

SACOME

Ordering the Disorderly Energy Transition:

*A response to the Government's Green Paper and
the need for an Energy Transition Roadmap*

August 2023

South Australian Chamber of Mines & Energy

The leading industry body representing the resources sector in South Australia

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1. Introduction and context

As the leading industry association for the South Australian resources sector, the South Australian Chamber of Mines and Energy (SACOME) continues to call for the urgent development of an Energy Transition Roadmap for the State. It is now seven years since the closure of the last coal-fired Northern Power Station and South Australia has the highest electricity prices in the nation and remains without a plan to navigate the energy transition.

The Australian Energy Regulator (AER) in its *State of the Energy Market 2022* 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.¹

Nowhere in the country is this more pronounced than in South Australia, which continues to be at the forefront of this economic transformation, with renewables now representing approximately 70% of the South Australian energy market.

As a consequence of the large-scale penetration of renewables, system security costs now cumulatively total in the hundreds of millions for commercial and industrial users, resulting in a “cost of business crisis”.

South Australia’s experience is one of a disorderly energy transition where energy policies have been set and pursued in relative isolation, resulting in unintended consequences elsewhere in the energy grid and significant financial pain for 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.

Today, policymakers are grappling with the urgent challenge of re-engineering the energy system to accommodate the mass influx of renewables-based power. Past policy decisions have occurred with comparatively little consideration of their impact on other parts of the economy, with this lack of coordination contributing to further reactive policies that compromise energy security and prices.

¹ Australian Energy Regulator, *State of the Energy Market 2022* Report, p.6

South Australia continues to experience 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.

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 policymakers is increasingly urgent.

The absence of Commonwealth Government leadership in climate policy until the election of the Albanese Government has stalled the development of nationally unified energy and climate policy. This has left States to pursue their own domestic policy arrangements, with the attendant consequences for energy security and cost.

The energy transition challenge is defined not only by the need to retrofit the South Australian electricity network to accommodate the influx of renewables-based power, nor in meeting our Net Zero commitments, but to do so in a manner that preserves and expands the State's industrial base.

The State Government has ostensibly recognised this with the release of the Energy Transition Green Paper, the convening of an Energy Transition Roundtable in November 2022 and July 2023, and subsequent commitment by Premier Malinauskas to develop a *Green Industrial Transition Roadmap* as noted in the South Australian Economic Statement of March 2023.

SACOME has consulted relevant member companies with reference to the questions posed in the Green Paper as to the transition and the needs of South Australia. SACOME member feedback is incorporated within this response and our recommendations to Government to not only ensure that the objectives of energy transition policy are front and centre, but to provide industry with the holistic roadmap for which they have been calling. From the outset, SACOME member companies shared four principal concerns:

1. The objectives of the Green Paper remain unclear;
2. How future policies and initiatives would be developed is uncertain, with a reference to the eventual White Paper being the "foundation document for the remainder of the first half of the 21st century";
3. The ten thematic areas of inquiry were insufficiently analytical, narrow in their scope or following current trends, rather than identifying a clear path forward; and
4. All technology sources – including nuclear – need to be considered as part of the energy transition.

The feedback contained herein reflects long-held policy positions of SACOME.

In March 2022, SACOME released its own Energy Transition Roadmap to guide future energy transition policy discussions. It provided an overview of South Australian energy transition policy to date, the impacts of regulatory intervention, what a roadmap should include, and recommendations to Government. In light of the release of the Green Paper, this Energy Transition Roadmap has been updated and revised accordingly but goes beyond the Green Paper's Terms of Reference.

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

SACOME's Climate Change Policy 2021² unequivocally supports a target of Net Zero by 2050, consistent with the positions held by SACOME member companies. Many SACOME member companies have set ambitious decarbonisation targets and are well on their way to achieving them ahead of 2050.

SACOME's analysis supports the role of renewable generation in South Australia and our 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, SACOME has long advocated for the development of a roadmap to better guide South Australia's energy transition process.

When considering the impact of South Australian energy policy on industry, distinct phases in the transition process are notable to date. Broadly speaking, these phases can be described as:

- 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.

Each phase has occurred in a disorderly manner where policies are implemented in a vacuum, resulting in consequences elsewhere in the energy system and further reactive policies to address the implications on energy security and prices.

The following section provides a contextual overview of South Australian energy policy from 2002 to the present day.

2.1 Phase 1 - Rapid expansion of renewables and 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 Governments to establish South Australia's renewable energy credentials and to reduce reliance on expensive imported electricity from interstate.

² <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. Renewables were therefore seen as a means of replacing the State's ageing coal and gas generation fleet, with the impetus for the expansion of renewable generation driven by both political and economic reasoning.

The 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 the development of wind and solar farms. South Australia's natural advantages in renewables have been recognised as excellent by global standards.

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

The unpredictability and zero marginal costs of subsidised wind and solar ultimately resulting from government policy settings disrupted the predictability required for thermal generators to remain profitable and resulted in the early retirement of coal-powered generation in South Australia 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 subsidised renewable generation and coal-fired power imported from Victoria.

The changed nature of the State's energy generation mix has ultimately led to grid instability, and price spikes for electricity between 2014 and 2018 of up to \$14,000 a megawatt 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.

Following the closure of the coal-fired Northern Power Station in May 2016, South Australia has become 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 until the present day.

The statewide blackout in September 2016 cast South Australian energy policy into the spotlight.

It is important to clearly state that the blackout occurred due to extreme weather events, which triggered the shutdown of the network for safety reasons.³

³ 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

The statewide 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.

