

SACOME

## Energy Transition Roadmap: Ordering the Disorderly Transition

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**South Australian Chamber of Mines & Energy**

*The leading industry body representing the resources sector in South Australia*

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## 1. Introduction

As the peak industry association for the South Australian resources sector, the South Australian Chamber of Mines & Energy (SACOME) calls for development of a South Australian Energy Transition Roadmap.

The Australian Energy Regulator (AER) in its *State of the Energy Market 2021* report observes that:

*The National Electricity Market (NEM) is undergoing a profound transformation from a centralised system of large fossil fuel (coal and gas) generation toward an array of smaller scale, widely dispersed wind and solar generators, grid scale batteries and demand response.<sup>1</sup>*

Nowhere in the country is this more pronounced than in South Australia, which continues to be at the forefront of this transformation. Since its commencement in the early 2000s this transition has continued to accelerate in the intervening decades.

South Australia's experience is one of a 'disorderly' energy transition where energy policy goals have been set and pursued in relative isolation, resulting in unintended consequences elsewhere in the energy grid and associated unintended impacts on both consumers and the State's economy.

Energy policy decisions made by the South Australian Government in the early 2000s saw the adoption of deliberately ambitious state-based renewable energy targets, the development of commercial scale solar and wind projects and the mass deployment of rooftop solar photovoltaic generation (solar PV).

While State Government renewable energy targets were achieved, it also resulted in rapid structural changes to the State's electricity system, including the early retirement of thermal power generators and historic increases in wholesale energy prices to among the highest in the developed world.

Fast-forwarding to 2022, policy makers are now grappling with the urgent challenge of re-engineering the State's energy system to accommodate the mass influx of distributed energy resources (DER). Integration and control of rooftop domestic solar photovoltaic (solar PV) generation is the most pressing of these challenges and, despite the instability it has introduced to the system, subsidised solar PV installation continues at pace creating a policy and system engineering challenge best summed up as 'building the plane while flying it'.

Past policy decisions have occurred with comparatively little consideration of their impact on other parts of the economy, with this lack of coordination resulting in further reactive policy measures in an effort to 'course correct' against threats to energy reliability, security and cost.

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<sup>1</sup> Australian Energy Regulator *State of the Energy Market 2021* Report, p.6

SACOME acknowledges the significant reduction in wholesale power prices across 2020 and 2021.

The operational experience of the resources sector (and the broader commercial and industrial sector), however, continues to be typified by significantly increased energy prices, greater levels of regulator intervention, greater risk of emergency separation from the grid and increased pass-through costs.

The cumulative impact of past policy decisions across multiple electoral cycles has resulted in a vastly more tenuous operating environment for industry, which now bears greater expense and greater uncertainty.

SACOME notes the economic development goals set by the South Australian Government's 'Growth State' policy, with the resources sector identified as one of the key industry sectors capable of meeting its 3% growth target.

As the energy transition in South Australia continues to play out, the need for greater coordination between energy, climate and industry policy from governments and policy makers is increasingly urgent.

Coordinated policy outcomes are needed to ensure that the commerciality of major economic sectors is maintained.

The energy transition challenge is defined not only by the need to retrofit the South Australian electricity network to accommodate the mass influx of distributed energy resources (DER), nor solely by the goals of reaching net-zero emissions, but to do so in manner that preserves, strengthens and expands the State's industrial base if we are to realise state growth targets.

A lack of coordination across energy and climate policy at a national level continues to exacerbate the poorly coordinated nature of the energy transition process.

The politicisation of energy/climate policy in Australia is well-documented, having been a feature of public policy and political debate for over a decade.

Development and subsequent abolition of national carbon reduction frameworks over the past decade has stalled development of nationally unified energy and climate policy, leaving States to pursue their own domestic policy arrangements.

Meeting a target of net-zero emissions by 2050 will require radical decarbonisation of electricity production and heavy industry.

SACOME's enduring policy position is that all technologies capable of helping to achieve this goal should be part of the energy transition roadmap.

In advocating for an Energy Transition Roadmap, SACOME has sought to consolidate issues relevant to the South Australian resources sector, noting that our sector continues to bear

disproportionate economic impacts as a result of the energy transition process through ongoing regulatory intervention and increasing pass-through costs, while at the same time as being tasked with helping to drive the State's economic growth.

## 2. South Australian Energy Policy – A Twenty-Year History of Disorderly Transition

By way of preface, SACOME reiterates support for decarbonisation goals in line with international agreements.

SACOME's Climate Change Policy 2021<sup>2</sup> unambiguously supports a target of net-zero by 2050 consistent with the public positions held by member companies. SACOME notes that some member companies have set ambitious decarbonisation targets with the aim of achieving them ahead of 2050.

SACOME's analysis accepts and affirms the reality of renewable generation in South Australia and commentary is focused on the policy measures relevant to the energy transition process, and the impact of these decisions on the resources sector.

In doing so, we are concerned with developing a strategic pathway to better guide South Australia's energy transition process.

When considering the impact of South Australian energy policy on heavy industry, distinct 'phases' in the transition process become apparent. In broad terms, these phases coincide with:

- Initial decisions to set renewable targets and the rapid development of renewable generation;
- The impact of those targets on the energy landscape in the form of generator retirement, wholesale price spikes and reliability concerns; and
- Subsequent policy decisions – both reactive and deliberate - seeking to mitigate the impacts of rapid change.

Common to each of these phases is the idea of a 'disorderly transition' whereby policy goals have been considered in a relative vacuum resulting in consequences elsewhere in the energy system and necessitating further reactive policy making to 'course correct'.

The following section provides a historical overview of South Australian energy policy from 2002 to 2021.

### 2.1 Phase 1 - Rapid expansion of renewables & closure of thermal generation (2002 – 2017)

The rapid expansion of renewable generation in South Australia was a deliberate policy decision made by the Rann and Weatherill Labor Governments to establish South Australia's renewable energy credentials and to reduce reliance on expensive imported electricity from interstate.

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<sup>2</sup> <https://www.sacome.org.au/climate-change.html>

In 2002, South Australia imported 30% of its energy requirements from interstate and often paid the highest wholesale energy price for electricity in the nation. In addition, renewables were seen as a means of replacing the State's ageing coal and gas generation fleet, meaning the impetus for expansion of renewable generation was driven by both ideology and economics.

Establishment of renewable energy targets at a Federal and State level allowed for rapid, subsidised development of renewable generation in South Australia, further supported by facilitative regulatory arrangements that mapped the State's wind and solar potential and expedited development of wind farms. This renewables potential has been recognised as excellent by global standards

While renewable energy targets encouraged and subsidised development of renewable generation, activity in South Australia was largely uncoordinated with reference to the impact of this renewable development boom on the broader energy market, the impact on power prices, implications for industry competitiveness, or longer-term planning considerations.

