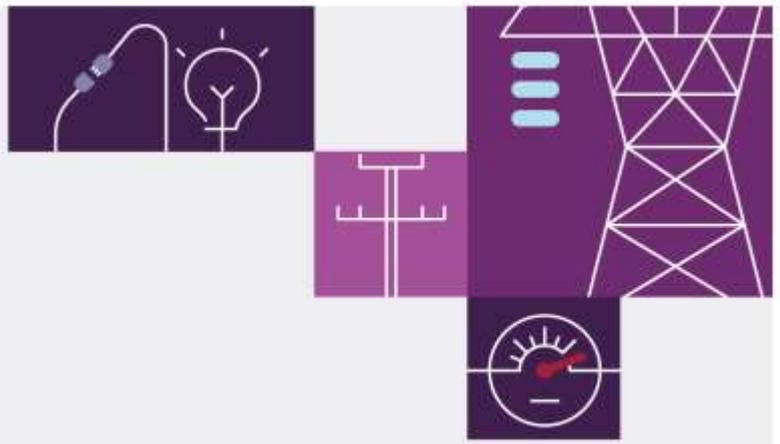


NEM Reform Program Post Implementation Review

Stand Alone Power Systems

June 2024





Important notice

Purpose

The purpose of this publication is to not only identify the key learnings and areas for improvement which can be applied across the delivery of future initiatives under the NEM Reform Program, but also an evaluation against the broader policy or reform objectives, benefits and/or assumptions defined at the time a final rule or policy is made and whether those objectives and benefits have been realised.

This publication has been prepared by AEMO using information available at 13 June 2024.

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Version control

Version	Release date	Changes
#1	19 June 2024	Initial publication

Executive summary

AEMO's post implementation review aims to not only identify the key learnings and areas for improvement which can be applied across delivery of future initiatives under the Program, but also an evaluation against the broader policy or reform objectives, benefits and/or assumptions defined at the time a final rule or policy is made and whether those objectives and benefits have been realised. In drafting its assessment, AEMO note the benefits of certain reforms may not be apparent from the outset and instead take time to develop or embed within the operation of the market, or participants' behaviours. For this reason, a subsequent assessment at a later point in time may be warranted.

Initiative summary

The Stand-Alone Power Systems (SAPS) reform was established under the NEM Reform Program ('the Program') to address changes to the National Electricity Rules (NER) to accommodate distributor led (priority 1) SAPS¹. The objectives of the reform were to:

- Develop a national framework for customers that move from grid-connected supply to stand-alone systems provided by NEM distributors.
- Support the supply of electricity from SAPS provided by parties other than NEM distributors.
- Support the registration of Market SAPS Resource Providers (MSRPs), so that they can supply electricity from one or more generating units to a SAPS and sell to the market.

Amendments to the NER were made as a result of the AEMC's *Review of regulatory frameworks for stand-alone power system*², a review which was requested by the COAG Energy Council in August 2018 that included a terms of reference setting out two priority areas of work:

- Priority 1 – to develop a national framework to facilitate the transition of grid-connected customers to SAPS supply provided by the current distribution network service provider (DNSP), as well as a mechanism for the transition of grid-connected customers to third party SAPS supply.
- Priority 2 – to develop a national framework for the ongoing regulation of third-party SAPS (that is, those not provided by the local distribution business).

On 30 May 2019, the AEMC published a final report for Priority 1 which recommended a suite of changes to energy laws and rules to enable the use of stand-alone power systems.³

¹ A SAPS is an electricity supply arrangement that is not physically connected to the national grid. A SAPS may incorporate one or more generators supplying electricity to one or more customers. Customers within a SAPS are entitled to all existing consumer protections including access to retail competition.

² AEMC. Review of the regulatory frameworks for stand-alone power systems. Website – Last Accessed 29 May 2024. Available here [Review of the regulatory frameworks for stand-alone power systems | AEMC](#)

³ AEMC. Final Report Review of the regulatory frameworks for stand-alone power systems – Website – Last Accessed 29 May 2024. Available here <https://www.aemc.gov.au/sites/default/files/2019-05/SAPS%20Priority%201%20Final%20Report%20-%20FOR%20PUBLICATION.pdf>

In order to progress the recommendations from the Priority 1 review, the AEMC initiated another review *Updating the regulatory frameworks for distributor-led stand-alone power systems*⁴ and on 28 May 2020 published a final report that sets out a national framework to facilitate the provision of SAPS by distribution networks to their existing customers. In quarter 2 of 2022, South Australian Parliament passed the amendments proposed to the National Electricity Law (NEL) and National Energy Retail Law (NERL).

AEMO, together with industry, was given to May 2023 to deliver the associated reforms. This included designing and implementing the SAPS Priority One Framework which required changes to electricity metering, retail⁵ & wholesale market arrangements, including any establishment and maintenance of relevant metering procedures specified in Chapter 7 of the NER.

Summary of findings

The go-live release for the SAPS reform occurred on 19 June 2023. This enabled SAPS to be established by DNSPs to supply electricity to consumers while still providing consumers with the full protections of grid connections.

