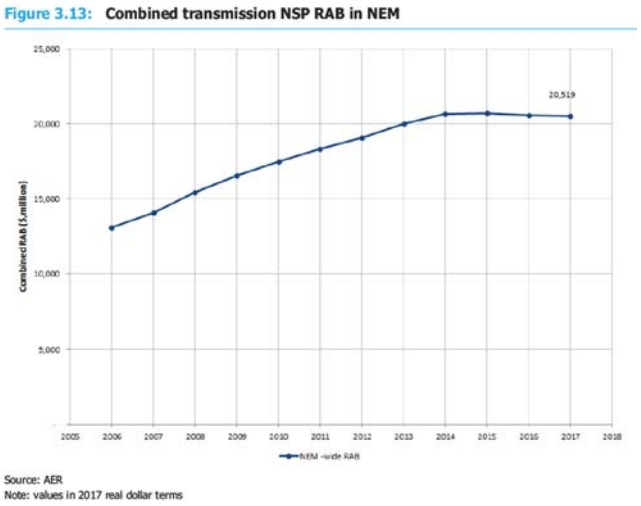
- Capital expenditure has declined sharply since 2013 and RAB growth has plateaued.

Figure 12: The combined RAB of all distribution companies has plateaued since the introduction of the Capital Expenditure Sharing Scheme (CESS)



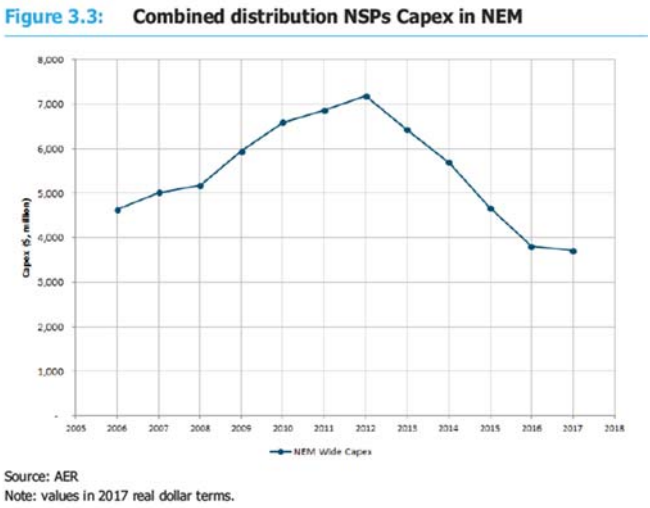
Source: AEMC Economic Regulatory Framework review, Promoting efficient investment in the grid of the future, figure 3.1 – page 39, 26 July 2018

Figure 13: The combined RAB of all transmission companies has declined since the introduction of the CESS



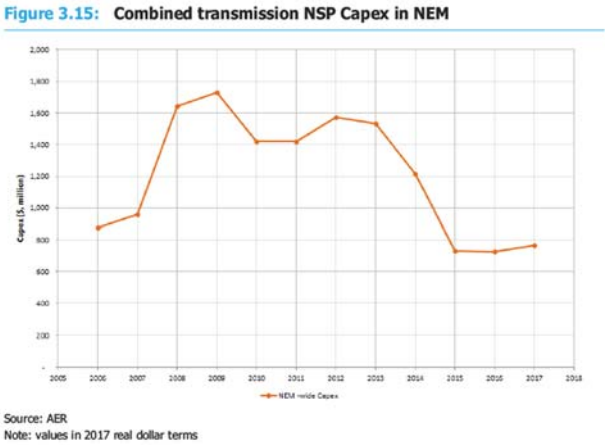
Source: AEMC Economic Regulatory Framework review, Promoting efficient investment in the grid of the future, figure 3.13 – page 51, 26 July 2018

Figure 14: The combined capex of all distribution companies has approximately halved from 2012 to 2017



Source: AEMC Economic Regulatory Framework review, Promoting efficient investment in the grid of the future, figure 3.3 – page 41, 26 July 2018