The unpredictability and zero marginal costs of wind and solar ultimately resulting from government policy settings disrupted the predictability required for thermal generators to remain profitable and saw early retirement of coal-powered generation between 2012 and 2016.

This occurred alongside the mothballing of gas-fired generation due to its inability to remain price-competitive against an oversupply of renewable generation and coal-fired power imported from Victoria.

The changed nature of the generation mix ultimately led to grid instability, and price spikes for electricity between 2014 and 2018 of up to \$14,000 a mega-watt hour as gas-fired generation was used to address supply shortfall. This was accompanied by price spikes in gas from under \$4 per gigajoule in 2014-15 to over \$15 in 2017.

With the retirement of coal-fired generation, South Australia became largely reliant on a combination of intermittent renewable energy generation, imported coal-fired generation from Victoria and local gas generation, with this profile being generally consistent today.

The state-wide blackout in September 2016 cast South Australian energy policy into sharp relief.

It is important to clearly state that the blackout occurred due to transmission lines between Adelaide and Port Augusta being blown over in a 'once in 100-year' storm, triggering the shutdown of the network for safety reasons.<sup>3</sup>

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<sup>3</sup> Detailed analysis is provided in AEMO's *Black System South Australia 28 September 2016 Report*: [https://www.aemo.com.au/-/media/Files/Electricity/NEM/Market\\_Notices\\_and\\_Events/Power\\_System\\_Incident\\_Reports/2017/Integrated-Final-Report-SA-Black-System-28-September-2016.pdf](https://www.aemo.com.au/-/media/Files/Electricity/NEM/Market_Notices_and_Events/Power_System_Incident_Reports/2017/Integrated-Final-Report-SA-Black-System-28-September-2016.pdf)

The state-wide blackout further politicised energy policy both nationally and in South Australia, intensifying rhetoric about the risks of transitioning away from traditional baseload generation.

This was exacerbated by a second blackout in February 2017 which, despite being the fault of the market operator, was again advanced as an argument for the unreliability of renewable generation by some political stakeholders.

The Weatherill Labor Government made efforts to address concerns with the South Australian energy system prior to the 2018 State Election via the *Our Energy Plan* policy, comprising:

- the Renewable Technology Fund;
- a State-owned gas power plant;
- local powers over the national market;
- new generation for more competition (underpinned by state electricity supply contracts);
- purchase of state-owned dual fuel gas/diesel generators to provide emergency generation support and renewables firming capacity to the South Australian grid; gas exploration and development incentives; and
- a regulatory obligation on retailers in SA to purchase target quantities of energy from qualifying local generators.

The Labor Government also invested in large-scale battery storage through the Renewable Technology Fund, with the Hornsdale Power Reserve constructed by Tesla in December 2017, providing 100MW of grid stabilisation and grid scale storage, comprising the largest lithium-ion battery in the world.

Grid stabilising measures like large-scale batteries continue to be a feature of the South Australian Energy Transition process as a means of addressing the intermittency of renewable generation.

In response, the Marshall Liberal Opposition announced its Energy Plan, comprising:

- a single comprehensive national energy policy, abolishing the state based RET;
- establishing a \$200 million Interconnection Fund;
- privatisation of the recently purchased state-owned gas/diesel generators;
- establishing a Household Storage Subsidy Scheme and a Grid-scale Storage Fund;



- \$20 million to support trials for domestic response and demand response aggregation technologies and initiatives; and
- support for regulatory intervention by the Australian Energy Market Operator (AEMO).

The Liberal Opposition was openly critical of Labor’s rapid development of renewable generation, publicly stating that it drove too much wind and solar into the system too quickly and without accompanying storage and sufficient dispatchable generation.

### **Commentary**

Both parties’ energy policy measures by this time were characterised by their reactive nature.

They *responded* to issues created by the rapid development of renewable generation in South Australia and focused on addressing the consequences of unplanned price shocks; thermal plant closures; the intermittency of renewable generation; increasing energy storage and security; bolstering the role of gas and gas generation as a system security measure; and the lack of interconnection to the eastern states’ larger and more diverse pool of generation supply.

While both parties’ policy offerings focused on resolving systemic energy issues like price and reliability, neither proposed prospective measures to protect major economic sectors from the worst impacts of the energy transition process.

## **2.2 Phase 2 – Inherited Momentum (2018 - 21)**

The Liberal Party won the South Australian Election in 2018 and inherited a transition to renewables that was deeply embedded, necessitating a change in their policy approach:

In their first year in office, 50% of energy was already being generated by renewables and path dependency in regard to investments, local employment, business opportunities, skills and system organisation was favouring renewables. In addition, there were proposals for 5669MW of new renewable generation and 1538MW of new storage.

The renewable transition was so advanced halting it would have required the new government to legislate against it ... (t)herefore, ... the state Liberal government quickly succumbed to the path dependent trajectory towards renewables.

The initiatives launched in (the Labor Party’s) *Our Energy Plan* were largely maintained. Furthermore, within 18 months of being elected, the Energy & Mining Minister Van Holst Pellekaan was articulating an aspirational target for South Australia to be generating 100% of its electricity using renewables by 2030. Finally,

the promised interconnector to NSW was reinvented as an opportunity to export energy from South Australian renewable resources.<sup>4</sup>

Between 2018 and 2022, the Liberal Government has further refined its energy policy direction through several policy iterations.

*South Australia's Energy Solution*<sup>5</sup> (June 2020) sets target of net-100% renewable energy generation 'through an orderly transition which delivers economic growth and competitive power prices.'

The language of orderly transition recognises the historically uncoordinated nature of the energy transition process and aims to position the government's policy offering as a means of arresting poorly controlled momentum.

Central to the South Australian Government's energy policy approach is the urgent need to address system threats resulting from the high penetration of rooftop solar PV generation, namely:

- Continued operation of solar PV during incidences of voltage disturbance, such as large generator outages. This has necessitated changes to AEMO operating protocols to manage these types of events; and the introduction of improved standards for solar inverters to ensure that new and replacement solar installations maintain system security during disturbance events.
- Managing minimum demand when operating separate from the National Electricity Market. To address this issue, AEMO has been granted capabilities to remotely manage rooftop solar PV generation in emergency circumstances, recognising the 'urgent need to establish a backstop allowing AEMO to curtail distributed solar PV when extreme and unusual operational circumstances arise'.

