



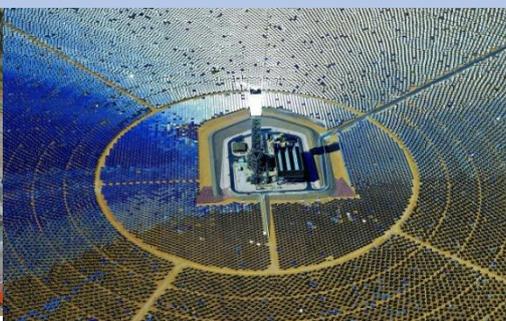
REVIEW OF SOUTH AUSTRALIA'S ENERGY PLANS

ADDENDUM – ELECTION PERIOD ANNOUNCEMENTS

A Report for the Australian Energy Council

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ADDENDUM – SOUTH AUSTRALIAN STATE ELECTION POLICY RELEASES

During the 2018 state election campaign period in South Australia, the Labor government announced a series of new energy policies and initiatives significantly extending its plans in the energy sector, while the SA-BEST party released an energy policy statement as part of its policy platform. This Addendum outlines and analyses these new developments using a similar framework to the original Review of South Australia’s Energy Plans prepared for the Australian Energy Council.

Labor’s Policy Announcements

Since February, Labor has announced four specific new initiatives or policies extending or building on its earlier Energy Plan. In addition, grant and loan support for specific new projects under the umbrella of Renewable Technology Fundⁱ has continued, and an investment facilitation agreement with battery manufacturer sonnen has been announcedⁱⁱ. This review covers only the four major policy announcements which are:

- Development of a “Virtual Power Plant” in partnership with Tesla Energy, covering up to 50,000 householdsⁱⁱⁱ
- \$100 million in “no-interest” loans of up to \$10,000 for individual South Australian households to install solar PV and / or home battery systems^{iv}
- Increase in the state Renewable Energy Target from 50 per cent to 75 per cent by 2025^v
- Establishment of a new state Renewable Storage Target of 25 per cent (750 MW capacity) by 2025^{vi}

SA-BEST’s Energy Policy

The SA-BEST party’s energy policy^{vii} places a strong and explicit focus on affordability and reliability, with a pledge that if the party holds a balance-of-power position in Parliament after the election then any support for a newly formed government would be withdrawn in the event of failure to sustainably reduce retail electricity prices and to maintain reliable supply.

The policy statement contains general criticisms of NEM governance and the overall Federal-State policy environment regarding emissions, competition, and control, as well as a number of initiatives addressing local procurement, electric vehicles, energy efficiency, and monitoring of retailer conduct, however its most significant and specific proposal is the proposed creation of a new, cooperatively owned and operated electricity retailer in South Australia specifically to address the needs of vulnerable domestic customers and small to medium businesses.

Evaluation

Each of the major initiatives announced by Labor and SA-BEST is evaluated in turn below, adopting the framework applied in the original Review.

Summary

Plan to roll out 50,000 home solar and battery storage systems (5kW, 13.5 kWh) over a four year period, with operation of the systems to be centrally controlled to provide “virtual power plant” capabilities including dispatchability of stored energy. Installations to be at no upfront cost, and financed through sale of generated / stored electricity to participants. Systems to be provided by Tesla Energy, while management, billing and customer interface will be delivered by a “program retailer” yet to be selected.

Objectives

- Additional renewable capacity of 250 MW and 650 MWh storage with centrally coordinated dispatch capability
- Reductions in electricity costs for participating households
- Increased wholesale competition through additional energy supply and dispatchable capacity

Costs

The South Australian government has allocated \$32 million initial funding from the Renewable Technology Fund (\$2 million grant, \$30 million loan). This funding appears to correspond to the costs of an initial two-phase trial rollout covering 1,100 Housing Trust properties. Overall scheme costs if extended to 50,000 homes (a further 24,000 Housing Trust properties and 25,000 other customers) are estimated at \$800 million^{viii}, or \$16,000 average per system. The government’s stated intention is that these costs are to be financed by private investors^{ix}, with participants paying a tariff for their power usage from these systems.