Figure 15: The combined capex of all transmission companies more than halved from 2009 to 2017

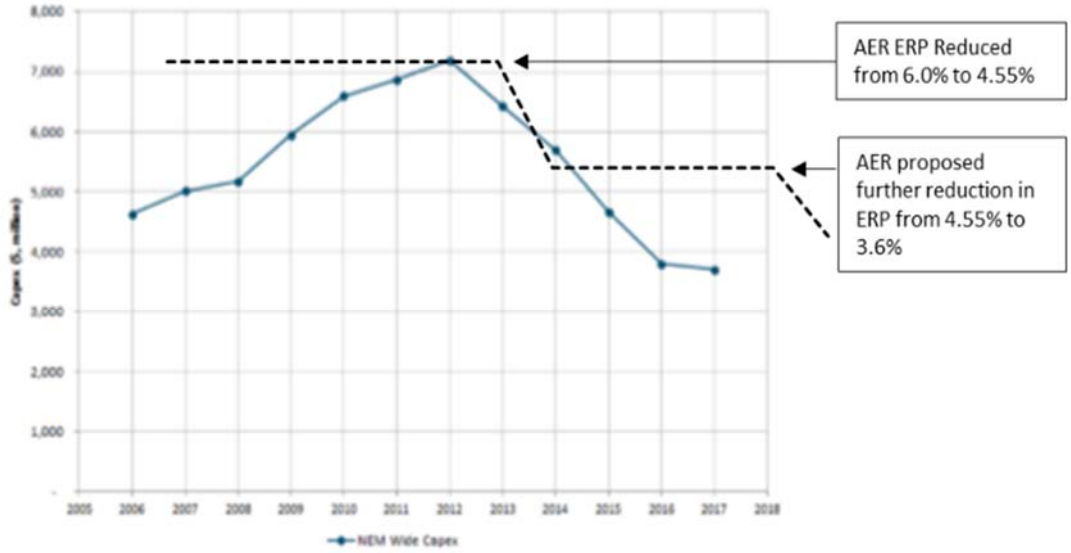


Source: AEMC Economic Regulatory Framework review, Promoting efficient investment in the grid of the future, figure 3.15 – page 53, 26 July 2018

Reducing the regulated return contrary to increasing risk will exacerbate adverse impacts on consumers

- The decline in capital expenditure and RAB growth has followed reductions in the regulated equity risk premium and the AER allowed return on equity

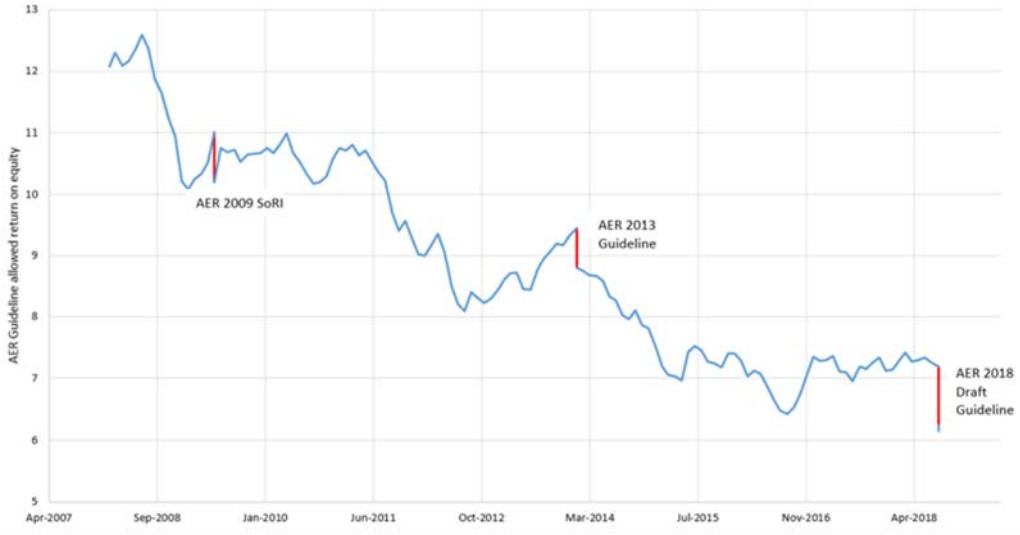
Figure 16: Changes in regulated equity risk premium and capital expenditure in distribution Network Service Providers (NSPs)



Source: AER
Note: values in 2017 real dollar terms.