The Weatherill Labor Government made efforts to address public concerns with the South Australian energy system before the 2018 State Election via the *Our Energy Plan* policy, comprising a Renewable Technology Fund; a state-owned gas power plant; additional State powers over the national market; the purchase of diesel generators to provide emergency generation support; and a regulatory obligation on retailers to purchase certain amounts of energy from 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.

In response, the Marshall Liberal Opposition announced its *Energy Plan* ahead of the 2018 Election, comprising:

- a single comprehensive national energy policy, abolishing the state-based Renewable Energy Target;
- 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).

Leading up to the election, 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 – present)

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.⁴

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

*South Australia's Energy Solution*⁵ (June 2020) set out a 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 aimed to position the government's policy offering as a means of arresting poorly controlled momentum.

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

⁴ 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

⁵https://energymining.sa.gov.au/data/assets/pdf_file/0009/364266/200615_Energy_Solution_Action_Plan_final_spreads_rs.pdf

- 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 separately 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 set 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 \$300 per annum for households; facilitate the development of renewable projects along its route; and allow export of excess renewable energy supply interstate when generation is high and domestic demand is low.
2. **Home Batteries:** in response to South Australia's high penetration of solar PV, a rollout of smart home batteries to stabilise the grid on days of high generation and low demand.

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

3. **Grid-scale storage:** \$50 million of additional investment in large grid-scale storage, including expansion of the Hornsdale Power Reserve. This was accompanied by the 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 included legislative changes to manage solar PV penetration, allowing remote voltage management where high solar generation would impact the 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 was, and continues to be, advanced as the means by which the intermittent characteristics of the South Australian energy grid will ultimately be mitigated,

not only is its forecast completion by the end of 2024 ambitious, but it is also not yet fully known what its impact on local supply both in terms of price and reliability will be.

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

These included:

- mechanisms that restricted the uncontrolled nature of solar PV generation and its impact on system security;
- established constraints to manage the Heywood Interconnector to reduce system risks until Project Energy Connect is operational;
- 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 and Mining Strategy* (October 2020) was a subsidiary sector plan to the Marshall Government's *Growth State* policy. *Growth State* set out an economic growth goal of 3% of Gross State Product (GSP), year on year. The resources sector was identified under *Growth State* as one of nine priority industry sectors with the capability required to help meet this economic growth target.

Energy policy measures set out under the *Energy and Mining Strategy* were 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, consistent with the then Government's Hydrogen Strategy;
- 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.

The election of the Labor Malinauskas Government in March 2022 has not radically altered the climate and energy policy landscape; however, it is to be noted that *Growth State* as Government policy was abandoned.

As part of SACOME's pre-election submission in 2022, SACOME called for the establishment of an Energy Transition Advisory Board, with industry, government and regulatory body representation that would be tasked to develop an Energy Transition Roadmap.

While neither major party acquiesced to SACOME's call, the incoming Malinauskas Government agreed to convene an Energy Transition Roundtable.

Further relevant policies and activities announced by Premier Malinauskas leading up to and post the 2022 election have included:

- the development of the *Hydrogen Jobs Plan*, involving the construction of a hydrogen power station, electrolyser, and storage facility by 2025 in Whyalla;
- the creation of a standalone Office of Hydrogen Power SA;
- the creation of a *Hydrogen and Renewable Energy Act*;
- the establishment of the National Energy Crisis Cabinet Committee, to be supported by a Crisis Taskforce with representation from DEM, Treasury and Finance and other agencies;
- a referral to the Essential Services Commission of South Australia by the Minister, to inquire into any evidence or the potential for sustained super profits in the electricity or gas industry to the financial detriment of South Australians;
- the delivery of an Energy Transition Roundtable in November 2022 and the subsequent commitment to develop an Energy Green Paper;
- the ongoing commitment to 100% net renewable generation by 2030.

Additionally, the Minister for Energy and Mining terminated the Marshall Government's Home Battery Scheme, maintaining that the uptake by consumers was negligible.

While the election of the Malinauskas Government could be seen as following the same policy trajectory of the Marshall Government, the election of the Albanese Government has transformed national climate and energy policy settings.

Some commentators have argued that climate change policy was one factor in the defeat of the Morrison Government, in favour of one which was more environmentally progressive. Key changes to date include:

- Stronger national emissions reduction targets, lodged with the United Nations Framework Convention on Climate Change, and enacted through a new *Climate Change Act*;
- Reforms to the Safeguard Mechanism, which imposes steeper emissions reduction rates on industry year on year, and which particularly affects hard-to-abate sectors that are often key to Australia's strategic interests; and
- The mandatory code of conduct for gas producers, including a cap on the wholesale price of gas at \$12/GJ, which disincentives exploration at a time of low supply.

The lack of coordination between State and Federal climate and energy policy contributes to the disorderly nature of the transition.

Commentary

State Government policy measures pursued over the past five years have been 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 full impacts of energy transition across the whole economy.

The Commonwealth Government's implementation of Safeguard Mechanism reforms, which has a disproportionate impact on hard-to-abate sectors, is a clear example of climate policy being pursued in isolation and blind to the consequences this will have on exports, domestic manufacturing, and jobs.

The state 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 the State's economic ambitions.

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.

