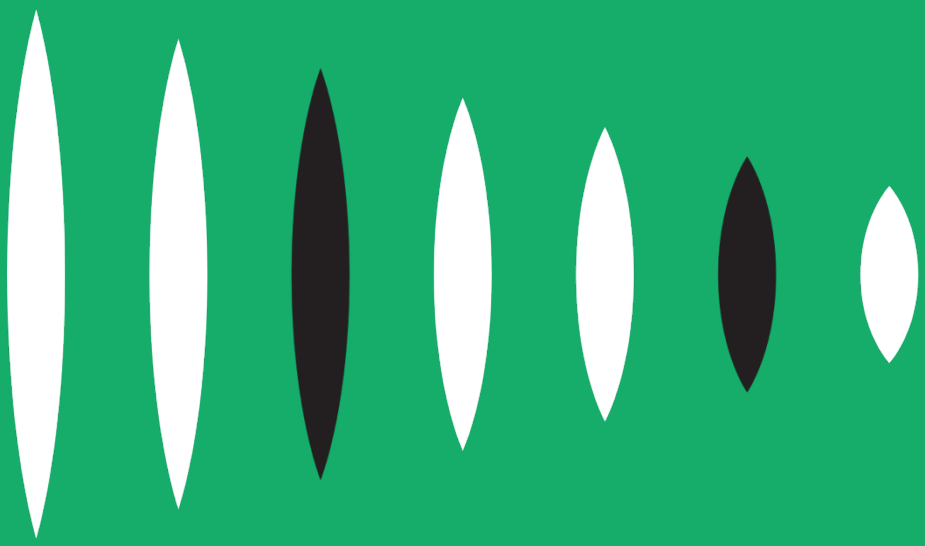
AER Issues Paper: SA Power Networks Electricity distribution determination 2020 to 2025

Submission

May 2019



ENERGY CONSUMERS AUSTRALIA

Contents

Version history

VERSION	DATE	COMMENTS
1	20 May 2019	Final

Introduction

Energy consumers in South Australia and across the National Electricity Market are making new choices about how they meet their energy needs. Networks must create a new dialogue with consumers about today and the future to develop robust, cost-effective strategies that optimise an increasingly distributed and diverse electricity system.

Energy Consumers Australia is the national voice for residential and small business energy consumers. Established by the Council of Australian Governments Energy Council in 2015, our objective is to promote the long-term interests of energy consumers with respect to price, quality, reliability, safety and security of supply.

We appreciate the opportunity to respond to the Australian Energy Regulator (AER) on its *Issues Paper: SA electricity distribution determination, SA Power Networks 2020 to 2025* (the AER Issues Paper). In our response, we will comment on matters raised in the AER Issues Paper, as well as matters from SA Power Networks' (SAPN) regulatory proposal (the Proposal).

Affordability is a priority for households and small businesses and is Energy Consumers Australia's first port of call when reviewing network revenue proposals. SAPN's Proposal would see annual customer bills decrease from 1 July 2020 by $40 for the average residential consumer and $111 for small to medium businesses.[1] These price reductions would provide welcome relief for consumers, and every effort must be made to explore opportunities for greater efficiencies and further savings.

The challenge of transformation looms large over this revenue determination with SAPN grappling with the reality of a more decentralised and diverse electricity system.

We have engaged the consulting firm Dynamic Analysis to provide a technical perspective on the AER Issues Paper and the SAPN Proposal. This work has identified a number of questions about the Proposal. These questions include:

[1] SAPN, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, page 2. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

- the rationale underpinning SAPN's approach to tax and depreciation following the AER's *Regulatory tax review 2018*;
- the impact of its re-characterisation of activities from capital expenditure (capex) to operational expenditure (opex) on the opex base year step changes and the flow on effects of this re-characterisation to the incentive regime and productivity trends;
- its capex strategy, in particular for information and communication technology (ICT) (including cyber security) and augmentation capex;
- whether it has done all it can to maximise opportunities to provide a more affordable distribution network for its consumers; and,
- how it has worked with the South Australian Government and transmission operator, ElectraNet, to ensure that work to provide voltage and broader system security is complementary, not duplicative.

What South Australian Consumers are telling us

Residential energy consumers in South Australia are telling us that they were more satisfied with the overall provision of electricity and gas supply in 2018 than in 2017. 70 per cent of respondents to our December 2018 Energy Consumer Sentiment Survey reported overall satisfaction with the provision of energy, which is a 17 per cent increase from December 2017.[2]

In terms of the provision of electricity, the largest increases in satisfaction measures were for reliability (which increased 16 per cent to 64 per cent) and fault resolution (which increased 15 per cent to 60 per cent).[3] These increases could be reflecting the length of time that has passed since the 2016 system black event.

Significant increases were also reported for respondents' satisfaction for overall value for money (which increased 12 per cent to 44 per cent) and customer service (which increased 11 per cent to 60 per cent).[4]

South Australian consumers are telling us they are increasingly confident in long-term technological advances to help them manage their energy supply and costs (increasing 10 per cent to 43 per cent since 2017[5]).

However, more broadly, South Australian consumers are still not confident that the market is working in their best interest, despite the increased confidence levels from 10 per cent to 30 per cent.[6]

Our framing and approach

The objective – the long-term interests of energy consumers

Promoting the long-term interests of consumers means that current and future consumers pay no more than they need to for the quality of service they require. To put it in even simpler terms, that not one dollar more is spent than necessary; not one day earlier than it is needed. This is an outcome that can best be achieved through a process of dialogue and alignment between network businesses and the consumers they serve.

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[2] Energy Consumers Australia, December 2018 Energy Consumer Sentiment Survey, page 99.
[3] Ibid, page 100.
[4] Ibid, page 100.
[5] Ibid, page 104.
[6] Ibid, page 103.

When this happens, businesses are demonstrably careful with consumers' money and investors are earning reasonable returns.

It does not happen when investors or managers are incentivised to follow a strategy that is distorted by objectives beyond the regulatory framework. In our assessment of regulatory proposals, we are guided by three principles to explore and understand the direction the business is taking:

1. The network business should be able to demonstrate that it has developed a deep understanding of the preferences of its consumers.

2. The business should be able to talk about its longer-term strategy and business plans to provide a context for the five-year revenue proposal under consideration, including a long-term price path expectation.

3. The business should be able to acknowledge the problems created by decisions made previously – comparatively less spending per se, is not enough. Consumers are looking for positive assurance that the spending is designed to meet the National Electricity Objective (NEO).

How we assess draft plans and regulatory proposals

For the SAPN 2020-2025 regulatory proposal, we have engaged experts, Dynamic Analysis, to provide technical advice on the Proposal. This advice is provided at **Attachment A** and builds on our engagement with SAPN at the earlier Draft Plan stage. We include this detailed advice in our submission and as a shared resource for all stakeholders engaging with SAPN as part of this process.

It is important to note that this advice does not reflect an Energy Consumers Australia final position. Rather, it is an input which informs our thinking and highlights areas for further exploration. We ask that network businesses and the AER consider the questions posed and issues raised in the advice, to help further public understanding of the network's strategy and reasoning for the revenue setting proposal.

When we engage with proposals, we hope to see proposals that successfully demonstrate the link between the business strategy and revenue proposal. In these documents, we look to see if the business has unpacked why the decisions being made (or proposed) are in the long-term interests of consumers. We seek evidence about the claims in the proposal and how they link back to consumer preferences and outcome; and how informed consumer preferences have influenced decisions within the business.

Based on our experience in similar processes, we have also come to the position that if one party has information that would make the choice between two alternatives in a draft plan or revenue proposal clear, but will not provide the information, we will assume the information works against the proposed preferred option. Consequently:

- If we are not provided with the information we request, our position is that the expenditure is unjustified.
- If we cannot see evidence of consumer preferences, our position is that the expenditure is unjustified.
- If we cannot see clear evidence of ring-fencing integrity, our position is that the expenditure is unjustified.

Our observation is that different businesses are at different stages of maturity as we move away from the old way of making revenue determinations. Some businesses have taken us on the entire journey; some have willingly shared non-public information with us and our experts; and some re-started this journey with a clear and demonstrated commitment.

At the end of this process, we would ideally be in a position where we can confidently assure consumers that the very best use of their next $1 is to spend it with their local network to deliver the high-quality network services consumers have said they wanted.

Looking at the decision-as-a-whole, Dynamic Analysis's advice to us is that:

> *South Australia Power Networks (SAPN) has been delivering its customers quality electricity service at an affordable price over the last 20 years. The 2020-25 regulatory proposal offers further prices reductions for South Australian consumers. SAPN is also leading the industry on tackling challenges and opportunities from integrating solar, batteries and electric vehicles into the grid. Our review however highlights elements of the proposal that require further review and evidence before being accepted by the AER. These include proposed increases to opex, growth and non-network capex programs, and the incentive reward for underspending capex in the last period.*

The basis for this assessment is outlined in **Attachment A**. This submission explores these, and other, concerns.

Our response

We recognise that it is the responsibility of the AER to set the maximum revenues that networks are allowed to recover from consumers through network tariffs over the five-year regulatory period, based on its assessment of efficient costs and an informed view on expected electricity demand.

Consumer views and perspectives are integral to ensuring that the decisions made by the AER are in the long-term interest of consumers.

In informing our views on this proposal, Energy Consumers Australia has had a laser like focus on affordability, which needs to be a constraint on all expenditure decisions of the business. At the same time, we understand that distributed energy resources (DER) (such as solar panels, battery storage systems, and other new energy technology) have been highlighted by SAPN as drivers for a different approach to running a distribution network, drivers which will incur costs and risks for consumers, which we explore below.

Engagement with stakeholders

We are in the midst of a paradigm shift in the energy system, which is largely stemming from the uptake of new technology. This change is seeing our networks transition from a "small number of large things, to a large number of small things".

These "small things" will be accompanied by values, needs and preferences that must and will shape decisions about the transition of the energy system. This challenge moves beyond the engineering changes – it is an extraordinary social and economic reshaping that demands new thinking, new frameworks and new tools.

When thinking about reshaping consumer engagement for revenue determinations, we want to have a deeper, richer and more open dialogue.

In its Proposal, SAPN stated that it has taken a 'no surprises' approach to engaging with consumers, stakeholders and regulators[7].

On the whole, we believe that SAPN's engagement practices have improved since 2017. We have observed that SAPN is better at engaging on some topics more than others. While the approach to engagement on the future network activities can broadly be described as "no surprises", this is not the case for SAPN's response to the changes to the regulatory framework, largely around taxation and depreciation. This issue is discussed in more detail below.

Looking forward, SAPN has already begun reviewing its consumer engagement strategy, reviewing with stakeholders what worked, what didn't, and opportunities for improvement. In one session that we participated in in March 2019, some stakeholders indicated that SAPN's engagement had improved since the engagement for the current regulatory period began.

However, one of the overwhelming themes from the March 2019 workshop was that stakeholders wanted engagement where they could advocate and influence outcomes on behalf of their constituent groups. This is at the heart of good consumer engagement – the opportunity to influence and collaborate with network businesses on matters that are not only important to the business, but to consumers. We encourage SAPN to allow itself to be more informed and influenced by consumer stakeholders and to reflect this guidance in its business documentation and decisions.

The bottom line – costs to consumers

SAPN's Proposal would see annual customer bills decrease from 1 July 2020 by $40 for the average residential consumer and $111 for small to medium businesses.[8] SAPN points to the savings being more than double

[7] SAPN, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, page 14. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

[8] SAPN, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, page 2. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

the residential savings estimated by the Australian Competition and Consumer Commission (ACCC) (see Figure 1).

These savings are driven by a mix of changes to the regulatory framework and SAPN's efficiency to date. We would like to see SAPN continue to challenge itself on where further savings can be made. Analysis at **Attachment A** (page 9) indicates that there could be opportunity for a further reduction of $240 million of revenue for SAPN, if not adequately justified.

SAPN has intentionally deviated from the AER's standard approach to projecting its revenue path for the period, as it believes it balances feedback from its consumers about wanting savings in their pocket up front, but also wanting to avoid bill shock.[9] We support a smoother revenue path as we view stable prices as a road to building consumer confidence and trust.

Figure 1: Achievable average annual residential bill savings by 2020-21[10]

		Achievable savings ($ per annum)						
Region	2017–18 Bill	Networks	Wholesale	Enviro	Retail	Reduction	2020–21 Bill	% Reduction
Victoria	1457	39	192	34	26	291	1166	20
NSW	1697	174	155	43	37	409	1288	24
South east Queensland	1703	147	152	18	62	413	1284	25
South Australia	1727	13	227	89	42	371	1356	21
Tasmania	1979	113	226	75	–	414	1490	21

Growth in the regulated asset base (RAB)

A network business's RAB is a significant factor in the affordability of the network, as (in simple terms) the higher the RAB per customer, the greater the overheads the network will recover from consumers and the greater the pressure on bills.

Unlike its peers in NSW and Queensland, SAPN has consistently kept its RAB low, which in turn has helped put downward pressure on prices. SAPN is proposing to increase its RAB from $4,417.7 million in 2020 to a closing RAB of $5,059.6 million in 2025. Based on SAPN's Proposal, the AER

[9] SAPN, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, page 17. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

[10] ACCC, *Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry – Final Report June 2018*, Table A, page xv. Accessed from https://www.accc.gov.au/publications/restoring-electricity-affordability-australias-competitive-advantage

projects the RAB value to increase by around two per cent in real terms by the end of the 2020-25 regulatory period[11].

Capacity utilisation

SAPN's capacity utilisation has remained largely consistent over the last three years at between 52 and 54 per cent[12].

One of the challenges facing SAPN is how its future grid strategy can take advantage of existing spare capacity on its network, as continuing to add to the capacity of the network could increase the risk of further under-utilised assets in the future.

Investing for the future – what, how and how much?

Our view is that great care needs to be taken to ensure that policies to shore-up the reliability of the system do not lead to overinvestment in the network and further price rises for consumers, who according to the Energy Consumer Sentiment Survey are more satisfied with reliability than value for money. Our thinking about striking the right balance is informed by our strategic framework for the transformation of the energy system and market:

- *Affordability* must be a constraint on investment and decisions about energy – an explicit criterion in decision making up and down the supply chain.
- Energy services must be built around *individuals* to reflect their own use and costs – whether that is consumers who are innovating and engaged; or the majority of consumers who are focused on affordability and costs; or consumers with vulnerabilities.
- Investment in the power system – networks, generation and retail – must be *optimised* based on consumers' demands that not a dollar more is spent than is necessary, not one day earlier than needed.

In its proposal, SAPN notes that increasing levels of rooftop solar panels is causing high voltage events on its low voltage (LV) distribution system. The impact of this is that SAPN is incurring both capex to reactively address consumer complaints about high voltage events and undertake remediation activities[13].

SAPN also indicates that if current connection rules continue to apply, many areas of the network will exceed its hosting capacity in 2020-25, as consumers continue to invest in solar. Absent a new strategy, SAPN may be forced to curtail the ability for consumers and new energy services providers

[11] AER, *Issues Paper*, page 19. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[12] AER, Regulatory Information Notices (RIN) for 2015/16, 2016/17 and 2017/18. Accessed from https://www.aer.gov.au/networks-pipelines/network-performance/sa-power-networks-network-information-rin-responses
[13] SAPN, *Supporting document 5.10, Distribution System Planning Report*, page 84. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

to get the full value of their investment and participate in a transforming market[14].

SAPN proposes three initiatives to address the voltage issues by implementing greater LV network visibility and dynamic export limits, including:

- visibility of LV network hosting capacity;
- a distributed energy resources register; and
- open interfaces[15].

SAPN engaged Newgate Research to better understand consumers' attitudes to potential options that SAPN could implement to enable more solar in South Australia. This included consulting on three options that SAPN could pursue to manage the impacts of solar on its network. In its consumer research for SAPN, Newgate characterised this package as a "dynamic update", where a new system would be developed to monitor, predict and manage the flow of energy in the LV distribution network, avoiding the need for extensive infrastructure upgrades[16].

SAPN argues that investment to manage voltage issues will also help manage electricity flowing in both directions: from the network to the consumer (the traditional flow); and from the consumer to the network (a new flow as a result of distributed energy resources on the network).[17]

It also says that the investments are necessary to ensure the stability and safety of the State's energy system in South Australia. This is because of the different characteristics of renewable generation and, the need to support new, more flexible, demand-side resources.[18]

However, SAPN is not the only business proposing options to provide stability to the South Australian energy system.

In February 2019, ElectraNet published its Project Assessment Conclusions Report for its Regulatory Investment Test for Transmission (RIT-T) for the proposed SA Energy Transformation interconnector between South Australia and NSW. RIT-Ts provide the framework for transmission operators to test options for significant investment. In this case, ElectraNet's preferred option is a new interconnector.

[14] SAPN, *Supporting document 5.18, LV Management Business Case*, page 9. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[15] Ibid, page 12.
[16] SAPN, *Supporting document 0.16, Newgate Research Community attitudes towards Solar*, slide 5. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[17] SAPN, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, page 29. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[18] Ibid, page 28-29.

As part of the RIT-T process, ElectraNet explored several options that included non-network solutions. In its Draft Report, ElectraNet found that:

> *The continued growth in rooftop PV installations is leading to the minimum grid demand approaching zero in the mid-2020s. Without an additional interconnector, future rooftop PV installations will have to be controllable in order to disconnect them when operating as an island. To enable this, policy changes may be required*.[19]

As part of its Conclusions Report and in response to public submissions, ElectraNet commissioned Entura to undertake a review of its non-network options. The Entura Report suggests that a number of system supports, including Minimum Load Control in 2025, would be needed for the non-network option to be considered for the "…SA Power System to operate as near as possible to the standard provided by a second AC [alternating current] interconnector."[20] Minimum Load Control is defined as "[a] wide area control of embedded storage and/or rooftop solar such that SA demand does not fall below such a level that positive grid demand cannot be maintained when the SA network is islanded."[21]

It is difficult to reconcile these reports. On the one hand, the proposed interconnector will be needed to safeguard South Australia's energy system from rooftop PV and other distributed energy generation connected to the distribution network.

One the other hand, SAPN is telling us that the investment proposed for its future grid strategy will provide that stability for the South Australian energy system.

Either way, consumers pay for the investments made at a distribution and transmission level.

Consumers need to be assured that these investments represent value for money, and that they are not paying twice.

To help clarify the situation, we request SAPN, ElectraNet and the South Australian Government work together to produce a brief diagram about how the two projects relate and provide benefit to South Australian consumers, without consumers paying twice for the same solution.

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[19] ElectraNet, *South Australia Energy Transformation Project Assessment Draft Report 29 June 2018*, page 56. Accessed from https://www.electranet.com.au/wp-content/uploads/projects/2016/11/2018-07-06-SAET-PADR-Final.pdf

[20] Entura, *SA Energy Transformation RIT-T, Consolidated Non-interconnector option, ENTURA-ECA29, 5 June 2018*, page 45. Accessed from https://www.electranet.com.au/wp-content/uploads/projects/2016/11/SAET-RIT-T-Consolidated-Non-interconnector-Option-Entura-5-June-2018.pdf

[21] Entura, *SA Energy Transformation RIT-T, Consolidated Non-interconnector option, ENTURA-ECA29, 5 June 2018*, page i. Accessed from https://www.electranet.com.au/wp-content/uploads/projects/2016/11/SAET-RIT-T-Consolidated-Non-interconnector-Option-Entura-5-June-2018.pdf

How much will the "Dynamic Control" option cost?

SAPN advises that the preferred option of dynamic control will cost $31.80 million of capex and $3.80 million of opex in the 2020-25 regulatory period (total expenditure of $35.60 million)[22].

Analysis undertaken for Energy Consumers Australia by Dynamic Analysis (**Attachment A**) indicates however, that total capex on the low voltage network is close to $150 million. Some of this, particularly the low voltage monitoring program, seems to be closely related to enabling dynamic exports. We also think that the proposed solution could lead to cost efficiencies in some of SAPN's business-as-usual programs such as its proposed $48 million for a quality of supply program that may no longer be required if dynamic exports are viable. We will continue to work with SAPN to understand the total costs associated with this option.

What do consumers want?

SAPN engaged Newgate Research to undertake a point in time survey of residential consumers to find out which of the three options to address voltage issues consumers preferred. These options were described as:

- Option 1: a "comprehensive upgrade" where the network is progressively upgraded with new infrastructure as sections of the networks come under strain from increased solar.
- Option 2: a "dynamic upgrade" where a new system would be developed to monitor, predict and manage the flow of energy in the LV distribution network – avoiding the need for extensive infrastructure upgrades.
- Option 3: a "no upgrade" option which involved routine maintenance only and no additional upgrade of the network for solar customers.[23]

The research found that while there was strong support for enabling more solar, some consumers continue to struggle with their power bills[24].

Efficient costs and value for money

It is clear that SAPN has undertaken extensive analysis on its approach to managing voltage issues on the LV network. It has also consulted widely through "deep dives" (a workshop focusing on a particular issue) and the Distributed Energy Resources Integration Working Group.

If the benefits of SAPN's proposed investment are to be realised, consumers with solar panels should be able to optimise their investment in their own solar panels; and consumers without solar should benefit from lower network capex costs.

We believe that the focus should be on maximising benefits for consumers, and delivering an appropriate return on their investment. When assessing

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[22] SAPN, *Supporting document 5.18, LV Management Business Case*, pages 13-14. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

[23] SAPN, *Supporting document 0.16, Newgate Research Community attitudes towards Solar*, slide 9. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

[24] Ibid, page 40.

the costs and benefits to consumers, we question whether outcomes such as "reduced risk of adverse media coverage and customer enquiries" and "reduced exposure to financial risk and SPS [service performance scheme penalties][25] should be considered in the equation.

The suite of measure to manage voltage issues on the LV network is ambitious and carries the risk that the proposed program of works may not be delivered within the period, and that the benefits to consumers may not be realised.

Our confidence in the proposed expenditure would be bolstered by an in-period tracking and monitoring of the proposed program of works.

We believe that the discussion would benefit from SAPN providing more information on the dynamic export option outlined in the Proposal. Our specific questions on this topic are outlined in **Attachment A**.

Comments on key components

The key components of SAPN's Proposal are summarised in Table 1.

Based on the assessment conducted by Dynamic Analysis (**Attachment A**), we have focused our comments on:

- opex (escalation; output; tax and depreciation; and step changes);
- capex (replacement; augmentation; connections; ICT; property, fleet and plant);
- incentives; and
- Tariff Structure Statement.