Source: NSG Response to the Aer's draft Rate of Return Guideline, 25 September 2018, p. 5

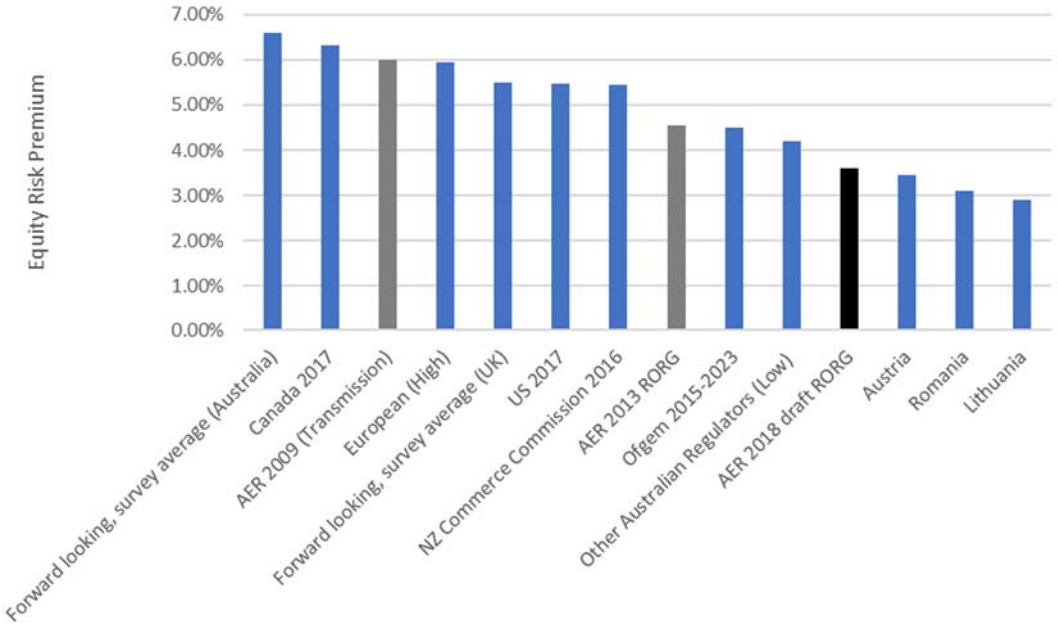
Figure 17: Change in AER allowed return on equity



Source: Energy Network Australia (ENA), AER Review of the Rate of Return Guideline, Response to the Draft Guideline, 25 September 2018, p. 23.

- The AER's draft RORG provides regulated equity returns at the bottom end of international comparators

Figure 18: the AER's proposed equity risk premium compared to other jurisdictions.



Source: Network Shareholder Group (NSG) Response to the AER's draft Rate of Return Guideline, 25 September 2018, p. 7.

A summary of relevant reports and reviews

KPMG, Optimising network incentives, Alternative approaches to promoting efficient network investment, January 2018 (A report prepared for the COAG Energy Council's Energy Market Transformation Project Team)

- KPMG was engaged to investigate opportunities to optimize network incentives by reviewing existing and alternative regulatory frameworks that may improve flexibility and encourage innovation and efficiency in electricity network investment and operation.
    - The report identified a number of issues that may be acting as handbrakes on grid innovation.
    - There is a bias in the regulatory framework against innovation
    - That the incremental approach to changing the framework will be insufficient to deliver the transformation required
    - A clear vision for the role of the networks in the transformation is required.
- The bias in the regulatory framework against innovation, amongst other things, is driven by lower rates of return leading to the adoption of more operating or business as usual solutions, and network businesses not adequately capturing rewards from innovation to compensate for the higher risk of investigating and implementing new technologies.
- KPMG also found that NSPs may not capture adequate rewards from innovation to compensate them for the extra risks they incur, that if the discount rate is less than 6% (real) the NSP will have an incentive to adopt the operating expenditure solution even with it is inefficient and that a move to a totex framework may assist in dampening the preference for capital solutions.