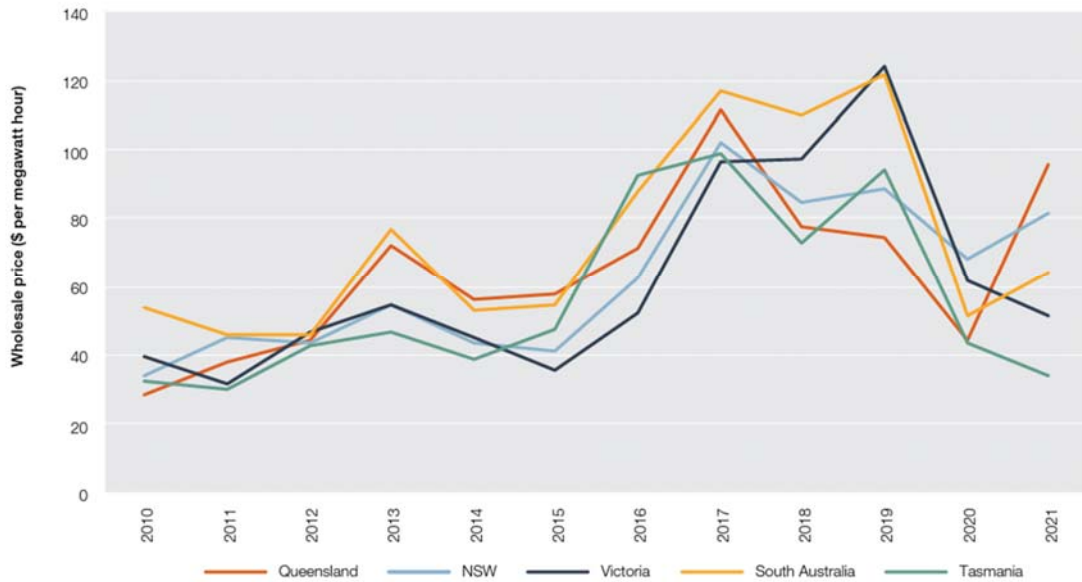
Similarly, the pursuit of nationally and internationally competitive energy supplies by 2025 and 2030 are important policy goals but are complicated by the insecure nature of the grid.

South Australia consistently has among the highest wholesale electricity prices in the nation, as demonstrated in the graph below;⁶ however, SACOME is of the view this is a simple measure and the *whole* cost of electricity, including regulator intervention, infrastructure

⁶ Australian Energy Regulator, *2022 State of the Market Report*, p. 21.

charges, transmission charges, and a range of other costs is the true measure of the impost to business.

Figure 2.5 Annual wholesale electricity prices



As a broad statement of future policy development, the energy transition must be considered in conjunction with industry and economic growth policy to mitigate adverse impacts for entities that have made significant capital investments in South Australia and to 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 and address problems for other parts of the economy before they arise. It is for these reasons SACOME has been consistently calling for the urgent development of an Energy Transition Roadmap.

The next phase of the energy transition process should consider how to integrate an array of policy aspirations. Shoring up the 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 a mechanism to export an overabundance of renewable generation once it is built, policy settings must consider how to bridge the economic and regulatory ‘impact gap’ between now and then. Consideration also needs to be given to any unintended consequences that the interconnector may bring including any impact on South Australian electricity prices and capacity generation.

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 does not contemplate scenarios where generators are forced to close for emergency or maintenance reasons.

While domestic customers have received the benefit of subsidies for solar PV and home battery installation, and, more recently, targeted financial assistance on energy bills for concession card holders as part of the 2023/24 Federal Budget, 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 costs due to a range of policies that cannot as yet be quantified – such as the impact of the Safeguard Mechanism and REPS.

3. Impacts of Regulatory Intervention

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.

In practice, the approach to managing energy security in South Australia, while pursuing ambitious single energy source targets, is by a combination of government and regulatory 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 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. While not universal, SACOME has observed that certain reforms – from both State and Commonwealth Governments – are rushed through without adequate time for industry to respond meaningfully. Feedback from members has emphasised the desire for a greater forward view of the likely costs of intervention arising from both State and Government interventions.

In 2023, SACOME commissioned an updated independent analysis of cumulative system security costs in the South Australian energy market, which was necessary to support the energy transition or hedge against energy security concerns arising from renewables penetration. A third party was engaged to confirm the veracity of the analysis.

The work builds on a previous analysis undertaken by the SACOME secretariat and released in 2022. SACOME has deliberately chosen the reference year of 2016 as the year in which the Northern Power Station was closed and before this system security costs were not significant.

These costs can be attributed as follows:

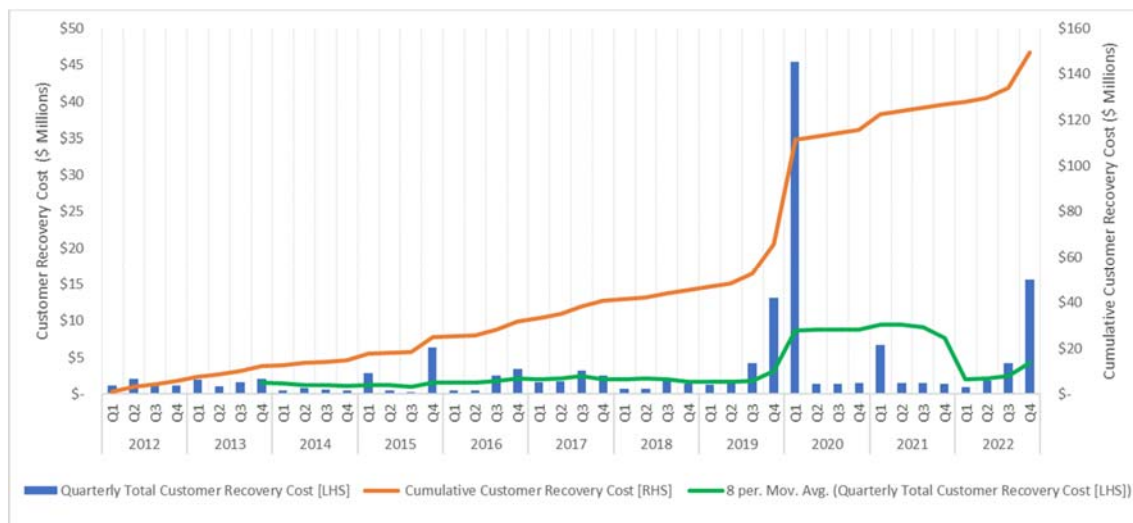
System Security Costs since 2016	Source	Cost (millions)
Global Frequency Control Ancillary Services (FCAS) – SA Contribution	AEMO Ancillary Services Payment and Recovery	124.8
Local FCAS – SA	AER Quarterly local FCAS costs by services – South Australia	258.6
System Security Directions	AEMO Quarterly Energy Dynamics (QED)	280.8
Total Cost		\$664.2 m

Further comment on some of these measures is made below.