Progress to date

- Program to commence with a trial installation of systems at 1,100 Housing Trust properties
- Registrations of Interest open for participants

Evaluation

Evaluation Criteria	Comments
Clarity of Objectives	Complex scheme seeking to address multiple objectives from individual consumer affordability through to wholesale market competition outcomes.
System Security	Will not provide inertia, system strength or fast frequency response services. Unclear to what extent the VPP will be capable of and will be seeking to provide market FCAS services.
Reliability	Will make a reliability contribution which depends on the actual extent of capability available for central dispatch or to offset household demand at times of peak system need. This in turn will be dependent on multiple factors including battery storage levels, charging and usage patterns, capabilities of control and monitoring technology. In the absence of established parameters and results from technology trials this contribution cannot easily be estimated, and is likely to be diurnally and seasonally variable.
Market Impact	

Short-term	Impacts will scale with number of systems installed and capable of coordinated operation – unlikely to be material prior to ~2020. May be significant long term impacts if trials scale to full 50,000 households / 250 MW capacity
Long Term	
Customer Impact	Participating consumers: Modelling ^x for government estimates a saving of ~30% on energy costs from current levels. However current retail prices are predicted to fall potentially resulting in smaller savings over time. Other customers: Claimed impacts on wholesale prices amounting to a reduction of up to \$8/MWh or \$90 million per year if 25,000 Housing Trust properties participate, scaling to larger levels if full 50,000 customer rollout proceeds ^{xi} . Must be viewed as broad estimates in the absence of detailed VPP performance parameters and modelling.
Taxpayer Cost	Initial loan (\$30 million) and grant (\$2 million) funding through existing Renewable Technology Fund. The novel, yet-to-be documented, and untested nature of the delivery and funding model suggests some risk of additional government financial support being required to support extensive rollout of the scheme.
Market Participant Impact	The scheme will effectively remove participating customers from the retail market as their energy will be exclusively supplied by the program retailer, presumably for the period required to recover system installation costs. At the wholesale level, there will be volume reductions and potential price impacts as the additional solar generation (if full rollout proceeds) is estimated as providing around 20% of current average demand in South Australia.
Consistency with NEM Framework	Unclear

Other Considerations

The scale, novelty, and complexity (both technical and financially) of the VPP scheme is unprecedented in Australia, at either its full rollout target of 50,000 households, or at the interim goal of 25,000 Housing Trust properties. To date in South Australia AGL, with support from ARENA, has commenced a single small-scale VPP trial targeted at 1000 households^{xii}. This trial has reportedly been delayed with installations suspended for period while AGL “reviews its technology choices”^{xiii}, and it unclear whether these technology issues have been fully resolved.

The staging of the government’s VPP program into at least three phases as shown in the table below (reproduced from Frontier Economics’ assessment^{xiv} of the proposal) acknowledges the existence of material technological and organisational risks. The technical complexities of communications, monitoring, optimisation and dispatch inherent in centrally coordinated operation of distributed small-scale systems as a “virtual power plant”, while continuing to provide reliable supply to participating households, are significant. The model for scheme financing and cost recovery via private investment and program retailer arrangements is untried in Australia and clearly needs to be market tested and validated.

Table 1: Program roll-out phases

Phase	No of customers	Timing	Overview
Phase 1	100	January to June 2018	Government acquisition, installation and management of 100 PV and storage systems Designed to test physical rollout, system operation and facilitate data collection for a number of representative customers. Customers who receive these systems would see a reduced retail bill, and eventually be rolled in to the program retailer to be commissioned to operate the system.
Phase 2	1000	July 2018 to June 2019	Government acquisition, installation and management of 1,000 systems, designed to further test physical rollout, VPP operation and retailer arrangements. Customers who receive these systems would see a reduced retail bill, and eventually be rolled in to the program retailer;
Phase 3	25000	July 2019 to June 2022	Final roll-out over three years to 24,000 Housing Trust homes and scheme extended to 25,000 non Housing Trust customers.