[25] SAPN, *Supporting document 5.10, Distribution System Planning Report*, page 97. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

TABLE 1: SUMMARY OF KEY COMPONENTS

2020-25 SUMMARY	SA POWER NETWORKS
Revenue ($June 2020, m) Unsmoothed	$4,220.8[26]
RAB June 2020 ($m)	$4,417.7[27]
RAB June 2025 ($m)	$5,059.6[28]
Capex (net forecast)	$1.7 billion ($2019-2020)[29]
Opex ($m)	$1,670.8[30]

Rate of Return

Given the AER has finalised its binding rate of return guideline, we defer comment on SAPN's compliance with this guideline to the AER.

Efficiency and productivity

The AER describes the productivity growth factor as capturing the improvements in good industry practice that should be implemented by efficient distributors as part of business-as-usual operations. Examples of areas of improvement include new technology and changes to management practices.[31]

While the Proposal states that SAPN would not apply the AER's productivity factor, at the AER's public forum on 4 April 2019, it announced that it will include the AER's opex productivity adjustment in its revised proposal[32]. We welcome this move from SAPN.

We support the AER's view that the incentive-based framework is not meant to incentivise the business-as-usual productivity growth that would be

[26] SAPN, *Attachment 1, Annual Revenue Requirement and Control Mechanism – January 2019*, Table 1-1, page 10. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[27] SAPN, *Attachment 2, Regulatory Asset Base – January 2019*, Table 2-2, page 21. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[28] Ibid
[29] AER, *Issues Paper*, page 19. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[30] SAPN, *Attachment 1, Annual Revenue Requirement and Control Mechanism – January 2019*, Table 1-1, page 10. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[31] AER, *Final decision paper: forecasting productivity growth for electricity distributors*, page 7. Accessed from https://www.aer.gov.au/system/files/Opex%20productivity%20growth%20review%202018%20-%20Final%20decision%20-%208%20March%202019.pdf
[32] SAPN, *SA Power Networks 2020-25 Regulatory Proposal, AER Public Forum, 4 April 2019,* slide 21. Accessed from https://www.aer.gov.au/system/files/SAPN%20-%20Presentation%20-%204%20April%202019.pdf

expected within the sector, but rather, the productivity growth that exceeds what it has forecast[33].

The analysis at **Attachment A** suggests a scenario where SAPN can continue to drive efficiency in its network, through an ambitious engineering and productivity transformation that could lead to $9.2 billion in total expenditure savings by 2060. The keys to success under this scenario are to stretch asset life, retire (rather than replace) parts of the network by leveraging consumers' solar panels and batteries, and pursue an aggressive strategy to reduce the cost of delivering capex and opex.

Taxation and depreciation

In December 2018, the AER released its final decision on its review of regulatory tax. In response to this, SAPN amended its approach to depreciation and classification of assets:

> *As a result of the AER decision, we have reviewed our treatment of economic asset lives, depreciation approaches, and capitalization policies and included these changes in our Proposal capex and opex forecasts. The proposed changes better reflect the actual work undertaken and life of assets involved and therefore align more closely with the depreciation requirements of the National Electricity Rules (section 6.5.5).*
>
> *Although our proposed changes provide for a capex/opex trade-off reducing capex and increasing opex by $68 million over 2020-25, the overall impact of the AER Taxation Allowance decision is a net reduction of $101 million in our allowed 2020-25 revenue.*[34]

While SAPN acknowledges the need to continue engaging with stakeholders on this approach, we would like to further explore the following questions:

- What would the impact have been if SAPN maintained its current approach? And what is the ongoing cost impact of an increasing opex?
- If this approach better reflects actual work and life of assets, why was this approach not implemented earlier? This question is asked because it speaks to consumer trust and confidence. It raises concerns about how closely aligned businesses' revenue proposals are with the actual network investment need, rather than the regulatory process being used as a financial tool for profit outcomes ahead of the long-term interests of consumers.

We are not satisfied that the need for the change is based on the long-term interests of consumers. We see a proposed depreciation allowance that is

[33] AER, *Final decision paper: forecasting productivity growth for electricity distributors* , page 7. Accessed from https://www.aer.gov.au/system/files/Opex%20productivity%20growth%20review%202018%20-%20Final%20decision%20-%208%20March%202019.pdf

[34] SA Power Networks, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, page 43. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

$120 million higher than the Draft Plan,[35] with a rationale that these changes are more aligned with the NER. Further questions for consideration include:

- The approach in the Draft Plan was the same as the current period,[36] which was approved by the AER as compliant with the NER. It does not logically follow that the proposed change is to correct a misalignment.
- If there is scope within the NER for multiple interpretations of the depreciation requirements, then this test must be assessed along-side what is in the long-term interest of consumers. If consumers are telling SAPN that affordability is a key issue, then we would ask the AER to review the depreciation and tax approach in the Proposal. It begs the question - just because you can do it, should you?

The Proposal also reclassifies expenditure associated with cable and conductor minor repairs on the basis that this would address inter-generational issues raised by the AER in its tax review (that is, where current customers receive short term benefits at the expense of future consumers).[37]

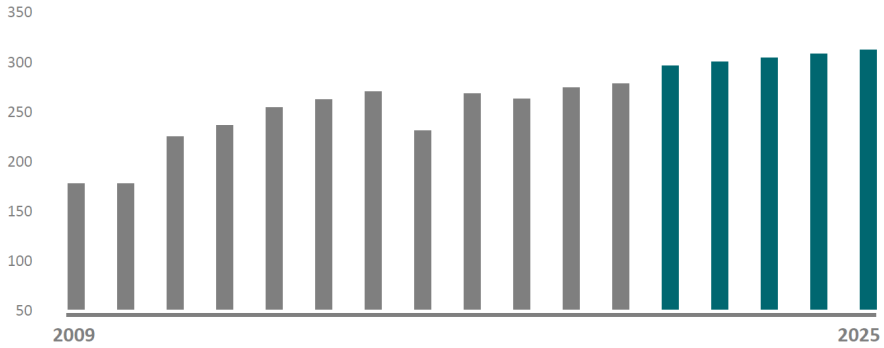
Accelerating the recovery of long-lived network investments so that only current customers pay for them actually shifts business risk from the business to the consumer. In effect, instead of the business developing a strategy to deal with uncertainty in the future, it is making the consumer underwrite the risk associated with uncertainty. We view this as being unfair given large businesses are better placed to manage uncertainty than residential and small business consumers. In addition, if the network sees that the investment can continue to be optimised once the consumer has paid for it earlier than they needed to, it is unclear what additional benefits consumers would receive from this strategy.

Opex

Looking at opex as a whole, SAPN's opex has increased by close to 50 per cent over the last 10 years (**Attachment A**, page 27). Figure 2 tells us that SAPN's 2024-25 proposed opex will be 18 per cent higher than its actual opex in 2017-18.

[35] SA Power Networks, *2020-25 Regulatory Proposal: An overview for South Australian electricity consumers January 2019*, Table 9.3, page 45. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal
[36] SA Power Networks, *2020-2025 Draft Plan*, page 60. Accessed from https://www.talkingpower.com.au/38336/documents/84356
[37] SAPN, *2020-25 Regulatory Proposal – Attachment 7 – Corporate Income Tax*, page 8. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

Figure 2: Opex increase from 2009 to 2025 ($m, real 2020, excludes metering)



Dynamic Analysis has identified the following opex components that warrant closer AER scrutiny (**Attachment A**, page 30).

Opex step changes

This represents an increase of $95 million. The main concerns are:

- cloud transitioning – timing of the project and cost estimates for the hosting and scheduling.
- cable conductor and minor repairs – this represents an increase of $60 million in step changes, which is a significant amount. We are querying whether the proposed expenditure is truly a repair and does not extend the life of the asset. This step change alone would increase SAPN's opex by 5.3 per cent and prices by about 1.5 per cent.
- LV management – staff and salary level (if related capex is approved).
- Guaranteed Service Level (GSL) step change. This component requires a negative step change since the GSL costs will fall by 40 per cent from 1 July 2020. The Essential Services Commission of South Australia (ESCOSA) advises that this equates to an annual contribution of around $5 per customer[38]. We would like to see the evidence of the underlying calculation to be assured that the cost reduction proposed by SAPN is appropriate and the design integrates with the AER's base year allowance.
- Critical infrastructure compliance – given the confidential nature of the business case, we would rely on the AER to undertake close scrutiny of the costs in line with the questions outlined in **Attachment A** (page 30).

Trend and output price

Given the significant increase in opex for output and labour price, we would like to see more tangible evidence that SAPN's underlying opex is impacted significantly by customer growth and network assets (see **Attachment A**, page 31).

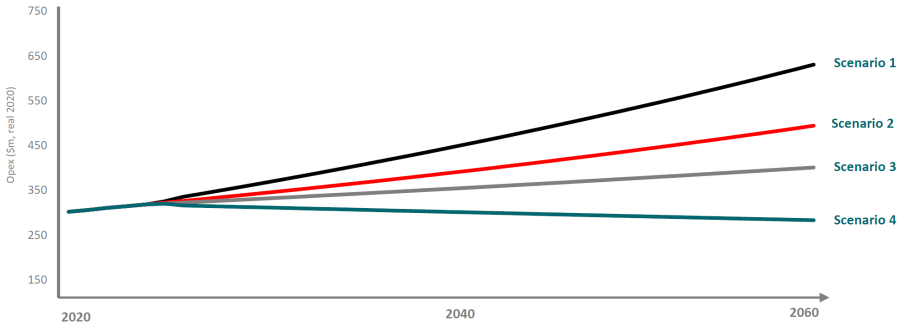
[38] ESCOSA, *Fact Sheet: Changes to SA Power Networks' Guaranteed Service Level (GSL) scheme from 1 July 2020*, page 2. Accessed from https://www.escosa.sa.gov.au/ArticleDocuments/1188/20190107-Electricity-SAPN-ReliabilityStandards-GSL-Scheme-FactSheet.pdf.aspx?Embed=Y

Trend productivity

Analysis undertaken by Dynamic Analysis indicates that without ongoing productivity, South Australian consumers are likely to suffer affordability issues in the long-term. This is particularly the case if opex continues to rise for step changes, output and labour but energy sales remain flat. Figure 3 illustrates four opex scenarios. What would happen to opex from 2025 if SAPN:

- Scenario 1: continue to increase opex based on steps and trends in 2020-25
- Scenario 2: removes the impact of step changes
- Scenario 3: removes the impact of escalation
- Scenario 4: incorporates a productivity trend on top of scenario 3.

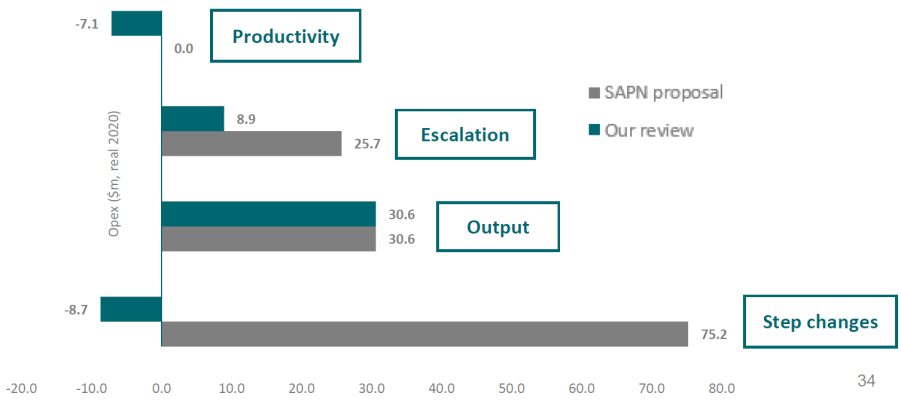
Figure 3: Opex scenarios



	Annual step change	Annual Output factor	Annual escalation factor	Annual productivity
Scenario 1	$3m	0.67%	0.61%	0%
Scenario 2	$0m	0.67%	0.61%	0%
Scenario 3	$0m	0.67%	0%	0%
Scenario 4	$0m	0.67%	0%	1%

Attachment A outlines many questions for further reflection by SAPN and the AER. Dynamic Analysis also considers the following components require justification, the magnitude of which is outlined in Figure 4. We note that the SAPN has made a verbal commitment to adopt the AER's 0.5 per cent productivity and will include it in its revised proposal.

Figure 4: Magnitude of adjustments to components of opex

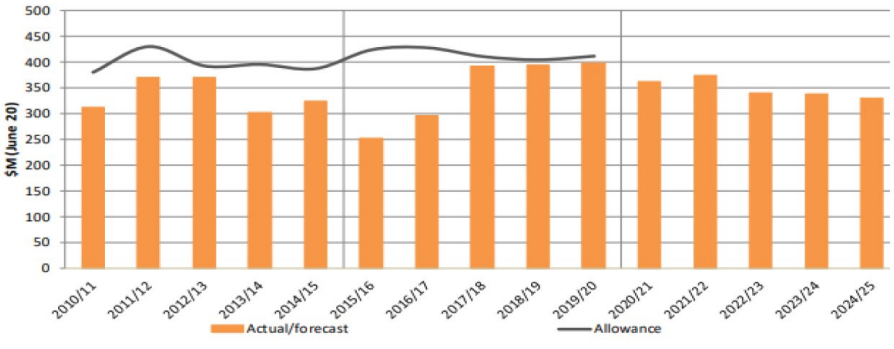


Capex

Dynamic Analysis has indicated three areas of opportunity for SAPN to minimise its proposed capex: augmentation capex (augex), connections and non-network programs.

The initial review of the capital trends also suggests that SAPN tends to deliver fewer projects than forecast. While this could be due to delivery issues or decisions to defer forecast capex closer to the time of delivery, this has a cost impact for consumers, which we will discuss later in the submission. Figure 5 highlights the systemic over-estimation in its forecast process, either due to delivery capacity, prioritisation closer to delivery, or forecast assumption errors such as customer growth. For the past two regulatory periods, SAPN has underspent its capex allowance by about 18 per cent.

Figure 5: Comparison of SA Power Networks actual/forecast vs AER allowance ($m, real 2020)



Source: SAPN Regulatory proposal

Repex

Our concerns about SAPN's repex component is largely about whether this level of replacement is sufficient over the long term. This flags an issue for

regulatory periods beyond 2025, as tension may grow between the need to retain affordability constraints without impacting reliability.

Augex

SAPN proposes to invest $400 million of augmentation at a time when energy demand is falling and replacement challenges are increasing. The drivers of this proposed investment include:

- Maintaining or improving reliability:
  - SAPN is proposing $64 million on programs that impact frequency and duration of outages; and $50 million on safety programs.
  - ESCOSA's final decision on reliability standards for SAPN for 2020-2025 is for SAPN to maintain reliability at current levels rather than improve or reduce performance. ESCOSA's approach was supported by results of a customer survey showing consumers are satisfied with reliability outcomes and have limited willingness to pay for reliability improvements. ESCOSA also indicated that the results of economic assessments show no clear economic benefit in setting targets to improve performance[39].
- Investing in monitoring and modelling its low voltage network. This is related to the work to manage voltage and two-way flows of energy on the network, referred to earlier in the submission.
  - SAPN is proposing to spend $150 million on measures to address voltage issues arising from two-way energy flows; including $48 million on rectifying issues with voltage complaints based on business-as-usual historical costs.
  - When the AER undertakes its analysis, we would expect it to consider affordability as a constraint on all investment areas, any equity issues for consumers with solar panels based on where they are situated on the network in relation to other network assets, and consumers' appetite to undertake the expenditure.

Given SAPN's history of underspending, Dynamic Analysis considers that about 20 to 30 per cent of the proposed augex is likely to be deferred in practice based on historical data.

Connections

SAPN spent 22 per cent less than the AER's allowance in the 2015-20 and 2020-15 periods (see Figure 6). It is now forecasting an 18 per cent increase from its actuals. We would like to see the AER undertake a robust analysis of the drivers of these changes to see if there is a chronic over-estimation of connections capex in the forecast or something else. The better outcome for consumers is to not have to pay for investment that is not needed or not based on robust data.

[39] https://www.escosa.sa.gov.au/projects-and-publications/projects/electricity/sa-power-networks-2020-reliability-standards-review

Figure 6: SAPN's actual/forecast connections capex compared to the AER allowance ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)

Information and Communication Technology (ICT)

As stated in our submission to SAPN's Draft Plan, we recognise that ICT is required as a transformation enabler. However, this position does not mean that consumer preferences, outcomes and benefits should not be articulated.

The key issues across the NEM are the lack of transparency and trust that the proposed ICT investment will deliver what it is meant to, and that the level of ICT investment is needed. Much of these concerns stem from not knowing what is driving the investment, not being able to see clear links between ICT investment and increased productivity and efficiency (and therefore reduced costs to consumers); and, the apparent need to invest more often. Figure 7 illustrates the amount of ICT investment in SAPN since 2011.

Figure 7: Actual and forecast ICT capex ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)

We have engaged Dr Rob Nicholls of the University of New South Wales to assist in building the knowledge and capability of advocates so that we may be able to engage meaningfully with networks on this topic. We aim to create a safe space for dialogue between network businesses and advocates to explore this component. In the meantime, we need to see a clearer link between consumer benefits/efficiencies stemming from ICT investment (see pages 46-48 of **Attachment A**).

Property, fleet and plant

Dynamic Analysis advises us that SAPN has underspent its allowance in all three categories over the last two regulatory periods. It is now asking for an 18 per cent increase in actual capex without a clear articulation of drivers. We ask the AER to carefully review the proposed $200 million for property, fleet and plant and tools (see page 49 of **Attachment A**).

Incentives

SAPN is proposing a Capital Expenditure Sharing Scheme (CESS) reward of $70 million, which Dynamic Analysis advises us equates to a residential consumer paying $10 more a year for electricity (page 52, **Attachment A**).

Incentive frameworks are designed to provide consumers with a fair share of benefits from efficient actions undertaken by the network business. We question whether the CESS proposed to be claimed is due to efficiency measures rather than over-forecasting or simply not being able to deliver the program. For example, Figure 8 shows how many projects have been deferred due to incorrect forecasts. We ask the AER to consider the primary motivator for undelivered projects when assessing the CESS reward.

Figure 8: Actual / forecast augex compared to the AER allowance[40]

Project Name	Region	Project Category	Planned Year	Estimated Cost ($ million[6])	Status	Reason for deferral / Comment
Barossa South Sub Upgrade (Mod 2)	Barossa	Substation Capacity - Existing	2016	3.5	Completed	-
Dorrien 33/11kV substation upgrade	Barossa	Substation Capacity - Existing	2015	2.8	Completed	-
Lyndoch East Substation (2 x Mod 6)	Barossa	Substation Capacity - New	2018	4.0	Not commenced	Slower customer load growth – deferred post 2025
Stockwell Sub Upgrade (No2 Mod 2 Substation)	Barossa	Substation Capacity - Existing	2018	3.9	Completed	-
Eliza Street Cable Duct works	CBD	Substation Capacity - New	2019	3.7	In progress	-
Meadows Substation Upgrade	Eastern Hills	Substation Capacity - Existing	2019	2.3	Not commenced	Slower customer load growth – deferred post 2025.
Mount Barker East Substation – New	Eastern Hills	Substation Capacity - New	2019	5	Not commenced	Slower customer load growth – deferred post 2025.

Incentives – theory and practice

The design of economic regulation for electricity distribution networks in Australia is described in general as an 'incentive framework' and is acknowledged as being derivative of the RPI-X price cap approach developed in the UK. While the regime continues to use a CPI-X approach to revenue smoothing, it is otherwise nothing like the original intent. The building block approach used to reset allowed revenue is more accurately described as a modified 'cost of service' mechanism with components of Performance Based Regulation. Cost of service regulation itself is a misnomer as applied in the US as it doesn't set prices on the basis of current costs but on prior costs, and therefore in an environment of declining average costs utilities benefitted from this regulatory lag.

The theory of incentives as applied to regulation by Laffont and Tirole considers a choice between polar extremes of actual cost of service

[40] SAPN, *Supporting document 5.10, Distribution System Planning Report, 2020-25 Regulatory Proposal, January 2019*, page 34. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

regulation and total price cap regulation. They identify that the social welfare maximising option is to provide the regulated firm with a choice of what proportion of revenue is recovered from each form, a firm that believes it has high cost saving opportunities will choose a mix with a high incentive.

The Australian model has five significant flaws[41]:

1. The approach to efficiency includes an inherent paradox. The regulator in setting the revenue allowance is determining the efficient costs of the business, but the incentive regime is designed to reward greater efficiency. The better the AER does its job *a priori* the less the available incentive for management.

2. The design of the Efficiency Benefit Sharing Scheme notionally distributes the benefits of efficiency improvement 30:70 between the firm and consumers. In practice the firm gets its share in the six years following the improvement, while consumers need to wait till the 15th year till they get the first 30 of their total 70. A scheme whereby consumers get the immediate benefit of some of the cost saving would be preferable and would in part resolve the paradox.

3. The estimation of the allowed rate of return is inconsistent with the operation of the incentive schemes. The CAPM assumes that actual returns are normally distributed around the expected return while the operation of the incentive mechanisms has been biased (and we would argue should be biased) on the upside. The intention is to reward the welfare maximising level of effort by managers in improving technical efficiency.

4. The incentive regime does not properly reward a business for the additional risk inherent in Research Development and Design (RDD) activities necessary to introduce the most significant efficiency improvements (that is, innovation). The logic that these activities should not require funding because the developments will reduce costs is undermined by the fact that not all RDD will deliver benefits. This is further eroded by the demand that an allowance for capital expenditure requires a matching reduction in operating expenditure. A final complication can be that the savings might not emerge at all till the next regulatory control period.

5. The approach to benchmarking the allowed rate of return and the tax allowance has historically been interpreted as an area where the network should benefit from financial management to reduce costs. Recent decisions on the weighted average cost of capital and tax allowance have sought to reduce this scope by setting the allowance at the (genuinely) efficient rate. Networks have consequently seen a reduction in the potential for economic profit which they may seek to recover in other ways. We support the AER's decision on the taxation review. However, this does not exempt SAPN from needing to provide the evidence to demonstrate that its change in approach

[41] These flaws are to be expanded on in a paper being prepared by Energy Consumers Australia for consideration in July.

to depreciation is appropriate and in the long-term interests of consumers (whether they are today's consumers or tomorrow's).

SAPN should be recognised for the effort they have put in to achieving efficiencies. Of all the networks they most acutely feel the impacts of high DER penetration and, consequently, have the most to gain from strategies to optimise the value of DER use. However, providing an upfront allowance for the development without compensating savings potentially over-rewards innovation, while providing an allowance with compensating savings potentially under-values risk and will stifle innovation. A combined approach of a 'cost compensation' approach for innovation capex (that is treat it as a passthrough) and bringing forward to consumers the benefit of efficiency improvements could better manage the innovation risk/reward trade-off.

We encourage SAPN to think more broadly about how the regime can work for the benefit of investors and consumers.