*South Australia's Energy Solution* sets out four strategic 'pillars' to address South Australia's energy grid challenges:

1. **Project Energy Connect:** an interconnector between SA and NSW to reduce the likelihood of SA being disconnected from the National Energy Market (NEM); reduce power prices by approximately \$100 per annum; facilitate development of renewable projects along its route; and allow export of excess renewable energy supply when generation is high and domestic demand is low.

This project was granted approval in June 2021 and was scheduled for completion by 2023-24. SACOME notes AEMO's *Draft 2022 Integrated System Plan* released in January 2022 has revised this completion date to July 2025.

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<sup>4</sup> McGreevy et al. *Expediting a renewable energy transition in a privatised market via public policy: The case of South Australia 2004-2018*, Elsevier, 2020 p.11

<sup>5</sup>

[https://energymining.sa.gov.au/\\_data/assets/pdf\\_file/0009/364266/200615\\_Energy\\_Solution\\_Action\\_Plan\\_final\\_spreads\\_rs.pdf](https://energymining.sa.gov.au/_data/assets/pdf_file/0009/364266/200615_Energy_Solution_Action_Plan_final_spreads_rs.pdf)

2. **Home Batteries:** in response to South Australia’s high penetration of solar photovoltaic generation (solar PV), a rollout of smart home batteries for the purpose of stabilising the grid on days of high generation and low demand.

This is paired with the \$200 million Home Battery Scheme subsidy and the SA Virtual Power Plant initiatives

3. **Grid scale storage:** \$50 million of addition investment in large grid-scale storage, including expansion of the Hornsdale Power Reserve. This is accompanied by installation of synchronous condensers to provide system strength during periods of excess renewable generation.

4. **Distributed Energy:** measures to better align energy consumption with periods of high renewable generation.

This includes legislative changes to manage solar PV penetration, allowing remote voltage management where high solar generation would impact stability of the grid.

Further to the major infrastructure investments adopted under this policy, it is important to emphasise legislative and regulatory measures given their impact on heavy industry.

While the interconnector is advanced as the means by which the intermittent characteristics of the South Australian energy grid will ultimately be mitigated, its completion is still at least three years away, assuming it proceeds according to schedule.<sup>6</sup>

In the interim, the South Australian Government has implemented a range of AEMO-recommended regulatory measures to manage grid security issues caused by the penetration of domestic rooftop solar PV.

These include mechanisms that restrict the uncontrolled nature of solar PV generation and its impact on system security; establishing constraints to manage the Heywood Interconnector to reduce system risks until Project Energy Connect is established; expanding protection schemes and emergency protocols to address low demand conditions; and increasing fast frequency control through grid scale storage and home battery rollouts.

The *Energy & Mining Strategy*<sup>7</sup> (October 2020) is a subsidiary sector plan to the South Australian Government’s *Growth State*<sup>8</sup> policy. *Growth State* sets an economic growth goal of 3% of Gross State Product (GSP), year on year. The resources sector is identified under *Growth State* as one of nine priority industry sectors with the capability required to help meet this economic growth target.

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<sup>6</sup>SACOME notes that the Australian Energy Market Operator (AEMO) in its *2022 Draft Integrated Systems Plan* has extended the expected delivery date of Project Energy Connect to July 2025.

<sup>7</sup>[https://www.energymining.sa.gov.au/\\_data/assets/pdf\\_file/0004/373243/205282\\_EnergyandMiningStrategy-Press\\_bookmarked-low\\_res.pdf](https://www.energymining.sa.gov.au/_data/assets/pdf_file/0004/373243/205282_EnergyandMiningStrategy-Press_bookmarked-low_res.pdf)

<sup>8</sup> <https://www.growthstate.sa.gov.au/>

Energy policy measures set out under the *Energy & Mining Strategy* are consistent with the *South Australian Energy Solution*:

- Net 100% renewable energy generation ‘in the 2030s’;
- Nationally competitive energy supplies before 2025 and internationally competitive energy supplies by 2030;
- Development of a national hydrogen export industry worth \$1.7 billion and providing 2800 jobs by 2030. This measure is supported via the SA Government’s Hydrogen Action Plan<sup>9</sup>.
- Interconnection with NSW via Project Energy Connect;
- The government-subsidised Home Battery Scheme;
- Grid Scale Storage Fund;
- Government Power Supply, with the government seeking to deliver ‘increased innovation and competition’ in the South Australian wholesale and retail energy markets by contracting 100% of its electricity demand.
- South Australian Virtual Power Plant (SA VPP) aimed at delivering grid security through paired solar PV and battery installations on 4100 SA Housing Trust homes. The SA VPP is also registered with AEMO to provide Frequency Control Ancillary Services.

## Commentary

These policy measures are aimed at addressing major transitional issues with the South Australian energy framework and represent a shift toward proactivity by the South Australian Government. They do so, however, in relative isolation and without considering the impacts of energy transition on key economic sectors.

The target of net 100% renewable generation by 2030 sets an important decarbonisation goal but is silent on how government and heavy industry can work collaboratively to realise it while simultaneously achieving economic objectives set by *Growth State*.

While domestic customers have received the benefit of subsidies for solar PV and home battery installation, large commercial and industrial entities have not seen comparative support.

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<sup>9</sup> <https://www.renewablessa.sa.gov.au/content/uploads/2019/09/south-australias-hydrogen-action-plan-online.pdf>

Instead, the commercial and industrial sector has borne a disproportionate share of the costs associated with the energy transition process in the form of regulatory charges and pass-through costs.

Similarly, the pursuit of nationally and internationally competitive energy supplies by 2025 and 2030 are important policy goals but are complicated by the insecure nature of the grid.

While wholesale electricity prices in South Australia fell significantly from \$122 in 2016 to \$51 per megawatt hour in 2020, industry has borne significant energy costs over a protracted period, and, for sixteen of the last eighteen years, wholesale power prices in South Australia were consistently the highest or second highest in the country.

The fall in wholesale prices is a welcome trend, however, it continues to be impacted by the costs of regulator intervention, infrastructure charges, transmission charges and a range of other pass-through charges resulting in significant unbudgeted costs for the commercial and industrial sector.

A focus on a reduction in the wholesale cost of electricity does not reflect the true cost of the energy transition occurring in South Australia.

As a broad statement of future policy development, the energy transition must be considered in conjunction with industry and economic growth policy so as to better mitigate adverse impacts for entities that have made major capital investment in South Australia, and to better support future investment in the State.

Energy transition is not occurring in a vacuum and, distinct from the past, policy measures must be sufficiently forward-thinking to anticipate problems for other parts of the economy. Consistent with *Growth State* objectives, alignment of energy and industry policy should be focused on the overlapping objectives of industry preservation, decarbonisation and expansion.