- Also, the risk of stranding assets skews behaviour against innovation and leads to the need for a higher hurdle rate for new capital expenditure. These issues will not be resolved through ad hoc changes to the regulatory framework without a clear vision for the future role of networks and explicitly valuing innovation.

AER, Initial Report, Review of regulatory tax approach, June 2018.

- On 15 May 2018, the AER released an issues paper for a review of the regulatory tax approach. The review is in response to a request from the Hon Josh Frydenberg MP for the AER to investigate whether network businesses are being overcompensated for their corporate tax liabilities, including using its information gathering powers if necessary.
- The AER's issues paper was accompanied by a letter from the Australian Tax Office (ATO) outlining analysis that indicated there was a discrepancy between the tax allowances provided by the AER and the actual tax payable – higher for taxpaying entities and lower for National Tax Equivalent Regime (NTER) entities. The ATO's analysis required several assumptions and exclusions due to limitations in data. The ATO identified that there are several key drivers for the difference such as entity structures, interest expense deductions, tax losses and depreciation.
- The current national electricity and gas rules relating to tax outline that the tax liability should be based on applying the statutory rate of tax to the benchmark efficient entity (BEE).
- The regulatory approach to tax is to estimate ex-ante the tax liability of the BEE based on forecast taxable income and tax expenses assuming regulatory assumptions about revenue, inflation and depreciation. The Australian tax paid reflects an ex-post assessment of the actual tax paid by the tax paying entity and adopts statutory rules. The two will never be equal.
- On 28 June the AER released its initial report on the review of the regulatory tax approach.
- The AER has decided to use its information gathering powers to seek actual tax payable information from NSPs (this means putting out a regulatory information notice (RIN) requiring NSPs to provide specific data in the form requested by the AER)
- The AER has identified a range of potential responses which include changes to the treatment of tax depreciation, other changes that might require rule changes or adjusting tax allowances for actual tax paid
- The AER agrees with stakeholders that caution should be taken before moving to a tax pass through approach as such an approach could lead to consumer charges increasing over time, create windfall gains or losses and provide perverse incentives to shift tax between regulated and unregulated entities.
- The AER is currently consulting on RINs.

AEMC, Economic regulatory framework review, 2018 final Report, 26 July 2018.

- The AEMC's annual review of network regulation focused on whether changes to the economic regulatory framework are required to support likely future scenarios where there is a high penetration of distributed energy resources (DER). The report finds that incentive regulation remains appropriate and provides sufficient flexibility to support the evolving role of NSPs in the context of the electricity sector's transformation.
- In addition, the review found that the incentive for NSPs to pursue capital or operating expenditure differs across NSPs and that these issues cannot be addressed within the regulatory framework simply by getting the rate of return allowance 'right'. The AEMC signaled that it would commence work to consider changes to expenditure assessment and remuneration to better align capital and operating expenditure incentives (potentially a totex approach) and include consideration of risk sharing and need for regulatory sandboxes.
- There are also barriers to investment to execute strategic investment plans and to enter into efficient funding arrangements when they are dependent on subsequent decisions by third parties. Providing clarity about how the views of different regulators can be reconciled and aligned will improve certainty, reduce the cost to customers and ensure efficient and timely investment in infrastructure.

ACCC, Retail Electricity Pricing inquiry, Final Report, July 2018.