Conclusions

The orchestration of small scale, distributed technologies using modern communications and computing techniques to provide controllable and “visible” resources with material direct benefits at system level is a very active area of research and technology trials worldwide. There is no doubt that there is enormous potential for these technologies and techniques to support and accelerate the energy transition away from centralised fossil-fuelled technologies towards a less carbon intensive and more distributed and potentially more resilient energy system.

But it must be remembered that there are still technical, organisational, and potential regulatory challenges to be overcome and thresholds to be crossed before these benefits can be confidently materialised. There has been very limited local experience with VPP arrangements and early trials have struck hurdles. Until the technical, financial and organisational challenges and thresholds discussed above have been satisfactorily tested and any difficulties resolved, the ultimate likelihood of success for the government’s VPP proposal and realisation of its full impacts for individual consumers and on the market as a whole must still be regarded as relatively uncertain.

Initiative	Labor: No-interest Loans for Solar and Batteries
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Summary

\$100 million scheme to provide loans of up to \$10,000 to homeowners for purchase and installation of a solar PV system, a home battery, or both, with no loan interest payable for the first seven years.

Objectives

To broaden the rollout of household solar PV and battery storage. South Australia reportedly has 220,000 solar households; assuming an average loan of \$5,000 this scheme could finance installation of home solar PV and / or battery systems for 20,000 participants.

Costs

The effective cost of this scheme will depend not only on the valuation of foregone interest (which might amount to a present value of roughly \$30 million¹) but also on the interest rate ultimately charged and on the likelihood of loan repayment after the seven year “no-interest” period, as well as scheme administration costs. No details of the scheme’s application criteria or administrative arrangements have been published.

Progress to date

- Policy announcement only with no accompanying detail

Evaluation

Evaluation Criteria	Comments
Clarity of Objectives	Unclear whether primarily targeted as an affordability mechanism for specific households, acceleration of home storage rollout, support for local supply of systems, or in pursuit of overall renewable energy & storage targets.
System Security	Nil, as household level systems do not provide inertia, system strength or FCAS services.
Reliability	New solar PV installations will not materially impact peak grid demand due to “saturation” effect (time of peak demand shifting away from sunlight hours). New battery storage systems potentially provide some peak demand reduction but difficult to quantify in absence of scheme criteria / projections for storage takeup.
Market Impact Short-term Long Term	Marginal additional impact – continuation of current trends Moderate additional impact – continuation of current trends
Customer Impact	
Taxpayer Cost	Effective present value of foregone interest ~\$30 million, with any future loan defaults / write-offs additional.
Market Participant Impact	Moderate additional impact – continuation of current trends
Consistency with NEM Framework	Effectively an additional form of technology subsidy – questionable whether justified for relatively mature solar PV technology. Affordability / equity concerns could be addressed in other ways.

¹ Using an interest rate of 5 per cent per annum

Other Considerations

While the policy announcement refers to a “preference for locally made products”, and states that all South Australians will be eligible for loans, there are no other details on qualification or targeting criteria relating either to loan sizes, household characteristics, or technology types and mix (solar PV vs battery storage vs combination). There is no published detail on what loan interest and repayment terms will apply following the seven year “no-interest” period.

Given this long no-interest period, significant questions also arise around how loan repayment or transfer of obligations will be handled in cases of:

- Changes in ownership / occupancy of the relevant property
- Failure or removal of systems (in the case of renovations, extensions, demolition etc)

It is plausible that a material proportion of the loans made will ultimately not be fully recovered, or that some form of insurance will be required against failure of systems or of loanholders to repay, increasing the cost of the scheme, and its effective transfer of value from taxpayers generally to scheme participants.