Tariff Structure Statement

The context

Energy Consumers Australia has assessed the extent to which SAPN's Tariff Structure Statement (TSS) creates opportunities to unlock the potential flexibility in consumers' energy use now and into the future, often described as demand side participation. Where consumers are able to understand and respond to opportunities to be rewarded for this flexibility, the necessity to build expensive long-lived assets to meet the electricity needs in our homes and businesses is lessened.

There is also a larger context, which goes to the nature of energy markets, and whether they are effectively working in the interests of consumers. Following completion of the Retail Electricity Pricing Inquiry in June 2018, the ACCC is closely monitoring all parts of the supply chain in the electricity sector for the next seven years with a focus on improving affordability including addressing the "dysfunctional state of energy retailing." [42]

The ACCC expressed its concern in the Retail Electricity Pricing Inquiry that progress in shifting to "user pays" or cost reflective pricing for the use of electricity distribution networks has been too slow. In our view, simply mandating that network tariff changes be imposed on all consumers with digital meters could have unknown and unintended consequences for consumers in the retail market, even allowing that governments could take a role in providing an adequate safety net for low income consumers.

When consumer groups are faced with consideration of the merits of proposed changes to the design of electricity distribution network tariffs, in almost all instances there is an absence of information on how these tariffs will be reflected in the choices of retail pricing offers made available to residential and small business consumers. When consumer groups see retailers limiting choice, such as no longer offering "flat rate" retail pricing following the implementation of cost reflective network tariffs, or see

[42] https://www.accc.gov.au/media-release/more-work-needed-to-make-electricity-prices-affordable

consumers experiencing bill shock from being charged peak rates, it negatively impacts confidence and trust which is already low in this market.

Further, there is an absence of information on how different consumers could be impacted by retail pricing offers that exposes them to peak pricing. As is evident in our Energy Consumers Sentiment Survey there is a lack of easily available information and tools to enable them to manage that risk, at the time they are making decisions that impact on energy use rather than seeing the electricity bill as the price signal.

Exposing consumers to the risk of higher bills – or the opportunity for lower bills – without ensuring they have the capacity to understand and respond is in stark contrast to the intention of the package of measures that have been recently introduced to improve consumer outcomes in retail energy markets.[43]

SAPN network tariff design

In consultation with customers, SAPN developed four customer impact principles that it has demonstrated it has applied in developing its TSS:

- Principle 1 – empower the consumer
- Principle 2 – fairness and equity
- Principle 3 – simplicity (to inform consumer decision making)
- Principle 4 – compliance.

SAPN has clearly articulated a rationale for the changes being made to network tariffs, given the uptake of solar which has resulted in a solar trough in the middle of mild sunny days and reverse power flows on the network.

> *"Consequently, our proposed tariffs include a stronger pricing difference between the solar "trough", and the morning and afternoon peaks to encourage customers to use energy in the solar trough period – and to avoid the morning and afternoon peaks.'*[44]

The tariff strategy also responds to the need to address peak demand (while a consideration, no longer a key driver of growth in the SAPN network) and localised demand constraints. The proposed tariff structures are also designed to influence consumer behaviour in relation to the timing and the nature of charging of electric vehicles.

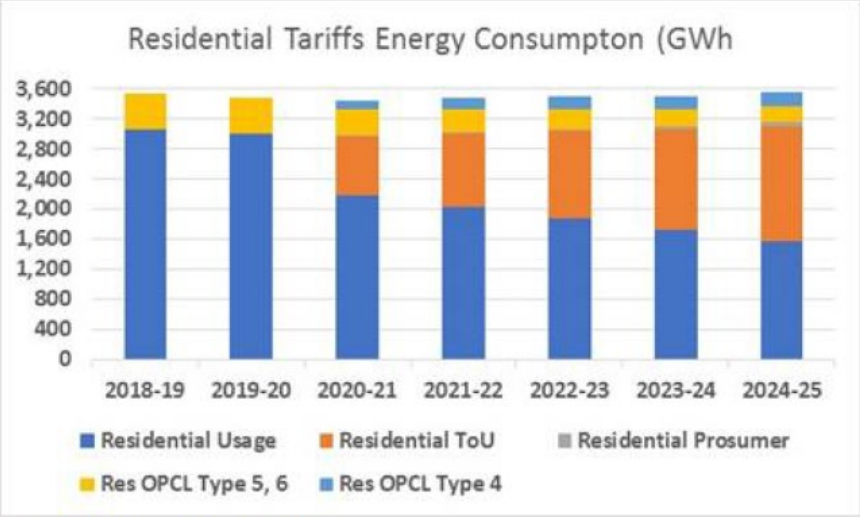
SAPN is proposing that the changes to network tariffs will apply to customers with digital meters (described as interval meters), which is currently approximately 10 per cent of residential and small business customers and rising to 45 per cent by 2025.

Our understanding of the package of network tariffs proposed by SAPN is that they work together to significantly increase the proportion of electricity consumption that is potentially flexible in response to pricing signals, if passed through by retailers. This is evident in the analysis shown in Figure 9 (that is, Figure 17.44 in Attachment 17 of the Proposal). The proportion of

[43] This includes the default market offer https://www.energy.gov.au/publications/price-safety-net
[44] SAPN Regulatory Proposal Overview, p. 37

residential consumption that is covered by network tariffs with peak and off-peak pricing rises from around 17 per cent to 56 per cent in 2020-25.

Figure 9: Residential tariff forecast energy consumption by class



Source: SA Power Networks analysis

We support the following elements of the network tariffs proposed by SAPN for residential and small business customers, as summarised in the Regulatory Proposal 2020-25[45] including:

- the replacement of inclining block tariffs with a flat usage rate for (existing) customers without digital meters;
- time of use as the default tariff for consumers installing digital meters from 1 July 2020, with significant blocks of off-peak pricing (which offsets a potential concern with having peak periods apply on weekends and public holidays for residential consumers);
- the off-peak controlled load tariffs, for electric hot water systems and appliances;
- an optional "prosumer" demand tariff for customers with new technologies (for example, solar and battery systems, home energy management systems), using average demand for residential customers during the peak window and anytime demand for small business; and
- the moderate increase in the supply charge, applying across all tariffs.

There are elements of the proposed tariffs where we have concerns, which go to ensuring that there is a fair transition, and the evidence of consumer impacts.

- There is no requirement to inform existing customers that have digital meters of the change in the network tariff on 1 July 2020, even though it could have an impact on their bill. (We recognise that time of use tariffs are simpler than a demand tariff, but the issue remains nonetheless). SAPN has identified that this is 13 per cent of residential customers and

[45] SA Power Networks 2020-25 Regulatory Proposal, p. 39 and Attachment 17 Tariff Structure Statement, p. 13.

15 per cent of small business customers.[46] For this reason, our view is that these customers should be able to opt-in to the time of use tariff rather than be defaulted onto the time of use tariff. Our view could change if it could be shown that 100 per cent of these customers would be better off than on the existing inclining block tariff.

- SAPN does not propose to allow consumers with a digital meter to "opt-out" back to a flat rate tariff. In the absence of SAPN offering a flat rate tariff for customers installing a digital meter after 1 July 2020, a retailer may also not offer the customer a choice of a flat rate *retail* tariff. We would like to understand from the retailers in South Australia whether this could be the case.
- There is an assumption that consumers with digital meters on a *retail* time of use tariff will be provided with the information on their energy use, in such a way that enables consumer decision making to shift or reduce their use. In the absence of this information, the only price signal consumers will receive is in their bill. There is a need for a whole of sector conversation in advance of the introduction of these tariffs on 1 July 2020 that addresses how consumers will be provided with information on their use that is meaningful and actionable and in particular, the appliances that drive their use.
- SAPN has estimated that for residential customers the "network price will vary by not more than five per cent of the current retail price"[47] and therefore proposes no transition arrangements. Appendix D of Attachment 17 in the TSS provides more detailed analysis which shows the proportion of residential consumers (with and without solar systems) have a higher bill on a time of use tariff compared with a flat rate tariff. For the 20 per cent of residential consumers without solar that have a higher bill, most have a potential increase of 5 per cent (it is not clear whether this is the retail price or network use of system charges) or less. If low income consumers in this group could be identified, then measures could be targeted to offset the impact, or to exclude them from a time of use tariff (for example to exclude people on life support, with medical needs for heating or cooling). Noting that the tariffs are technology neutral, for consumers with solar the impacts overall are small and dependent on the proportion of consumption that is charged at lower rates. Similarly, for small business customers, SAPN has identified the potential change in the network use of system charges of the proposed tariffs. For most small businesses those on time of use tariffs will have decreases in their network bill, while a significant proportion of small businesses that will be shifted to the anytime demand charge will face increases in costs. Our expectation is that SAPN would work with these businesses to adjust their energy use during the transition period, and if needed adapt the tariff or offer an alternative demand response/load control mechanism, to enable behaviour change.

In our view it is important that SAPN continue to explore within the regulatory period innovative mechanisms to unlock the flexibility in consumers' energy use as well as find solutions that enable the potential impact of more cost reflective pricing to be mitigated. In this context we support:

[46] SA Power Networks, Attachment 17 Tariff Structure Statement p. 11
[47] SA Power Networks, Attachment 17 Tariff Structure Statement p. 58

- SAPN's approach to integrating demand management and trials into their overarching tariff strategy, in particular the Riverland trial and the hot water management trials; and
- SAPN continuing to investigate the appropriate mechanisms for unlocking customer value in Virtual Power Plants.

Given that SAPN is at the frontier of new technologies adoption (as is evidenced in the prosumer tariff), we suggest that there be a further exploration of how alignment between the retail incentives for the timing and location of local generation (or demand response); and the network tariffs and charging can be aligned to optimise the benefits for consumers.

Conclusion

Energy Consumers Australia has appreciated the opportunity to comment on the SAPN Proposal for 2020-25 and address issues raised in the AER Issue Paper.

If you have any questions about our comments in this submission, or require further detail, please contact Shelley Ashe, Associate Director – Networks, by email at shelley.ashe@energyconsumersaustralia.com.au or phone on 02 9220 5514.

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ENERGY CONSUMERS AUSTRALIA

Technical regulatory advice to the ECA

Review of South Australia Power Networks (SAPN) 2020-25 regulatory proposal

Dynamic Analysis Pty Ltd
16 May 2019

All information contained in this report is the independent opinion of Dynamic Analysis and does not represent the view of ECA

Contents

Executive summary

Decision as a whole

South Australia Power Networks (SAPN) has been delivering its customers a quality electricity service at an affordable price over the last 20 years. The 2020-25 regulatory proposal offers further price reductions for South Australian customers. SAPN is also leading the industry on tackling challenges and opportunities from integrating solar, batteries and electric vehicles into the grid. Our review highlights elements of the proposal that require further review and evidence before being accepted by the AER. These include proposed increases to operating expenditure, growth and non-network capital expenditure programs, and the claimed incentive reward for underspending capex in the last period.

In February 2019, we were engaged by Energy Consumers Australia (ECA) to review South Australia Power Network's (SAPN) 2020-25 regulatory proposal. The ECA wished us to provide a strategic perspective of whether SAPN's proposal provides a foundation for long term affordability and reliability in South Australia.

Our review has found that SAPN is currently operating at the efficiency frontier in the National Electricity Market (NEM) relative to its peers. SAPN's current efficiency has helped keep a lid on network prices in South Australia for the last 20 years without compromising service quality.

SAPN's 2020-25 regulatory proposal provides for a welcome price reduction for its customers.

Our concern is whether SAPN has explored all options to sustainably reduce prices further. We consider the AER should scrutinise key elements of SAPN proposal including significant operating expenditure (opex) increases, growth and non-network capex, and incentive payments for deferring capex in the 2015-20 period. In our view, about $240 million of revenue requires further justification and challenge before it can be accepted by the AER.

Our findings are informed by a strategic review of SAPN's long term challenges which show that the company faces an uphill battle to keep prices affordable for customers over the next 40 years. SAPN will need to address issues with deteriorating assets, while cost-effectively integrating solar, batteries and electric vehicles into its network.

These challenges emphasise the need to keep costs tracking down over time through ambitious and innovative asset management, minimizing expenditure plans, and productivity strategies.

Our executive summary draws out key themes of our review. We:

- Highlight key challenges facing SAPN in the long term and show how this is relevant to SAPN's expenditure decisions for the 2020-25 regulatory proposal.
- Identify key areas of focus in SAPN's regulatory proposal where the AER should target its review.
- Outline key areas of regulatory reform that would improve long term outcomes for customers.

Strategic challenges

A vital question is whether SAPN's regulatory proposal provides the foundation for long term affordability and service sustainability to its customers. Our review highlights that SAPN will face tough challenges over the next 40 years to keep prices affordable and smooth, and to ensure the network stays reliable and secure. The most pertinent challenge will be prudently managing a deteriorating network over the medium term. A second challenge is how SAPN will cost effectively integrate solar, batteries and electric vehicles into the grid.

Replacement of ageing assets

SAPN deserves praise for its 'best-practice' methods to safely maintain assets beyond their manufacturing life. This has helped SAPN keep its regulatory asset base (RAB) and replacement capex below Queensland and NSW peers despite being the oldest network in the NEM.

The key issue our analysis uncovers is that this level of replacement may not be sustainable in the long term. If SAPN continue to invest at today's levels, about 40% of SAPN's network value will be older than 60 by 2060 (currently 5%) and 60% older than 50 (currently 15%). We expect this will lead to significant reliability issues in the medium term, triggering significant capex to renew assets.

This will come at a time when financing costs may be higher than today's historical lows, leading to significant increases in network prices. We would expect SAPN's regulatory proposal to include more evidence of an ambitious engineering strategy to re-design its network to 'retire' rather than replace ageing assets.

We would also expect a proactive approach to constraining all other expenditure, together with strong productivity targets. Our review highlights areas of SAPN's proposal where there appear to be opportunities to reduce expenditure without impacting service quality. We note SAPN has not embedded productivity into its forecasts at this stage.

Integrating solar, batteries and electric vehicles into the grid

SAPN is at the forefront of integrating customer-owned solar and batteries into its network. It has shown leadership and collaboration in tackling potential issues. We agree with SAPN that innovative investment is required on the low voltage network, and that tariff re-design is necessary. We also consider that DER is vital to helping SAPN re-design its network to minimise future replacement and augmentation.

SAPN have proposed about $100 million relating to DER integration. We believe this decision is of strategic importance to the NEM as SAPN is the forerunner for investments by other distributors. We agree in principle with SAPN's investments to integrate more DER into the grid, but want the AER to closely scrutinise the total costs of its proposal. In particular, costs should be proportionate to the problem, and not lead to a stranded solution. We also think that SAPN should provide regular updates to stakeholders on success and implementation of the project so the industry can learn from it.

We commend SAPN's proposed tariff reform which includes measures to shift energy use to times when solar generation is highest, and to incentivise charging of electric vehicles in off-peak periods. Our view is that proactive tariff reform will help SAPN keep future augmentation costs down in the long term.

Focus areas for AER review of SAPN proposal

Our strategic findings informed our review of the 'building block' elements of SAPN's proposal. Our view is that SAPN needs to demonstrate value for each dollar of proposed expenditure to ensure it can keep prices affordable in the long term. In this respect, we note that SAPN has generally provided a well-articulated proposal. However there are key areas of the proposal where SAPN have not provided sufficient evidence to demonstrate that it requires the proposed revenue.

SAPN's expenditure starts from an efficient point, as is reflected in AER productivity benchmarks. The secret of SAPN's success has been best practice asset management which has kept assets in service longer than their technical life. SAPN has also shown constraint with its operating expenditure allowance over the last 20 years, allowing it to be on the efficiency frontier relative to its peers.

Our concern is that price reductions in SAPN's 2020-25 proposal generally relate to external factors such as the AER's binding rate of return and tax guidelines, together with historically low interest rates. SAPN's underlying expenditure is significantly higher for operating expenditure, and capital expenditure contains a high proportion of augmentation and non-network capex. We consider that SAPN could achieve further price reductions for its customers by exploring all avenues to constrain expenditure.

As part of our review, we have identified some areas of the proposal where there is insufficient justification or a strategic question mark. We consider the AER's technical experts should scrutinise these areas in more detail and reduce SAPN's expenditure if no positive evidence of efficiency and prudency.

Operating expenditure

SAPN is seeking a 12% increase in operating expenditure in real terms. We consider the AER should closely examine whether the expenditure relates to higher cost drivers, reflects efficient trade offs with capital expenditure, and embeds efficiencies from the Information and Communication Technology capital program.

Augmentation and connection capital expenditure

SAPN is proposing to considerably expand its network to meet customer growth and integrate Distributed Energy Resources. We consider that the reliability and future network elements of SAPN's augmentation plans require further scrutiny to assess need, options and efficiency of solution. We also want the AER to test whether SAPN's connection capex reflects most recent outlooks on economic growth.

Non-network capital expenditure

We encourage SAPN to provide quantitative evidence to show how its information technology ecosystem has delivered value to its customers. We consider the renewal element of the ICT capex plans lacks a strong risk assessment. We also think new ICT investment should demonstrate NPV capex and opex savings. We also note that SAPN's building and fleet capex forecasts may contain an overstatement of need and that SAPN will deliver less than forecast based on previous performance.

Capital incentive reward

SAPN underspent its capital expenditure allowance by 15% in the 2015-20 period, claiming a reward of $69.7 million under the Capital Expenditure Sharing Scheme (CESS). We strongly support incentives when they relate to a true cost efficiency. However in this case it appears the underspend relates to delivery issues in the first 2 years of the 2015-20 period. We encourage SAPN and the AER to consider whether customers should fund this incentive payment as it does not appear to have benefited customers.

Regulatory reform

The regulatory framework is providing a resilient method to test regulatory proposals. The AER has been a tough and robust regulator, protecting customer interests through evidence based appraisals of proposals. As part of our review, we have highlighted areas that require a new brand of regulatory thinking. This includes new tools to assess if networks are tackling the challenges of the future, new ways to assess Information and Communication Technology expenditure, and incentive frameworks that only reward networks for actions that are clearly in the interest of customers.

In 2012, the Australian Energy Market Commission (AEMC) made substantial reforms to the Rules on how the AER should assess regulatory proposals. The Rules gave the AER more powers to use benchmarking data in its decisions. It also encouraged networks to involve its customers in the proposal process.

Since that time, the AER has developed a consistent and resilient process to assess regulatory determinations. It has made tough decisions that reflect the long term interests of customers. Prices have tracked down for most networks, relieving some of the affordability pressures that arose before the AEMC amended the Rules.

We have also seen a great change in the way networks engage and involve customers in the proposal process. While still on a journey, networks have made great leaps to listen and respond to their customers' feedback.

Regulation constantly needs to evolve to meet the challenges of the day. The key issue is how to regulate in a rapidly changing energy landscape. This requires broader industry thinking.

We see three areas where regulatory reform would further promote the long term interests of customers.

- Long term regulation - A shortcoming with regulatory proposals is they only require DNSPs to put forward expenditure plans for 5 years. We would like to see DNSPs showing long term trends of expenditure, prices and service outcomes. Some of our analysis shows that customers may experience increased prices and poorer reliability in the long term unless networks address key challenges. We would like regulation to reward networks that actively transform their businesses to meet these challenges, and who consult widely with stakeholders.
- Information and Communications technology (ICT) assessment - New technology is the toolkit for positive transformational change. However, ICT is the 'hidden' RAB - it requires continual investment over 5 year cycles and is a large contributor to prices. The issue at present is that there is no overarching framework to review whether proposed ICT is efficient and prudent. We also consider that there is no clear method on how to link ICT capex to productivity gains in expenditure proposals. We are encouraged by the AER's recent review into ICT expenditure.
- Incentive Framework - We are not convinced that the CESS is providing a fair sharing of rewards between customers and networks. Networks are being rewarded for underspending capex due to delivery issues, rather than true cost efficiencies. We encourage the AER to conduct a review of its current capital expenditure incentive guidelines.

Key findings

Key findings

Our review has focused on whether SAPN's regulatory proposal will deliver long term affordability and service quality to South Australian electricity customers. SAPN has delivered very good outcomes for customers over the last decade, and is an efficient networks relative to peers. Our analysis shows that SAPN faces an uphill battle to keep a lid on prices in the future with a looming repex challenge and higher interest rates. In this context, it is vital that SAPN do everything possible to sustainably minimise expenditure in the 2020-25 period.

The strengths for customers

- SAPN has provided a well articulated proposal that allows stakeholders to engage with the drivers of expenditure.
- SAPN has provided compelling evidence to demonstrate that its current practices are leading in the NEM in efficiency. This includes opex benchmarks, a low RAB, and extending the life of its assets without compromising reliability.
- SAPN is also leading the industry in thinking about the challenges and opportunities for the future network. It has reached out to the broader industry, and its analysis is of a very high quality.
- SAPN has proposed an 8% reduction in distribution prices for the average customer, which will materially improve affordability. In part, this is driven by external drivers such as the AER's WACC guidelines, historically low interest rates and the AER's changes to tax calculations. But it also demonstrates a continued effort to keep a lid on prices.

The weaknesses for customers

- SAPN faces significant long term challenges to keep prices affordable and smooth, and energy reliable. By 2040, it will need to address failures with a significant proportion of its ageing assets, at a time when financing costs may be higher.
- In our view the proposal 'as a whole' does not set SAPN up to meet these challenges. SAPN are building new network, have not embedded productivity, and will increase its large portfolio of Information Technology assets without quantitatively demonstrating the benefits.
- Our targeted review suggests material issues in expenditure and claimed incentive payments. This includes operating expenditure step changes and trends, growth and IT capital expenditure, and Capital Expenditure reward payments.
- Based on our limited review, we consider further justification is required to justify at least $240 million of proposed revenue. The AER may consider further reductions are required based on its more extensive review.