- The report outlined the issues contributing to rising energy prices and recommended actions to address them. This report acknowledged the role of government in driving over investment in network Government owned businesses. It fell short, however, in recognising that customers of privately held networks have enjoyed flat or marginal increases in network charges despite increasing costs to meet new obligations (for example, the roll-out of interval meters in Victoria).
- The report includes 56 recommendations to deal with concentration in generation markets, dealing with over investment in networks, governments to bear the burden of premium feed in tariffs, improve retail outcomes and experiences and help businesses through lower prices.
- There are 11 recommendations relating to networks (no. 10 to 20). Key items of note include the proposed treatment of overinvestment, support for price reform and the additional role of the AER in assessing impacts of write-down on retail prices, setting reliability standards, increased use of AER Guidelines, increased flexibility in determination process.
- Recommendation 13 is to introduce stranding risk by making changes to the National Electricity Rules (NER) to allow for assets to be stranded and the cost of stranding to be shared between customers and networks. The AEMC has been charged with investigating this issue.
- The current roll-forward approach to the regulatory asset base was established to reduce the risk of efficiently investing in infrastructure. This maintains a low cost of capital and therefore delivers lower prices to customers. If the risk is increased due to the potential stranding of assets which were efficient at the time, the cost of capital would need to increase and so would prices to customers.
- We strongly oppose the suggestion to investigate retrospective re-valuation of investment. Writing down the value of assets privately held will reduce the incentives to invest and increase the cost of capital resulting in poorer services and higher prices to customers. This was recognised in the Finkel Review[1] and has been strongly supported by work undertaken by the ENA[2]. The regulatory compact where investors can earn a return on efficient investment is critical to maintaining low cost of capital. Actual or perceived risk that this will be altered will increase the cost of capital unnecessarily.[3]
- At its meeting on 10 August 2018, the COAG Energy Council agreed to progress 16 of the recommendations (relating to reducing the time it takes for consumers to switch, ensuring consumers get the information they need and strengthening penalties and AER's investigative powers) and a program of work to consider the remaining recommendations.
- We support the ACCC's recommendations for pricing reform[4] in addition to and including the following:
    - Requiring network charges and changes in network charges to be separately identified on a customer's bill to improve transparency and accountability for all elements of the energy supply chain.
    - Government and regulatory support and advocacy for improvements in network tariff design to provide efficient signals to customers and retailers that enable cost impacts to be managed and guidance to ensure further investment is investment.
    - The development of targeted and effective policies to support low income and vulnerable customers, particularly where impacts are likely to be exacerbated by actions of customers that can afford solar and or batteries to off-set network charges.

AEMO, Integrated System Plan, July 2018

- The Integrated System Plan (ISP) acknowledges the critical role of transmission in optimising the existing investment in energy infrastructure, efficiently connecting renewable energy sources and delivering more

[1] Dr Alan Finkel, AO, Independent Review into the Future Security of the National Electricity Market, Blueprint for the Future, June 2017, p. 136.

[2] Energy Networks Association, Written Down Value? Assessing proposals for electricity network write-downs, August 2014.

[3] Energy Networks Association, Written Down Value? Assessing proposals for electricity network write-downs, August 2014.

[4] ACCC, Retail Electricity Pricing inquiry, Final Report, July 2018.

than $1.2 billion in quantified benefits to end use customers (based on transmission investment of approx. $1 billion to $3 billion) than if further transmission investment does not take place.

- The ISP also recognised that a failure to leverage new technology and innovative approaches will delay $4 billion in benefits to end-users from behind the meter investments and dynamic matching of demand and supply.
- The ISP should also streamline the AER's process for reviewing the regulatory investment tests by providing a reference point for projects and assumptions.
- The ISP outlines a three-phase approach:
    - Group 1 – near-term construction to maximise economic use of existing resources, this includes increasing transfer capacity between NSW, QLD and Victoria
    - Group 2 – developments in the medium term to enhance trade between regions, provide access to storage and support renewable energy zones, this includes establishing new transfer capacity between NSW and SA and QLD and NSW
    - Group 3 – longer term developments to support renewable energy zones (REZs) and system reliability and security, this includes further increasing transfer capacity between NSW and Victoria.

ESB, Converting the Integrated System Plan into Action, 21 September 2018.