3.1 Frequency Control Ancillary Service (FCAS)

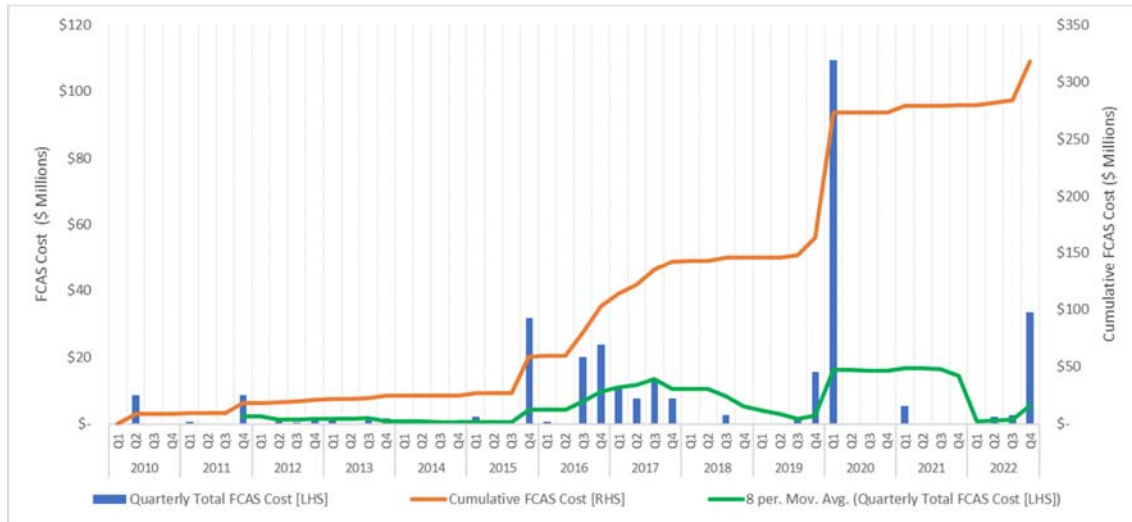
Between 2016 and the present day, the control of power system frequency during normal operation significantly degraded when compared to historical levels. This degradation was reflected in higher FCAS costs. From Q1 2016 to Q4 2022 (the most recently published data), cumulative FCAS costs were \$383.4 million.

Were FCAS costs to be included from the onset from Q1 2012 in respect of Global FCAS, and Q1 2010 in respect of local FCAS (the earliest data that could be sourced), to Q4 2022, the total cumulative cost is \$467 million.



Graph 1: SA Customer Recovery Costs – 2012-2022. The SA Contribution of the Global Quarterly Total Customer Recovery Costs, its moving average, and the Cumulative Customer Recovery from 2012 to 2022.

The moving average of the Quarterly Total Customer Recovery highlights a gradual increase in cost. The first moving average cost from Q3 2013 is \$1.52 million and the most recent from Q4 2022 is \$4.23 million, representing a 278% increase over the 10-year period.



Graph 2: SA FCAS Costs – 2010-2022. SA Quarterly Total FCAS costs, its moving average, and the cumulative FCAS costs from 2010 to 2022, exclusive of GST.

Although these data are subject to the greatest volatility, the first moving average from Q4 2011 is \$2.26 million and the most recent from Q4 2022 is \$5.5 million, representing a 146% increase over the 12-year period.

3.2 System Security Directions

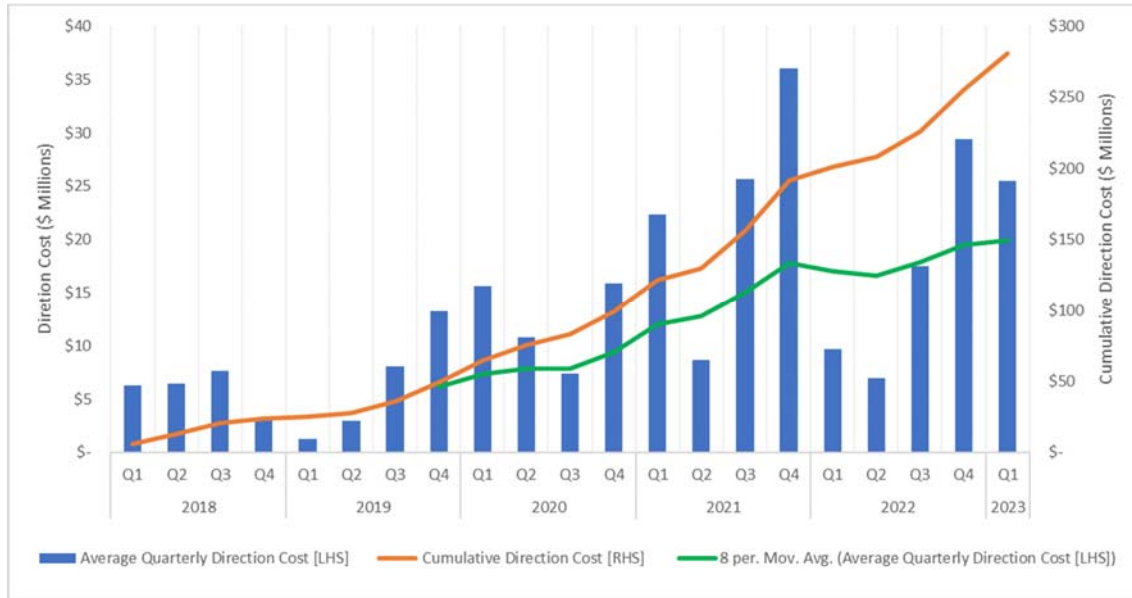
The available costs are sourced from Q1 2018 to Q1 2023.

