

MCE Decision paper

13 December 2007

A National Minimum Functionality for Smart Meters

In April 2007 COAG committed to a national mandated roll-out of electricity smart meters to areas where benefits outweigh costs, as indicated by the results of the cost-benefit analysis which will take account of different market circumstances in each state and territory and the circumstances of different groups of consumers.

MCE noted the full cost-benefit study is almost complete and will undergo public consultation in January/February 2008. MCE will review the results and stakeholder views at its next meeting in early 2008 and agree on the scope, timeframe and implementation framework for the national roll-out, considering the different market circumstances and costs and benefits identified in each state and territory.

MCE notes that businesses could consider this upcoming decision in developing existing meter asset replacement programs, to minimise unnecessary risks of stranded assets. MCE notes that NEMMCO is already supporting this form of risk management planning in reviewing asset management plans of Victorian businesses. MCE would encourage this.

COAG also committed MCE to develop a national minimum functionality for smart meters. Phase 1 of the cost-benefit study considered the direct benefits of a range of functions that could be included in the national minimum functionality and consulted with stakeholders on the benefits of a consistent national minimum.

MCE agrees with the uniform stakeholder view that a consistent national minimum functionality for smart meters will maximise the benefits of smart meters for all stakeholders. MCE agrees to establish the minimum functionality in the National Electricity Rules (Rules) and relevant regulatory arrangements in the other jurisdictions that it will form the basis for any future government decisions on smart meter deployment, including any mandated roll-out and any new jurisdictional programs.

Jurisdictions agree to review existing related programs, once the national roll-out process is agreed, and develop any relevant transitional arrangements to ensure stakeholders can capture future benefits from a consistent national standard and that any risks of stranded costs are minimised.

Based on a cost-benefit analysis of each function and considering views from subsequent consultation, Ministers have agreed to support an initial set of functions to be included in the national minimum functionality. This list includes:

- Remotely read interval metering, with the meter capable of daily reads;
- Quality of supply and outage detection to improve consumer supply services;
- Import and export metering to support distributed generation such as solar PV;
- Ability to control connection and disconnection remotely and apply supply capacity limits to manage emergency situations;
- Ability to manage load through a dedicated circuit, to support existing off-peak arrangements; and

- Supporting management functions such as data security, tamper detections, remote configuration, remote upgrade and plug-and play installation.

MCE is still considering further specific requirements for the home area network to support in-home displays and appliance control.

MCE noted that performance levels considered in the cost-benefit analysis were only indicative and agreed that detailed technical requirements, including performance and service levels, should be fully developed by a technical stakeholder group. This should include an analysis of the full costs of service level requirements, as some functions while mandatory in the meter (for future flexibility and scale) may be left to individual business decisions to support.

MCE will prepare terms of reference for this technical stakeholder group, to include industry, consumers and market managers, and request them to:

- Develop and recommend technical specifications, performance requirements and amendments to functions, based on a sound benefits case.
- Develop and recommend service standards, including analysis of cost implications;
- Propose supporting National Electricity Rule changes and relevant changes to WA and NT instruments; and
- Develop appropriate supporting technical documentation through standards and/or NEM procedures.
- Considered any related decisions arising from Phase 2 of the cost-benefit assessment.

All detailed technical specifications must meet the key criteria of maximising net benefits across different stakeholder groups. Ministers also note that as part of the Rules, the national minimum functionality will be subject to ongoing stakeholder review through the usual AEMC Rule change procedures.

MCE recognises that smart meters technologies carry the usual technical challenges associated with any relatively new technology. Ministers note the importance of further pilots and technology trials to maximise benefits and minimise costs and risks. Ministers will facilitate an appropriate range of pilots as part of any implementation plan and will consult with stakeholders on a framework to prioritise, support and share outcomes from these pilots.

MCE recognises the importance of interoperability and/or open communication standards to support competition and flexibility. Stakeholders broadly agreed that interoperability is critical to minimising future costs and risks, but that international standards remain under development and further work would be required to apply any existing standard to Australian requirements. Ministers will develop a supporting framework to promote the development of interoperability and ongoing competition in metering as part of the implementation of any mandate.

MCE also recognises that a number of the new functions, such as remote connect/disconnect and supply capacity limits, will require review of existing jurisdictional consumer protection and safety arrangements. Ministers commit to work with stakeholders and the appropriate jurisdictional consumer protection and safety authorities, post the decision on the extent of a national roll-out in 2008, to review these arrangements and ensure they remain appropriate for each jurisdiction.

MCE RESPONSE ON INITIAL FUNCTIONS TO BE INCLUDED IN
THE NATIONAL MINIMUM FUNCTIONALITY FOR SMART METERS

Functionality		Description	Consultant view	Recommendation	MCE decision
1-8	Core functions	1. Half hourly consumption measurement & recording 2. Remote reading 3. Local reading – hand-held device 4. Local reading – meter display. 5. Communications and data security. 6. Tamper detection. 7. Remote time clock synchronisation. 8. Load management at meter – dedicated control circuit.	Include	Agree – these functions are recommended as fundamental to any smart meter deployment. However, there has not been extensive analysis of these functions individually and that including these functions reflects their fundamental nature as part of any smart meter – not a benefits case to support roll-out. The benefits case for smart meter roll-out will be considered as part of Phase 2. The need for a stakeholder technical review of performance and service levels is recognised and supported.	Support inclusion, subject to further advice.
9	Daily read	Daily remote collection of the previous trading days energy data	Include	Agree – the Phase 1 Report indicated that there was no incremental cost associated with this function in relation to the meter functionality and that significant benefits may accrue to retailers. Some retailers strongly support this function. However, some stakeholders have raised questions as to the costs of specific service levels. The function is therefore supported in the meter, but there is a need for a stakeholder technical review of performance and service levels, which should also confirm the cost of supporting the performance and service levels.	Support inclusion of capability in meter – but requests further advice
10	Power factor - three phase	Half-hour reactive interval energy measurement and recording on three phase meters.	Include	Agree – based on the argument put by consultants of minimal costs. However the stakeholder technical review is to confirm this case through further analysis.	Support inclusion
10	Power factor - single phase	Half-hour reactive interval energy measurement and recording on single phase meters.	Not included	Agree - A small number of stakeholders put a case forward to continue to include this function; most supported the recommendation. There may be merit in further testing in this area, but a clear benefits case has not yet been made.	Do not support inclusion