SACOME contends that the next phase of the energy transition process should consider how to best integrate an array of policy aspirations. Shoring up security of the transitioning grid and realising decarbonised energy supply must be done in a manner that does not render heavy industry non-viable, nor diminish South Australia's investment attractiveness.

Noting that Project Energy Connect is intended to provide South Australia with mechanism to export an overabundance of renewable generation once it is built, policy settings must better consider how to bridge the economic and regulatory 'impact gap' between now and then. A future renewable energy export industry is a laudable goal, but it does not address the issues being encountered by existing industry in the present.

In developing this 'policy bridge', settings could consider how to reduce price shocks arising from regulator intervention; enact mechanisms to ensure that major industrial plants are not suddenly cut from energy supply; fund energy infrastructure upgrades through government revenues rather than via pass-through costs to customers; and implement measures to encourage C&I investment in lower emissions technologies.

The early closure of coal-fired power stations in the eastern states must also be considered. While coal fired generators are required to now give three years notice prior to closure, this rule is yet to be tested and doesn't contemplate scenarios where generators are forced to close under emergency circumstances.

While domestic consumers continue to receive the benefit of subsidies for solar PV and home battery installation, large commercial and industrial operators receive no assistance via facilitative policy settings, or arrangements to support their investment in new plant or equipment.

Instead, the commercial and industrial sector continues to be exposed to increasing levels of risk and bear additional cost due to a range of measures. These impacts are addressed in further detail below.

### 3. Impacts of Regulatory Intervention on the Resources Sector

South Australia is now operating in new and untested territory. The South Australian Government publicly acknowledges that the re-engineering of the South Australian electricity system is an unprecedented occurrence and that there are simply no national or international examples to draw upon in undertaking this task.

Alongside this, the deeply complex nature of the energy market coupled with the need to rapidly decarbonise the economy represent one of the most significant public policy challenges in recent history. This challenge has been compounded by years of fractious political and policy debate.

The South Australian resources sector, along with other large C&I operators have been subject to range of policy decision that have resulted in significant commercial impacts as a result of operating in this new and untested territory.

The de facto approach to managing energy security in South Australia is characterised by a combination of government and regulatory authority intervention.

While government intervention is justified as a necessary part of the system re-engineering process, it continues to impose new pass-through charges in the midst of a rapidly changing and unpredictable business environment.

Additionally, many of these measures have been implemented with either very short government consultation timeframes or in some cases with no consultation at all. SACOME has observed an increasing number of 'emergency' measures being implemented by the South Australian Government in order to address imminent system security and reliability risks.

While SACOME recognises the importance of maintaining system security and reliability, the ongoing enactment of emergency measures reinforces that the energy transition process continues to be disorderly, focused on addressing immediate problems out of simple necessity. SACOME remains frustrated by a lack of proactive consultation by government to fully understand the impacts of proposed measures on resources sector operations.

SACOME has undertaken a body of work to quantify the cost of State Government, network/transmission operator and regulatory authority intervention in the South Australian energy market to support the energy transition or to resolve system security issues arising from SA's world-leading solar PV penetration.

**This work has identified that since 2018, the total cost of market intervention and energy transition measures in South Australia is over \$1 billion.**

These costs can be attributed as follows:

Intervention	Cost (millions)
<b>National Electricity Market (NEM) Interventions</b>	
Frequency Control Ancillary Services (FCAS)	\$183.4m
System Security Directions	\$183m
<b>State Government NEM Interventions</b>	
Electricity (General)(Technical Standards) Variation Regulations 2021	\$50.1m
<b>State Government Initiatives</b>	
Home Battery Scheme	\$218m
Retailer Energy Productivity Scheme (REPS)	\$82m
Project EnergyConnect (underwriting)	\$75m
Grid Scale Storage Fund	\$50m
Trial Demand Management Program	\$11m
<b>Other Grid Investments</b>	
ElectraNet's Synchronous Condensers	\$190m
<b>Total Cost</b>	<b>\$1,042.5m</b>

Further comment on some of these measures is made below.

### 3.1 Frequency Control Ancillary Service (FCAS)

Between 2016 and 2020, the control of power system frequency during normal operation significantly degraded when compared to historical levels. This degradation was reflected in higher FCAS costs. Between 2015 and 2019, FCAS costs increased to over \$220 million; while in 2020, FCAS costs increased to over \$350 million.

Between 2018 and 2021 FCAS costs in South Australia were \$183.4 million.

FCAS costs for Q1 2020 were higher than the entirety of 2019, predominantly due to high local cost in South Australia when it was isolated from the rest of the NEM for a period of seventeen days.

### 3.2 System Security Directions

The use of AEMO directions to manage system security reached a new peak in 2020, with directions being used for more than one-third of the year across the NEM. During late 2020 AEMO intervened a record 64% of the time, directing a minimum level of gas-powered generation to provide system strength at times of low demand.

The use of system security directions has the net effect of also driving up wholesale electricity prices. For example, by restricting wind or solar outputs that might have zero marginal costs, AEMO directions may lead to dispatch from synchronous generators with higher costs.

Curtailment of renewable generation is now a feature of the South Australian energy grid, reflecting the high penetration of solar PV installation and generally uncoordinated nature of its rollout.



### 3.3 Under Frequency Load Shedding (UFLS)

The Under Frequency Load Shedding scheme is intended to contain frequency fall by the controlled disconnection of load.

It is one of South Australia's Emergency Frequency Control Schemes, designed as a 'last line of defence' to manage multiple contingency events and designed to arrest frequency decline following a severe under-frequency event, such as the separation of South Australia from the rest of the NEM while importing into South Australia.

In 2020, AEMO determined that the high penetration of solar PV had reduced the effectiveness of UFLS to arrest severe under-frequency in the system. The periods of most concern requiring additional UFLS are clear sunny days where system demand is low due to moderate temperature and uncontrolled roof-top solar generation is high.

In response to AEMO's determination, large C&I customers were incorporated into the UFLS for the first time in response creating new operational risks for operators who would now be subject to instantaneous disconnection in the incidence of a severe under-frequency event.

While AEMO advises the likelihood of this event as extremely low, these load shedding directions do not consider the financial impacts on companies' asset integrity and production. Further, there is a safety imperative associated with taking a large industrial plant offline with people, furnaces, metallurgical plants and kilns put at risk.

During discussions with AEMO and the SA Government on expansion of the UFLS, SACOME and member companies were required to explain to the regulator that there is no difference in operational terms if a facility is required to load shed for an hour under a UFLS event or is disconnected via a complete "system black".

In either case it will necessitate major rebuilding of plant and machinery with costs in the order of millions of dollars or, if rebuilding is not a viable economic decision, exiting operations in South Australia.