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.

In Q4 2021, AEMO intervened a record 86% of the time, eclipsing the previous record of 64% just one year earlier, by 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 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.

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



Graph 3: SA Direction Costs – 2018-2023. SA Directions Costs, its moving average, and the Cumulative FCAS costs from 2018 to 2023, exclusive of GST.

The first moving average cost from Q4 2019 is \$6.15 million and the most recent from Q4 2022 is \$19.94 million, representing a 224% increase over the approximate 5-year period. Without having had access to data prior to 2018, SACOME understands that interventions were previously barely a feature in the market.

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, 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 State Government on the 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".

There are economic costs that can be material with loss of production, equipment failure and equipment recovery costs and potentially environmental and safety risks.

AEMO has the 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 for their operational implications.

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

SACOME has provided extensive advice to the South Australian Government on the impacts of UFLS on the C&I sector. SACOME further understands that as a result of Project Energy Connect an additional emergency scheme is being introduced: namely, the South Australia Interconnector Trip Remedial Action Plan, in the event one interconnector goes down when both are fully operational. Industrial load shedding is forecast to be part of this for energy security, but it does add yet another level of financial risk in an uncertain operating environment.

3.4 Electricity (General) (Technical Standards) Variation Regulations 2021 / SA Power Networks Distribution Determination 2020-2025

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 renewables-based power 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 late 2020; while the Voltage Management project has been completed with the South Australian Government underwriting \$10 million of the project cost as part of the South Australian Energy Solution initiative.

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

During consultation, SACOME sought clarification on how costs for these projects would be recovered. The Department for Energy and 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 was unable to provide a total cost for both projects. SACOME sought further clarification in 2023 without success.

SACOME notes that Page 59 of the Australian Energy Regulator's final decision on [SAPN's Distribution Determination for 2020 to 2025](#) indicates the initial proposal for these works was \$40.1 million. While DEM advised that the Regulations are necessary to allow SAPN to conduct their two projects, they resulted in an additional \$40.1 million of pass-through costs.

SACOME recognises the need for the implementation of measures to address stability issues with the energy grid caused by increasing levels of solar PV. It is unsatisfactory, however, that the Government should regulate to allow SAPN to charge over \$40 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 measures, 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 \$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 the introduction of the REPS, exemplifies the lack of coordinated energy policy in South Australia.

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

SACOME's ongoing requests for commercial and industrial operators to be exempt from the REPS have been unanswered by the State Government, as recently as 2023.

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.

The ostensible purpose of the Green Paper is to inform a White Paper that will set out an overarching Government energy transition policy, taking into account broader economic and environmental concerns. Economic considerations appear to be delegated to other bodies, such as the National Energy Crisis Committee of Cabinet. At first instance, while this appears to be consistent with SACOME's previous calls for Government to holistically consider the impact of its policies, its Terms of Reference are confined and exclude whole energy sources.

SACOME members have observed that the cost of the energy transition disproportionately affects hard-to-abate sectors and recent policy changes to the Safeguard Mechanism by the Commonwealth Government magnify this. For context, SACOME has received anecdotal information from large industrial customers that market intervention costs now account for approximately 30% of their electricity bills.

This poses a range of issues for the resources sector and other heavy industries which 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 backup, land use costs, costs to industry, waste disposal costs and larger impacts on the economy as a whole.⁷

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

There is an urgent need for a mechanism that can assess and coordinate the many variables in play, futureproofs South Australia's energy system to ensure affordability, reliability, and stability, and reflects the full cost of the energy transition process.

⁷ 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

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

In future, 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:

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.⁸

The 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 politically popular energy policies best exemplified by the continued subsidisation of solar rooftop PV and, previously, subsidies for home battery installation.

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

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 considered necessary and popular by the public and Government alike.

In contrast, major industrial sectors are unlikely to garner support by arguing for a slowdown of renewable installation while measures to stabilise the grid are put in place, or for sharing the costs of the transition with the rest of the community.

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 largely dependent on electricity, water, transport logistics and facilitative land access regimes.

⁸ Australian Industry Energy Transitions Initiative ‘Setting up Industry for Net Zero Phase 1 Highlights Report: current state and future possibilities’, June 2021 p.13

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.

Reaching Net Zero requires mass development and deployment of technologies that are not commercially available at present, though government support for the development of hydrogen and carbon capture and storage (CCS) provides 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 Gas

The South Australian gas sector makes a major contribution to the State economy and has a key role to play in reaching Net Zero.

Gas is essential to the South Australian electricity grid and has been fulfilling the role of baseload power, with gas-fired power plants responsible for 27% of the State's power generation in 2022.⁹ While this figure continues to decline with the uptake of renewables, gas-fired generation will continue to play a critical role in maintaining system security and reliability, complementing the increasing amount of penetration of renewables in the grid. Gas will also continue to be a key energy source and feedstock for South Australian industry.

South Australian 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. Key among these is Carbon Capture and Storage, which requires Government support consistent with approaches taken internationally, such as the United States' *Inflation Reduction Act*.