Due to delays in progress with SAPS component testing, including ensuring ongoing market processes such as NEM Settlement were not negatively impacted, production deployment for the SAPS reform within AEMO's systems was implemented on 25 and 28 May 2023 with a go-live release date of 19 June 2023 for SAPS industry participants. AEMO adopted a collaborative approach with DNSPs to ensure the delay in timing of delivery did not have a commercial impact on SAPS participants or customers.

Regulation changes in Victoria and Queensland are still required to support the NEL changes in those jurisdictions to recognise regulated standalone power systems as part of the jurisdiction's specific distribution system(s) and is operated by the DNSP(s). Further, the uptake of SAPS is not expected to be rapid, as the reform is an 'opt-in' reform and as networks are required to test their hardware / systems in the field before committing to disconnecting the customer from the network.

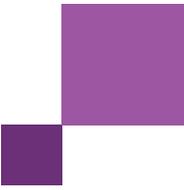
However, there have been positive signs from industry with two MSRPs currently registered with AEMO. These are from New South Wales distribution companies, Ausgrid and Essential Energy, with four SAPS metering points in operation in the state. Additionally Essential Energy has already indicated that there are about 2,000 of its customers across NSW that are economically viable to set up with a SAPS, with another 14 customers signing up for the service.⁶

Given the infancy of the regulatory framework to support SAPS connections, its effectiveness is dependent on the deployment of SAPS by distribution networks and the preference of consumers to move to an alternative option for their supply of electricity. Additionally, any cost savings to network businesses and consumers will become more evident in the medium to longer-term as the uptake of SAPS increases.

⁴ AEMC. *Updating of the regulatory frameworks for distributor-led stand-alone power systems*. Website – Last Accessed 29 May 2024. Available here [Updating the regulatory frameworks for distributor-led stand-alone power systems](#).

⁵ Retail processes for connection points within a SAPS were unaffected.

⁶ One step off the grid. Networks embrace stand-alone power as solar and batteries beat out poles and wires. Website – Last Accessed 29 May 2024. Available here <https://onestepoffthegrid.com.au/networks-embrace-stand-alone-power-as-solar-and-batteries-beat-out-poles-and-wires/>



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1 NEM Reform Program

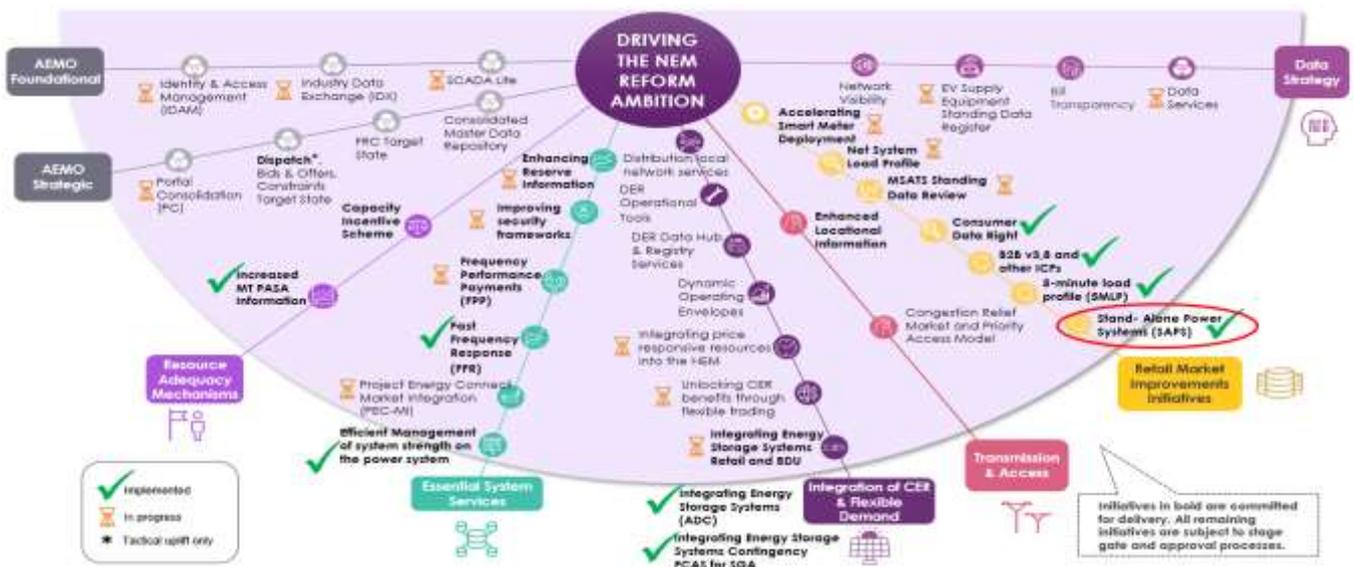
The NEM Reform Program (‘the Program’) was established by AEMO to collaborate with energy industry participants to deliver many of the Energy Security Board’s (ESB) post-2025 reforms along with various other energy market reforms.⁷

The ESB’s post-2025 electricity market design set out a pathway to transition the National Electricity Market (NEM) into a modern energy system fit to meet the community’s evolving wants and needs and move towards a net-zero future for Australia. The designs sought to address essential change as ageing coal-fired generators are retired, replaced by an expanding array of new technologies, including large-scale renewable energy generation and storage systems, complemented by rapid growth in consumer energy options, including rooftop solar.