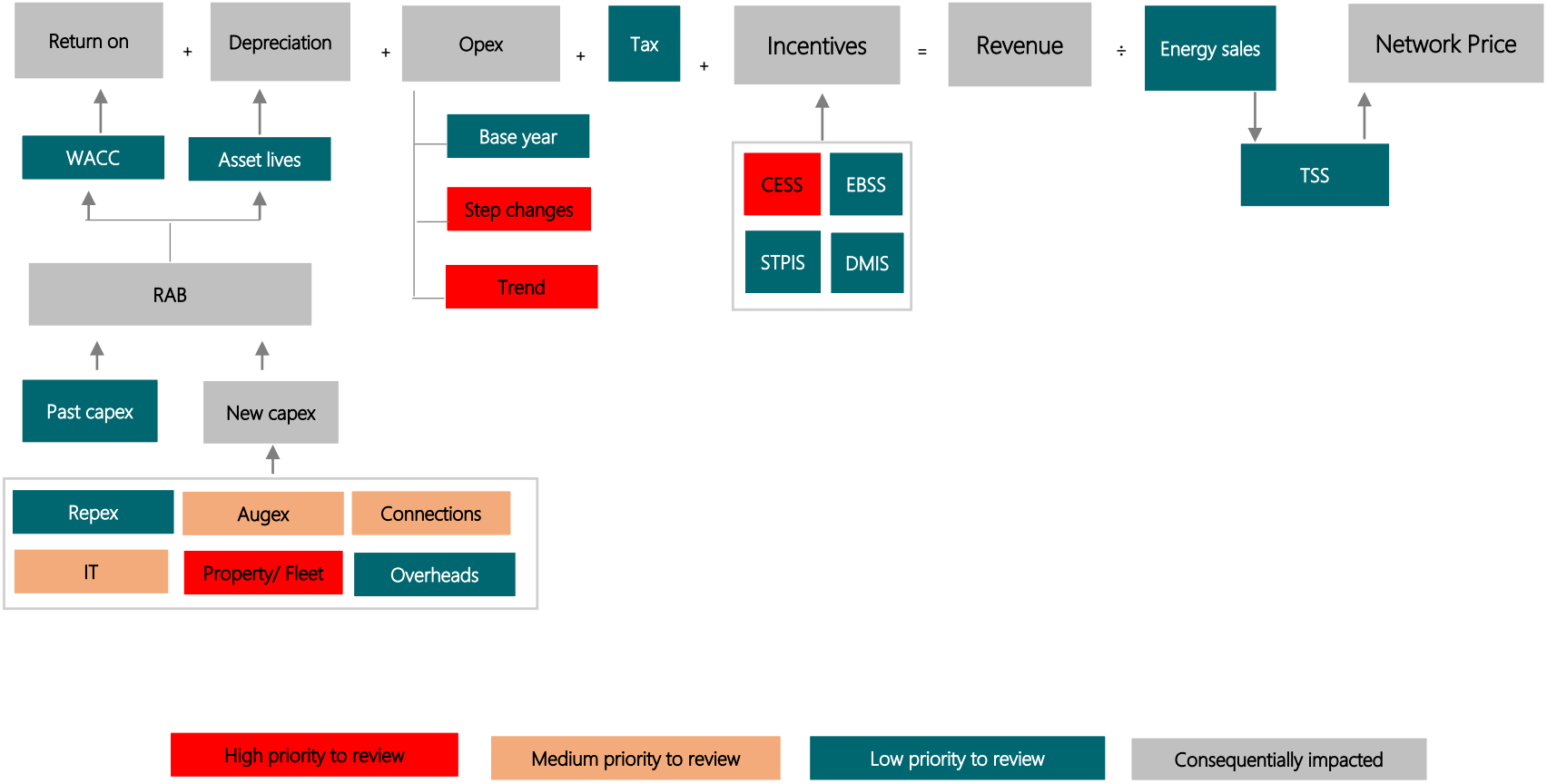
Our targeted review suggests at least $240 million of revenue should not be accepted by the AER unless further justification is provided by SAPN.

Focus areas we would like the AER to review

Findings on building blocks based on limited review

We have not undertaken a line by line assessment of each element of the building blocks. We have identified areas where we think further evidence is required or rigorous AER technical review is required to satisfy customers of the efficiency of the proposal. Our view is that the AER and its technical consultants are in a much better position to assess SAPN's proposal in detail and deliver findings based on additional evidence provided by SAPN.

Figure 1 – Focus areas for the AER's review of SAPN's regulatory proposal



Materiality of outstanding issues

Materiality of issues in revenue terms

Our limited review has uncovered a number of areas where further review is required by the AER, or further evidence from SAPN. The materiality to revenue is about $240 million in total over the 2020-25 period. Of this, almost 45% relates to operating expenditure, 30% to incentive payments and 25% to capex.

Figure 2 – Impact on revenue from issues raised in our review

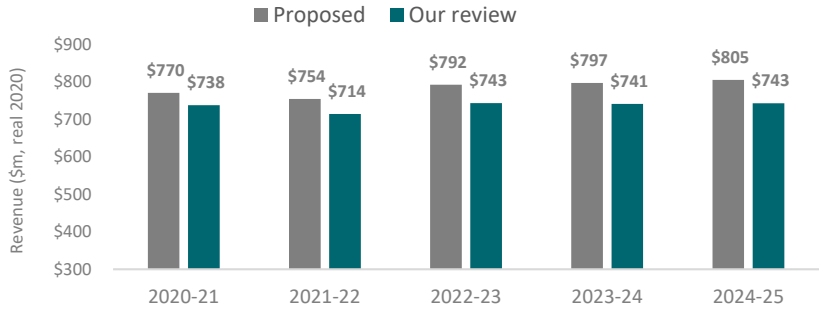
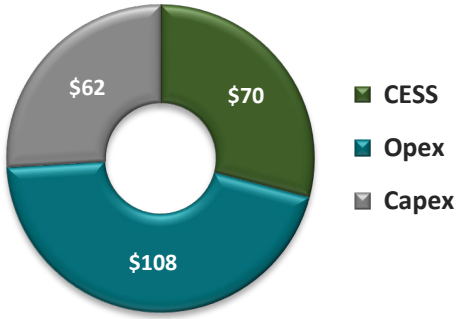


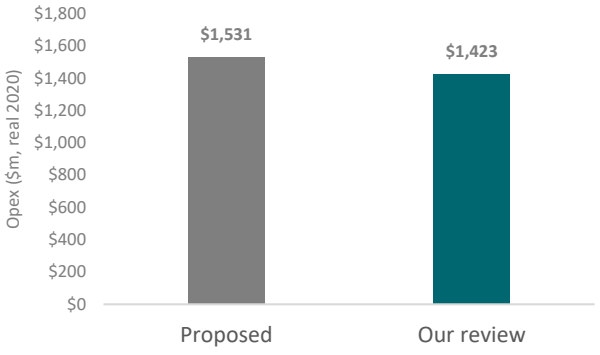
Figure 3 – Materiality of building block on revenue ($m, real 2020)



Materiality of issues by building block

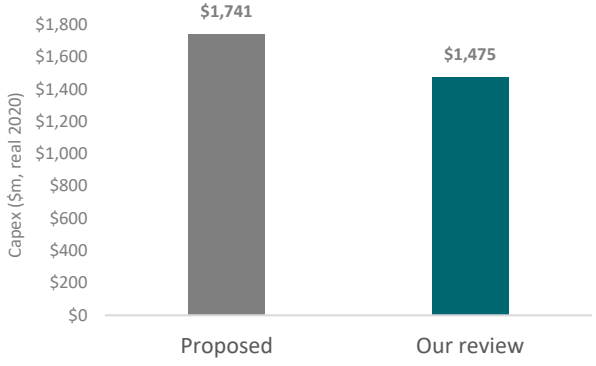
Our limited review suggests that at least $107 million of opex and $266 million of capex (which accounts for $108 million of revenue) requires further detailed review by the AER and further evidence from SAPN before it should be accepted as efficient and prudent. Our review also encourages SAPN to review whether it should propose an incentive reward for underspends in capex of $70 million. When these changes are modelled through the AER's revenue calculator, the end outcome is a $240 million less than SAPN has proposed.

Figure 4 – Estimate of opex from our limited review



Operating expenditure (opex)

Figure 5 – Estimate of capex from our limited review



Capital expenditure (capex)

Figure 6 – Estimate of CESS from our limited review

Capital Expenditure Sharing Scheme (CESS)

Section 1
Approach to review

How did we approach our review?

Our review was directed at testing whether SAPN's 2020-25 proposal is in the long term interest of South Australian customers. Our methodology was to undertake a strategic review of the 'proposal as a whole' to identify if SAPN's proposal caters for challenges and opportunities from a changing energy market. We used our strategic review to 'deep dive' into elements of SAPN's building blocks.

Why is it important to look at long term impacts?

- SAPN's proposal will have a significant impact on the price and service quality experienced by customers well beyond the 2020-25 regulatory period.
- New technologies such as solar and batteries are fundamentally changing the role of networks in the NEM. Today's investments may become obsolete or under-utilised, with customers picking up the bill for an oversized regulatory asset base into the future.
- At the same time, unsustainable cost cutting and deferrals simply delays today's problems to tomorrow. This sets up the conditions for large and unexpected price increases. Similarly, networks require a fair return for the risk of investment.

What was our methodology?

- **Strategic review** - Our first step was to examine the proposal 'as a whole' from a strategic perspective. We explored the past to future strategic context for SAPN, and identified key headwinds facing the provides the network. We tested whether SAPN's 2020-25 proposal is positioned to address these future headwinds.
- **Deep dive review of key building blocks**- Our second step was to 'deep dive' into material elements of the building blocks, informed by our strategic review. We did not undertake a 'line by line' review, but rather tested key elements such as opex increases, and augex and non-IT capex.

What were the key questions we asked in our strategic review?

- Does the proposal cater for future challenges and opportunities?
- Do the expenditure proposals reflect a discipline to minimise costs now and in the long term?
- Is there a plan to deliver productivity?
- How is SAPN planning to more efficiently use its network?

What were the key questions we asked in our deep dive review?

- Is there a high level explanation of key trends in SAPN's proposal?
- Are SAPN's expenditure plans directed by a sound governance, risk management and prioritization framework?
- How does SAPN compare to its peers?
- Is there evidence of need, options and costings for programs?

Approach and methodology

Using our strategic review to guide our deep dive review

We tested whether the proposal is underscored by a plan to meet future challenges and opportunities facing SAPN over the long term. This informed our deep dive into elements of SAPN's building block proposal.

Figure 7 – Key areas of exploration in our review of SAPN's proposal

Strategic review

Strategic context

- What is SAPN's performance to date?
- What are the drivers of change in the future?

Opportunities and challenges

- What will impact SAPN's prices or service quality?
- What actions are available to SAPN today and into the future?

Transformation strategies

- Is there a clear plan to meet challenges and opportunities?
- Is this reflected in the proposal for 2020-25?

Deep dive review

Materiality

- What are the areas of the proposal of strategic value?
- What are the most material elements of the proposal?

High level test

- Is there a compelling narrative to explain past and trends?
- What benchmarking evidence to test with peers?

Detailed justifications

- Is there a sound framework for decisions?
- Is there detailed evidence of needs, options and costings?

Section 2
Strategic review of proposal

Strategic context – Past to future

SAPN has been resilient to paradigm changes in the energy market – from meeting the peak demand burden of air conditioners to exponential growth in household solar. It has shown remarkable agility in keeping a lid on prices while delivering reliable and secure services. The future is uncertain but we know that more customers will want SAPN to integrate their solar, batteries and electric vehicles. We also know that the network is ageing fast, and interest rates may climb.

How have SAPN responded to changes in the past?

- New technology is forcing unprecedented change in the energy market. A key question is how resilient a network has been to adapting to changes in the energy market.
- SAPN has been one of the few distributors to keep a lid on prices and its RAB during the 2000 to 2020 period. This period was characterised by an air conditioning boom in the early to mid 2000s that led many networks to invest in new assets. It was also a time when many networks started to increase replacement in response to an ageing network.
- The secret to SAPN's success has been asset management practices that extend asset lives using 'best practice' risk management frameworks. This has been enabled by well implemented IT changes which allow for data analysis. This has helped SAPN efficiently address condition issues and constraints on its network without pushing up prices for customers.
- In recent times, SAPN has been able to successfully integrate exports from customers' solar into the grid without investing significantly in new assets. Once again this underscores SAPN's ability to efficiently utilise its network.

What does the future look like for SAPN?

- Over the next 40 years, we know that the shape of the energy market will change significantly. While the magnitude and direction of technology change is uncertain, we know that solar will continue to grow, batteries will exponentially increase, and electric vehicles will become a dominant presence.
- SAPN's Future Network strategy demonstrates that it is a leader in thinking about how its network will adapt to these changes in technology. In particular, we see that there will be a need to efficiently invest in the distribution network to integrate solar, batteries and electric vehicles.
- We also know that SAPN's network is ageing, and that current rates of replacement (about 0.3% of assets per year) will not allow SAPN to address reliability issues over the long term.
- In this context, the key question is whether SAPN can continue its excellent performance to date to deliver reliable and secure services at affordable prices.

Strategic context

External and internal factors will have a profound impact on SAPN

SAPN have kept a lid on prices despite significant technological change impacting the energy market over the last 20 years. The scale of change will increase exponentially over the next 40 years, and SAPN will need to flexibly adapt to maintain reliability and security at an affordable price.

Figure 8 – External and internal factors impacting SAPN's affordability and reliability in the long term

	External drivers	Internal drivers
2000 to 2010	▪ Air conditioning takes off ▪ Consistent growth in energy sales ▪ No change in security conditions	▪ Privatisation ▪ Peak demand growth rises ▪ Assets in good condition
2010 to 2020	▪ Solar takes off ▪ Air conditioning saturation ▪ Energy sales fall ▪ Interest rates climb and then fall to lowest levels.	▪ Assets ageing but no failures ▪ Peak demand growth flattens ▪ Able to deliver 2 way energy flow
2020 to 2040	▪ Solar continues to grow ▪ Batteries and VPPs take off ▪ Interest rates rise ▪ Electric vehicles penetrate the market	▪ Assets significantly over age ▪ Potential constraints from integrating DER and EVs ▪ Potential capacity on sub-transmission network.
2040 to 2060	▪ Solar reaches saturation ▪ Batteries reach saturation ▪ Electric vehicles dominate the market	▪ Continued renewal from generation of aged assets ▪ Spare capacity on high voltage and sub-transmission network due to more local generation.

The Past

SAPN deserves high praise for keeping prices down for South Australian customers over the last 20 years. This is despite significant changes in technology, energy use, and its network assets.

Possible future

The key question is how SAPN will continue to deliver affordable and reliable services when its ageing assets start to fail, and the network copes with delivering 2 way energy flow. On the plus side, electric vehicles if managed properly, will significantly improve utilisation of the network.

Strategic challenges to keep prices affordable

The challenges are mounting for SAPN to keep a lid on prices in the long term –its assets are ageing rapidly, interest rate rises are on the horizon, and energy sales are falling despite growth in customers. But this gives rise to opportunities to transform the network, drive productivity, and improve how its network is utilized.

The repex challenge

- SAPN's asset management strategy has pushed the envelope on extending the life of network assets. This has helped to keep a lid on prices by deferring replacement capex as long as possible
- However, our analysis suggests that in the medium term, reliability and security will worsen as progressively older assets fail in service. Our analysis shows:
  - SAPN will replace only 0.3% of its asset population each year during 2020-25. Only 6 per cent of its assets are over 60, meaning current levels of replacement may not impact reliability in the short term.
  - But if SAPN continues to replace assets at today's level, a third of its assets will be over 60 by 2060, and almost half will be over 60 by 2060. This would severely impact reliability and security.
- Under some simple modelling assumptions, we think SAPN would need to progressively increase its replacement capex by about 15% compared to previous year between 2025 to 2040 to keep the proportion of 60+ assets similar to today (see Figure 2).
- Under this scenario, SAPN's capex would be $600 million higher in 2060 compared to what it is today. Such a large step change would put immense pressure on the RAB and consumer prices.
- This dire scenario could be averted if SAPN have an aggressive transformation strategy based on retiring and downscaling (rather than replacing) its assets.

Compounding challenges

Bond rates

- Yields on corporate bonds are a key component of the AER's calculation of the rate of return on the RAB.
- Yields are at historical lows, and well below the medium term average since 2005 (see Figure 3). This reflects interest rates in Australia and globally, which are at record low levels since the Global Financial Crisis.
- While uncertain, we would expect that interest rates would rise from today's historically low levels.
- The key challenge for SAPN is that higher interest rates would hit at the same time as the increase in replacement capex, amplifying any price increase.

Decline in energy sales despite increase in customers

- Growth in energy consumption (via more customers) helps dilute price increases when revenues rise.
- However, energy sales have decreased by 10% between 2006 and 2018 despite customer growth of 15%. This is due to customers using their own solar and batteries to feed energy, falling commercial load, and more energy efficiency.

Capacity issues to integrate solar, batteries and electric vehicles

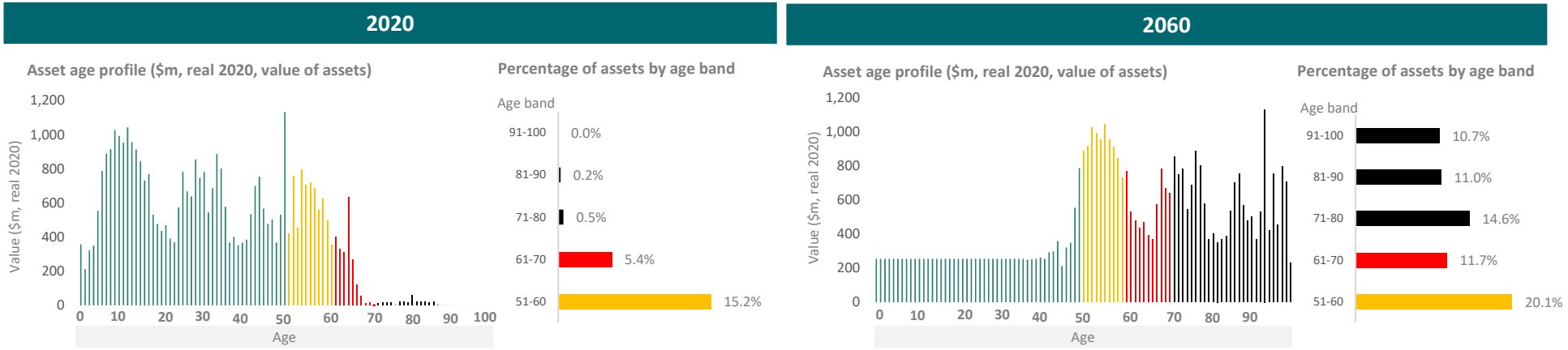
- Increased solar and batteries may lead to voltage and thermal constraints on the network. Unrestricted EV charging may also drive augmentation to meet a short, sharp peak.

Repex challenge

How old will SAPN's network be in 2060 if it continues to invest at today's levels?

Our modelling suggests that about 35 per cent of the network will be over 70 years of age by 2060 if SAPN invests at current rates. Only 1 per cent of its assets are over 70 years old today.

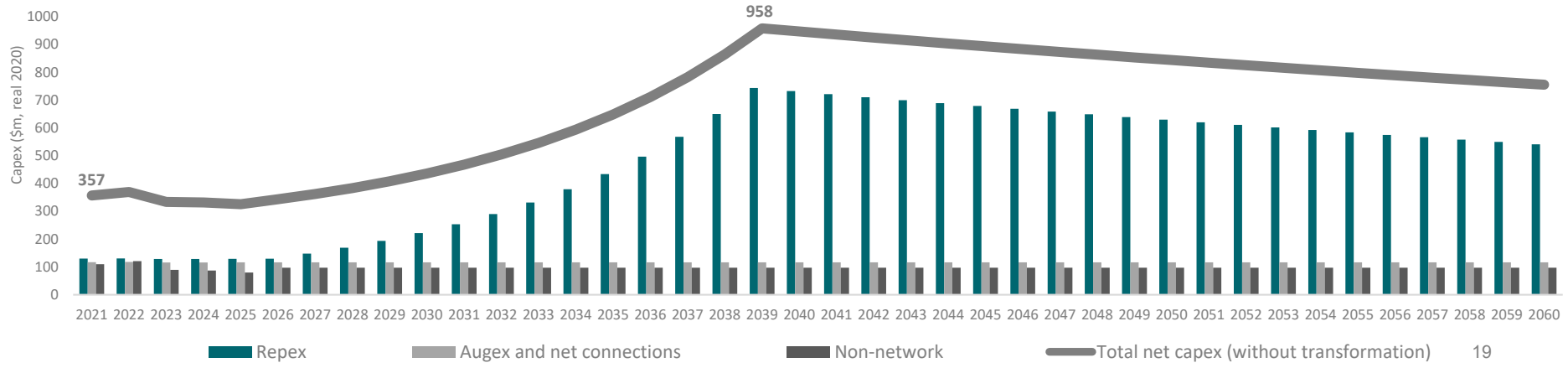
Figure 9 - Net SCS Capex forecast to 2060 by category ($m, real 2020)



Capex could increase significantly by 2060 without a transformation strategy

Our modelling assumptions suggest SAPN may need to increase annual capex by $600 million by 2040 to keep the proportion of older assets at the same level as today.

Figure 10 - Net SCS Capex forecast to 2060 by category ($m, real 2020)

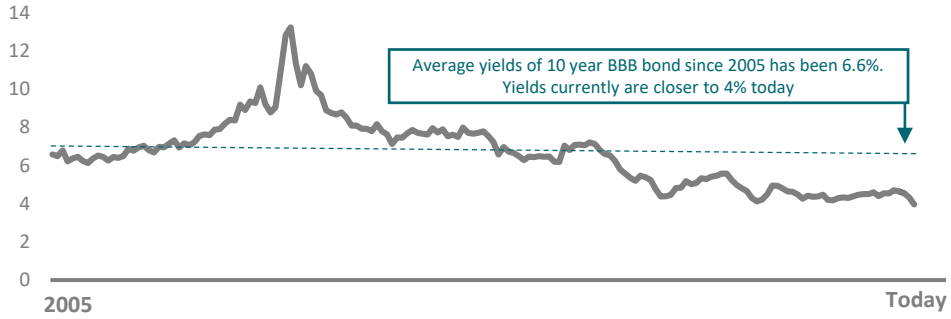


Compounding challenges

Today's interest rates are at historically low levels

Historically low interest rates are helping keep the rate of return low for the moment. However we would expect interest rates (and yields on corporate debt) to rise in the medium term

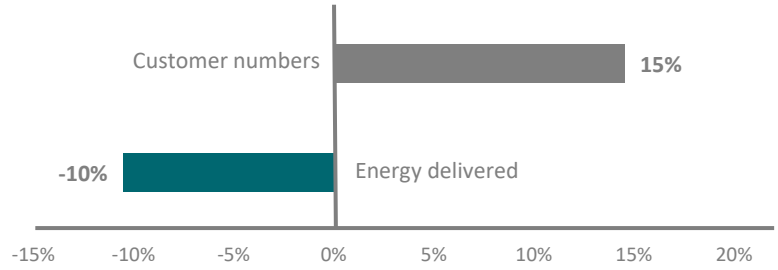
Figure 11 - RBA BBB yield on 10 year bonds (%)



Energy sales falling despite customer number increase

Customer growth has traditionally soaked up revenue increases. However, energy sales have declined by 10% between FY2006 and FY2018 even though customer numbers have grown by 15% over that time.

