Renewable Energy Policy Group SA
Submission on SA Power Networks' request for amended F&A 2020-2025

29 November 2017

Mr Chris Pattas
General Manager, Network Regulation
Australian Energy Regulator
Via email: aerinquiry@aer.gov.au

Dear Mr Pattas,

Thank you for the opportunity to comment on the AER's upcoming revision to the Framework and Approach for SA Power Networks 2020-2025. The Renewable Energy Policy Group SA (*REPG*) is concerned that the current F&A is in need of revision, for the reasons given by SA Power Networks and several more.

We believe that South Australian energy consumers are positioned to benefit greatly from the fast and widespread uptake of *Distributed Energy Resources* (*DER*), which includes Solar Panels, Energy Storage, and platforms for upstream market access. Consumer technology has the potential to smooth currently volatile energy markets, including frequency control (FCAS) and the Dispatchable Generation Spot Market. Reducing market volatility drives down prices through lower risk-management costs. Consumer access to energy markets would also bring increased competition resulting in further downward pressure on prices.

The REPG has included several recommendations for the AER in this submission. We hope that the AER will take into account South Australia's unique ability to transform into the world's most efficient energy system as it regulates network policy and investment for 2020 and beyond.

Feedback and questions for REPG should be addressed to Stewart Martin, Chair: stewartmartin697@gmail.com (mobile number provided to the AER separately)

Please feel free to contact the author with any other concerns regarding this submission.

Best Regards,

John Herbst
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Summary of Recommendations

Recommendation #1 [Change to Approach]: The AER should assume that SA Power Networks, like all corporations, is driven by profit.

Recommendation #2: DNSPs' Cost Allocation Methodology (CAM) should be expanded to show all steps in applying regulated costs to individual customers.

Recommendation #3: The AER should no-longer offer explicit incentives for DNSPs to operate efficiently.

Recommendation #4: The AER should require SA Power Networks to release the full data from its Salisbury Battery Trial and any other funded research before being offered any further incentives for research or trials.

Recommendation #5: SA Power Networks must have all tariff trials, and any other tests it wishes to conduct on consumers, approved by an ethics committee.

Recommendation #6: The AER must reject forecasts and estimates in network proposals which are based on unrealistic assumptions, missing inputs, or any other source of bias. Forecasts of demand for 2020 onwards should factor in efficient levels of Demand Response, to control for lack of price-signals in actual tariffs.

Recommendation #7: The AER should require SA Power Networks to provide a level playing field for non-grid solutions, in terms of its approach to tariffs, lobbying, renewable energy policy and ring-fencing (interaction between the regulated monopoly and its commercial business ventures).

Recommendation #8: Provide consumers with assurance that their best interests are protected.

Recommendation #1 [Change to Approach]: The AER should assume that SA Power Networks, like all corporations, is driven by profit.

The AER should expect DNSPs to propose policy which gives the illusion of efficiency, yet seeks to maximise profit. For example, SA Power Networks may initially propose a price path for 2020-2025 which is just under expected CPI because it satisfies a definition of "long-run efficiency" on a very simplistic level. The AER must ensure that economic terms are used rigorously, in ways which are compatible with the Rules and the NEO.

Benchmarks which reward DNSPs based on poor measures of efficiency cause a snowballing problem. A DNSP which is benchmarked relative to its peers maximises profit by acting only as efficiently as its peers, and to pull ahead of the pack reduces long-run profitability for everyone. As long as all DNSPs can claim to be "near the frontier of efficiency", they can jointly maximise long-run profits by slowing down price reductions.

The long-run increase in profit from collusion vs competition is so great that collusion amongst DNSPs has occurred naturally, not just as a result of shared ownership. In cases where multiple DNSPs have a single owner, explicit joint profit-maximising is naturally occurring, and cannot be ignored when predicting a DNSP's decision or assuming a DNSP's motivation. The pressure of multiple DNSPs across multiple jurisdictions pushing the same policy should not undermine the AER's ability to make impartial and efficient decisions, in line with its duty to consumers.

The AER's approach to designing incentives recognises several areas where profit-maximisation is inconsistent with long-term consumer goals, and assumes that the DNSP will choose profit over the NEO at each opportunity. We believe that the AER must extend this enlightened approach to all of its regulatory decisions.