AEMO has responsibility to keep the market operating, but no obligation to do in the most cost-efficient manner. Large industrial customers are invoiced directly (unlike small customers) with no ability to challenge or refute the amount. These charges cannot be budgeted for and represent a financial and operational risk to business.

This issue further highlighted to SACOME and its members that regulatory decisions are being made without full understanding or regard to their operational implications.

As a result of this direction, resources sector operators have incurred additional costs in protecting their facilities against possible disconnection events.

SACOME has provided exhaustive advice to the South Australian Government on the impacts of UFLS for the C&I sector, however, there has been a broad rejection of industry-proposed solutions and calls for assistance.

### 3.4 Electricity (General) (Technical Standards) Variation Regulations 2021

Amendments to these regulations were urgently implemented in October 2021 to allow SA Power Networks (SAPN) to conduct:

- Dynamic Arming, enabling SAPN to disarm UFLS relays when circuits are in reverse flows and allowing real-time optimisation of the frequency settings for sensitive load blocks; and
- Voltage Management upgrades to substations, providing greater voltage control at substations to support increased solar PV.

These regulatory amendments were made in the context of the current National Electricity Rules and regulatory frameworks not being designed to consider two-way flow systems; and recognising that the amount of DER (principally solar PV) entering the NEM continues to have a material impact on 'last resort' power system measures being fit for purpose.

The Dynamic Arming project was proposed as an intermediate measure by AEMO in later 2020; while the Voltage Management project has been completed with the South Australian Government underwriting \$10 million of project cost as part of the South Australian Energy Solution initiative.

Consultation on these regulatory amendments comprised a total of ten business days, allowing very little time for scrutiny of the proposed measures.

During consultation SACOME sought clarification on how costs for these projects would be recovered. The Department of Energy & Mining (DEM) advised that both the Dynamic Arming and Voltage Management projects would be subject to cost recovery measures. DEM confirmed that the Voltage Management project had a cost of \$10 million but were unable to provide a total cost for both projects.

SACOME notes that Page 59 of the Australian Energy Regulator's final decision on [SAPN's Distribution Determination 2020 to 2025](#) indicates the initial proposal for these works was \$40.1 million.

While DEM have advised that the draft regulations are necessary to allow SAPN to conduct their two projects, they appear to result in an additional \$40.1 million of pass-through costs to South Australian customers.

SACOME recognises the need for implementation of measures to address stability issues with energy grid caused by increasing levels of solar PV. It is unsatisfactory, however, that the government should regulate to allow SAPN to charge over \$50 million in pass-through costs to South Australian customers, relying on a 10-day consultation window as a justification for stakeholder engagement.

### 3.5 Retailer Energy Productivity Scheme

The Retailer Energy Productivity Scheme (REPS) was introduced in 2021 as a successor to the Retailer Energy Efficiency Scheme (REES). The REPS sets energy productivity targets for energy retailers achieved through undertaking energy efficiency measures which are paid for by the customer base.

While the REES was focussed on domestic/household energy efficiency measure, the REPS expanded the REES to include large commercial and industrial operators.

The rapid implementation of the REPS has proved more complex than anticipated and was poorly communicated to C&I customers.

Ultimately the REPS has increased electricity costs for large C&I customers, however, the ability of energy retailers and their contractors to undertake meaningful energy efficiency measures relevant to the C&I sector is still being determined.

For one major operator, REPS charges added an addition \$2 million to their energy bill and other major operators have advised additional energy costs of \$700,000 directly attributable to the scheme.

While energy efficiency measures are an important objective, the cost of REPS charges relative to their value in delivering energy efficiency outcomes is questionable.

The administrative structure governing the REPS was not finalised before the scheme came into effect on 1 January 2021. This meant that large C&I customers were being charged by their retailers without having any understanding of how to meet their obligations under the REPS.

Furthermore, SACOME members only became aware of the REPS through increased electricity charges or when renegotiating their electricity contracts.

The imposition of retrospective charges, lack of clear administrative structure, unresolved questions about how to meet REPS obligations and the absence of targeted consultation with C&I operators to understand how they would be impacted by introduction of the REPS exemplify the lack of coordinated energy policy in South Australia.

Reporting commissioned by the South Australian Government to inform establishment of the REPS advised that exemptions for C&I operators are a common feature of similar schemes in other Australian jurisdictions.

SACOME's request for commercial and industrial operators to be exempt from the REPS has been rejected by the South Australian Government.

## 4. Scoping a Future Energy Transition Roadmap

SACOME recognises that the energy transition is well-underway and is now moving towards its next phase which further embeds renewables as the dominant energy source in South Australia.

SACOME members have observed that the cost of the energy transition disproportionately affects hard to abate sectors.

This poses a range of issues for the resources sector and other heavy industries face the pressing need to decarbonise their operations while also being tasked with assisting the State to realise its economic growth ambitions.

In attempting to bring order to the energy transition process, policy consistency at both the national and state level continues to be of fundamental importance.

The Energy Policy Institute of Australia provides useful advice in considering how to achieve the policy aims of energy transition, decarbonisation and economic growth:

If we think of energy policy as an optimisation problem across a complicated system what we should be doing is starting from the end and working back to get some idea of the best trajectory ...

It is not enough to rely on short-term levelised costs or energy cost estimates that ignore systems-wide implications and trajectories of development. These include grid-level costs, such as the costs of wires and poles and buffering, system level costs, including balancing and back up, land use costs, costs to industry, waste disposal costs and larger impacts on the economy as a whole.<sup>10</sup>

The South Australian energy transition is characterised by its narrow focus.

There is an urgent need for a mechanism that can assess and coordinate the many variables in play and reflect the full cost of the energy transition process.

From its initial focus on developing renewable generation in isolation from other economy-wide consequences to its current focus on addressing the system-related problems that have emerged as a result, inadequate attention has been given to anticipating impacts ahead of time and understanding 'system-wide' implications.

Going forward, SACOME believes greater consideration must be given to how the ongoing energy transition process links with economic development and industry policy, noting the specific challenges faced by heavy industry:

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<sup>10</sup> Stephen Anthony *'Electricity Generation and Emissions Reduction in Australia: We need a Coherent Policy to Foster Technological Development and Investment'*, Energy Policy Institute of Australia, August 2021 p.5

Industrial supply chains are considered ‘hard-to-abate’ because addressing emissions with those supply chains poses more technological and commercial challenges than other sectors of the economy. A range of solutions ... are mature and well established (for example, energy efficiency measures, solar and wind power, as well as batteries and electrification ...). However, in industrial supply chains, challenges exist for solutions that are at the early stages of commercialisation, as well as for the challenge of integrating emerging and established technologies into large scale industrial systems ...

