

Notice on Screening for Non-network Options – Master Subtractive Metering

Essential Energy



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Glossary

Acronym	Full name
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
CAPEX	Capital Expenditure
DPAR	Draft Project Assessment Report
FPAR	Final Project Assessment Report
FRMP	Financially Responsible Market Participant (Retailer)
MSM	Master-Subtractive Metering
NEM	National Electricity Market
NER	National Electricity Rules
NMI	National Metering Identifier
NPV / C	Net Present Value / Cost
OPEX	Operational Expenditure
RIT-D	Regulatory Investment Test for Distribution

1. Background

A master subtractive metering (MSM) installation consists of a master meter that measures total, or aggregated, power consumption at premises where downstream meters exist. Meters installed downstream from a master meter are referred to as subtractive meters, as they measure a subset of power already measured by the master meter.

At the commencement of the Power of Choice program in 2017 there were 13,402 MSM installations in Essential Energy's network located over a large geographic area across regional and rural New South Wales. The number of sites continues to reduce due to customer-initiated works, e.g. the installation of solar generation, and commencement of the reactive rectification program for MSM installations.

MSM arrangements have not been installed by Essential Energy (or its predecessor organisations) for more than 20 years. This type of installation was typically used to measure consumption of controlled load hot water systems, shearing sheds and bore pumps.

MSM configurations are not technically compliant with AEMO's metrology procedures or the NER.

Complex multiple premise arrangements with one master meter servicing multiple NMIs are not compliant with the NER, which requires each connection point to have only one NMI and one FRMP. In addition to this, the published meter data for all MSM sites is not compliant with the NER or the AEMO Metrology Procedure Part A, as the meter data published to the market does not match the actual master meter reading and cannot be reconciled directly to the metering installation.

Essential Energy is responsible for the rectification of MSM sites due to its role as the initial or legacy Metering Coordinator. Six technical solutions are available for the rectification of sites involving consolidation of metering to the main switch point or more complex installation of sub-circuits or alteration of the distribution network. The appropriate solution will be determined following site assessment and is dependent on the existing NMI and MSM configuration. The specifics of the solution are independent of the requirement for rectification and therefore the assessment of credible options in this document is focused on feasible options relating to program timing.

Table 1 MSM Solution Methods

Item	Solution	Description
1	Customer main switchboard consolidation	Consolidate metering in the customer's main switchboard
2	Central metering point consolidation	Consolidate metering in the central metering point switchboard
3	Multiple metering points	Install individual metering points as required to maintain existing tariff structure
4	Subtractive metering sub-circuit	Install sub-circuits as required to maintain existing tariff structure
5	Multi-premise	Solutions for sites with multiple NMIs or any other single NMI solution including installation, alteration, or removal of distribution network
6	Non-network	Installation of non-network solution (e.g. Stand alone power system unit or solar hot water system)

Essential Energy has developed three classification levels of MSM installations, depending on the metering installation complexity, as detailed in Table 2 Current Essential Energy MSM Sites (July 2020) below.

Table 2 Current Essential Energy MSM Sites (July 2020)

Configuration Type	Description	Typical Installation
Simple configuration (8,699 premises)	<ul style="list-style-type: none"> > One Master Meter > One Subtractive Meter > One NMI > One FRMP 	<p>Simple</p>
Complex Single Premises configuration (2,457 premises)	<ul style="list-style-type: none"> > Either more than one Master Meter, or > More than one Subtractive Meter, or > More than one of each > One NMI 	<p>Complex Single Premise</p>
Complex Multiple Premises configuration (757 premises)	<ul style="list-style-type: none"> > Either more than one Master Meter, or > More than one Subtractive Meter, or > More than one of each > Two or more NMI > One or more FRMPs 	<p>Complex Multiple Premise</p>

2. Proposed Network Option

Rectification of the MSM sites will be completed to ensure compliance with regulatory requirements. This involves the rewiring of sites to consolidate metering to a single switchboard and single NMI. The following general activities will occur during the program and for each site.