Conclusions

The scheme is in effect an additional form of subsidy for specific technology choices in the energy sector. Given the already high and continuing penetration of rooftop PV and the relative maturity of the sector in South Australia there is no strong case on industry development grounds for such a subsidy, while there are other more cost effective mechanisms with lower risks for both participants (who may be no better placed to repay loans seven years after installation of a system, and may remain locked into a repayment obligation even when moving house) and for the government itself.

Summary

Increase in the Renewable Energy Target (RET) to 75 per cent by 2025. Introduction of a new Renewable Storage Target (RST) of 25 per cent by 2025.

Objectives

The RET is a goal for the proportion of electricity produced in South Australia that is generated by large and small scale renewable technologies. The previous target was 50% by 2025, with the current level already estimated by the government to be 48.9%.

The RST targets large and small scale energy storage capacity in South Australia of 750 MW by 2025 (representing 25% of current peak grid demand of ~3,000 MW).

Neither of these targets is binding in the sense of imposing specific regulatory or policy mechanisms forcing or requiring their achievement (unlike for example the Federal Renewable Energy Target, or the Californian Energy Storage Procurement Mandate^{xv}). They are best viewed as overall goals or yardsticks against which more specific policy measures are framed and outcomes assessed.

Costs

No specific costs are attributed to these targets. For example, loan or grant funding for storage feasibility studies have been drawn from within the existing Renewable Technology Fund allocation.

Progress to date

- Estimated renewables share of South Australian energy production is at 48.9%. Multiple additional renewable generation projects are under construction or have been announced (refer original Review for details).
- Hornsdale Power Reserve 100 MW battery operational, smaller batteries planned for Wattle Point (30 MW), Lincoln Gap (10 MW), Snowtown (21 MW). The Aurora 150 MW CST plant will incorporate eight hours of molten salt storage capacity. If rolled out fully the government's Virtual Power Plant could add up to 250 MW of home battery storage capacity by 2023. Several pumped hydro storage proposals in the hundred MW range are under investigation at various sites in South Australia.

Evaluation & Conclusions

These targets do not mandate any particular actions or policy initiatives, and the detailed impacts of new policies or schemes aimed at adding specific forms or quantities of renewable generation or storage capacity (such as the VPP and No-Interest Loans proposals) are best evaluated individually.

As a general observation, the target levels selected for the South Australian RET and RST do not appear to have emerged from any structured consideration or evaluation of alternative scenarios. They seem instead to be projections based on largely on current trends and policy settings.

This invites the criticism that there is no specific justification for the targets chosen, nor evidence that they are optimal, relative to other future pathways for the South Australian energy system. And it increases the risk that if forecasts, technological factors, or economic circumstances change in ways that meant that substantially different levels of renewable production or storage capacity – whether higher or lower – were justified, political reluctance to modify these largely symbolic targets could become a barrier to appropriate policy responses.

Initiative	SA-BEST's Energy Policy – Community Retailer Model
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Key features of the model proposed by SA-BEST are as follows:

- Creation of a government-sponsored community retailer (“cETSA”) under a legislated coöperative model open to membership for approximately 50,000 lower-income households and 5,000 small businesses
- Supply to be arranged via power purchase agreement (PPA) with a newly constructed dispatchable renewable generator of 150 MW capacity (similar concept and size to the state government supply PPA / Aurora project under the current government’s Energy Plan)
- State government to financially guarantee PPA, design contract terms and conduct competitive auction process for selection of project proponent (which is not to be one of the existing SA “gentailers”)

SA-BEST claim that this initiative would directly benefit member-customers of cETSA through access to lower cost electricity via the PPA (a price reduction of approximately 20 per cent is projected, although there is no supporting analysis presented), and that benefits would accrue more generally to South Australian consumers as a result of increased wholesale supply and competition.