The Program’ is a large-scale, complex, industry-wide program, impacting participants across all areas of the NEM. Each initiative that makes up the Program’s scope supports the transition of the NEM and brings Australia closer to a net-zero future.

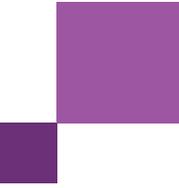
To manage the implementation of this significant package of reforms and to deliver the best possible outcomes for consumers, the Program works collaboratively with industry participants from across the energy sector. The Program focuses on delivering solutions that meet the reform objectives, as efficiently as possible, leveraging opportunities to bundle, sequence and prioritise projects within the Program, and where possible identify and drive out costs through solution design and implementation.

Figure 1. NEM Reform Program Scope



AEMO’s post implementation review aims to not only identify the key learnings and areas for improvement which can be applied across delivery of future initiatives under the Program, but also an evaluation against the broader

⁷ ESB. Post 2025 Electricity Market Design. Website – Last Accessed 29 May 2024. Available here <https://esb-post2025-market-design.aemc.gov.au/>



policy or reform objectives, benefits and/or assumptions defined at the time a final rule or policy is made and whether those objectives and benefits have been realised.

2 Initiative Summary

The Stand-Alone Power Systems (SAPS) reform was established under the NEM Reform Program ('the Program') to address changes to the National Electricity Rules (NER) to accommodate distributor led (Priority 1) SAPS.⁸ The objectives of the reform were to:

- Develop a national framework for customers that move from grid-connected supply to stand-alone systems provided by NEM distributors.
- Support the supply of electricity from SAPS provided by parties other than NEM distributors.
- Support the registration of Market SAPS Resource Providers (MSRPs), so that they can supply electricity from one or more generating units to a SAPS and sell to the market.

Amendments to the NER were made as a result of the AEMC's *Review of regulatory frameworks for stand-alone power system*.⁹ The review was requested by the COAG Energy Council in August 2018 which included a terms of reference setting out two priority areas of work:

- Priority 1 – to develop a national framework to facilitate the transition of grid-connected customers to SAPS supply provided by the current distribution network service provider (DNSP), as well as a mechanism for the transition of grid-connected customers to third party SAPS supply.
- Priority 2 – to develop a national framework for the ongoing regulation of third-party SAPS (that is, those not provided by the local distribution business).

The final report for Priority 1 was published by the AEMC on 30 May 2019 and recommended a suite of changes to energy laws and rules to enable the use of stand-alone power systems.¹⁰ The final report on Priority 2 of the review was published on 31 October 2019 and sets out the AEMC's recommendations for the regulatory framework that should apply to third-party SAPS so consumers have appropriate protections.¹¹

The recommendations together form package of reforms, the development of which was guided by a number of factors, including:

- the relatively low numbers of customers identified for transition by DNSPs over the next 10 years;
- given the significant cost savings that can flow from even a small number of stand-alone systems, a desire to minimise the barriers to the use of these systems;
- overwhelming stakeholder sentiment for a clear and simple framework;

⁸ A SAPS is an electricity supply arrangement that is not physically connected to the national grid. A SAPS may incorporate one or more generators supplying electricity to one or more customers. Customers within a SAPS are entitled to all existing consumer protections including access to retail competition.

⁹ AEMC. Review of the regulatory frameworks for stand-alone power systems. Website – Last Accessed 29 May 2024. Available here [Review of the regulatory frameworks for stand-alone power systems | AEMC](#)

¹⁰ AEMC. Final Report Review of the regulatory frameworks for stand-alone power systems – Priority 1. Website – Last Accessed 29 May 2024. Available here <https://www.aemc.gov.au/sites/default/files/2019-05/SAPS%20Priority%201%20Final%20Report%20-%20FOR%20PUBLICATION.pdf>

¹¹ AEMC. Final Report Review of the regulatory frameworks for stand-alone power systems – Priority 2. Website – Last Accessed 29 May 2024. Available here <https://www.aemc.gov.au/sites/default/files/2019-10/AEMC%20SAPS%20priority%202%20final%20report%2031%20October%202019.pdf>

- an objective of allowing customers who are supplied by stand-alone systems to continue to receive at least the same level of consumer protections, including access to retail competition and existing reliability and safety standards; and
- an objective of achieving, as far as possible, consistency with the current arrangements for customers served by standard grid supply and the new arrangements also being developed by the AEMC for customers in embedded networks.¹²

In order to progress the recommendations from the Priority 1 review, the AEMC initiated another review *Updating the regulatory frameworks for distributor-led stand-alone power systems*.¹³ On 28 May 2020 the AEMC published its final report that sets out a national framework to facilitate the provision of SAPS by distribution networks to their existing customers, where these offer a lower cost substitute to investing in, and maintaining, traditional network solutions. Energy Ministers, following consultation, progressed the AEMC recommendations with amendments to the National Electricity Law and National Energy Retail Law and associated rules which were passed by South Australian Parliament in quarter 2 of 2022. AEMO, together with industry, was given to May 2023 to deliver the associated reforms.