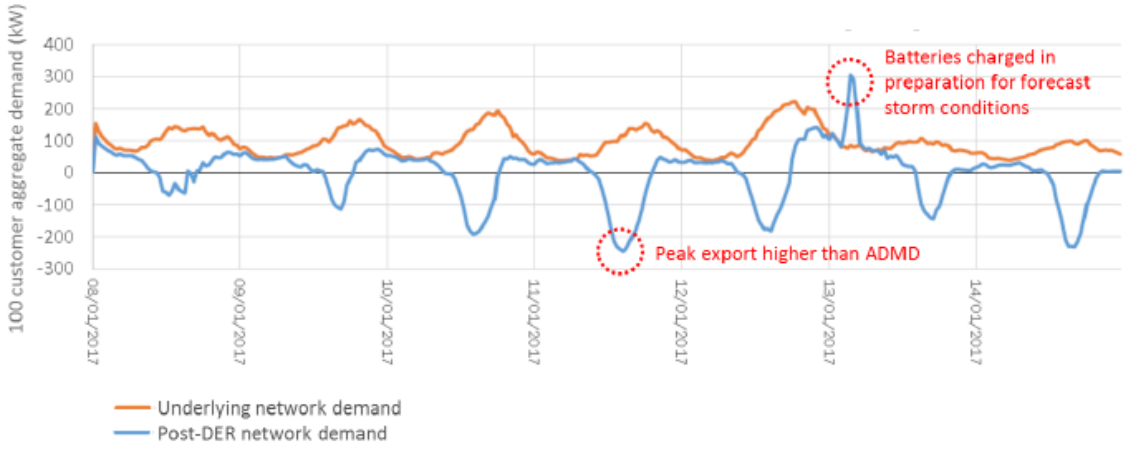
Figure 12: SAPN growth in customer numbers and decline in energy sales between FY2006 and FY2018 (total %)



Integrating DER may require capex

Integrating solar, batteries and electric vehicles may drive capacity capex to augex to manage short bursts of peak demand, and to manage 2 way flows during the solar trough.

Figure 13 – SAPN Salisbury trial



Source: SAPN Future Network Strategy (p30)

Strategic opportunities

With new technology comes opportunities to transform SAPN's network and operations to address the uphill challenges ahead. In reviewing SAPN's proposal we were looking for evidence that it was looking to re-engineer its network, improve utilisation, minimise expenditure plans, and drive productivity.

Reimagine the network of the future

- Solar and batteries provide new tools to re-imagine the design and footprint of SAPN's network.
- Importantly they provide opportunities to 'retire' assets rather than 'like for like' replacement, saving significant capex. It also allows for growth in peak demand to be met by demand management.
- Opportunities to streamline and slim the network include:
- Stand-alone networks in areas where the network is no longer economically efficient.
- Upstream networks: With increased generation available locally, the high voltage network may need to deliver less energy with less redundancy offering opportunities to retire expensive assets.

Keep expenditure plans to a minimum

- With such challenges along the horizon, it will be vital for SAPN to take every opportunity to minimise its expenditure plans and programs.
- Every dollar of expenditure should be challenged and prioritised to see if the activity could be sustainably deferred, provided at lower cost, or cost drivers absorbed through economies of scale.

Increase energy growth and improve utilisation

- Increasing energy sales at off-peak times will help keep average prices lower even if SAPN's revenue increases.
- Keeping residential and commercial customers connected to the grid is crucial for avoiding a death spiral. Keeping a lid on prices will incentivise customers to stay on the grid and in business.
- Electric vehicles could provide the magic pill for increasing energy sales. However the charging infrastructure needs to be in place.
- Tariffs will need to rewards customers for shifting energy appliance use to off peak times, and incentives for customers with batteries to export at peak periods.

Drive productivity

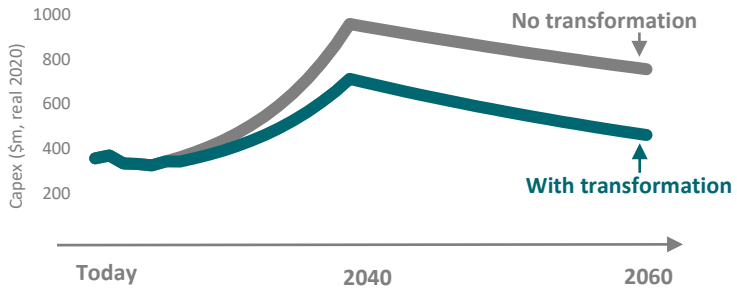
- Continuous cost productivity can significantly drive down opex and capex over time without impacting service quality.
- SAPN is one of the firms at the efficiency frontier, so we would not expect rapid productivity gains.
- However we would expect that new technology and innovative thinking would provide the toolkit to lower the cost of activities over time.

Opportunities to transform the business

Impact of productivity and ambitious engineering

An ambitious engineering and productivity transformation could lead to $9.2 billion totex saving by 2060. Our modelling suggests that the key is to stretch asset life, retire (rather than replace) by leveraging customers' solar and batteries within the grid, and pursue an aggressive strategy to reduce costs over time.

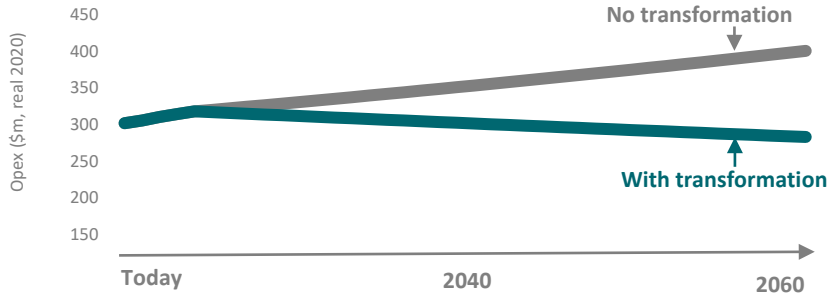
Figure 14 - Capex projection to 2060 with and without transformation



Capex transformation strategy - Assumptions

- Stretching average asset life from 65 to 70 years
- Retiring 10% of aged assets instead of replacing like for like
- Cost productivity of 1% per year applied to all capital programs.

Figure 15 - Opex projection to 2060 ($m, real 2020, SCS only)



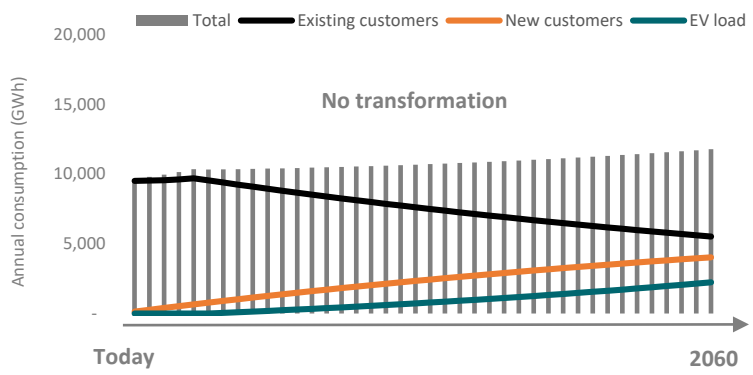
Opex transformation strategy - Assumptions

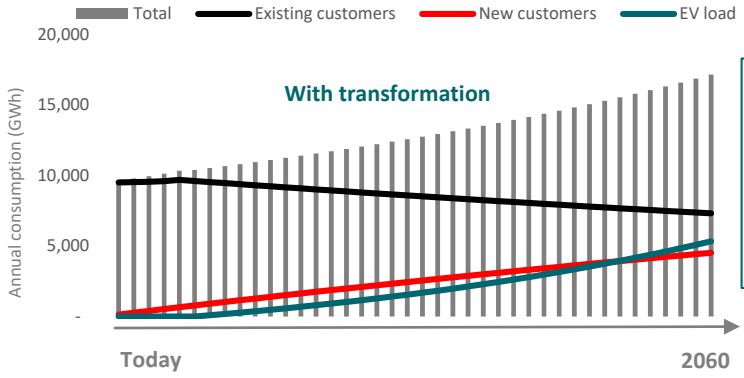
- Cost productivity of 1% per year to all opex after 2025
- No step changes after 2025
- Output factors but no real escalation after 2025

Increasing energy sales

A key strategy to lower prices is to grow energy sales without expanding the network. This will require facilitating electric vehicles, keeping customers connected to the grid by providing a reliable and affordable service, and cost reflective prices to shift energy consumption on EVs to off peak periods.

Figure 16– Projected energy sales to 2060 – with and without transformation (GWh)





Energy sales transformation - assumptions

- Arrest decline in energy customer from 1.6%pa now to 0.8%pa from 2025.
- Enable EVs from 40% to 80%.

Is the proposal positioned to deliver long term benefits?

SAPN's regulatory proposal demonstrates that it is actively thinking about strategic challenges and opportunities from a changing energy market. It has a well articulated future strategy, accompanied by sophisticated modelling. The key issue from our review is that its future strategy has not articulated its plan to address the repex challenge. We are also concerned that it is not actively pursuing a productivity transformation and that its proposal embeds expenditure increases.

Positives

- In our view, SAPN's Future Strategy shows it is the intellectual leader in the NEM on the future network.
- The strategy clearly articulates the opportunities and challenges from technology changes in the energy market. The 2020-25 proposal seeks funding to tackle some of the constraints with the distribution network. The strategy demonstrates that it is looking at alternatives to augmenting the network to meet customer's expectations for 2 way energy flows. While some questions remain of the project costing, we consider that SAPN is proactively engaging with the issue.
- The Future strategy also identifies opportunities to re-size its network. There are also some examples of where SAPN has used alternatives to 'like for like' replacement in the 2020-25 period.
- SAPN have shown how it intends to be 'electric vehicle ready' and to look at new ways to grow energy sales. This shows that SAPN is actively addressing downward energy sale trends.
- The 2020-25 proposal also sets out a plan to move towards more cost reflective pricing. There are innovations that SAPN are introducing including a reward for using energy at times when solar is being exported on the grid, and a prosumer demand tariff.

Areas for improvement

- Our analysis shows that SAPN's repex challenge is the single most important element threatening customer prices and reliability. SAPN are ahead of its peers in its thinking on this issue, but its regulatory proposal does not draw out how it will tackle the challenge without increasing prices. We also see many potential avenues to re-size the network but not a comprehensive engineering re-design. We see this as the most critical long term pricing issue for the NEM.
- We have seen some positive evidence that SAPN is constraining its expenditure, such as by maintaining its current replacement capex. However in other areas of the proposal such as opex we are seeing a significant increase in costs. We are also not convinced that the non-network capex has been fully validated to demonstrate value to the customer.
- SAPN has not articulated or embedded a productivity strategy in its regulatory proposal. This is despite seeking customers funding for significant IT program that should drive lower costs.
- SAPN is seeking a reward for underspends on its capex allowance. This is despite any evidence to show that the underspend has benefited customers.

How the strategic review directed our deep dive

The strategic review shows the importance of driving today's costs down so that we have headroom to deal with the challenges ahead. Our review has focused on material elements of the building block where SAPN have control over their decisions today.

Strategic review implications

Our strategic review demonstrates that SAPN will have difficulty in keeping prices affordable for customers in the long run, despite a welcome reduction in the 2020-25 period. We think SAPN needs to take measures today to make sure prices are affordable in the future. This includes minimising capex and opex where there are opportunities, and embedding productivity in its forecasts.

Deep dive review

Our deep dive review has focused on material elements of the building blocks where we see that SAPN have control over its decisions. This includes new capex, opex, and incentive rewards. Many of the blocks are 'locked in' from previous decisions such as RAB, WACC, tax and asset lives for depreciation. We have also focused on building blocks which involve a strategic future direction such as tariff design. Our deep dive review is summarised in the following sections of this document.

Figure 17 – Deep dive of building blocks

Section 3

Review and findings on proposed operating expenditure

Operating expenditure as a whole

SAPN should be commended for consistently delivering SA customers a reliable service at a low operating cost. While it continues to operate close to the efficiency frontier, it has significantly uplifted its opex over the last decade. Our concern is that SAPN's forecast opex for the 2020-25 period continues to materially climb upwards. We have reviewed the drivers of the proposed increases, and have not been satisfied that the proposed increase is justified.

Frontier performer

- SAPN performs well on AER efficiency benchmarks for operating expenditure (opex) across a range of metrics and models
- We note that this is a very positive outcome for South Australian customers given:
  - The high proportion of aged assets on SAPN's network assets which we expect would increase maintenance costs relative to networks with younger assets.
  - A very low portion of overheads are capitalised relative to peers. We consider this means more overheads are reflected in opex.
- SAPN's opex appears to be sustainable. Customers receive reasonable reliability compared to other jurisdictions, and there is no evidence of a service quality issue.

Concern is that costs are rising over time

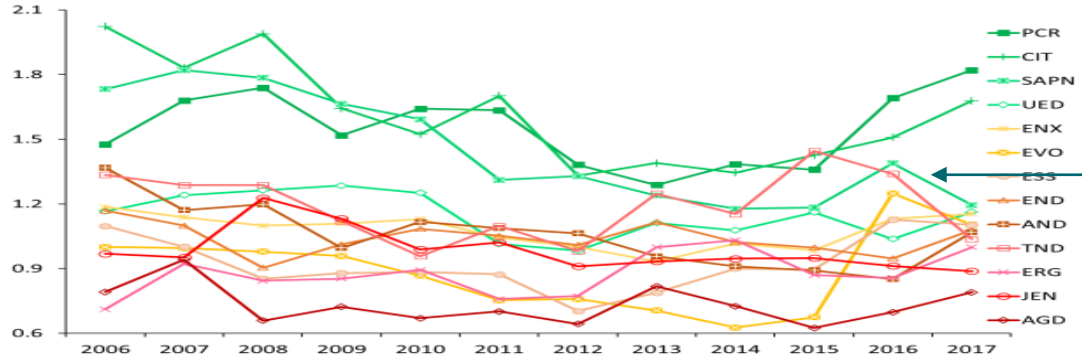
- Our concern is that SAPN has increased its opex by 22% between 2010-11 and 2019-20, and forecasts a further increase of 12% in the 2020-25 period.
- This suggests a worrying trend for South Australian customers. As noted in section 2, SAPN will need to focus on continual productivity to deliver affordable prices in the long term.
- Our review of opex components has focused on whether there is persuasive evidence to justify increases in opex over the 2020-25 period.
- At a high level, we found that SAPN provided evidence to justify some increase from today's level of opex, but not the full amount proposed. We also consider a business operating in an efficient competitive market would absorb higher costs through productivity improvements for example from new technology.

Opex as a whole – trends over time

While SAPN continues to be among the efficiency frontier firms, other DNSPs are catching up

SAPN's current performance is efficient relative to its peers. But its performance is declining based on AER benchmarks.

Figure 18 – AER findings on DNSP opex multilateral partial factor productivity indexes, 2006–17



SAPN is still the third best performer but other DNSPs are catching up.

Source: AER 2018 Annual benchmarking report p17

SAPN is proposing a significant increase in opex for 2020-25

SAPN's opex increased by close to 50% between 2008-09 and 2018-19. This reflects that SAPN may have been operating at an unsustainable level before 2010. However, our review notes that SAPN's opex in 2024-25 (the last year of the period) will be 18% higher than actual opex in 2017-18.

Figure 19 – SAPN's SCS actual and proposed opex between FY2009-25 ($m, real 2020, excludes metering)

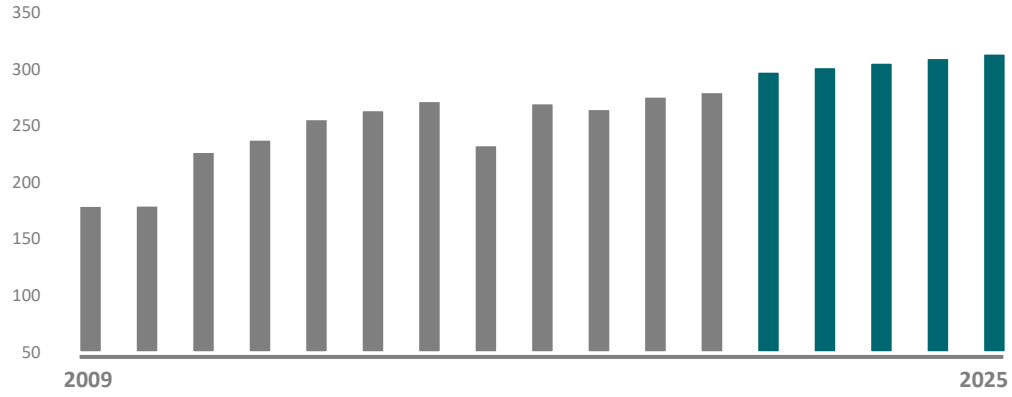
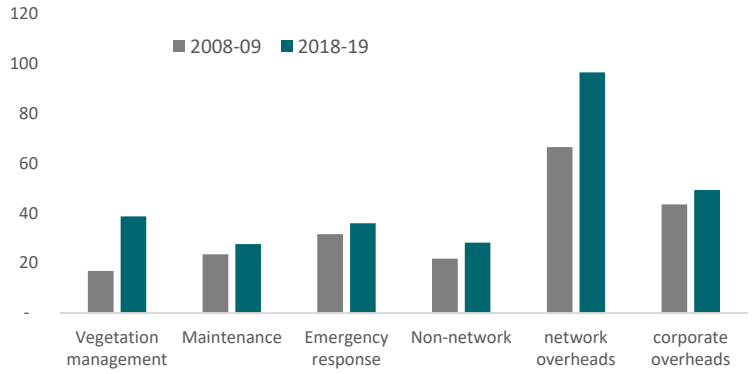


Figure 20 – SAPN's SCS opex by category ($m, real 2020,)



Opex components – Base Year

We consider SAPN has provided strong evidence to show it operates close to the efficiency frontier. We have cross-checked this with the AER's recent benchmarking report, and also examined a range of opex category metrics. On the basis of our limited review, we consider there is sufficient evidence for the AER to accept 2017-18 opex as the base year, even if there is scope for efficiency. We suggest the AER examine whether actual GSL payments in 2018-19 should be applied rather than 5 years of data proposed by SAPN.

Total opex benchmarking suggests SAPN is a top performer

- The AER's most recent benchmarking report shows that SAPN's opex is low compared to its peers on a range of available models. This includes opex multi and partial productivity metrics, and each of the 4 econometric models used by the AER.
- A key question is whether SAPN have any operating and environmental factors (OEFs) that provide a material advantage in its performance outcome. We have limited information to undertake that assessment and would like the AER to review and publish the results.
- We agree with SAPN that the AER should give regard to SAPN's aged network, and low capitalized overheads when considering OEFs. SAPN has performed well on opex despite these factors.
- Despite its good performance, we consider there is always scope for efficiency in a business. We would expect a firm on the efficiency frontier to use new technology and experiences to continually improve.

Category benchmarking suggests SAPN performs well across categories

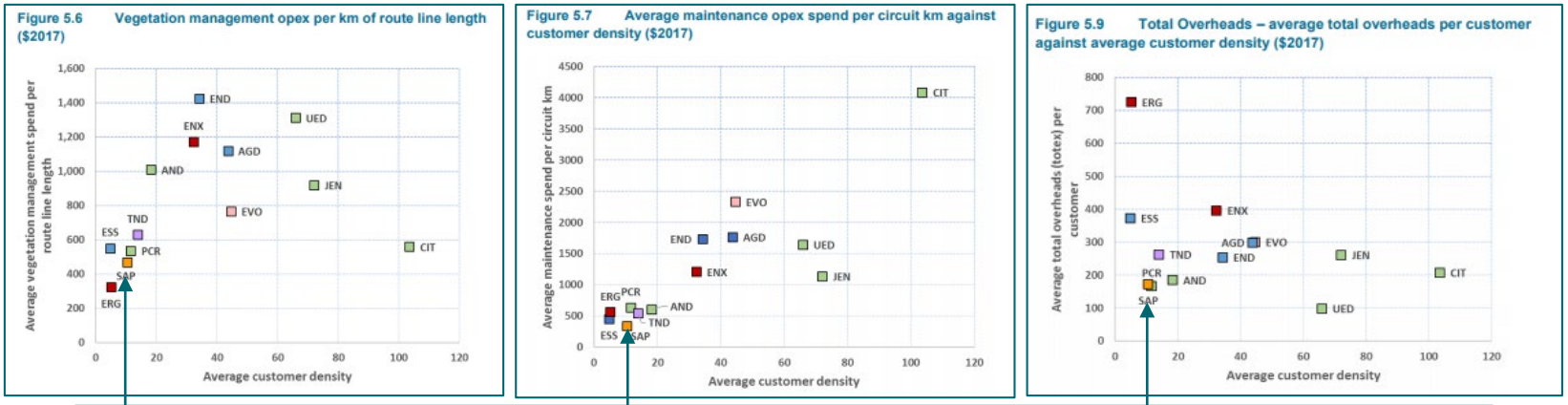
- The AER's most recent benchmarking report also shows that SAPN performs relatively well to its peers for individual categories. The only exception is emergency response where SAPN has a high cost per interruption compared to other DNSPs.
  - We agree with SAPN that this measure does not necessarily imply inefficiency in emergency management. Our experience is that higher costs may relate to cost accounting or travel time.
- We have independently reviewed a range of other opex metrics per category and found that there is no systematic evidence of inefficiency in SAPN's opex costs. For example, we compared SAPN's maintenance and non-network opex compared to firms with similar customer density such as Ergon, Powercor and Essential Energy. We found that SAPN has very low maintenance costs and is within the middle range of non-network opex. On this basis, it appears reasonable for the 2018-19 costs to be the base year.
- Our only concern is that SAPN propose to adjust the base year for GSL payments to reflect longer term average expenditure.

Opex components – Base Year

The AER's category analysis testing does not suggest any systematic areas where SAPN is below its peers in 2017-18

There is great variation in how networks map opex to categories. Nevertheless, we have found little evidence of systematic issues with SAPN's categories, and this appears to be confirmed by AER benchmarks in its recent annual report.

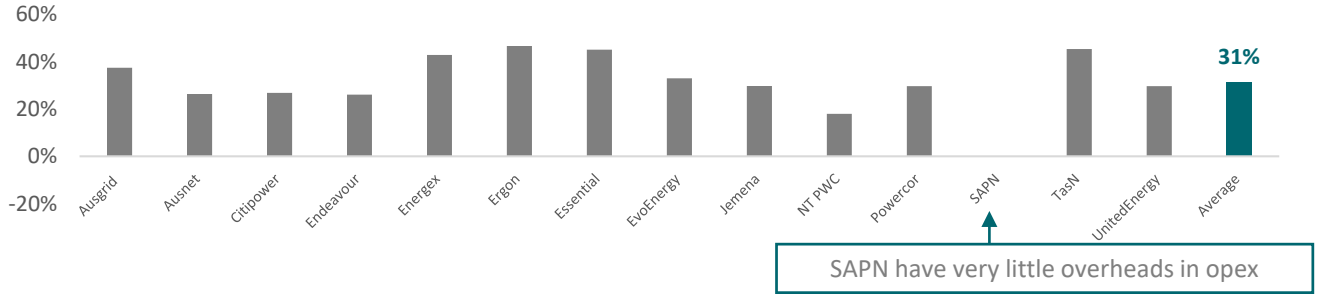
Figure 21 – AER findings on opex category benchmarks (2017-18 RIN data)



SAPN puts all its overheads into opex

We agree with SAPN that a relevant OEF for econometric benchmarking is the proportion of overheads that networks allocate to capex. Opex appears lower for firms with higher overhead capitalisation. This means that SAPN and Victorian efficiency frontier firms may actually perform even better than their peers if this was taken into account in OEFs.