Carbon Capture and Storage will be critical to emissions reductions across several hard-to-abate industrial sectors, as well as in low-carbon hydrogen production and carbon dioxide removal. Royalties on Carbon Capture and Storage should be regarded by Government as a decarbonisation tax.

Continuing bi-partisan support for the South Australian gas sector is imperative to preserving the State's economic base and to reaching Net Zero. Additionally, the skill sets underpinning gas supply chains will be critical to the commercialisation and trade of Carbon Capture and Storage and low-carbon hydrogen.

⁹ Open NEM Market Data for South Australia.

4.2 Nuclear

Nuclear energy continues to be disregarded as a source of zero-emissions energy in Australia, reflecting the long-held antipathy by politicians toward it domestically. This is despite it providing a logical 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-emissions 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 the 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 the National Radioactive Waste Management Facility.

Further, South Australia has one of the only two ports in the nation approved for the 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 realise fully 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 Nuclear Fuel Cycle Royal Commission has left some political representatives reluctant to pursue the nuclear argument, despite the statement by the Commissioner that while construction of a power plant at the time was uneconomic, *"nuclear power may be necessary, along with other low carbon generation technologies ... it would be wise to plan now to ensure that nuclear power would be available should it be required"*. Governments should be preserving optionality.

Without political support, Federal 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. Additionally, the bipartisan support for AUKUS represents further synergies for the 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.¹⁰

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. SACOME has made lengthy and detailed submissions about the potential role of nuclear in the energy market and the opportunity for South Australia, which are available [here](#).

Advice from industry experts is that SMR technology is estimated to be at least 5 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 work by the former Marshall Government and the Malinauskas Government’s hydrogen ambitions, typified by their *Hydrogen Jobs Plan*, the development of a *Hydrogen and Renewable Energy Act* to facilitate investment, and the creation of the standalone Office for Hydrogen Power South Australia.

SACOME members have expressed a clear interest in the development of hydrogen opportunities and SACOME recognises the potential for hydrogen as an emissions-free source of energy into the future and to firm the grid. This notwithstanding, member companies have expressed concern as to the reliance upon and prominence given to hydrogen in both the Green Paper and by Government generally.

It should be noted that SACOME polling shows that both hydrogen as a fuel source and the extent of the Government’s hydrogen policies are, as yet, neither well-supported nor understood.

Memoranda of Understanding signed with countries like Japan and South Korea and the Port of Rotterdam in the Netherlands for the supply of green hydrogen have laid the foundation for Australia to develop an export industry, but technical and economic hurdles to export have yet to be resolved.

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, and particularly welcomes its facilitation in industrial settings.

SACOME supports the principles underlying the development of the proposed *Hydrogen and Renewable Energy Act*, noting that clear regulatory frameworks will place us at a comparative advantage relative to other jurisdictions and facilitate greater investment.

¹⁰ Ibid, p.20

4.4 Increased Grid Infrastructure Costs

AEMO forecasts that the NEM's output will need to double in size by 2050 to support the full electrification of transport, industry, offices, and homes.¹¹

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

The energy transition must consider and plan for future infrastructure needs to avoid or mitigate sudden or unexpected pass-through costs, otherwise referred to as price shocks.

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 customers shifting toward electrification, it particularly leaves hard-to-abate sectors bearing significant accelerated depreciation costs when they are already exposed to the costs of the transition.

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.

¹¹ AEMO 2022 Integrated System Plan

5. Energy Transition Recommendations

5.1 Develop an Energy Transition Roadmap

An Energy Transition Roadmap was a key Pre-Election call submitted ahead of the 2022 State Election.

SACOME submits that the White Paper or Energy Transition Roadmap, regardless of its name, should be urgently developed with close input from industry and consider the following matters in addition to those listed in the Green Paper:

- Whole of electricity cost, as distinct from wholesale electricity cost;
- Impact and interaction of Commonwealth and State policies;
- Current and future energy mix, including nuclear, in the context of Net Zero commitments;
- The viability of domestic reservation policies;
- Incentive schemes for decarbonisation technologies;
- Impact of retailer failure;
- South Australia’s renewable energy competitiveness, based on the findings of the Productivity Commission; and
- Scoping the overall cost of the energy transition to South Australian businesses and taxpayers.

From the outset, the principal objectives, concrete outcomes, and timelines from energy transition policy need to be made clear. This includes the identification of priorities by Government – by way of example, does South Australia intend to become internationally competitive on power prices or reduce them by a fixed amount by 2030? Will a White Paper encompass the whole of the economy and not just select sectors?

An Energy Transition Roadmap is needed to assist Government and industry in better planning for the transition, help to stabilise the South Australian energy grid by managing the transition in an orderly manner, ensure energy security and reliability for South Australia, and reduce electricity costs for industry and households in a manner consistent with Net Zero commitments.

5.2 Inclusion of a ‘Resources’ representative on the Premier’s Climate Change Council with expanded objectives

The Premier’s Climate Change Council (PCCC) was established under the Climate Change and Greenhouse Emissions Reduction Act 2007. The primary role of the Council is to provide independent advice to the Minister for Environment and Waster on reducing greenhouse gas emissions and adapting to climate change. This role includes providing advice in several areas, including:

- Achieving energy efficiencies;
- Increasing the use of renewable energy;
- Developing methods to remove greenhouse gases from the atmosphere;
- Establishing and achieving relevant targets;
- Considering the impact of climate change on business and the wider community;
- Assessing costs associated with reducing or limiting climate change (or failing to take action);
- Commercial or other opportunities associated with climate change;
- The effectiveness of targets under the *Climate Change and Greenhouse Emissions Reduction Act 2007*.