AEMO collaborated with industry to identify how best to integrate SAPS into its retail market systems and processes, with production deployment of systems delivered as part of AEMO's scheduled May 2023 release ready for participant SAPS activation by 19 June 2023.

2.1 Impacted stakeholders

The following participant types were impacted by the SAPS reform:

- Distribution Network Service Providers (DNSPs).
- Financially responsible market participants (FRMPs).
- A new market customer category was created for SAPS generation units – Market SAPS resource provider (MSRP).

2.2 Initiative scope

As part of the SAPS reform, AEMO was required to determine the proposed design options to support the SAPS Priority 1 Framework. This involved designing and implementing the required changes to electricity metering, retail¹⁴ and wholesale market arrangements, including any establishment and maintenance of metering procedures specified in Chapter 7 of the NER, except for procedures established and maintained under NER 7.17.

¹² AEMC. Final Report Review of the regulatory frameworks for stand-alone power systems – Priority 1. Website – Last Accessed 29 May 2024. Available here <https://www.aemc.gov.au/sites/default/files/2019-05/SAPS%20Priority%201%20Final%20Report%20-%20FOR%20PUBLICATION.pdf>

¹³ AEMC. Updating of the regulatory frameworks for distributor-led stand-alone power systems .Website – Last Accessed 29 May 2024. Available here [Updating the regulatory frameworks for distributor-led stand-alone power systems | AEMC](#).

¹⁴ Retail processes for connection points within a SAPS were unaffected.

The scope of work implemented via the SAPS reform included:

Procedures and Guidelines	Market Applications	Market Interfaces
<p>Consultation and amendments to the following procedures:</p> <ul style="list-style-type: none"> • Service Level Procedure (SLP): Metering Data Provider Services. • SLP: Metering Provider Services. • Metrology Procedure: Part A and Part B. • National Metering Identifier (NMI) Procedure. 	<ul style="list-style-type: none"> • Updates to Market Settlements and Transfer Solutions (MSATS) to enable a participant to identify a SAPS NMI. • Updates to Electricity Market Management System (EMMS) to calculate SAPS pricing, configure new wholesale connection point type, billing calculations for SAPS connection points to use data from SAPS settlement tables, mapping of SAPS specific transaction types to new line items in billing templates; inclusion of SAPS transactions under aggregated figures. • Changes to the Settlement Interface for Market Management System (SIMMS) for Prudentials to configure additional SAPS specific analysis types to draw from SAPS settlement data & SAPS pricing. 	<p>Including SAPS in the following interfaces:</p> <ul style="list-style-type: none"> • Process SAPS energy settlement transactions in Billing. • Include SAPS line items in Invoicing. • Include SAPS transactions in Settlement Reports. • Publish SAPS reconciliation data in the Participant Data Model. • Participants' registration process for the new MSRP category.
<p>Releases</p>	<ul style="list-style-type: none"> • Changes to SAPS registration needs became effective as part of the March 2023 release. • Pre-production environment (MSATS) was made available on 17 April 2023 for industry to prepare for testing. • EMMS 5.2 Data Model deployed to production on 23 May 2023. • Wholesale Systems production deployment, including MSATS and other market applications and procedures, on 25 and 28 May 2023. • 19 June 2023 – SAPS Go live release for industry participants. 	
<p>Industry Readiness / Testing</p>	<p>The following information and updates on industry readiness and testing were provided to stakeholders prior to the initiative's go-live date:</p> <ul style="list-style-type: none"> • Industry testing was via invitation. • Monthly meetings to inform participants of impending changes. • Updates via the Implementation Forums and Industry Testing Working Group (ITWG). • Readiness criteria and go-live assessment / recommendation 	

3 Post Implementation Review

AEMO’s post implementation review aims to not only identify the key learnings and areas for improvement which can be applied across delivery of future initiatives under the Program, but also an evaluation against the broader policy or reform objectives, benefits and/or assumptions defined at the time a final rule or policy is made and whether those objectives and benefits have been realised.

In completing this review, AEMO note not all objectives / benefits may be realised from day one (1) of an initiative being delivered. For certain initiatives, this may require further assessment at a later point in time in which the market and its participants / stakeholders have had ample opportunity to engage or participate (e.g., where a new market service has been established), or access to new data fields.

3.1 Delivery – timing

The key milestones for the SAPS reform which were achieved included:

Date	Milestone
31 March 2023	Application forms for Distribution Network Service Providers (DNSPs) to register with AEMO as a Market SAPS Resource Provider (MSRP) in the National Electricity Market (NEM) made available on the AEMO website.
17 April 2023	SAPS registration applications accepted.
25, 28 May 2023	Production deployment.
19 June 2023	SAPS Go-Live release (focussed on identifying and settling SAPS).