1. Detailed planning and project management activities to ensure the program is set up for success and managed well throughout the life of the program
2. Communication with the relevant customer, throughout the duration of MSM rectification activities at each site, and depending on the complexity of the site, communication with multiple customers
3. Site preparation activities including:
 - a. Customer outage coordination
 - b. Undertaking detailed site inspection at each MSM installation.
 - > Based on the detailed site inspections and given the high number of possible variations involved, additional and specific parts / stores may be required
 - c. Undertaking detailed individual site rectification technical design development activities, which may involve design activities that span over several properties or easements
4. Investigating wiring configurations “behind the meter” on a site-by-site basis and rectifying wiring in line with individual site complexity:
 - a. Expected on-site work duration range: 2 hours (simple sites) to 5 days (complex sites)
 - b. The level of complexity at each site is not known until each site is investigated in detail

- c. The wiring process can be relatively simple in line with standard meter changes or extremely complex, requiring complete rewiring of metering arrangements across the site, which may be kilometres apart on some remote sites and across multiple retailers
- 5. Engaging with impacted retailers to coordinate relevant MSM rectification activities
- 6. Engaging with the relevant metering coordinators for each site to coordinate relevant rectification activities
- 7. Leading ongoing collaboration with stakeholders throughout the rectification plan.

Essential Energy identified five credible network options, which vary in the timing of delivery and the resources used.

The options were formulated based on the following key constraints:

- 1. The availability of specialist resources to undertake the rectification plan — given the large number of sites that need to have the wiring corrected, and the specialist skills that will be required to complete this type of work
- 2. The logistical implication associated with the rectification plan in terms of geographic coverage and the time needed to undertake the work
- 3. The need to complete the rectification plan in the most efficient way
- 4. No funding is allowed for in Essential Energy’s 2019-24 AER determination to rectify MSM installations.

Table 3 describes the options that were considered.

Table 3 Network Options

Option	Description	Result
1	Arrange for the rectification of all MSM sites in one regulatory period 2019-24 – outsourced delivery	<ul style="list-style-type: none"> > Higher cost option than using internal resources > Significant financial consequences for Essential Energy as no funding is allowed for in the AER 2019-24 determination > Likely that external resources will need further training > Control risk due to extent of resourcing.
2	Arrange for the rectification of all MSM sites in one year – outsourced delivery	<ul style="list-style-type: none"> > Best outcome for timely compliance > Higher cost option than using internal resources > Significant financial consequences for Essential Energy as no funding is allowed for in the AER 2019-24 determination > Likely that external resources will need further training > Unlikely to be achievable in the short timeframe due to the preparatory work required > Potential for insufficient customer communications.
3	Arrange for the rectification of all MSM sites over two regulatory periods 2019-29 – internal delivery	<ul style="list-style-type: none"> > Lower cost option than using external resources > Reduced financial consequences for Essential Energy as, although no funding is allowed for in the AER 2019-24 determination, there is the potential for recovery of some costs in the 2024-29 determination > Trained resources with coverage in remote locations > Increased administrative costs due to longer rectification period > Delays compliance until 2029.

Option	Description	Result
4	Undertake the rectification work reactively when the MSM fails – expected to be completed over five regulatory periods 2019-2044 – internal delivery	<ul style="list-style-type: none"> > Best outcome for cost management > Trained resources and best outcome for work scheduling > Non-compliance until 2044 is unlikely to be acceptable.
5	Arrange for the rectification of all MSM sites before end of FY29 – blended approach (internal and outsourced delivery)	<ul style="list-style-type: none"> > Provides greater resource flexibility to prioritise high-risk work and respond to critical incidents without affecting program delivery timescales > Provides a potential opportunity (dependent upon market availability and other criteria) to phase the MSM program > By using a blended approach, Essential Energy can use its resources to best effect in these works and in its recovery response to COVID-19 and bushfire impacted programs > Allows the proactive program to be efficiently completed using contract resources while maintaining control over rectification timeframes using internal resources for failed sites > Provides a potential opportunity to stimulate NSW regional economies through the engagement of external resources in these areas.

2.1 Preferred Option at this Draft Stage

Option 5 has been found to be the preferred option. It involves rectifying all MSM sites within two regulatory periods (2019-2029), utilising both internal and external resources.

Refer to the Draft Project Assessment Report for this project for further details about the options assessment.

3. Assessment of Non-Network Solutions

Essential Energy has completed an assessment of credible options and determined that no viable non-network options exist. Rectification of MSMs occur for non-network activity such as installation of behind the meter generation, EV chargers and stand alone power systems. These constitute a non-network solution however, the rate of uptake is not significantly influenceable to meet the scale and response time required. The identified need, as a result of meeting the changes to regulatory policy (the power of choice program), necessitate changes to the MSMs which preclude non-network options as an alternative.

4. Conclusion

It is not considered possible that a non-network option could address the identified need given the constraints imposed by compliance. Consequently, a Non-Network Options Report has not been prepared in accordance with clause 5.17.4(c) of the NER.