The current Climate Change Council includes representatives from business, urban design and planning, transport, renewable energy, innovation, agriculture, education, research, arts, culture, and local government. Representation from the resources sector, arguably the highest energy consumer in the state, is absent.

SACOME submits that a representative from the resources sector should be added to the PCCC. This would ensure the PCCC has full representation from industry and appropriate subject-matter experts to inform Government policy settings on the energy transition *and* climate change, given these policy areas are intrinsically linked.

SACOME also recommends that the PCCC should also have a reporting function to the Minister for Energy and Mining, as well as the Minister for Environment and Water, and that the objectives of the PCCC should be expanded to consider:

- The energy transition roadmap (once developed) to ensure it is implemented across government and industry in an orderly fashion;
- Current and future energy mix required to ensure energy security, reliability, and affordability, on the way to meeting Net Zero targets; and
- The operational impacts for industry ensure the commerciality of South Australia's major economic sectors is maintained.

This would ensure coordinated policy advice is provided to the State Government that addresses the full complexities, implications, and opportunities of the energy transition, while mitigating cost and operational risk to key industrial sectors on the road to decarbonising.

5.3 Real Cost of Energy Transition Must Inform Policy

The full cost of energy transition measures must be transparently calculated, discussed, and equitably distributed across the whole of the economy.

Currently, wholesale power prices are impacted by the cost of regulator intervention, infrastructure charges, transmission charges, government initiatives and a range of other

pass-through charges. This is resulting in significant, unbudgeted costs for the commercial and industrial sector which is bearing the financial burden of the energy transition, and, in SACOME's view, is a cost of business crisis.

The cost of energy and system transition must be considered in conjunction with industry and economic growth policy to better mitigate economic impacts.

The energy transition challenge requires a complete retrofit of the electricity network to accommodate renewables, with the significant cost of re-engineering the system being passed on to commercial and industrial customers. This is inequitable and unsustainable for industry and ultimately damages investor confidence in South Australia.

Policymakers need 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.

5.4 Accelerate the rollout of Transmission Line Infrastructure

SACOME acknowledges the work underway to deliver Project Energy Connect, a new energy interconnector being built between South Australia and New South Wales.

The interconnector is intended to address system stability issues for the State, enabling new renewable energy projects to connect to the grid and supply new energy to the national electricity network. The forecast benefits of the project include lower power prices for the first two years of the project, improved energy security and increased economic activity.

Construction of the South Australian component of the interconnector began in early 2022. Amid the global race to build infrastructure to connect renewal energy generation, the project timeline has been extended, with a completion deadline for Project Energy Connect now set for July 2025.

Delays in building new transmission lines have been cited by the Australian Energy Market Operation (AEMO) as a key risk to reliable power, while proposed new generation capacity has been curtailed as investors seek certainty before making final investment decisions.

SACOME acknowledges the Federal Government's commitment of \$20 billion to accelerate the development of the nation's transmission lines to date.

5.5 Review the Retailer Energy Productivity Scheme (REPS)

The Retailer Energy Productivity Scheme (REPS) commenced on 1 January 2021. The Scheme was designed to provide incentives for South Australian householders and businesses to save energy, with the objective of 'improving energy productivity' and 'reducing energy costs and greenhouse gas emissions.'

The REPS achieves its objectives through the setting of energy productivity targets (EPTs) to be met by electricity and gas retailers. EPTs are determined annually by the Minister for Energy and Mining. Energy retailers that set annual REPS targets are known as obliged retailers. To achieve their targets, obliged retailers offer incentives to households and businesses to deliver energy productivity activities in homes and business premises. Retailers also have the flexibility to design and offer individual incentive programs to customers. The absence of a pre-approved list of projects under the Flexible Framework has left companies without a practical mechanism for deriving benefit from REPS charges, nor meeting imposed REPS obligations.

SACOME member companies have advised the Flexible Framework does not consider:

- Time and cost pressures placed on both companies and retailers in undertaking the necessary work to identify projects to discharge their REPS obligations on their sites.
- A credit system recognising energy efficiency projects already completed by operators before their absorption into REPS. Members have advised that they have undertaken efficiency measures via similar energy efficiency schemes in other jurisdictions and their plant is unable to undertake further useful energy efficiency measures. As such, they cannot find suitable projects to meet REPS obligations.
- Competing capital interests and financial constraints of companies who will make investment decisions based on commerciality rather than energy efficiency. In this situation, the REPS effectively operates as an energy efficiency tax on commercial and industrial operators for no useful purpose.

In line with previous submissions to the Minister and the Department for Energy and Mining, SACOME calls for an exemption mechanism to be incorporated into the REPS for large energy users, in particular for large commercial and industrial users.

SACOME again consulted with its membership in early 2023, and they reiterated their previously cited concerns, which were conveyed to Government.

5.6 Technological Neutrality

All low-emission energy sources and technologies should be considered as part of the future energy mix to ensure both rapid decarbonisation and energy reliability for domestic and industrial needs, in line with SACOME's [Energy Policy](#) and [Climate Change Policy](#).

The Energy Transition Roadmap must integrate a range of energy sources and technologies, understand their applications, and consider the regulatory frameworks necessary for their operation. This includes hydrogen, natural gas, renewable energy generation and storage, nuclear energy, and carbon abatement technologies, such as carbon capture and storage.

5.7 Reduce the carbon intensity of oil and gas in an orderly manner

Bi-partisan support for the South Australian oil and gas sector is imperative to preserving the State's economic base and energy security as well as to reaching Net Zero.

Gas-fired generation has a key role in South Australia's energy transition process and performs a critical role in maintaining system security and reliability. Gas will also continue to provide a key energy source and feedstock for industry. Continued exploration and development in oil and gas is necessary to allow the energy transition to occur in a planned and orderly fashion.