As the SAPS reform involved National Electricity Law changes, progress of AEMO’s work was dependent on the law change process and its timeframes. As a result of this process, a risk adverse approach was adopted and no work was undertaken for 12-18 months during the time the reforms were being approved by the South Australian Parliament.

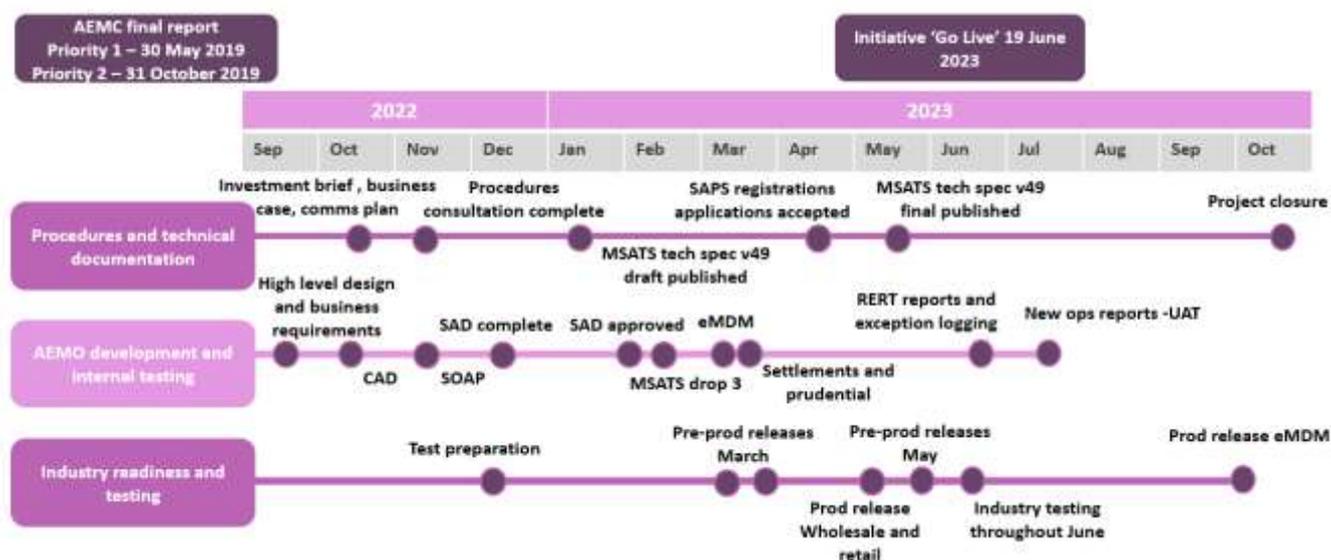
There were also some delays with SAPS internal testing, specifically the planned refresh of the Retail pre-production environment (MSATS) required an outage of approximately three weeks rather than one week as originally scheduled. Additionally there was delayed registration of MSRPs, which lead to a staged introduction of SAPS from various DNSPs that had targeted action by 30 May 2023.

Therefore, the proposed rule change effective date of 30 May 2023 was not achieved across industry. In order to mitigate the potential impact to NEM operations, AEMO’s systems production deployment occurred on 25 and 28 May 2023 so that availability of the SAPS capability (in the retail systems) for industry participants was able to occur on 19 June 2023. A contingency solution where AEMO backdates a Transmission Node Identifier (TNI) to 30 May 2023, or nominated SAPS Operational Date (SOD) once SAPS capability was made available.

AEMO notified the AER of the short delay to AEMO’s delivery timeline and its decision to delay implementation go-live to 19 June 2023 as this represented a technical non-compliance with the MSATS Procedure and NMI Procedure for AEMO, as well as any DNSP that opted into having a SAPS operational date between 30 May 2023 and 18 June 2023. AEMO also advised the AER that the use of the contingency solution would limit any commercial impact of the situation, and that discussions with DNSPs indicated there would be no impact to customers on the delay to implementation date through transition approaches.¹⁵ In the end, the contingency solution was not required as there were no active SAPS establishments in progress at Rule commencement.

The figure below sets out key milestones achieved by both AEMO and industry participants, from procedure consultation to implementation of the reform.

Figure 2. Delivery timeline



3.2 Delivery of scope

The SAPS reform delivered the changes to the NER that resulted from the AEMC’s final determination, as per the scope agreed in collaboration with industry, on accommodating distributor-led SAPS in the NEM. The project scope included updates to existing registration, pricing and wholesale IT systems, updates to business processes, industry procedures / guidelines, stakeholder engagement and industry readiness activities.

3.3 AEMO implementation costs

The SAPS reform was delivered within AEMO's allocated budget as shown in **Error! Not a valid bookmark self-reference..**¹⁶ The actual costs of the SAPS reform will be recovered through AEMO’s NEM core fee, with recovery

¹⁵ The AER confirmed that compliance action would not be taken against a DNSP who opts to lodge their SAPS information in MSATS, once AEMO has released their software update on 19 June 2023 for retrospective application in settlement runs.

¹⁶ Note these costs do not cover the costs incurred by participants associated with implementation of the initiative.

from Wholesale Participants (55.9%), Market Customers (26.6%) and Transmission Network Service Providers (TNSPs) (17.5%).^{17,18} As the reform’s go-live date was May 2023, cost recovery commenced on 1 July 2023 and will continue for a period of seven years.