These challenges often mean that the transformational solutions needed to get to net zero emissions are more than a single organisation can achieve alone, or even in a joint venture. Solutions must address the transition across and between supply chains, requiring collaboration across industry, government, finance and the energy sector.<sup>11</sup>

Pursuit of net-zero emissions targets is an urgent priority, presenting a challenge that runs across the whole of the South Australian economy.

Over the last two decades, successive South Australian Governments have demonstrated a preference for pursuing populist energy policies best exemplified by the continued subsidisation of solar rooftop PV and now home battery installation.

The consequence of this has been destabilisation of the South Australian energy grid, making regulator intervention and reactive infrastructure investment a necessary response.

Rather than limiting the continued installation of rooftop solar PV at a time where system security and reliability is historically tenuous and the completion date of Project Energy Connect has been extended to 2025, the South Australian Government has made the conscious decision to maintain the installation trajectory.

This has created an operating environment where large C&I operators bear the additional costs of the transitioning market.

The politics of altering this trajectory are difficult – renewable energy is necessary and popular, the South Australian Government can justifiably demonstrate its environmental credentials and it would be electorally brave to impose retrospective curtailment of solar generation and associated feed-in tariffs, and to restrict future installations.

By contrast, major industrial sectors are unlikely to garner populist sentiment by arguing for a slowdown of renewable installation while measures to stabilise the grid are put in place, nor for incurring disproportionate costs to the rest of the community as part of the energy transition process.

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<sup>11</sup> Australian Industry Energy Transitions Initiative ‘*Setting up Industry for Net Zero Phase 1 Highlights Report: current state and future possibilities*’, June 2021 p.13

The resources sector recognises its ability to assist in realising the South Australian Government’s economic growth and decarbonisation ambitions. Its commitment to investment in South Australia is well-demonstrated, with future investment dependent on the stability and availability of key project inputs: electricity, water, transport logistics and facilitative land access regimes.

If the challenge of transition is to be fully embraced, however, the South Australian Government must acknowledge the impacts of its decisions on key industrial sectors and meaningfully engage with industry to develop policy solutions that acknowledge its operational circumstances, assist the shift to net zero across entire supply chains and ameliorate ongoing price shocks that are now a feature of the South Australian energy market.

Reaching net-zero emissions for the energy system requires mass development and deployment of technologies that are not commercially available at present, though government support for development of hydrogen and carbon capture and storage (CCS) provide medium term tools to decarbonise industry.

Mapping available technologies and potential activities that can be implemented by industrial operators must be an ongoing conversation between industry and government to better facilitate the orderly uptake of new options.

As a general statement of policy, more must be done to align industry investment cycles with achieving renewable energy targets and economic growth goals set by government.

#### **4.1 Oil & Gas**

The South Australian oil and gas sector makes a major contribution to the State economy, however, due to its carbon intensive nature it is notably exposed as part of the energy transition process.

Gas is also essential to the South Australian electricity grid, with gas-fired power plants responsible for 33.5% of the State’s power generation in 2021. While this figure continues to decline with the uptake of renewables, gas-fired generation plays a critical role in maintaining system security and reliability.

South Australian oil and gas operators have made considerable headway in reducing their carbon intensity and are assessing which technologies and investments can enable further progress. This approach will need to be holistic, encompassing entire value chains.

Continuing bi-partisan support for the South Australian oil and gas sector while it undergoes decarbonisation, and the pursuit of net-zero objectives is imperative to preserving the State’s economic base. Additionally, the skill sets underpinning oil and gas supply chains will be critical to the commercialisation and trade of future fuels like hydrogen.

Pursuit of net-zero targets should not mean the abandonment of energy sources, particularly those which are critical to electricity generation in our State. The energy transition process

must consider mechanisms to reduce the carbon intensity of those sources in an orderly manner. South Australian oil and gas operators are acutely aware of their responsibilities in this space and are actively implementing measures to meet their publicly stated emissions reduction targets.

## 4.2 Nuclear

Nuclear energy continues to be disregarded as source of zero-emissions energy in Australia, reflecting the long-held antipathy toward it.

This is despite it providing a logical and proven solution to many of the problems relevant to the energy transition process and the additional economic benefits that a South Australian nuclear industry could create.

The development of our abundant uranium resources could allow us to utilise small modular reactors (SMRs) in our energy mix to provide low-cost, zero emission power for industry. SMRs, coupled with South Australia's abundant renewable energy sources would also assist us to rapidly decarbonise our economy and provide efficient, reliable power as an input to development of nascent technologies like hydrogen.

South Australia is a world class uranium province, hosting 25% of the world's uranium resources and 80% of Australia's uranium; the home of the Australian Radioactive Waste Agency and soon to be home to the National Radioactive Waste Management Facility.

Further, South Australia has one of the only ports in the nation approved for export of uranium products and a well-developed regulatory regime governing the uranium supply chain. These are nationally and internationally competitive advantages waiting to be capitalised upon.

Despite these significant advantages, South Australia is yet to fully realise the benefits of a nuclear industry, and this can only come from concerted, bipartisan efforts to advance the public policy debate. The outcome of the NFRC has left political representatives reluctant to pursue the nuclear argument.

Without political support, Federal and State laws prohibiting nuclear power and uranium processing cannot be altered and new technologies like SMRs continue to be excluded as an option in the broader energy policy debate. The recent announcement of nuclear submarine construction in South Australia represents further synergies for development of a nuclear industry in this State.

SACOME notes that:

A net-zero emissions economy will require a vastly different and far larger electricity system compared to today. Electrification of industry alongside large scale production of hydrogen from electricity is expected to require three to four times as much electricity generation than is presently available.



If Australia was to realise the opportunity of being a major exporter of hydrogen as outlined in the most optimistic scenarios of the National Hydrogen Strategy, it would require a total electricity load five times greater than the current size of the National Electricity Market.<sup>12</sup>

Given the scale of the energy transition challenge, nuclear provides a ready solution to the problem of decarbonising while preserving key industrial sectors, subject to the exercise of necessary political will.

Advice from industry experts is that SMR technology is estimated to be 8-10 years away from commercialisation, which is a similar timeline to that of hydrogen. Were nuclear to receive the same levels of regulatory support and government subsidy as has been provided to renewables and hydrogen development, this timeframe could be expedited.

### 4.3 Hydrogen

SACOME recognises the significant levels of government support for hydrogen, as exemplified by both the National Hydrogen Strategy, South Australia's Hydrogen Action Plan and its predecessor, the Hydrogen Roadmap for South Australia.