Evaluation

The cETSA proposal can be assessed against the criteria used for evaluating elements of the Energy Plan as follows:

Evaluation Criteria	Comments
Clarity of Objectives	Seeks to address multiple objectives ranging from assistance to vulnerable consumers, support for dispatchable renewables, and increased wholesale competition.
System Security	No immediate benefits. Earliest timeframe for any new capacity likely to be well after 2020.
Reliability	
Market Impact Short-term Long Term	No immediate impact.
Customer Impact	Claimed retail price reductions of 20 per cent from current levels for participating consumers. Note that current prices are expected to fall under “business-as-usual” assumptions.
Taxpayer Cost	Not specified. However government sponsorship, PPA financial guarantee, and presumably some establishment costs will be incurred.
Market Participant Impact	Government support for new retail business and additional generation capacity is likely to impact on outcomes for competing retail and wholesale market participants.
Consistency with NEM Framework	

Conclusions

Given the customer base it is seeking to serve, a retailer established under SA-BEST’s proposed model seems likely to require significant government financial and legislative support, both express and implied. Whilst not as capital intensive as generation or transmission and distribution, any

electricity retailer nevertheless requires access to substantial working capital to support its trading arrangements and operations, which is partially recognised in SA-BEST's proposal that the state government guarantee cETSA's proposed PPA arrangement. It is unlikely that this would be the only financial support required.

More broadly, it is highly questionable whether establishment of a new retail business and, in effect, financial sponsorship through that business of a specific form of new generation capacity, are the most effective and least distortionary ways to address the very different issues of energy affordability for vulnerable retail consumers at one end of the spectrum, and the wholesale market challenges facing South Australia's electricity sector at the other.

References

ⁱ See <http://ourenergyplan.sa.gov.au/opportunities>

ⁱⁱ Media Release dated 22 February 2018, “Batteries to be manufactured in SA – creating more than 430 jobs”, <https://standingupforsouthaustralia.com.au/media/batteries-to-be-manufactured-in-sa-creating-more-than-430-jobs/>

ⁱⁱⁱ See <http://ourenergyplan.sa.gov.au/virtual-power-plant>; Media Release dated 4 February 2018, “World’s Largest ‘Virtual Power Plant’ To Lower Energy Bills”, <https://standingupforsouthaustralia.com.au/media/world-s-largest-virtual-power-plant-to-lower-energy-bills/>; Media Release dated 15 February 2018, “More Than 500 Jobs Expected To Flow From World’s Biggest Virtual Power Plant”, <https://standingupforsouthaustralia.com.au/media/more-than-500-jobs-expected-to-flow-from-world-s-biggest-virtual-power-plant/>

^{iv} Media Release dated 22 February 2018, “No-Interest Loans For Solar And Batteries”, <https://standingupforsouthaustralia.com.au/media/no-interest-loans-for-solar-and-batteries/>

^v Media Release dated 21 February 2018, “Labor To Increase Renewable Energy Target To 75 Per Cent”, <https://standingupforsouthaustralia.com.au/media/labor-to-increase-renewable-energy-target-to-75-per-cent/>

^{vi} Media Release dated 21 February 2018, “Labor to introduce a Renewable Storage Target”, see also <http://reneweconomy.com.au/s-a-labor-commits-to-750mw-renewable-storage-target-95784/>

^{vii} See <https://sabest.org.au/state-policies/energy/>

^{viii} See http://ourenergyplan.sa.gov.au/virtual-power-plant#faq-faq_recent-13

^{ix} Ibid

^x Frontier Economics briefing note February 2018 “South Australia’s Virtual Power Plant”, downloaded from <http://www.frontier-economics.com.au/south+australian+government+announces+virtual+power+plant>

^{xi} Ibid

^{xii} See <https://aglsolar.com.au/our-energy-future/>

^{xiii} See <http://reneweconomy.com.au/agl-hits-pause-on-virtual-power-plant-in-technology-rethink-57487/>

^{xiv} Frontier Economics briefing note February 2018 “South Australia’s Virtual Power Plant”

^{xv} See https://www.theclimategroup.org/sites/default/files/develop/generate/rop/etp_californiacasestudy_apr2017.pdf