Table 1. Implementation Costs

Budget	Actual	Variance
\$3,808,348	\$3,754,410	\$53,938

3.4 Uplift, optimisation and cost take-out for industry

The proposed framework to facilitate the provision of SAPS by distribution networks assigned a number of activities for Metering Data Providers (MDPs) to implement. Working with stakeholders, AEMO proposed, and eventually implemented, an alternative solution that utilised some existing functionality in AEMO systems, removing the need for MDPs to otherwise make material system and process changes and incurring material costs in the process. For example, AEMO proposed to convert non-5-minute metering data to settlement intervals on behalf of participants as a lower cost solution, compared to calculations being performed by appropriately accredited MDPs.

Cost savings from the use of lower cost SAPS will flow through to all users of the distribution network, through lower network prices.

3.5 AEMO and industry readiness

AEMO engaged with industry prior to the reform’s go-live date to ensure successful integration of the required changes into its own, and participants systems, particularly due to the delays experienced with SAPS system testing. The following approaches were utilised in progression of the SAPS reform.

3.5.1 SAPS invitation testing

Invitations to MSRPs / FRMPs / Local Network Service Providers (LNSPs) were sent out for interested parties to verify SAPS set up and a settlement run for SAPS.

While two participants had initially expressed interest in testing SAPS functionality ahead of the May go live date, the testing did not proceed due to participants unavailability in the proposed timeframe.

¹⁷ AEMO’s Final Determination on the Electricity fee structures for 1 July 2021 – 30 June 2026 was published on 26 March 2021 and is available on AEMO’s website: [AEMO | Electricity Market Participant Fee Structure Review](#)

¹⁸ While the SAPS reform is part of the NEM Reform Program, it was not part of the NEM2025 Reform Program declared NEM project scope, hence costs are not recoverable via the NEM2025 Reform Program fee.

3.5.2 Industry readiness approach

A readiness approach and any updates on the approach for the SAPS reform were communicated to industry via the NEM Reform Implementation Forum¹⁹ which has been established to coordinate readiness activities across the industry for the various system releases. The May 2023 release included the changes required to implement the SAPS reform and therefore industry were made aware of the readiness approach for this release in March 2023, and again in May 2023 ahead of production deployment.

Originally a staged introduction of SAPS was proposed which included industry participation from AusNet, Ausgrid and Essential Energy targeting a 30 May 2023 activation. However, as noted in section 3.1, this staged approach did not proceed in that timeframe and a contingency solution of AEMO backdating a TNI to 30 May 2023 (or a nominated SAPS Operational Date (SOD)) once SAPS capability was made available.

3.5.3 SAPS go-live plan

The below table outlines the steps for the implementation of SAPS registration changes and corresponding communication channels for the March 2023 release.²⁰

#	AEMO actions	Industry impacts and actions	Planned Time (Market Time)	Communication channel
1	AEMO to make SAPS registration information available		31 March 2023	
2	AEMO notifies Participants via email that registration material is available	Participants wanting to register to consume information in readiness for registration.	31 March 2023	Email to NEM2025 Implementation Forum members
3	AEMO to facilitate SAPS registration walkthrough session if there is sufficient demand from Participants		March / April 2023, date TBC	NEM2025 Implementation Forum
4	“AEMO Communications” e-newsletter article		6 April 2023	Email
5	AEMO notifies Participants via email that registration	Participants can submit SAPS registrations.	17 April 2023	Email to NEM2025 Implementation Forum members

¹⁹ AEMO. NEM Reform Implementation Forum. Website – Last Accessed 29 May 2024. Available here <https://www.aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/implementation-forum>.

²⁰ AEMO. AEMO March 2023 Release. IESS and SAPS March Release Industry Go-live plan. Website – Last Accessed 29 May 2024. Available here https://www.aemo.com.au/-/media/files/stakeholder_consultation/working_groups/5ms-meetings/rwg/march-2023-industry-go-live-plan.pdf?la=en.

The below table outlines the steps for the deployment of retail and wholesale system changes to support the implementation of SAPS and corresponding communication channels in the May 2023 release²¹.

#	AEMO actions	Industry impacts and actions	Planned Time (Market Time)	Communication channel
1	Notice of planned release for MSATS 49.0 and B2B 3.8		9 May 2023	Support Hub Bulletin
2	Notice of planned release for SAPS Wholesale System changes and EMMS 5.2 Data Model		16 May 2023	Support Hub Bulletin
3	AEMO deploys EMMS 5.2 Data Model Changes	EMMS 5.2 Data Model Changes become available	23 May 2023	Support Hub Bulletin
4	AEMO deploys Wholesale System changes	No Outage, no impact to participants	25 May 2023	Support Hub Bulletin
5	AEMO deploys MSATS release 49.0	MSATS, B2B and B2M outage during upgrade.	28 May 2023	Confirmation of completion of deployment and notification of B2M/B2B restart via NEM Reform mailbox Support Hub Bulletin at completion of outage window
6	First Settlement run after a SAPS TNI is established in MSATS	RM51 report is generated with SAPS summary data. SAPS data available in EMMS.	SAPS Processes to be activated from Monday 19th June. Dependent on establishment of a SAPS in production	N/A

3.6 Stakeholder feedback

AEMO received the following feedback on the implementation of the SAPS reform:

- Monthly meetings to inform participants of impending changes was beneficial.
- The Implementation Forum and ITWG were effective means by which to undertake the readiness approach.