Recommendation #2: DNSPs' Cost Allocation Methodology (CAM) should be expanded to show all steps in applying regulated costs to individual customers.

We understand that the Cost Allocation Methodology is used to assign asset costs at a high level, for example determining whether an asset is part of the RAB or is an unregulated asset. The regulated portion of network costs is charged to each customer class through annual Pricing Proposals and more recently through Tariff Structure Statements. We believe that this methodology should be set out prior to each regulatory period, so that 1) it is transparent and 2) there is the potential for consumer engagement on the topic.

Recommendation 2, cont'd.

As an example, consider the following:

For many years, SA Power Networks has been using an inefficient measure to assign peak network costs to individual small customers, shown below:

$$PeakCharge_i = MaxDemand_i * ClassAvgDiversity$$

Where $PeakCharge_i$ is the cost of peak service assigned to customer i,

MaxDemand$_i$ is the customer's measured or estimated maximum Demand in a peak period.

$ClassAvgDiversity$ is the "Class Average Diversity Factor", the ratio of aggregate maximum demand to the sum of individual maximum demand (total billable Demand) for the customer's class. This factor has range (0, 1], with 1 being "everyone acts in unison", and values close to zero indicating a wider range of load profiles and energy usage patterns.

Using the class average diversity, rather than *individual* customer diversity, is not appropriate for customers with high elasticity of demand, such as those with SEGs like battery storage. Proper use of battery storage may result in high individual peak demand, as batteries can opportunistically recharge during peak times if there is no constraint at the moment. A neighbour with solar exporting to a neighbour with batteries, then buying it back at night, could have a net load of zero on the grid, but under the current CAM, both customers would be charged as if their demand were costly, effectively subsidising other customers.

A correct CAM allocates peak charges based on an individual customer's expected contribution to future peak loads on network assets (called the customer's *long-run marginal cost*). Smart meters provide a means for networks to estimate individual peak contributions more efficiently than the broad average used now. We look forward to consulting with the AER on designing efficient measures of individual LRMC. Cost-reflective tariffs must reflect efficient LRMC, thus it is critical that LRMC is properly estimated.

The lack of public consultation on this topic has been extremely disappointing. The continued use of this measure (or "tariff average diversity", or any other inefficient measure of individual diversity) would be devastating to the efficient charging of customers, particularly those with battery storage, whose max demand could be caused during a grid-healing exercise (responding to an "import" signal, for example).

Recommendation #3: The AER should no-longer offer explicit incentives for networks to operate efficiently.

The AER already has the power to enforce the Rules and punish networks which do not abide by the NEO and operate in the best interest of consumers. Previous incentives handed to SA Power Networks have not produced consumer-driven projects or useful results.

Incentives work only when they turn bad behaviour to good. Incentives paid to SA Power Networks in recent years have not created any good policy, nor have they provided net value to consumers. Incentives drive up prices directly and in the short-term (much like a carbon price or the RET). This will further limit the viability of an already over-priced distribution network from 2020 onward.

Recommendation 3, cont'd

There are clear problems with existing incentive schemes, and since these have been known for years but remain unresolved, it is our recommendation that all payments be set to zero for the ongoing future:

STPIS: The Service Target Performance Incentive Scheme has suffered from unresolved issues for 2 regulatory periods now. The economic theory underpinning it may have been sound, but problems with inputs such as Value of Customer Reliability are so problematic that it renders the scheme ineffective. As a completely relative benchmark, it also incentivises DNSPs not to jump ahead of the pack. The focus on measures like phone call answering times take away from more important measures of good service. Interaction with initiatives like decommissioning underperforming lines and taking communities off-grid makes any further use of STPIS even more problematic.

DMIS: The Demand Management Incentive Scheme is unnecessary and has not resulted in public benefit. New infrastructure projects require consideration of non-network costs, thus DNSPs are required to assess Demand Management options along with all other options. If networks choose to act inefficiently, their prices will reflect that, leading customers to choose alternatives.
Once the DNSPs produce their constraint maps, the public can handle Demand Management on its own. There is no need for a DNSP to be part of Demand Management if they don't wish to invest in it. We certainly should not be paying DNSPs to compete in this market space.