Figure 22 – Proportion of overheads in opex forecast (% of total opex)



Opex components – Step changes

SAPN have proposed an uplift of $95 million for positive step changes. At a high level, we are concerned that the step changes will embed higher costs that reduces affordability in the long term. For this reason, our review has looked deeply at the justification and evidence submitted by SAPN. Our view is that only 1 of the 4 positive step changes provides adequate justification, and that the AER should examine the modelling of the GSL negative step change to assess if a further reduction is warranted.

Cloud transitioning – hosting and scheduling

- We consider that SAPN have provided evidence to suggest that there are advantages of transitioning to the cloud for these services. This appears to be efficient capex-opex substitution, will not impact the price paid by customers due to short lives of IT capex, and allows for scaleability. However, we suggest the AER scrutinise the timing of the project and the cost estimates.

Cable conductor and minor repairs

- We consider this $60 million step change needs to be carefully reviewed by the AER and its experts.
- From a principle perspective, we consider more evidence needs to be provided on whether the expenditure is truly a repair, and does not extend the life of the asset.
- If so, the AER should consider if SAPN's opex is still efficient relative to peers. We estimate that this step change alone would increase opex by 5.3 per cent and prices by about 1.5%.

LV management

- If the AER is to accept the capex for this project, we would like to see more justification on staff time and salary level. We question whether the activities would require 3 FTEs, with a cost of $300,000 per FTE.

GSL step change

- We agree that the change in SAPN's GSL requires a negative step change. We have not been able to source the spreadsheet which provides the underlying calculation. We would rely on the AER to ensure that the method to capture the cost reduction is appropriate and that the decision integrates with the AER's base year allowance.

Critical infrastructure compliance

- The business case for this project is confidential. To be satisfied of the project the AER would need to examine the options and cost analysis. Key questions are: what drives the cost differential between Australian and overseas suppliers; to what extent the cost reflects a stranded contract price with the existing supplier; and what arrangements have been made to minimise the stranding cost.

Opex components – Trend output and price

We are concerned that SAPN's opex increases significantly for output and labour price. We would like more tangible evidence that SAPN's underlying opex is impacted significantly by customer growth and new network assets. We also consider that SAPN overstates the proportion of labour in its cost structure, and that the AER should consider most recent economic outlooks on economic growth.

Increase output costs

- SAPN consider that its costs will increase by $30 million by 2024-25 as a result of increasing customer numbers and more network. This is more than 10% of SAPN's base year opex.
- SAPN has used the AER's method of using weights from AER benchmark models to forecast output growth, but has narrowed the range of models compared to recent AER decisions.
- SAPN submitted a report by NERA in support of their approach. We recognise the methodological issues raised in NERA's report. However, we would like to see some tangible evidence to show how opex is impacted by these variables:

- Our understanding is that new assets initially require minimal maintenance. SAPN could provide more data to on the total cost of inspecting the types of new assets it proposes to build.
- We also recognise that SAPN's maintenance costs would be likely to rise with a higher prevalence of aged assets. We seek data on this to provide a more rounded picture of cost drivers.
- Our view is that SAPN could rely on natural economies of scale when serving additional customers. SAPN is claiming that a 1% increase in the customer base leads to 0.7% in total opex. We would like SAPN to demonstrate how increased customer numbers impacts maintenance and vegetation management, and whether other cost categories increase by this percentage.

Increase in real labour costs

- SAPN's consultant (BIS Economics) has provided a strong evidence based forecast of wage growth. We also agree with SAPN's approach to use a mid-point between the AER's consultant (Deloiitee) and BIS Economics.
- However, we have four concerns with the analysis put forward by SAPN to justify its labour forecast:

  - We note that BIS Economics report may be out of date. The RBA's February 2019 monetary statement suggests a more pessimistic outlook on economic growth.
  - SAPN's RIN suggests that labour only comprises 41% of total opex, but for the analysis it has used AER benchmark of 59%. We question whether this provides a reasonable forecast of increases associated with wage growth.
  - Many of SAPN's workers provide corporate and professional services. We consider that SAPN needs to forecast the percentage of its labour force, and the forecast WPI for these workers.
  - BIS Economics states that labour productivity is not a driver of nominal wage growth. We consider this could be tested by looking at SAPN's previous Enterprise Agreements.

Opex components – Trend productivity

Our analysis of long term affordability demonstrates the criticality of achieving productivity gains over the next 30 years. We consider that a competitive firm operating on the efficiency frontier would still continue to drive productivity in their business through continued improvement and new technology. In this regard we note that SAPN's customer funded IT portfolio should be driving productivity at least equal to this investment.

The case for embedding productivity in forecasts

- We recognise that SAPN is a leading performer in delivering SA customers a quality service at a low cost. There is no evidence to suggest that SAPN's current opex leads to unsustainable outcomes.
- We also agree with SAPN that 2018-19 actual costs are a reasonable base year to start the forecasting method. This is not to say that SAPN is necessarily efficient in all its functions. It is merely to say that SAPN performs well on AER benchmarks relative to their peers.
- Our view is that even a competitive firm on the efficiency frontier is likely to have inefficiencies in some part of their business. We would expect the level of inefficiency to be more prevalent in monopoly firms, even those who perform well relative to their peers.
- Our analysis has shown that without ongoing productivity, South Australian customers are likely to suffer affordability issues in the long term. This is particularly the case if opex continues to rise for step changes, output and labour, but energy sales remain flat.

How much productivity could be reasonably achieved

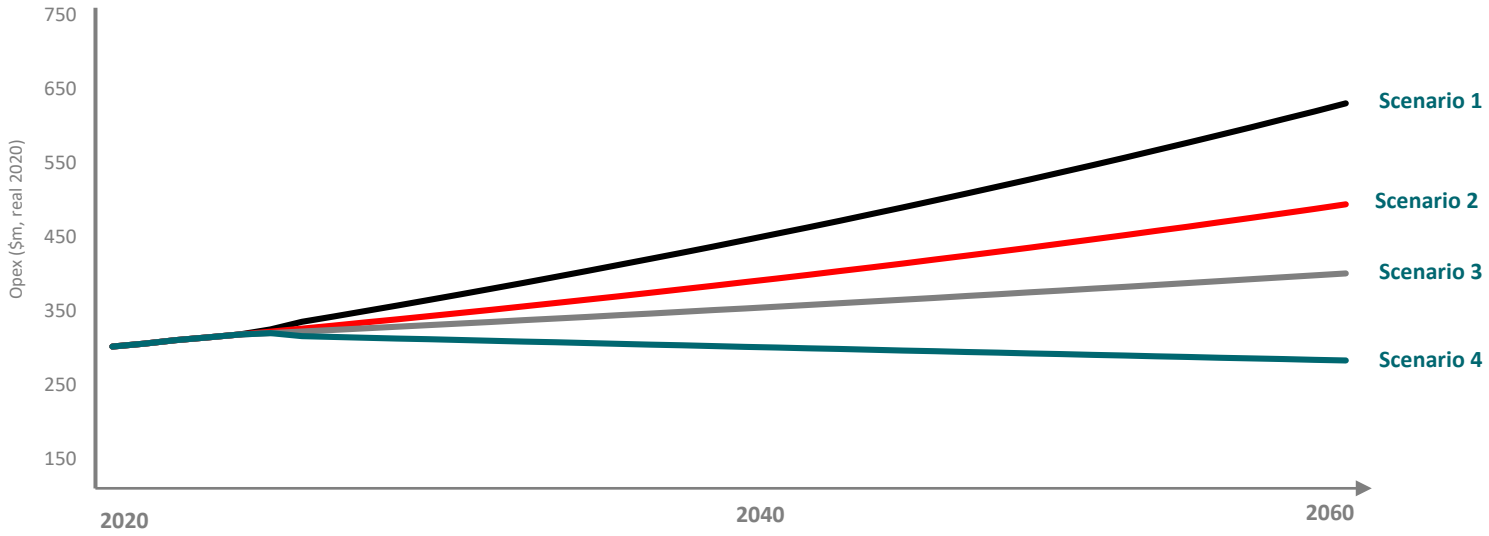
- We consider that SAPN's customer funded Information and Communication Technology (ICT) investments should provide ongoing opportunities for SAPN to embed productivity going forward.
- SAPN is proposing that customers pay $135 million in recurrent IT and $125 in new ICT. While some of this investment is specifically to improve customer service, a key driver of ICT capex is more efficient operations.
- The savings from recurrent ICT capex would likely be embedded in the cost structure of the business, and there may be only limited opportunities to drive further productivity.
- However, we expect that SAPN's proposed new IT capex would lead to a savings in capex returns and opex that is proportionate to the total spend. The alternative is that customers pay more for electricity than they do today.
- In addition to IT, we note opportunities for 'organic efficiencies' to arise in a business. For example, more efficient ways to undertake maintenance activities, or more streamlined processes for a customer centre.

Why worry about increases in opex

Opex increases become embedded in cost structures

Our simple modelling shows the importance of constraining opex unless clear evidence that the cost driver cannot be absorbed or transferred from another activity. Scenario 1 would show what happens to opex from 2025 if SAPN continue to increase opex based on steps and trends in 2020-25. Scenario 2 and 3 remove the impact of step changes and escalation respectively. Scenario 4 incorporates a productivity trend on top of scenario 3.

Figure 23 – Opex scenarios



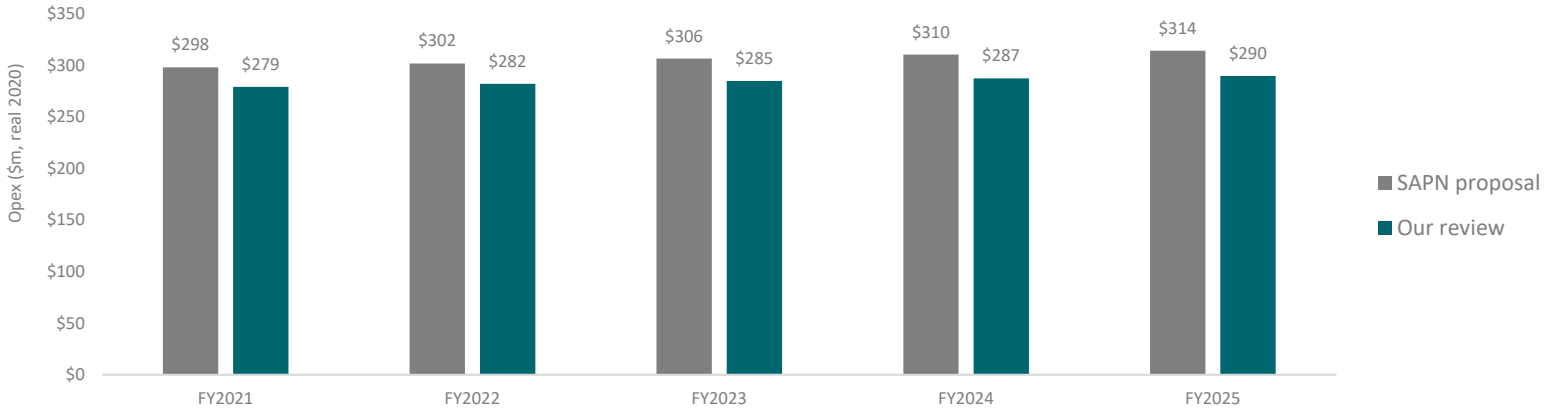
	Annual step change	Annual Output factor	Annual escalation factor	Annual productivity
Scenario 1	$3m	0.67%	0.61%	0%
Scenario 2	$0m	0.67%	0.61%	0%
Scenario 3	$0m	0.67%	0%	0%
Scenario 4	$0m	0.67%	0%	1%

Conclusion on opex

Proposed opex requiring substantiation

Based on our targeted review about $108 million of opex requires further technical review by the AER or substantiation by SAPN.

Figure 24 – Our conclusions on level of opex that requires further review

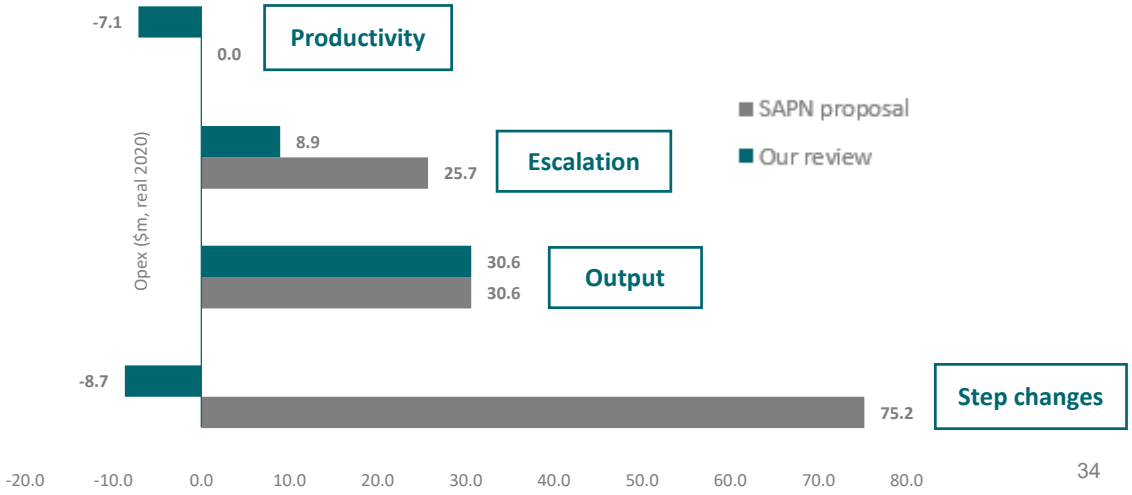


Areas for review

In coming to our view, we consider the following components of opex require justification:

- Productivity – We would encourage SAPN to adopt 0.5% productivity as per AER guidelines.
- Escalation – We think SAPN's escalation should be applied to SAPN's labour component of opex. We also consider that latest economic data suggests a slowdown.
- Output – While we question the magnitude of the output factors, we note this is an AER benchmark.
- Step changes – We think the AER need to undertake granular review of proposed step changes.

Figure 25 – Magnitude of adjustments to components of opex



Section 4

Review and findings on proposed capital expenditure

Capital expenditure as a whole

SAPN's capital expenditure (capex) proposal is generally well documented and reasoned. The replacement proposal exemplifies SAPN's 'best practice' risk management approach. However, we consider there is room for minimising augex, connections and non-network programs. Our high level overview of capital trends also suggests that SAPN tend to deliver less projects than forecast. This could be due to delivery issues or decisions to defer forecast capex closer to the time of delivery.

Our high level findings

- SAPN has prepared extensive and high quality documentation. It uses sound risk management frameworks, and its business cases generally describe the need, options and timing.
- SAPN is also currently performing well on AER capex benchmarks. Our category analysis shows that SAPN's mix of capex is close to the average DNSP in the NEM.
- A key risk for customers is that SAPN asks for more than it will deliver. SAPN has underspent its capex allowance by about 18% in the last 2 periods. We think this reveals systematic over-estimation in its forecast process, either due to delivery capacity, prioritsation closer to delivery, or forecast assumption errors such as customer growth.
- SAPN is a forerunner in the industry in seeking capex to integrate DER. We agree with the strategic direction but the AER should extensively review the program.
- In our view, there is evidence to suggest that SAPN have used ICT to drive efficiency in its business, but there is no quantifiable data provided on customer value. We encourage SAPN to provide more evidence on the benefits of ICT capex and demonstrate how this will result in continued lower costs.

Implications

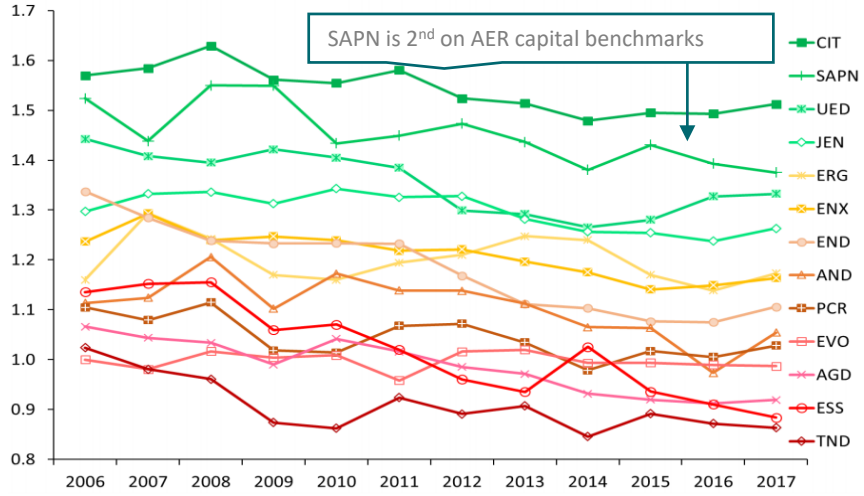
- SAPN's capex proposal is generally reasonable, but there appears to be scope to prioritise and minimise the scope and costs of investment programs.
- We consider that systematic capex underspends:
  - Reveal that SAPN's forecast methods may be overstated at the time of a regulatory proposal.
  - Demonstrate that forecast inputs such as connections may be over-estimated at the time of regulatory proposals.
  - Demonstrate that property and fleet capex forecasts do not consider delivery risks.
- The AER will need to look carefully at SAPN's proposed augex. The reliability program goes beyond jurisdictional obligations. We also would like the AER to review the proposed capex to integrate DER to ensure the investment is practical and proportionate to the problem being solved.
  - We also expect that SAPN's customer funded IT program needs further evidence on value to customers, and a clear demonstration that productivity gains are embedded into forecasts.

Capex as a whole

SAPN is performing well on AER benchmarks

SAPN performs well on AER capex benchmarks despite the oldest network in the NEM and high penetration of solar. SAPN's mix of capex is aligned with its peers.

Figure 26 –DNSP capex multilateral partial factor productivity indexes, 2006–17



Source: AER 2018 Annual benchmarking report

Figure 27 – Capex by category (% of total capex) for SAPN and DNSP average

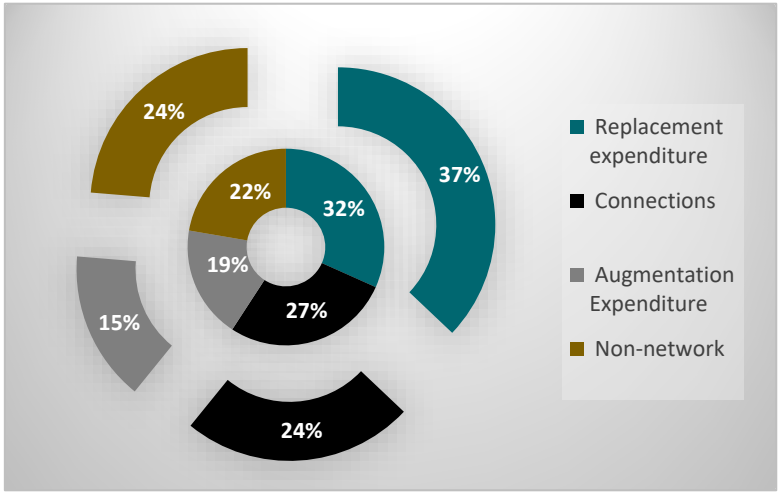
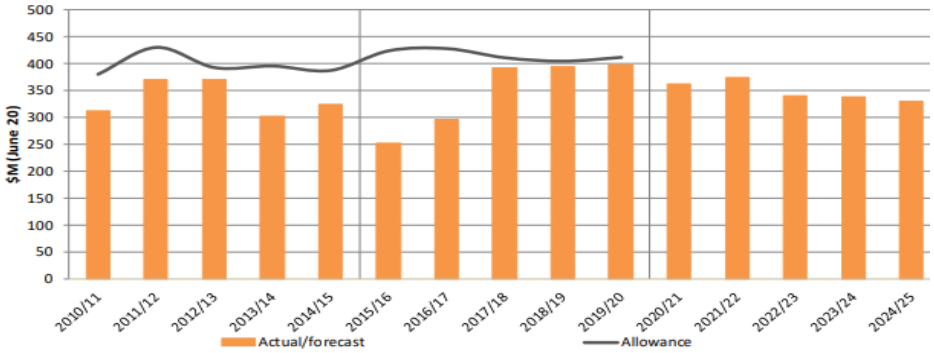


Figure 28 – Comparison of SAPN actual/forecast vs AER allowance ($m, real 2020)



Source: SAPN Regulatory proposal

SAPN has a history of delivering less than forecast

SAPN has spent 18% less than the AER's allowance in the last 2 regulatory periods. The AER should examine whether this relates to systematic forecasting issues.

Capex – Replacement

SAPN should be given high praise for the manner in which they effectively manage risks with ageing assets. SAPN's proposal represents only 0.3% of the value of the asset base, despite having the oldest network in the NEM. We express some caution on whether this level of replacement is sufficient to mimimise network risks, but have received some comfort from SAPN's documentation. In the long run, we see an exacting challenge for SAPN to manage ageing assets without impacting affordability and reliability. We consider this is the most vital element of SAPN's future network strategy.

SAPN delivers reasonable reliability to its customers

- SAPN provides a reasonable level of reliability to its customers. Apart from 2017 when there was a one-off major event, SAPN's performance on outage frequency and duration was similar to the average in the NEM.

Concerns about reliability performance in the short term

- In reviewing SAPN's age profiles, we had concerns that its proposed replacement program may not be enough to sustain its reliability performance.
- SAPN has the oldest network in the NEM with 15% of the value of its assets over 50 and 5% over 60. SAPN is replacing only 0.3% of its assets, which equates to an expected life of 300 years.
- This raises issues about whether SAPN is replacing enough assets in the 2020-25 period to sustain current performance.

SAPN provides evidence that replacement is sufficient

- Our review of SAPN's documentation shows it carefully considers short term performance issues. It has a well documented Asset Management Strategy which in our view is best practice in the industry. SAPN's risk framework allows it to identify the most risky assets for replacement, and defer others with less risk.
- We also reviewed SAPN's repex overview document. For the most part, SAPN use historical trends as a basis for forecasts. Programs where it is seeking higher funding such as PILC cables demonstrate that it is looking at emerging issues.
- We have also not seen a significant increase in failure rates. This gives us some confidence that SAPN will not experience a rapid decline in performance in the short term. We also note that SAPN's direct unit costs appear high compared to peers but this may relate to its very low capex overheads.