²¹ AEMO. May 2023 Release Program. SAPS, CDR, B2B & B2M Release Industry Go-live plan. Website – Last Accessed 29 May 2024. Available here https://www.aemo.com.au/-/media/files/stakeholder_consultation/working_groups/5ms-meetings/rwg/may-2023-industry-go-live-plan.pdf?la=en.

- There was trust from external stakeholders for AEMO to continue to deliver the reform despite the delay in internal testing timing.

3.7 What worked well ?

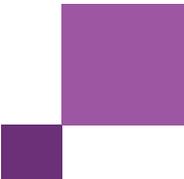
This post implementation review identified the following aspects of implementation of the SAPS reform that worked well:

- *Scope & timelines:* The project scope was clearly defined with all teams aligned for solution delivery. Timelines were well communicated and adjusted accordingly to reflect internal testing delays. This was further supported through effective separation of system and industry testing / User Acceptance Testing (UAT) cycles into distinct environments.
- *Engagement:* The project team engaged extensively both internally and externally through the lifecycle of the project. This was supported with clear reporting and cadence with detailed documentation including schedule and milestone structures, risk management, critical path planning, in addition to monthly meetings to inform participants of impending changes. Further, effective use of the Implementation Forum and ITWG are as proven means by which to undertake readiness activities.
- *Collaborative design & solution delivery:* The project team undertook extensive consultation with participants initially to determine the appropriate IT design options to support the SAPS Priority One framework, with a focus on the appropriate way to identify in MSATS that a NMI is connected to a SAPS. Subsequently, AEMO also consulted on changes to several AEMO Retail Electricity Market and Settlement procedures. This work included multiple consultation stages, as well as industry workshops. This process provided opportunity for effective collaboration with participants on the proposed design and solution delivery contributing to efficient delivery with clear objectives and prioritisation of release within AEMO.

3.8 What areas could be improved ?

While the SAPS reform was delivered on time and within budget, there were still some challenges related to tight timelines, testing delays as well as environment and release planning constraints. As such, the following areas are recommended for improvement in any future implementation of initiatives of this nature:

- *Timelines & testing delays:* Implementation of the reform was subject to South Australian Parliament passing the amendments proposed to the NEL and NERL which ultimately resulted in a compressed timeframe for delivery. For future NEL/NERL reforms, options to explore more flexible implementation schedules should be considered. Further, AEMO to identify options to stand up a project and commence requirement gathering earlier, subject to ongoing policy or rules development. Finally, as noted above in relation to testing delays, opportunities to focus on iterative development and delivery within shorter periods are to be considered, in addition to the inclusion of more detailed scope and timing requirements accommodating potential testing issues / delays in AEMO's environment management plan at project commencement.
- *Communication / Engagement:* While overall communication and engagement was positive throughout the delivery period, opportunities were identified to provide for earlier engagement within the project team including in relation to upfront planning of environments, release management and detailed resource allocation. Further opportunities to be considered to increase the profile of readiness activities across the



Program including increasing awareness of industry challenges and AEMO system constraints and communicating key milestones and critical path items for a shared / improved understanding across all participants.

- *Solution design and delivery:* While AEMO and industry were able to collaborate well on the proposed solution design and delivery, opportunities were identified to improve internal requirements definitions, including impact assessment of existing systems, identification of dependencies, constraints and support requirements. Further, where possible, earlier planning and commitment of resources and environments and the introduction of more test automation to reduce reliance on key business resources are to be explored.

4 Policy Objectives & Reform Value Assessment

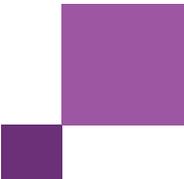
In this section AEMO provide an assessment against the stated policy objectives and reform value as documented in the AEMC’s final report Review of the Regulatory Frameworks for Stand-alone Power Systems – Priority 1.

In drafting its assessment, AEMO note the benefits of certain reforms may not be apparent from the outset and instead take time to develop or embed within the operation of the market, or participants behaviours. This is the case for the SAPS reforms as greater benefits of the enablement of SAPS provided by distributors increases over time. Therefore a subsequent assessment at a later point in time is warranted.