EBSS: The Efficiency Benefit Sharing Scheme rewards DNSPs for underspending OPEX in the last years of each 5-year regulatory period. The AER comments:

> *"This provides an incentive for SA Power Networks to reveal their efficient opex which, in turn, allows us to better determine efficient opex forecasts for future regulatory control periods."* [1]

We agree that determining efficient opex in future periods is important, however the cost of the EBSS appears to outweigh any potential benefit. It is our understanding that under the current scheme, SA Power Networks could slash wages in 2018-2020, but recover approximately 30% of the difference from customers over the next period. *We hope that this scheme is not putting South Australian jobs and wages at increased risk until 2020, since it appears to incentivise cutting OPEX now rather than waiting until the next period.*

The AER has the duty to forecast efficient OPEX. It is not required to use "actual OPEX" in any calculation. Forecasting must be done with care, not by blindly applying a formula, thus the AER must have the prerogative to adjust unjustified OPEX figures if it sees evidence of the profit-inflation attempt which was predicted.

Other incentive schemes have issues similar to those already raised. In general, simplistic incentives are too easily gamed and are therefore ineffective. The more complex incentives are too costly to administer, and some of those may still be gamed at a less-transparent and more sophisticated level. As DNSPs struggle to compete with the low *Standalone Cost* of grid alternatives, there is stronger pressure for them to act efficiently, and incentives reward them for things they should already be planning to do.

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[1] AER Final Framework and Approach SA Power Networks 2015-2020, p61.

Recommendation #4: The AER should require SA Power Networks to release the full data from its Salisbury Battery Trial and any other funded research before being offered any further incentives for research or trials.

As above, SA Power Networks has provided no consumer benefit and apparently plans to keep the data to itself. It is not clear that customers have seen any benefit at all.

Rather than demonstrating in the trial how effective batteries can be at controlling local frequency, voltage and reliability, SA Power Networks elected to operate their batteries in a way which exacerbated the problems it wishes to highlight. This appears to be an attempt to hold back home energy storage uptake and prevent customers from using their investments efficiently. For instance, simultaneous charging of 100 batteries from the grid, 3kW average, as SA Power Networks did, resulted in the trial's joint maximum demand of around 100*3kw -= 300kW. Whether due to solar or a signal to export, the joint maximum feed-in also happened to be around 300kW. What is clear is that if there were any network constraints, the batteries could have been used differently.

These trivial results are displayed prominently in preliminary reports, obscuring the results which might be interesting. This panel data might provide very interesting results if properly analysed, but clearly SA Power Networks is keeping the most important information for itself.

Recommendation #5: DNSPs must have tariff trials, and any other experiments they wish to conduct on consumers, approved by an ethics committee.

Tariff trial participants might not be able to envision their efficient response to a tariff structure, policy or pricing change at the start of the trial. Informed consent is critical, and historically SA Power Networks (and other DNSPs) have downplayed issues with their proposed Demand Tariffs. It is therefore unlikely that participants were truly informed of all of the potential impacts on their energy supply and the wellbeing of their household. There was no reason to impose a disadvantageous tariff on these unsuspecting people.

Recommendation #6: The AER must reject forecasts which are based on unrealistic assumptions, missing inputs, or any other source of bias. Forecasts of demand for 2020 onwards should factor in efficient levels of Demand Response, to control for lack of price-signals in actual tariffs.

Clearly invalid statistical practices lead to clearly inaccurate forecasts. As the number of biasing factors rises, it becomes less and less plausible that they would all cause bias in the same direction, particularly when that also happens to be the direction desired by the DNSP. The AER must protect customers from poor forecasting, as forecasts drive expenditure and the future direction of the network.

Models of system Peak Demand must take into account covariates such as marginal peak energy price ($/kWh) and estimates of consumer elasticity of demand at that level. Elasticity of Demand must be assumed to be growing over time (rising in absolute value) with respect to peak price (through using less energy) and the price of substitution (through load-shifting). Consumers with storage have much higher elasticity of demand than any previous customers in history, and may have highly *elastic* demand patterns. This implies that Peak System Demand is not truly random, thus making classical forecasting inaccurate.

Recommendation 6, cont'd.