- At its meeting on 10 August 2018, the COAG Energy Council requested that the ESB report to the December 2018 meeting on how Group 1 projects can be implemented and delivered as soon as practicable and also to convert the ISP in to an actionable strategic plan. The COAG Energy Council also indicated that the work program should include possible changes to the RIT T.
- The ESB released a consultation paper commencing the review on 21 September 2018.
- This should include consideration of the policy and regulatory settings that could reduce incentives for, or increase the cost of, undertaking the investment.

AEMO and ENA, Open Energy Networks, Consultation on how best to transition to a two-way grid that allows better integration of Distribution Energy Resources for the benefit of all consumers, July 2018.

- The AEMO and ENA are jointly holding a set of workshops on consultation on how best to transition to a two-way grid that allows better integration of distributed energy resources (DER) for the benefit of all customers. The workshops were accompanied by a consultation paper.
- The aim of the workshops is to:
    - Introduce the content of the Open Energy Networks consultation paper
    - Identify opportunities and challenges high DER brings to the NEM
    - Develop the 'strawman' framework options on the frameworks for optimisation of DER in the paper, including the key principles identified for any new design
    - Identify immediate "least regret" actions that may be required
    - Outline the next steps and ongoing opportunities to collaborate.
- The options include a single integrated platform provided by AEMO, a two-step tiered regulated platform operated by the local distribution NSP with an interface between the distribution NSPs platform and AEMO, or an independent distribution system operator (DSO).

AER, Draft Rate of Return Guideline Explanatory Statement, July 2018.

- On 10th July the AER released its draft Rate of Return Guideline (RORG). The draft RORG delivers a significant reduction in the allowed return on equity (95 basis points), reflecting a reduction in equity beta from 0.7 to 0.6, a reduction in the market risk premium (MRP) from 6.5% to 6.0%. The AER also increased the value of imputation credits from 0.4 to 0.5.

- The RORG proposes to fix the MRP for the 4-year term of the RORG, retain gearing of 60%, a credit rating of BBB+ and the trailing average portfolio approach to estimating debt. The draft RORG has suggested a change in the approach to estimating the debt yield which will also have a smaller impact on the estimate of the cost of debt.
- Further information on the draft RORG is provided in the attached submission from the Network Shareholder's Group (NSG) provided to the AER on 25 September 2018. The following table summarises the draft RORG outcomes against the evidence, expert views and the NSG positions.

Table 2: Summary of draft RORG with evidence, expert views and NSG

Issue	Evidence	Experts	NSG	AER	Outcome
Return on debt	No material changes in estimates or undeniable better estimate	Not considered	No change proposed	Reduction in debt yield based on arbitrary weighting adjustment	Reduction in rate of return
Approach to estimating ROE	No new developments in finance theory or academic literature	No new developments in finance theory or academic literature	No change proposed	Apply the SLCAPM with no regard to underestimation bias or forward-looking estimates	Reduction in rate of return
Equity Beta	Increase in empirical estimates	Expect equity beta to be stable and current listed firms most comparable	No change proposed	Remove weight on international firms and apply equal weight to current and de-listed firms. Ignore more recent estimates that provide directional information on movements in systematic risk	Reduction in the rate of return
MRP	Increase in each of the three relevant estimates (historical excess return (HER), distributed growth model (DGM), analyst surveys)	All three estimates relevant Agreement on arithmetic mean and disagreement on geometric mean	Increase in MRP	Rely only on HER and change weight on geometric and arithmetic means	Reduction in the rate of return
Gamma	No material changes in estimates and only one estimate that is free of ATO data issues	AER approach incorrect Necessary to use data from a broader range of companies that are comparable, and the capital intensity is relevant when considering comparable firms	Reduce gamma (adopt the direct estimate)	Re-define the BEE to be only listed firms and adopt an estimate that is not for the BEE (hybrid all equity and the top 20 listed firms)	Reduction in the rate of return

Source: NSG Response to the Aer's draft Rate of Return Guideline, 25 September 2018, p. 20.