Table 2. Reasons for making the rule

Policy objective / value ²²	Assessment
<p>Facilitates competition and consumer choice in energy services and products</p>	<p>A change in regulatory arrangements to enable SAPS as another service / product for consumers increases competition in the market. Effective competition, in the long-run, can incentivise businesses to innovate, minimise costs, provide competitive prices, and provide a quality of service matching customer expectations and a choice of services consistent with consumer preferences.</p> <p>The facilitation of competition and consumer choice through the new regulatory framework will be more evident as the uptake of SAPS increases over time.</p>
<p>Promotes efficient investment and allocation of risks and costs</p>	<p>The new regulatory arrangements have been designed to encourage innovation and promote efficient investment in DNSP-led SAPS to supply energy to consumers. It is expected that cost savings arising from the use of lower cost SAPS will flow through to all users of the distribution network, through lower network prices. Further, transaction costs can be minimised and efficient outcomes can arise where risks and costs are appropriately allocated to the parties best placed to manage them.</p> <p>Efficient investment and reduced costs will be observed in medium to longer-term as the uptake of DNSP-led SAPS increases.</p>
<p>Clear, consistent and transparent regulatory arrangements that are proportional to the risks they seek to mitigate</p>	<p>The regulatory framework for SAPS has been designed to be as transparent and understandable as possible to encourage effective participation in the market and therefore result in expected outcomes for all participants. This includes consumers having sufficient information to make informed and efficient decisions to accept a SAPS solution. Additionally the framework implemented has been designed to balance the costs of regulatory arrangements with their benefits.</p> <p>The outcomes that the new arrangements encourage and the impact this has on market signals will be dependent on the uptake of SAPS and more evident in the medium to longer-term.</p>

²² AEMC Final Report Review of Regulatory Frameworks for Stand-alone Power Systems – Priority 1. 30 May 2019.



The reforms have been designed to help unlock the benefits of new technologies that are increasingly allowing electricity services to be delivered through alternatives to a traditional grid connection at a lower cost and with improved reliability, and with other benefits such as reduced bushfire risks, especially to those consumers in remote parts of the NEM.

Under the reforms, customers who receive stand-alone systems will retain all of their existing consumer protections, including access to retail competition and existing reliability and safety standards. As such, customers would not be disadvantaged where a distributor determined that it would be more efficient to supply them on a stand-alone basis.

4.1 Reform in action

Although the SAPS reform was implemented in May 2023, the full benefits of the reform are dependent on the following factors:

- Timing of regulation changes to support the change in NEL in each jurisdiction, to recognise regulated standalone power systems as part of a jurisdiction's specific distribution system(s) and operated by the DNSP(s). At the time of publication of this report, this has not yet occurred in Victoria or Queensland.
- Once appropriate regulations are in place, the deployment of DNSP-led SAPS, which is an opt-in reform for DNSPs.
- Consumer preferences, in the case where the option exists for their electricity to be supplied from SAPS.

Further, any cost savings expected to be delivered by the reform will become more evident in the medium to longer-term as the uptake of SAPS increases in the NEM.

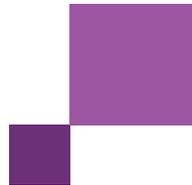
As networks are required to test their hardware / systems in the field before committing to disconnecting the customer from the network, the uptake of SAPS is not expected to be rapid. Currently there are two MSRPs registered with AEMO, both from NSW distribution companies, Ausgrid and Essential Energy, and four SAPS metering points in operation in the state.

Since 2020, there have been two SAPS that have been trialled in New South Wales (NSW), which have since gone live, both owned and operated by Essential Energy.²³ One of these systems consists of a 10.6 kW solar array, 16 KWh battery and 15 KVA diesel generator, while the other has a 10.9 kW solar array, 38 KWh battery and a 15 KVA diesel generator.

It has been reported by Essential Energy that operating these SAPS has resulted in cost savings for the customers who are very remote and are generally connected by significant distances of lines, as well as cost savings for Essential Energy, as they no longer need to maintain the distribution network to those remote areas and clear vegetation.²⁴

²³One step off the grid. Networks embrace stand-alone power as solar and batteries beat out poles and wires. Website – Last Accessed 29 May 2024. Available here: <https://onestepoffthegrid.com.au/networks-embrace-stand-alone-power-as-solar-and-batteries-beat-out-poles-and-wires/>

²⁴ Ibid.



In late 2022, Essential Energy launched an 18-month trial of a hydrogen-based system to power a heritage cottage in a national park.²⁵ The trial, in partnership with the NSW National Park and Wildlife Service, uses a combination of solar PV, a battery and hydrogen electrolysers, fuel cells and storage to power the cottage. The trial is designed to observe the effectiveness of using a hydrogen SAPS to remove the reliance on 6 km of powerlines.

Essential Energy has stated that there are about 2,000 of its customers across NSW that are economically viable to set up with a SAPS, with another 14 customers signing up for the service.²⁶

²⁵ One step off the grid. Network trials hydrogen electrolyser to dump diesel and power lines. Website – Last Accessed 29 May 2024. Available here <https://onestepoffthegrid.com.au/heritage-cottage-trials-cutting-edge-microgrid-with-green-hydrogen-electrolyser-and-fuel-cell/>

²⁶ One step off the grid. Networks embrace stand-alone power as solar and batteries beat out poles and wires. Website – Last Accessed 29 May 2024. Available here: <https://onestepoffthegrid.com.au/networks-embrace-stand-alone-power-as-solar-and-batteries-beat-out-poles-and-wires/>