SACOME members have expressed a clear interest in development of hydrogen opportunities and SACOME recognises the potential for hydrogen produced from renewable energy to provide an emissions-free source of energy into the future.

Memoranda of Understanding signed with countries like Japan and South Korea and the Port of Rotterdam in the Netherlands for supply of green hydrogen have laid the foundation for Australia to develop a valuable export industry.

Port Bonython in the Upper Spencer Gulf has been identified as the State's preferred location for a hydrogen export hub, with a high level of global and domestic investment interest in response to the South Australian Government's call for expressions of interest in 2021.

Hydrogen demonstration projects like Hydrogen Park South Australia (HyP SA) have produced encouraging results in successfully blending hydrogen with natural gas at volumes of up to 5%. Similarly, planning work to develop requisite hydrogen export infrastructure is progressing at pace.

While commercialising renewable hydrogen remains a challenge, SACOME acknowledges the substantial political, policy and financial capital that is being invested by government and industry to achieve this goal.

Consistent with the interests of its member companies, SACOME supports the continued development of hydrogen, recognising the economic and emissions reduction opportunities it represents for South Australia.

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<sup>12</sup> Ibid, p.20



SACOME also acknowledges the timeframe set by the Hydrogen Action Plan for large scale hydrogen export projects to begin commencement by the early 2030s. Recognising the scale of the challenge, this timeframe appears realistic in the context of developing a new industry and its associated supply chain.

#### **4.4 Increased Grid Infrastructure Costs**

Full electrification of the National Electricity Market as contemplated in decarbonisation scenarios will require a doubling of its size.

The associated network costs are likely to be significant and will manifest as pass-through costs to the customer base.

The energy transition must consider and plan for future infrastructure needs so as to avoid sudden step-changes in pass-through costs

#### **4.5 Stranded Gas Pipeline Assets**

In the scenario that South Australia moves to an energy mix of significant electrification and alternate fuel sources, existing gas pipelines that were intended to be depreciated over sixty years will need to be depreciated at an accelerated rate.

With more customers shifting toward electrification, it leaves the hard-to-abate sector bearing significant accelerated depreciation costs.

It is unclear what policies or initiatives are in place to support affected businesses or whether measures to prevent offshoring or business closure have been considered in the context of the energy transition/decarbonisation process.

## 5. Recommendations for an Energy Transition Roadmap

### 5.1 Establish a South Australian Energy Advisory Board

As one of its 2022 Pre-Election Priorities, SACOME has called for establishment of a South Australian Energy Advisory Board to inform development of a future South Australian Energy Transition Roadmap.<sup>13</sup>

SACOME submits that the Energy Advisory Board should comprise representation from industry, government, regulatory bodies and other relevant stakeholders for the purpose of considering the impacts of energy policy across the whole of the South Australian economy.

No unified forum for stakeholder dialogue and critical consideration of energy policy has been implemented, leading to misaligned policy outcomes and significant cost burdens on the commercial and industrial sector.

A key objective of the Energy Advisory Board should be development of a South Australian Energy Transition Roadmap that consolidates energy transition challenges and sets out measures to mitigate cost and operational risk to key industrial sectors while also assisting decarbonisation.

SACOME members have suggested that the Oil & Gas Roundtable implemented by the Department of Energy & Mining provides a useful reference model in establishing an Energy Advisory Board.<sup>14</sup>

The Oil & Gas Roundtable was formed in 2010 to enable stakeholder feedback and guidance for the advancement of oil and gas projects in South Australia. It meets annually to share information about the latest developments in the upstream natural gas and oil sector and agree on priorities for action. This informs government actions to sustain energy security and jobs while protecting social and natural environments.

Given the magnitude, complexity and impacts of the energy transition process, a vehicle to facilitate dialogue and inform policy settings should be an urgent priority and government is uniquely placed to facilitate its implementation.

### 5.2 Real Cost of Energy Transition Must Inform Policy

SACOME's central argument is that the real cost of the energy transition process is not represented in public dialogue, with commercial and industrial business bearing a majority of this hidden burden.

The recent reduction in the wholesale price of electricity must be acknowledged as a significant achievement.

<sup>13</sup> [https://www.sacome.org.au/uploads/1/1/3/2/113283509/sacome\\_2022\\_pre-election\\_platform\\_final\\_feb\\_2022.pdf](https://www.sacome.org.au/uploads/1/1/3/2/113283509/sacome_2022_pre-election_platform_final_feb_2022.pdf)

<sup>14</sup> <https://www.petroleum.sa.gov.au/roundtable/about-the-roundtable>

It does not, however, reflect the costs that have been borne by industry over the last two electoral cycles, nor does it represent the full cost of electricity when regulator intervention, pass-through costs for new infrastructure and new statutory charges are included.

SACOME members have also cautioned that the low wholesale electricity prices seen in 2020 and 2021 are threatened by the potential early exit of coal fired generation from the National Electricity Market as the retirement of coal increases the cost of providing baseload electricity.

The energy transition challenge is defined not only by the need to retrofit our electricity network to accommodate renewables, nor exclusively by the goal of reaching net-zero emissions, but to do so in a manner that preserves and strengthens the State's economic base.

This requires policy makers to expand their perception of the energy transition process as an engineering and systems management process to one that considers impacts and costs across the broader economy.

### **5.3 Mitigate Impacts on the Commercial & Industrial sector**

While Project EnergyConnect is intended to address system stability issues for the State once built, the present reality is that the C&I sector continues to incur significant pass-through and regulatory intervention costs.

Extension of the completion deadline to July 2025 will require another three years of interim management and energy transition measures

Industry requests for assistance and/or exemptions continue to be rejected by government, however, subsidies for domestic customers are ongoing, despite the dramatic system security issues historical and ongoing installation of solar PV creates.

That government should continue to charge the cost of re-engineering the South Australian energy system to the C&I sector is inequitable, unsustainable and ultimately damages investor confidence and industry perception of the South Australian government.

SACOME calls in the strongest terms for government to cease using the commercial and industrial sector to fund the energy transition process and instead look to measures that make the cost equitable across the whole customer base.

Measures to mitigate the impact of the energy transition process should be implemented as a matter of priority, recognising the significant and unbudgeted costs that continue to be incurred by industry as a result of current government policy settings. Such measures could also include support for decarbonisation of heavy industry across supply chains.

In developing a suite of measures, government should prioritise genuine consultation with cross-section of industry to better understand the consequences of proposed policy settings.

This could be done through the South Australian Energy Advisory Board and encompassing the nine key 'Growth State' industry sectors.

#### **5.4 Technological Neutrality**

A technologically neutral approach to the energy transition process must consider all energy sources capable of meeting domestic and industrial energy needs while also reducing emissions.