Long term challenges

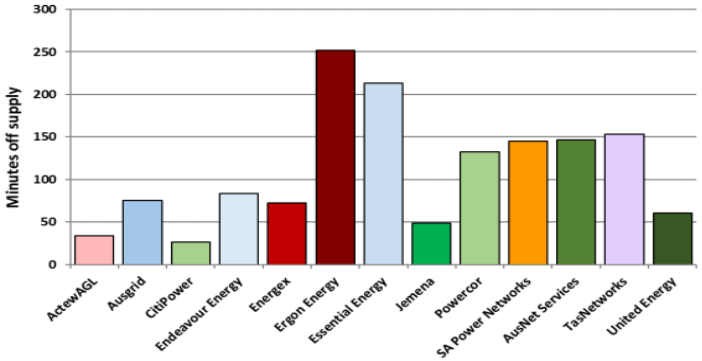
- Our strategic analysis shows that SAPN will not be able to continue replacing at today's levels forever. SAPN already has the oldest network in the NEM, and at current rates of replacement almost 35% of its assets will be over 70 by 2060.

Replacement – high level indicators

SAPN has been providing a reasonable level of reliability for its customers

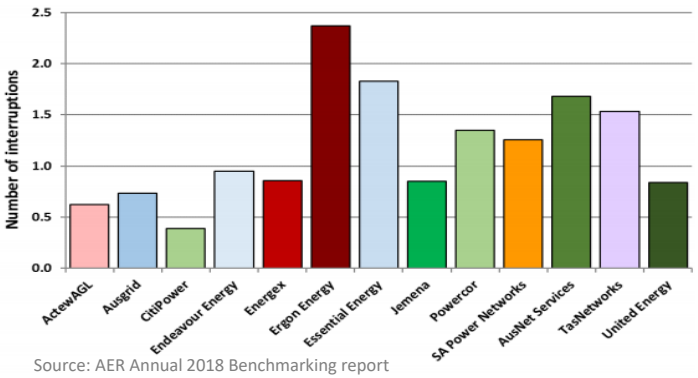
AER analysis shows that SAPN's reliability is in the mid range of the NEM.

Figure 30 –Minutes off supply per customer in NEM (2013-17)



Source: AER Annual 2018 Benchmarking report

Figure 31 –Number of interruptions per customer in NEM (2013-17)



Source: AER Annual 2018 Benchmarking report

There appear to be no short term indicators of failing health

RIN data does not suggest a systemic growth in asset failure rates. 2017 was marked by a major event, but failure rates have rebounded back to 2016 levels for most asset classes.

But there are worrying signs on the horizon

SAPN will experience significant reliability if it continues to spend at today's levels. Our strategic analysis showed that SAPN would have 35% of its assets over 70 if it continues to replace 0.3 per cent of the value of its assets each year until 2060.

Figure 32 – Number of failures by asset category (FY2015 to FY2018)

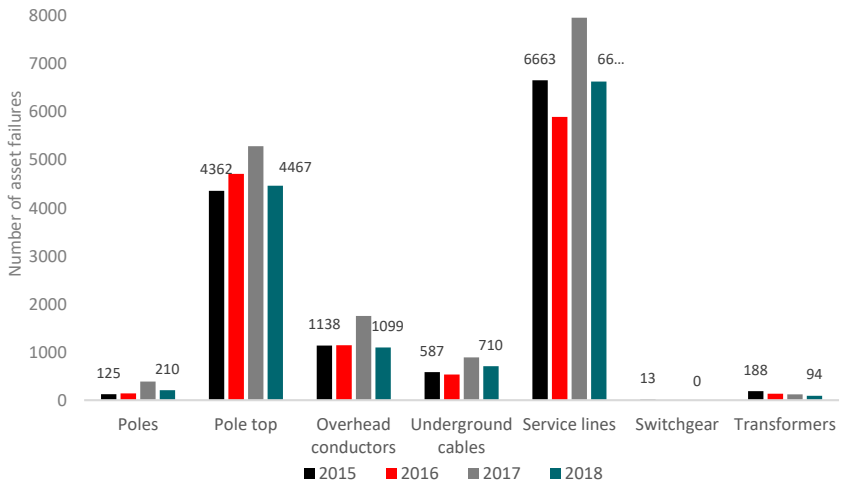
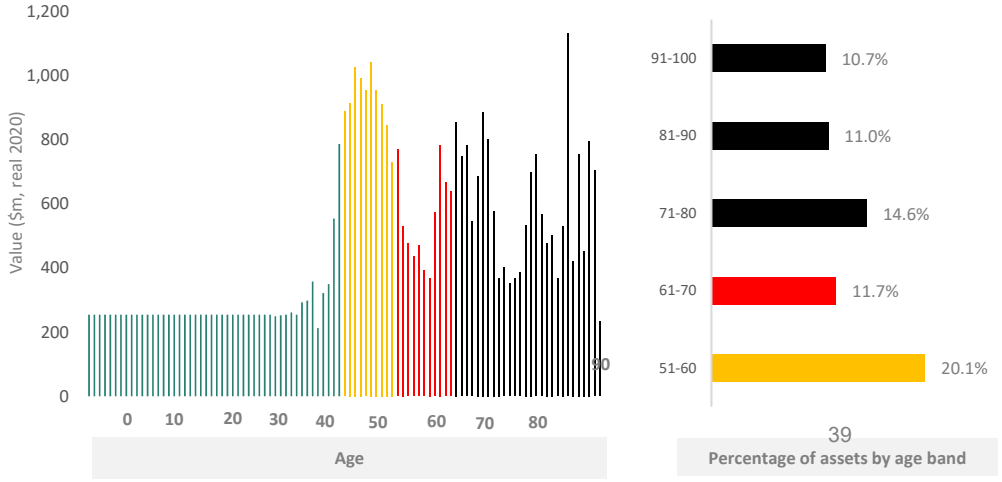


Figure 33 – Asset age profile in 2060 based on today's rate of replacement



Capex – Augmentation

We are concerned that SAPN proposes to invest $400 million of augmentation at a time when energy sales are falling and a replacement challenge looms. We recognise that SAPN is facing new challenges with integrating DER and this is a reason driving increases in capex. However, we consider there may opportunities to minimise expenditure programs while still future proofing the network. In particular we do not consider there is a case for investing above reliability standards. We would also like the AER to examine SAPN's capex on low voltage augmentation to ensure is it prudent and efficient.

Drivers of augmentation

- Traditionally, augmentation was required to address constraints in local areas arising from peak demand growth. Peak demand growth is relatively flat, and energy sales have been falling. This is reflected in SAPN's proposal where capacity investment is relatively minor.
- Augmentation is also driven by investments to maintain or improve reliability. SAPN is proposing significant expenditure to improve reliability in rural areas.
- SAPN is also investing in monitoring and modelling its low voltage network. This is to address increasing voltage constraints from 2 way flow of solar, batteries and Virtual Power Plants (VPPs). This is where the majority of proposed augex is directed.

History demonstrates that prioritisation occurs in practice

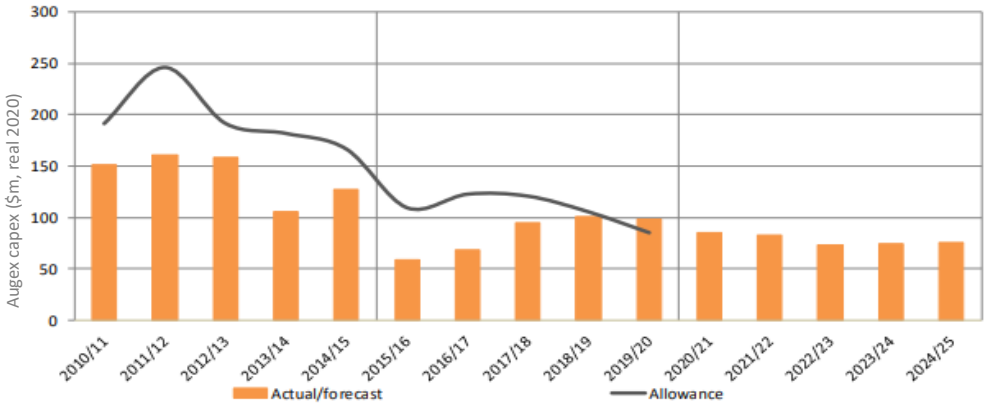
- We note that SAPN generally find opportunities to defer augmentation closer to the time of investment.
- This suggests that growth take longer to materialise compared to original forecasts, and that SAPN efficiently act on demand management opportunities.
- We would expect that SAPN would take this systematic overstatement of augex into account when developing a prioritised capex forecast for the period.
- In our view, about 20 to 30% of augex is likely to be deferred in practice by SAPN based on historical data.

Capex augmentation

Review SAPN's augex forecast process and inputs

At a high level, we consider the AER should review whether SAPN's process and inputs provide for a reasonable estimate of augex.

Figure 34 – SAPN's actual/ forecast augex capex compared to AER allowance



Source: SAPN regulatory proposal

Figure 35 – SAPN's actual/ forecast augex capex compared to AER allowance

Project Name	Region	Project Category	Planned Year	Estimated Cost ($ million[6])	Status	Reason for deferral / Comment
Barossa South Sub Upgrade (Mod 2)	Barossa	Substation Capacity - Existing	2016	3.5	Completed	-
Dorrien 33/11kV substation upgrade	Barossa	Substation Capacity - Existing	2015	2.8	Completed	-
Lyndoch East Substation (2 x Mod 6)	Barossa	Substation Capacity - New	2018	4.0	Not commenced	Slower customer load growth – deferred post 2025
Stockwell Sub Upgrade (No2 Mod 2 Substation)	Barossa	Substation Capacity - Existing	2018	3.9	Completed	-
Eliza Street Cable Duct works	CBD	Substation Capacity - New	2019	3.7	In progress	-
Meadows Substation Upgrade	Eastern Hills	Substation Capacity - Existing	2019	2.3	Not commenced	Slower customer load growth – deferred post 2025.
Mount Barker East Substation – New	Eastern Hills	Substation Capacity - New	2019	5	Not commenced	Slower customer load growth – deferred post 2025.

Source: SAPN Distribution Annual Planning Report

Significant underspends in augex allowance

SAPN's forecast approach has resulted in its overstatement of its actual requirements for the last 2 regulatory periods.

SAPN reasons for underspends are slower customer growth

This table shows that SAPN is only track to complete 3 of the 7 substation upgrades planned for the 2015-20 period. SAPN state that the reasons relate to slower customer growth.

Capex – Augmentation categories

Our review has focused on material and strategic categories of augex where we consider further review is required by the AER on efficiency and prudency of proposed investments. We consider that about half of SAPN's proposed augex requires further justification and review before it can be accepted by the AER. This includes greater scrutiny on addressing voltage concerns from 2 way flows of energy, reliability investments and safety programs.

Addressing voltage issues

- SAPN is proposing to spend about $150 million on measures to address voltage issues arising from 2 way flow of energy. We consider this is both material and strategic for customers.
- We commend SAPN for its dynamic and innovative thinking on the future network, and the extensive work on identifying issues.
- In principle, we support SAPN's proposal to develop a mechanism to allow dynamic exports of DER. We note that fully utilising cost efficient customer DER is the key to unlocking network cost savings in the future. Static exports and costly augmentation would seem strategically inferior.
    - We have reviewed SAPN's robust evidentiary material. We have specific questions on evidence of need, overlap with other programs, and implementation, many of which mirror the concerns of the CCP.
- We also note that SAPN is proposing to spend $48 million on rectifying issues with voltage complaints based on BAU historical costs. We would like the AER to investigate whether lower cost options could resolve voltage issues, and whether VoltVAr and dynamic exports will reduce voltage complaints over time.

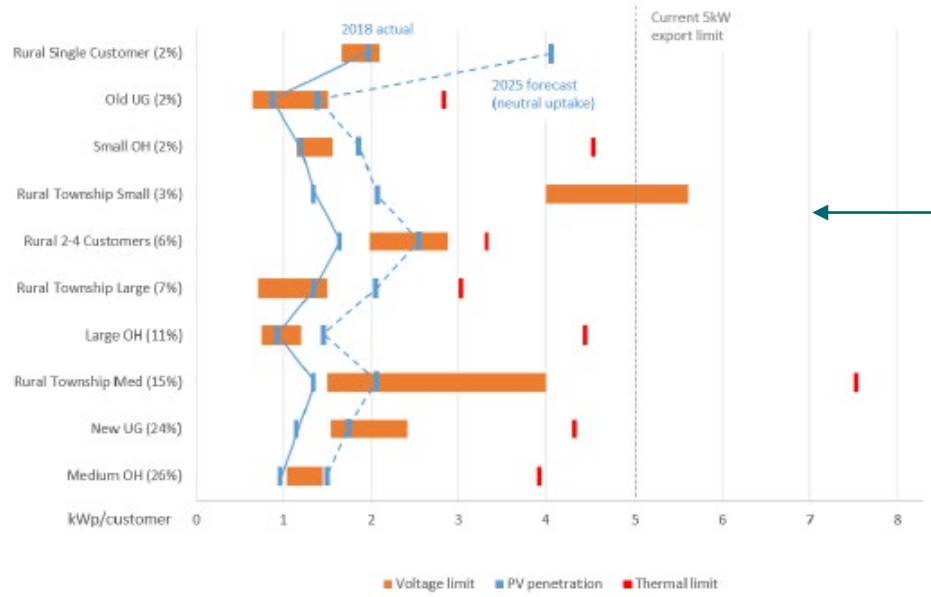
Reliability and safety programs

- SAPN is proposing to spend $64 million on programs that impact duration and frequency of outages, and $50 million on safety programs.
- We consider that reliability capex is too high given that SAPN perform well among peers:
    - We consider the AER should strongly review whether $34 million is required to maintain reliability.
    - Our view is that SAPN should not be provided funding to improve reliability unless approved by ESCOSA. The AER should place greater weight on ESCOSA's recent review of reliability where it provided an economic justification for not improving reliability in regional areas.
- SAPN has also proposed $50 million in safety programs. Some of this appears to have economic modelling such as the bushfire mitigation program. However in other areas, we have not evidence quantitative modelling of risks, similar to what is performed in the replacement program.

Capex – Augmentation LV projects

Key questions for low voltage augmentation projects

- Need - How has SAPN modelled the impact of increasing saturation of VoltVAR on voltage constraints moving forward?
- Options - Can the model be provided by the open market? If not, why?
- Market development - Does the model interfere with the development of DSOs in the future
- Overlap - Is the LV monitoring program a key element of the project's success? If so, what is the impact on the business case outcomes?
- Implementation - Do modern inverters on DER have the technology to allow for dynamic ratings, and more generally how will you control devices?



SAPN provide compelling modelling evidence to suggest voltage constraints will arise in the 2020-25 period. We would like the AER's technical consultants to provide a view on whether there is any technology available now or in the future that could address this issue cost-effectively.

Source: SAPN Low Voltage Business case

Capex – Connections

SAPN have significantly underspent their connections allowance in the 2015-20 period. SAPN are predicting that connection expenditure will rebound in 2020-25 period back to the levels forecast in 2015-20. Our view is that the AER should closely examine SAPN's connection forecast model to ensure there is no systematic over-statement in the modelling, and to test whether economic growth predictions remain valid for South Australia.

Connection capex

- SAPN has relied on the expert opinion of BIS Oxford to provide a view on the level of connection capex it expects to incur in the 2020-25 period.
- We note that BIS Oxford is well qualified to provide economic opinion, but that the AER should also independently evaluate other economic forecasts such as the RBA. The AER should also consider whether there has been any material change in economic outlook since BIS provided its report.
- Our concern is that SAPN underspent the connections capex allowance in the 2020-25 period. SAPN have demonstrated that lower capex was due to an unexpected economic downturn. However, the AER should assess whether there is a systematic overstatement in the connection modelling.

Connection policy

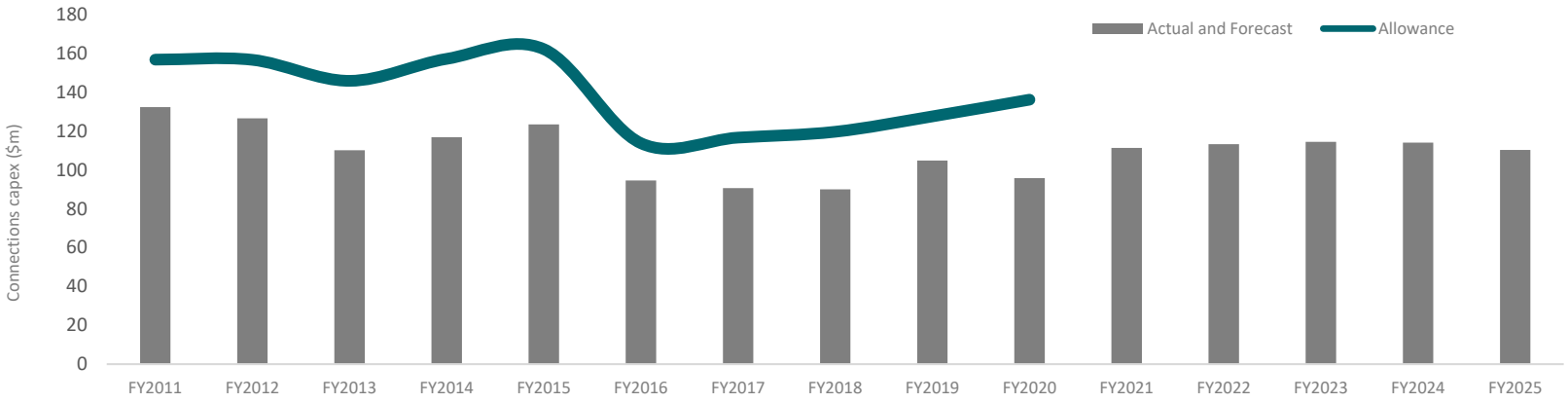
- The connection policy provides a framework for identifying who pays for the costs of connecting new customers.
- In our view, new customers should pay for the cost of their dedicated connections, and for their fair share of augmenting the network. This provides incentives for customers to locate in areas where there is capacity on the network. We consider that the revenue test in SAPN's connection policy provides for a fair sharing of augmentation costs.
- We also think this is reflected in the relative proportions of contributions and net capex.
- The AER may wish to examine why net capex is a higher percentage of total connections in the 2020-25 period.

Capex connections

SAPN is asking for more than actuals despite spending less than AER's allowance

SAPN spent 22% less than the AER's allowance in the 2015-20 and 2010-15 periods. It is now forecasting an 18 per cent increase from its actuals. The AER should examine whether this relates to over-estimation of connections capex in the forecast, or due to a one-off circumstances

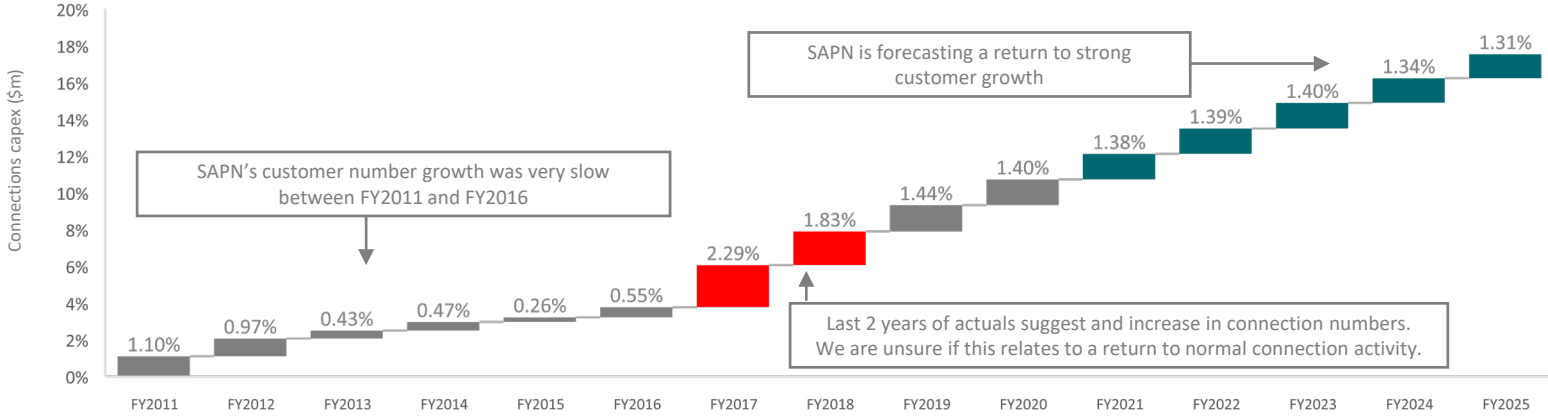
Figure 36 – SAPN's actual/ forecast connections capex compared to AER allowance ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)



Latest RIN data provides some evidence that customer numbers have rebounded in recent times

SAPN's growth in customer numbers was very subdued between FY2011 and FY2017, before significant growth in the last 2 years. This may provide some evidence to support SAPN's view that customer numbers are on the rise.

Figure 37 – SAPN customer growth rate



Capex – Information and Communication Technology

SAPN has spent $500 million on Information and Communication Technology (ICT) over the last decade. The key question for SA customers is whether ICT has helped keep a lid on electricity prices through network savings, and improved service quality. This is a pivotal question in the context of SAPN's proposal to spend $260 million on ICT in the 2020-25 period. We would expect SAPN to provide more quantitative evidence on how its evolving ICT portfolio will improve long term affordability and services for SA customers.

Understanding how ICT fits impacts customer prices

- SAPN has proposed a 5 year life for its ICT assets. The implication is that:
  - ICT investments are paid for by customers within a regulatory period giving it a similar price intensity as opex in the short run.
  - Unlike other network assets, it does not lead to an obvious increase in the RAB. It is the 'silent reoccurring' capex in the RAB
- Due to their short shelf life, ICT investment benefits need to accrue in a short period of time. For example, a $5 million IT system would need to defer $50 million of system capex by more than 1 year.
- This also shows why the proposed IT investment portfolio must demonstrate a commensurate value. This may be in the form of capex deferral, capital cost productivity or embedded opex productivity. It may also be improvements in service in a form valued by the customer.

How effective has SAPN's ICT investment been?