Additionally, the skill sets underpinning oil and gas supply chains will be critical to the commercialisation and trade of carbon capture and storage and future fuels like low-carbon hydrogen.

Increased uncertainty surrounding oil and gas will only result in a decline in production which will drive shortfalls and price increases and undermine the transformation of the economy to Net Zero.

Appendix 1 - South Australian Energy Transition Timeline

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

	<ul style="list-style-type: none"> Engie announces the closure of Hazelwood Power Station by the end of March 2017.
2016	<ul style="list-style-type: none"> Load shedding and curtailment in South Australia in December 2016.
2017	<ul style="list-style-type: none"> Further load shedding and curtailment in South Australia in February 2017.
2017	<ul style="list-style-type: none"> Engie closes Hazelwood Power Station.
2017	<ul style="list-style-type: none"> 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.
2017	<ul style="list-style-type: none"> Engie announces a \$40 million investment into Pelican power station to return it to full operating capacity.
2017	<ul style="list-style-type: none"> AGL announces a \$295 million investment to develop a 210 MW reciprocating engine power station, the Barker Inlet power station.
2017	<ul style="list-style-type: none"> 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; establishes 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.
2017	<ul style="list-style-type: none"> Nuclear Fuel Cycle Royal Commission concludes, Weatherill Government determines that there is a lack of popular support for the development of a South Australian nuclear industry.
2017	<ul style="list-style-type: none"> Federal Government proposes the National Energy Guarantee.
2017	<ul style="list-style-type: none"> AEMO declares a system strength gap in South Australia.
2018	<ul style="list-style-type: none"> The South Australian Liberals form Government, led by Premier Steven Marshall.
2018	<ul style="list-style-type: none"> Federal Government elects not to proceed with the National Energy Guarantee.
2018	<ul style="list-style-type: none"> In December 2018, AEMO declares an inertia shortfall in South Australia.
2018 onwards	<ul style="list-style-type: none"> South Australian Government Policy is to achieve net 100 per cent renewables by 2030, and a notional aspiration to increase it to a 500 per cent renewable energy target by 2050.
2020	<ul style="list-style-type: none"> South Australia meets 100 per cent of its energy needs from solar power; and keeps on reaching new minimum demand records.
2021	<ul style="list-style-type: none"> AER approves Project Energy Connect comprising an interconnector linking SA and NSW. The expected completion date is mid-2023-24.

2022	<ul style="list-style-type: none"> • AEMO revises Project Energy Connect's completion date to July 2025.
2022	<ul style="list-style-type: none"> • SA Labor forms Government, led by Premier Peter Malinauskas.
2022	<ul style="list-style-type: none"> • Creation of the Office of Hydrogen Power SA.
2022	<ul style="list-style-type: none"> • Convening of Energy Transition Roundtable.
2023	<ul style="list-style-type: none"> • Draft Hydrogen and Renewable Bill circulated for comment.
2023	<ul style="list-style-type: none"> • Premier announces the development of the Green Industrial Transition Roadmap in the Economic Statement.
2023	<ul style="list-style-type: none"> • Release of the Government's Energy Transition Green Paper for consultation.

Appendix 2- Glossary

AEMO: The Australian Energy Market Operator is a body that manages the electricity and gas systems and markets across Australia.

AER: The Australian Energy Regulator is a body that regulates wholesale and retail energy markets under national energy legislation and rules.

AUKUS: AUKUS is a security alliance between Australia, the United Kingdom, and the United States, aimed at enhancing cooperation in defence, technology, and intelligence sharing. Under the alliance, the US and UK are to assist Australia in acquiring nuclear-powered submarines.

C&I: Commercial and industrial.

CCS: Carbon Capture and Storage is the process by which CO₂ emissions are captured and subsequently stored, to prevent the emissions from entering into the atmosphere.

FCAS: Frequency Control Ancillary Services is a process that AEMO implements to maintain the frequency of the electricity system within the usual operating band. FCAS provides a timely reduction or injection of energy to accommodate supply and demand.

GJ: A gigajoule is a metric for measuring energy.

Grid-Scale Storage: Refers to various methods, such as batteries, used for energy storage on a large scale within an electrical power grid.

Interconnector: A transmission cable allowing electricity to flow from both directions from one region to another.

LRET: The Large-scale Renewable Energy Target was a Federal Government policy aimed at ensuring that a minimum of 33,000 gigawatt-hours of Australia's electricity comes from renewable sources by 2020.

Megawatt: is a metric used to measure the output of a power station. One megawatt is equal to one million watts.

NEM: The National Electricity Market facilitates the exchange of electricity between generators and retailers.

REPS: The Retailer Energy Productivity Scheme is a scheme instituted by the Government of South Australia that is aimed at facilitating businesses and households to become more energy efficient.

SA Power Networks: A body responsible for building and maintaining poles, wires and substations that supply power to households and businesses in South Australia.

SA VPP: South Australia's Virtual Power Plant is a network currently under development aimed at delivering grid security through paired solar PV and battery installations on 4100 SA Housing Trust homes.

Safeguard Mechanism: The Australian Government's policy for reducing emissions at Australia's largest industrial facilities.

SMR: Small Modular Reactors are nuclear reactors that are smaller than conventional reactors and modular in design.

Solar PV: Solar Photovoltaic converts sunlight directly into electricity using either a semiconductor cell or a solar PV cell.

SRES: The Small-scale Renewable Energy Scheme is a scheme incentivising the installation of small-scale energy systems such as solar panel systems and small-scale wind systems.

Synchronous condensers: These help to stabilise electricity grids by regulating voltage.