A future Energy Transition Roadmap must seek to integrate a range of energy sources, understand their applications, and consider the regulatory frameworks necessary for their operation.

## Appendix 1 - South Australian Energy Transition Timeline

Year	Event
1998	<ul style="list-style-type: none"> <li>National Electricity Market is established.</li> </ul>
2001	<ul style="list-style-type: none"> <li>The Federal Government introduces the Renewable Energy Target (RET), to encourage additional renewable generation and reduce greenhouse gas emissions in the electricity sector.</li> <li>The RET aims to source 2% of the nation's electricity generation from renewable sources by 2010.</li> </ul>
2002	<ul style="list-style-type: none"> <li>South Australia has no renewable energy production in its energy mix.</li> </ul>
2002	<ul style="list-style-type: none"> <li>South Australian Labor forms Government. Its first Strategic Plan aims to achieve 15% renewable energy generation by 2014; and 26% by 2020.</li> </ul>
Early 2000's	<ul style="list-style-type: none"> <li>South Australia is comprehensively mapped for both solar and wind resources (<a href="#">Renewable Energy Atlas</a>).</li> </ul>
2008	<ul style="list-style-type: none"> <li>Solar feed-in tariffs are introduced in South Australia.</li> </ul>
2009	<ul style="list-style-type: none"> <li>The Federal Government increases the RET from 2% by 2010 to 20% of the nation's electricity generation from renewable sources by 2020.</li> </ul>
2009	<ul style="list-style-type: none"> <li>The South Australian Government establishes Renewables SA and announces a target of 33% renewable energy generation by 2020.</li> </ul>
2011	<ul style="list-style-type: none"> <li>RET is split into the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Scheme (SRES). <ul style="list-style-type: none"> <li>The LRET supports the establishment or expansion of renewable power stations such as solar farms, wind farms, hydro-electric and waste power stations; and</li> <li>The SRES supports the installation of small generation units (primarily solar PV systems) and solar water heaters/air source heat pumps.</li> </ul> </li> </ul>
2012	<ul style="list-style-type: none"> <li>The Federal Government introduces a carbon pricing scheme.</li> </ul>
2012	<ul style="list-style-type: none"> <li>The South Australian Government enacts the Statewide Wind Farms Development Plan to provide greater clarity and certainty for communities and investors about renewable energy development.</li> </ul>
2014	<ul style="list-style-type: none"> <li>The Federal Carbon Pollution Reduction Scheme is scrapped.</li> </ul>
2014	<ul style="list-style-type: none"> <li>Alinta Energy mothballs the Playford B power station.</li> </ul>
2015	<ul style="list-style-type: none"> <li>Engie mothballs the Pelican Point power station.</li> </ul>
2015	<ul style="list-style-type: none"> <li>Alinta Energy announces the closure of Playford B Power Station, Northern Power Station and Leigh Creek Coal mine by 2018.</li> </ul>
2015	<ul style="list-style-type: none"> <li>Nuclear Fuel Cycle Royal Commission commences.</li> </ul>
2015	<ul style="list-style-type: none"> <li>Gladstone LNG Plant exports its first tanker.</li> </ul>
2016	<ul style="list-style-type: none"> <li>Playford B Power Station and Northern Power Station closes.</li> </ul>
2016	<ul style="list-style-type: none"> <li>28 September 2016, South Australia has a state-wide blackout.</li> </ul>

	<ul style="list-style-type: none"> <li>Engie announces the closure of Hazelwood Power Station by the end of March 2017.</li> </ul>
2016	<ul style="list-style-type: none"> <li>Load shedding and curtailment in South Australia in December 2016</li> </ul>
2017	<ul style="list-style-type: none"> <li>Further load shedding and curtailment in South Australia in February 2017.</li> </ul>
2017	<ul style="list-style-type: none"> <li>Engie closes Hazelwood Power Station.</li> </ul>
2017	<ul style="list-style-type: none"> <li>The South Australian Weatherill Labor Government announces its Energy Plan. The Plan consists of the Renewable Technology Fund; a State-owned gas power plant; local powers over the national market; new generation for more competition (underpinned by state electricity supply contract); gas incentives; and a regulatory obligation on retailers in SA to purchase target quantities of energy from qualifying local generators.</li> </ul>
2017	<ul style="list-style-type: none"> <li>Engie announces \$40 million investment into Pelican power station to return it to full operating capacity.</li> </ul>
2017	<ul style="list-style-type: none"> <li>AGL announces a \$295 million investment to develop a 210 MW reciprocating engine power station, the Barker Inlet power station.</li> </ul>
2017	<ul style="list-style-type: none"> <li>In October, the Liberal State Opposition announces its Energy Plan. The Plan supports a single comprehensive national energy policy, abolishing the state-based RET; establishes a \$200M Interconnection Fund and the tender out of the state-owned diesel generators; establish a Household Storage Subsidy Scheme and a Grid-scale Storage Fund; \$20 million to support trials for domestic response and demand response aggregation technologies and initiatives; and supports the AEMC's 5-minute pricing proposal.</li> </ul>
2017	<ul style="list-style-type: none"> <li>Nuclear Fuel Cycle Royal Commission concludes, Weatherill Government determines that there is a lack of popular support for development of a South Australian nuclear industry.</li> </ul>
2017	<ul style="list-style-type: none"> <li>Federal Government proposes the National Energy Guarantee.</li> </ul>
2017	<ul style="list-style-type: none"> <li>AEMO declares a system strength gap in South Australia.</li> </ul>
2018	<ul style="list-style-type: none"> <li>The South Australian Liberals form Government, led by Premier Stephen Marshall.</li> </ul>
2018	<ul style="list-style-type: none"> <li>Federal Government elects not to proceed with the National Energy Guarantee.</li> </ul>
2018	<ul style="list-style-type: none"> <li>In December 2018, AEMO declares an inertia shortfall in South Australia</li> </ul>
2018 onwards	<ul style="list-style-type: none"> <li>South Australian Government Policy is to achieve net 100 per cent renewables by 2030; and a notional aspiration to increase it to 500 per cent renewable energy target by 2050.</li> </ul>
2020	<ul style="list-style-type: none"> <li>South Australia meets 100 per cent of its energy needs from solar power; and keeps on reaching new minimum demand records.</li> </ul>
2021	<ul style="list-style-type: none"> <li>AER approves Project EnergyConnect comprising an interconnector linking SA and NSW. Expected completion date mid 2023-24</li> </ul>
2022	<ul style="list-style-type: none"> <li>AEMO revises Project EnergyConnect completion date to July 2025.</li> </ul>