Demand response should be able to reduce peak loads by 30% or more, under the assumption of a "fully cost-reflective" tariff. SA Power Networks should be able to achieve this by 2020-2025, since it was achieved in 2005, when batteries were not included.[2] Given the potential of batteries to reduce joint peak demand on network assets, efficient price signals should result in at least as much peak reduction in the future.

Tariffs which fail to generate the same response as the simple Critical Peak designs shown by Ausgrid cannot be cost-reflective, since they do not induce efficient levels of Demand Response from consumers. Forecasts for 2020-2025 should factor in efficient levels of Demand Response, so that the lack of fully cost-reflective tariffs is quantified. Tariff design is a virtually zero-cost method to lower peak demand, and should be utilised fully in all future periods.

The AER was extremely lenient in allowing DNSPs to bias demand forecasts upward over the past 2 regulatory periods.[3] The AER must hold DNSPs accountable for submitting unsubstantiated or inaccurate forecasts, and cannot rely on traditional, simplistic estimation in the presence of so many factors that render OLS Regression invalid.

Recommendation #7: The AER should require SA Power Networks to provide a level playing field for non-grid solutions, in terms of its approach to tariffs, lobbying, renewable energy policy and ring-fencing (interaction between the regulated monopoly and its commercial business ventures).

SA Power Networks is meant to respond to the needs of the public, not to drive or influence them. SA Power Networks is not a political organisation or a public advocate, thus it should not be using its revenues to entrench its power or advantage its partners through lobbying or otherwise attempting to distort or pervert the course of Australia's sovereign governance and competitive markets.

Markets for consumer electricity products and services are currently unstable, and the AER must enforce the Rules to prevent DNSPs from further disrupting these markets. *A cost-reflective network tariff is vital to the stability and growth of new and emerging markets, where investment rewards are measured by how much they reduce the customer's bill*.

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[2] Ausgrid *Appendix K, Regulatory Proposal 2016.* Examples from "Southern Pricing Project" (2004-5, CA, USA) are telling.

[3] Herbst, J. *Submission on ACTewAGL's Revised Regulatory Proposal,* 2015.

Recommendation #8: Provide consumers with assurance that the AER is protecting their best interests.

When the National Electricity Market was being established, the role of distributors as natural monopolies was recognised, and it was also recognised that they should not also generate energy, and hence compete with electricity generators. That was at a time when the potential, and more particularly the need, for energy storage was not appreciated. Following the high penetration of variable renewable energy sources in SA, the need for storage is now well understood. However, whatever storage is introduced will compete with generation sources, especially with fossil fuel based sources because they have the capacity to respond to demand.

SAPN has conducted experiments with network-based batteries, with the clear implication that they intend to deploy them to meet variable supply and demand. It can be argued that network providers have a legitimate interest in introducing storage in a manner that offsets the need to strengthen the network – e.g. introducing batteries in places of network weakness. However, the fact that networks installing storage can compete with energy generators will influence the nature of the tariffs they propose to AER. Also, the installation of batteries in places of network weakness fundamentally undermines the validity of so-called demand-responsive tariffs. Network providers will be in a position to propose tariffs designed to cover the cost of their battery installations rather than to re-schedule consumer demand. As importantly, they will be competing with both current energy generators and with new-entrant entrepreneurs and community groups that might wish to install batteries – including where they are located to overcome network weakness. This potential conflict between the role of DNSPs on one hand and generators and ancillary network service providers on the other, is an important issue of public policy and demands the serious consideration of AER.

As consumers gain leverage and control, AER must ensure that the South Australian electricity grid is not upsized to meet artificial demand spikes resulting from volatile upstream market prices. Pricing and policy which impedes uptake and use of DER dooms SA energy consumers to high prices, volatility, uncertainty, and the flow-on effects of inefficient market operation. DNSP policy which empowers consumers to enter upstream energy markets (through unfettered investment and use of DER) is therefore essential for South Australia.

We are concerned that SAPN's Regulatory Proposal for 2020-2025 is likely to contain many of the same issues which plagued its previous proposals. The AER's approach to SA Power Networks must therefore be critical and careful, to ensure it protects consumers from network inefficiency.

Thank you again for considering our views.

Renewable Energy Policy Group SA