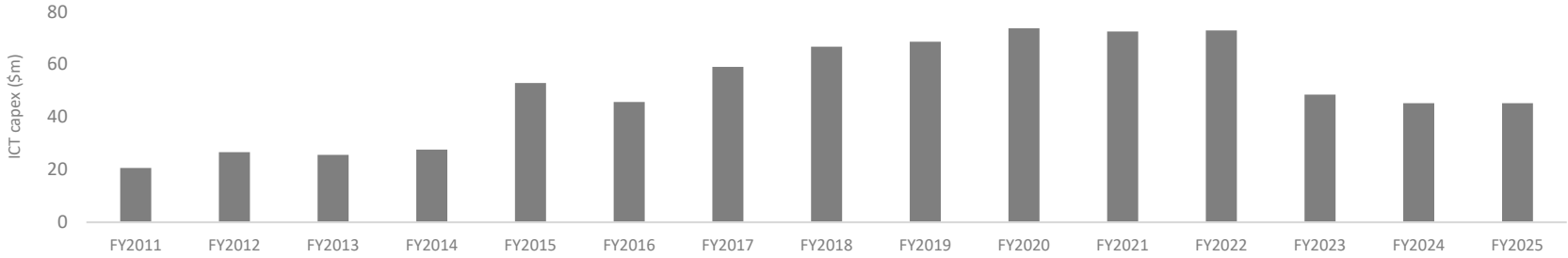
- SAPN has been on the forefront of using new technology to improve the way it operates and plans its business. It will spend about $750 million between 2010 and 2025.
- There is some compelling evidence that SAPN has put IT investment to good use. For example it has deferred significant replacement capex over the last decade through better IT systems. However SAPN has not provided quantitative evidence of IT benefits.
- A key issue is that a new ICT systems may show net benefits for an individual business case at the time of commissioning:
  - But the technology works within an IT ecosystem (IT infrastructure and security) some which provide support without benefits.
  - The technology may only produce benefits for the life of the asset, but is so integrated with the ecosystem that its failure poses a system risk.
- We think this is what is causing the issue of whether ICT investments provide value. We would like to see SAPN have a go at showing the net value of its ICT investments including cost efficiencies, cost avoidance/deferrals, risk reduction or customer value.

ICT capex

SAPN will have invested $750 million in IT between 2010 to 2025

SAPN increased its ICT capex in the 2015-20 period but is proposing to spend 10 per cent less this period. Some of this reduction relates to transferring capex to opex from moving to the cloud.

Figure 38 – SAPN's actual and forecast ICT capex ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)



What is the cost of the proposed ICT program for 2020-25

ICT capex has a 5 five year life, before re-investment is required. Under simplifying assumptions, SAPN's ICT capex will cost consumers $324 million, once financing costs are taken into account.

Figure 39 - Total revenue from ICT proposed capex program ($m, real 2020)

Capex – ICT projects

SAPN provided an ICT plan as part of its published documents and some business cases. We have examined the documents to assess whether there is evidence of a sound strategy, coherent IT architecture, and evidence of business case analysis. We would like to see more evidence that SAPN has fully explored options to minimise its recurrent capex. We also consider that SAPN need to show how new ICT functions will provide cost savings that outweigh the costs of the project.

Recurrent capex

- Recurrent ICT accounts for about $135 million of the proposed $260 million. The projects include replacements, upgrades or refreshes to devices, infrastructure, applications and platforms such as SAP and billing systems.
- We recognise the risks of not upgrading IT infrastructure, but we are concerned that SAPN are continually renewing so much of its assets, without demonstrating continued value. We are also concerned that it has little bargaining power on the costs of ICT once it is locked into a platform provider. These are issues facing all networks and should be reviewed in detail by the AER.
- We understand that there are business cases accompanying the submission. We looked at the SAP Business upgrade which has been provided by SAPN as an example.
- SAPN showed that the need arose from end of vendor support, and sought to show that the risks were untenable. It also outlined a number of options including moving to a different vendor. It is less clear whether the costs provided by vendors are efficient, or that detailed negotiation is taking place. We recognise this is difficult evidence to demonstrate.

New capex

- SAPN is also proposing about $125 million of new capex. When assessing new capex, we were looking for evidence of efficiency (with productivity embedded in forecasts) or evidence of a new compliance obligation.
- A key element of SAPN's digital strategy is to manage business and network costs through more efficient data. SAPN have provided quantification of benefits, which it considers exceeds the cost of the project.
  - We note that the primary benefit appears to be deferral of $65 million of capex. We have not been able to source evidence, but we note that the $65 million should relate to the return on and depreciation, rather than the cost of the project.
  - We also would like the AER to review where additional savings have been embedded in the capex or opex forecast.
- SAPN has also proposed ICT to meet new obligations under the Rules. We examined the 5 minute settlement Rule business case and found evidence of the need for the project, but were not in an informed position to examine the efficiency of costs. We would like the AER to review the business case for ring fencing.

Capex – Property, fleet and plant

SAPN is proposing $200 million for property, fleet and plant and tools. We are concerned that SAPN has underspent its allowance in all three categories over the last 2 regulatory periods, spending significantly less than provided for in the AER allowance. It is now asking for an 18 per cent increase in actual capex without a clear articulation of drivers.

Overestimation of capex in forecast process

- SAPN has underspent its capex by 48 per cent for property, fleet and plant and tools in the 2015-20 period. The AER provided an allowance of $249.7 million of which it has only spent $168.4 million.
- This follows an underspend of 13 per cent in the previous period. In our view this shows that there is a clear disconnect between the forecast process and what occurs in practice.
- We have examined the potential reasons for the underspend:
  - Property: SAPN notes delays were due to uncertainty with its service delivery model, and composition of workforce. We question how SAPN will deal with uncertainty in the 2020-25 period, and if it will underspend for the same reasons.
  - Fleet: SAPN note that it benefited from a more competitive supply of vehicles, and that some of the work in the period was delivered by external providers. We question further efficiencies would not be achieved in the 2020-25 period and how SAPN has sought to incorporate this into its forecast process.
  - Plant and tools: Similar to above, SAPN note the use of external contractors kept costs down in this category.

We would like the AER to undertake a review of SAPN's forecast process in light of systematic overestimation.

Drivers of non-network capex in 2020-25 period

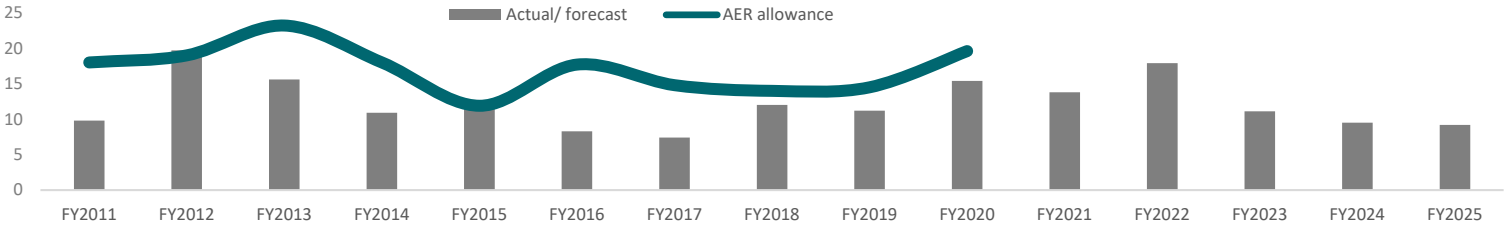
- SAPN are forecasting an increase of 13% more property capex and 25% more fleet capex compared to actual capex in the 2015-20 period. Plant and tools is forecast at similar levels.
- We have examined SAPN's documentation to understand the drivers of the increase in property capex:
  - The majority of the program appears driven by refurbishment issues at existing depots. While we recognise the importance of a safe and habitable workplace, we are concerned that:
  - SAPN's 'Property services' document notes the continued uncertainty with the service delivery model. We question whether the works will proceed.
  - Further we note that condition issues may give rise to deeper strategic thinking on how to consolidate depots to achieve savings in the property portfolio.
  - We note that SAPN does not apply its framework for prioritising high risk system assets. We note that SAPN deferred property capex this period without entailing any significant issues.
- We also reviewed fleet capex. We have not seen clear evidence for why an increase in capex is warranted. The AER may wish to review if there is a cyclical reason for higher capex.

Property fleet and plant capex

SAPN have shown a pattern of under-delivering their forecast capex allowance for non-network capex

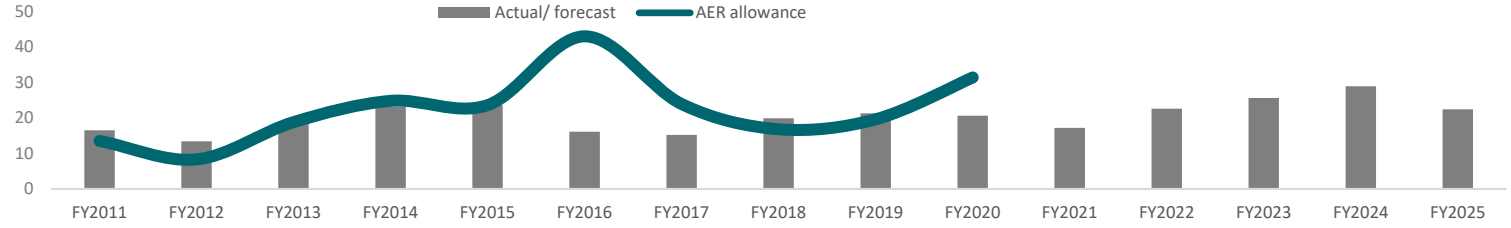
SAPN have significantly underspend their investment allowance for property, fleet and plant in the last two regulatory periods.

Figure 41 – SAPN's actual and forecast property capex compared to AER allowance ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)



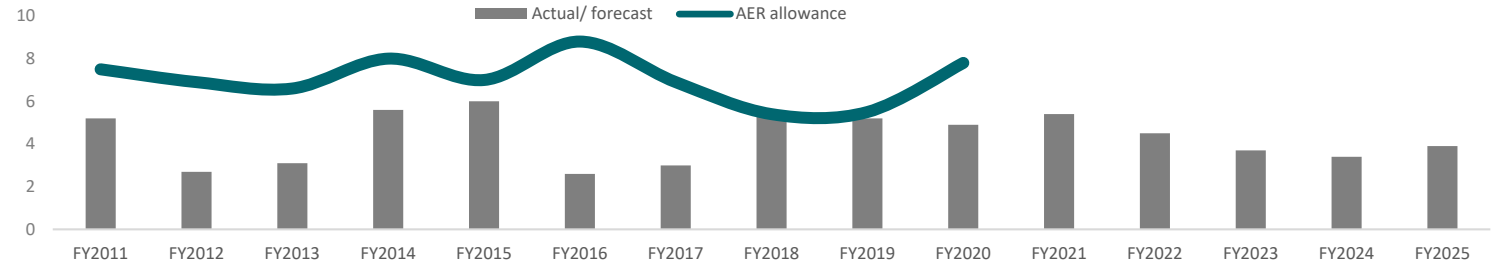
Property

Figure 42 – SAPN's actual and forecast fleet capex compared to AER allowance ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)



Fleet

Figure 43 – SAPN's actual and forecast plant and tools capex compared to AER allowance ($m, real 2020 for 2016 to 2025, nominal for 2011 to 2015)



Plant

Section 5
Review and findings on incentives

Capital Expenditure Sharing Scheme - Claimed reward

SAPN notes that affordability concerns of SA customers was a critical consideration in developing its regulatory proposal. With this in mind, we encourage SAPN to re-consider whether it should claim the Capital Expenditure Sharing Scheme (CESS) reward. SAPN is proposing $70 million which equates to residential customer paying $10 more a year for electricity (total of $50 by the end of the period). Our concern is that SAPN has not clearly provided evidence of how its underspend benefited customers.

CESS incentive – A fair share for customers?

- Incentive frameworks are designed to provide customers with a fair share of benefits from efficient actions by network. In our view, the current CESS does not place enough onus on the network to demonstrate to customers that the reward is due to efficient actions.
- The CESS gives a reward if the DNSP spends less than the AER allowance. The only exception is when a project has been clearly deferred to the next period.
- Our key concern is that the incentive rewards firms who have not been able to deliver its capex, or has over-forecast requirements. We think the incentive should only be provided if the DNSP can provide evidence that total capex is lower than the allowance due to:
  - lower costs of delivering projects or programs.
  - has efficiently deferred or avoided capex, and that this was a result of action it had taken that was not foreseeable at the time of its proposal. The DNSP would need to show the benefit of deferral is NPV positive.
  - If this cannot be established the DNSP would still receive a reward for underspends through the normal ex-ante framework.

Evidence that SAPN should provide

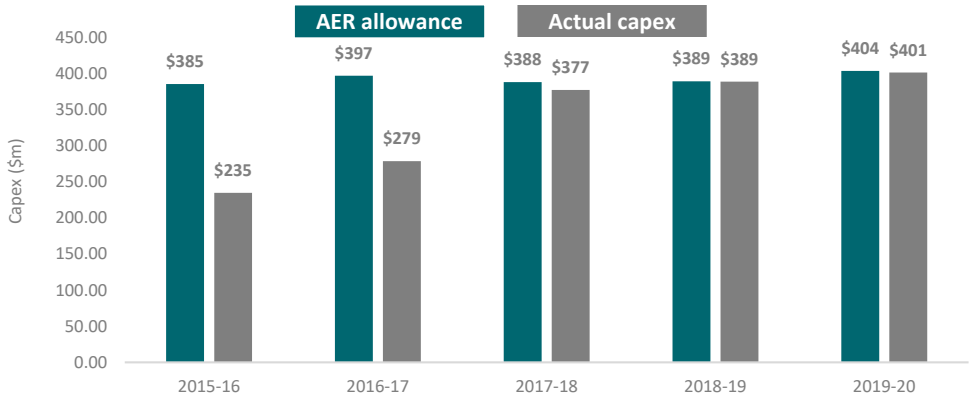
- We recognise that the current CESS guidelines may limit the AER's discretion to assess the prudency of the proposed CESS reward.
- We still think that the AER may be in a position to assess if any of the proposed replacement program for the 2020-25 period contain volumes that had been forecast for 2015-20. There may be also some fleet and property capex that has been deferred into the 2020-25 period.
- We would encourage SAPN to re-consider how much of its CESS reward is in the spirit of the incentive framework.
- SAPN recognises that the underspend is most prominent in the first 2 years of the 2015-20 period, and that this was due to uncertainty with the outcome of the AER's final determination in the appeal process.
- SAPN have also noted that underspends in augex and connections were due to lower customer growth than it forecast in its last regulatory proposal. This also does not suggest that the underspend was a consequence of an efficient action.
- We recognise that SAPN may be able to provide some good examples of where it has been more efficient than forecast.

CESS reward

SAPN's underspend occurs in first 2 years of the period

SAPN recognise that its underspend is more prominent in first 2 years. This was due to uncertainty with the appeal process for its last determination, rather than efficient actions taken to reduce capex

Figure 44 – SAPN's actual/ forecast capex compared to AER allowance



"We re-prioritised some work programs to later in the 2015-20 RCP while the uncertainty concerning our revenue allowance for the 2020-25 RCP was being resolved" (SAPN, Attachment 5, p5-20)

SAPN also forecast higher demand growth

SAPN delayed some of its augex projects as a result of slower demand growth.

Figure 45 – SAPN's actual/ forecast augex capex compared to AER allowance

Project Name	Region	Project Category	Planned Year	Estimated Cost ($ million[a])	Status	Reason for deferral / Comment
Barossa South Sub Upgrade (Mod 2)	Barossa	Substation Capacity - Existing	2016	3.5	Completed	-
Dorrien 33/11kV substation upgrade	Barossa	Substation Capacity - Existing	2015	2.8	Completed	-
Lyndoch East Substation (2 x Mod 6)	Barossa	Substation Capacity - New	2018	4.0	Not commenced	Slower customer load growth – deferred post 2025
Stockwell Sub Upgrade (No2 Mod 2 Substation)	Barossa	Substation Capacity - Existing	2018	3.9	Completed	-
Eliza Street Cable Duct works	CBD	Substation Capacity - New	2019	3.7	In progress	-
Meadows Substation Upgrade	Eastern Hills	Substation Capacity - Existing	2019	2.3	Not commenced	Slower customer load growth – deferred post 2025.
Mount Barker East Substation – New	Eastern Hills	Substation Capacity - New	2019	5	Not commenced	Slower customer load growth – deferred post 2025.

Source: SAPN Distribution Annual Planning Report

"Of these 34 major projects, eight have been deferred to post 2025 and one deferred to the 2020-25 period, with the remaining being complete or in progress at the time of writing. The seven deferrals are due to a reduction in demand forecast which has resulted in changes to the timing of the constraint the project was proposed to resolve. (SAPN, DAPR, p34)

Section 6
Tariff structure statement

Tariff structure statement

We have undertaken a very high level review of the proposed TSS. We find that SAPN has deeply considered how its tariffs should change over time to meet the challenges of the future network. It has proposed significant change including time of use charges for residential customers with interval meters, and an optional prosumer tariff. A very innovative aspect of the TSS is a very low charge during the 'solar trough'.

SAPN have articulated the case for tariff changes

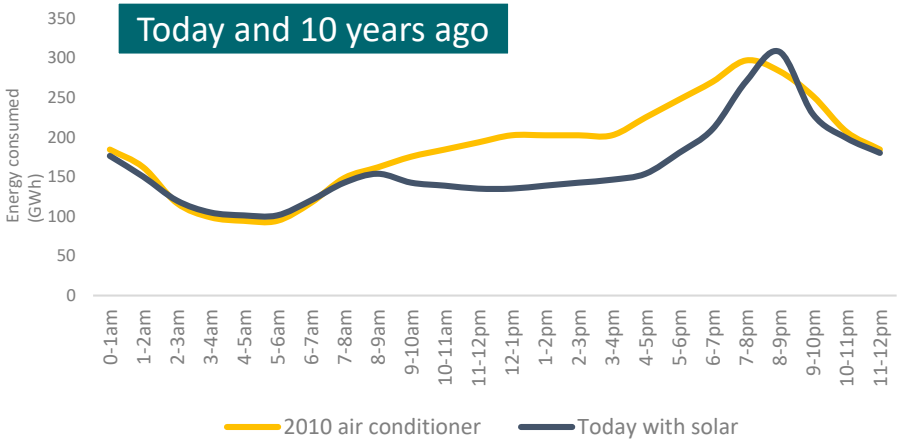
- SAPN's TSS proposal is grounded in a keen understanding of the opportunities and challenges facing its network.
- One of the key opportunities for SAPN is the increased rate of interval meters that will roll out across the state. SAPN expect almost 45% of its customers will have smart meters by the end of the period.
- SAPN have seized on this opportunity by proposing that customers on interval meters by moved onto a time of use pricing structure.
- In doing so, SAPN are aware of the importance of shifting energy away from peak periods during the day. SAPN has an eye to the future. It is helping set up the right signals to shift electric vehicle charging to off peak periods where there is sufficient capacity on the network.
- More importantly, SAPN have recognised an impending issue with the 'solar trough' where there is the possibility of reliability issues if too much energy is exported into the grid when people are not using energy.

SAPN has thought carefully about the design of tariffs

- SAPN is proposing a small increase in the proportion of revenue relating to the fixed cost. SAPN is also moving away from inclining blocks for customers without a small meter.
- For residential customers with smart meters, SAPN will have a time of use tariff that applies all year. It has provided analysis noting that seasonal demands are not strong enough to drive more complex price structures except in the CBD. We agree with keeping tariffs simple where possible.
- SAPN is being more innovative with small commercial customers in its time of use tariff. It will have a separate time period for peak and off-peak prices for the weekend.
- Similarly SAPN is looking forward with the Adelaide CBD, creating a new tariff to reflect the seasonality of tariffs.
- Overall we see that SAPN has the right mix of tariffs for its customers, and that its speed of transition is appropriate given it is at the forefront of the future network. In other networks, slower change may be justified.

TSS – Case for cost reflective tariffs

Figure 46 – Figurative example of daily profile of energy use by customers today and in 2010

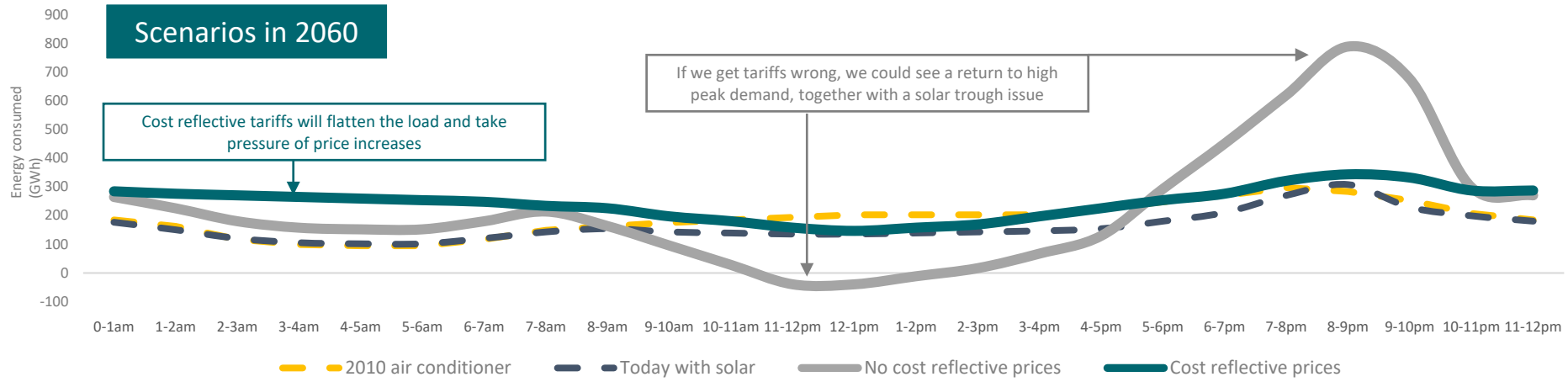


What are the trends we are seeing today

This is figurative data to show the changes in how customers are using the grid since 2010 when air conditioning caused peak issues.

- There is less energy consumption than 10 years ago, as households use solar for their own energy needs.
- We see a solar trough beginning to occur where less energy is being delivered via the grid at off-peak times when the sun is high.
- We see a more accentuated peak demand as people return to the network when solar and batteries have run dry.
- But the peak demand in aggregate is the same as 2010 due to lower energy sales.

Figure 47 – Figurative example of daily profile of energy use by customers in 2060



What are the scenarios for tomorrow?

Electric vehicles and new customers could increase energy sales by up to 50% by 2060, but solar penetration and battery will be at its highest. This could cause two major issues if there are no cost reflective prices. Firstly, we will see issues on the low voltage network as solar exports exceed demand. Secondly and more importantly we will see a massive increase in peak demand for a small part of the day as people charge electric vehicles, and batteries run out of energy. Cost reflective tariffs will need to provide rewards to encourage people to shift the majority of energy use to times of very low demand (overnight electric vehicle charging) and during the day when there is excess solar.