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11	Import Export	Records active energy flows both into the electricity grid and out, where the customer has installed local generation (eg, solar cells).	Include	Agree - a benefits case by reducing the incremental cost of net interval metering where PV is installed, by avoiding meter replacements at very low incremental cost in the meter. Net interval metering will also support a much wider range of future feed-in tariffs than current net accumulation metering. Some stakeholders have raised the concern that a reduced incremental cost for net metering feed-in tariffs may increase the preference against gross metering feed-in tariffs, which would still require a meter replacement. However there are currently no gross PV feed-in tariffs in Australia and the cost to support any such tariff has not been increased. The objective of gross tariffs under flat tariffs, to compensate for the undervaluing of PV generation, may be better achieved through time-reflective tariffs valuing peak generation more appropriately.	Support inclusion
12	Remote connect/disconnect	Allows the power to a customer's premise to be connected or disconnected remotely	Include	Agree – based on a benefits case for operational efficiencies supported by stakeholders. However, <i>some benefits (but not all) are contingent on appropriate safety arrangements</i> . A review is required of consumer protection arrangements and safety regulations to clarify these impacts, in addition to the stakeholder technical review of performance and service levels .	Support inclusion – but request further advice
13	Supply capacity control	Provides the ability to limit power to individual customers, for example in recovery from a black out to manage stability and allow recovery power for emergency services.	Include	Agree – based on a benefits case for system management, supported by stakeholders. However, <i>some benefits are contingent on appropriate safety arrangements</i> . A review is required of consumer protection arrangements and safety regulations to clarify these impacts, in addition to the stakeholder technical review of performance and service levels .	Support inclusion – but request further advice
14	Load management at meters – dedicated control circuit	Supports existing arrangements for load control of electric storage water heating and space heating systems. This functionality allows more rapid and flexible use of load control than in the core case.	Include	Agree - this form of load control should operate at a service level which reflects existing capabilities. This should be part of the technical stakeholder review of performance and service levels .	Support
15	Interface to load control - direct	Allows devices in the home to be controlled directly from the	Further work	Consider further - direct load control is important. However, this mechanism would be redundant in a roll-out if function 16 was	Do not support inclusion at this

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		communication network, bypassing the meter via proprietary control technologies.		confirmed, as it achieves a similar outcome with an open standard. A decision on this function will be made subject to Phase 2 recommendations.	time – pending further advice in Phase 2
16	Home Area network	The capability to interface with an in-home display or other in-home device via a home area network (HAN) using an open standard	Further work	<p>Consider further – strong stakeholder support was evident for the benefits of a home area network under an open standard. This is one of the most important functions for innovation and development of this technology. It is expected this function would be supported, subject to Phase 2 findings.</p> <p>The recommended open standard and technology is ZigBee. However, further piloting and review is needed to demonstrate the maturity of this technology prior to any substantive deployment. A stakeholder technical review of performance and service levels will be sought.</p>	Expect to support – pending further advice in Phase 2
17	In home display	An in-home display, provided as part of the national roll-out, provides a communications interface with the home owner.	Not included	Agree - the deployment of IHD is supported in-principle. However, noting that this function is the most critical for innovation, and may be easily and cheaply retrofitted and exchanged separately from the meter, it is considered that this should be subject to market choice rather than a minimum function mandate. Additional market incentives to supply IHDs may be considered as part of Phase 2 decisions.	Support not including in a mandate – but may consider further incentives
18	Water and gas metering	Gas and water meters would be able to be read remotely, via a communications interface in the electricity meter.	Not included	Agree – but support further work. The economic case needs further development and the functionality is likely achievable via the ZigBee HAN. Further piloting in this area is necessary to develop this case further.	Support not including in a mandate – but support further work
19	Quality of supply and other event recording	Enables meters to record information in relation to quality of supply and other events (eg: outage). The event log could then be read remotely.	Include	Agree – a benefits case, particularly noting the qualitative long term benefits of greater information about customer's individual service levels and the ability to improve service standards in problem areas. However there is a need for a technical stakeholder review of performance and	Support inclusion

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				service levels, particularly to examine any supporting costs.	
20	Loss of supply detection and outage alarm	Enable a loss of supply to the meter and system outages to be detected.	Include	Agree – a clear benefits case. However SCO supports the need for a technical stakeholder review of performance and service levels . SCO also requests the industry review confirms the operation of this function with the complementary function 22.	Support
21	Customer supply Monitoring	Detects and alarms reverse polarity, degradation neutral, or degradation the earth connection.	Further work	Agree – this function is not yet ready and may have a limited benefits case even if it was.	Do not support inclusion at this time
22	Real time service checking	The meter can be "pinged" remotely in real time in order to check the presence of supply to a meter.	Not included	Further work – Stakeholders raised significant questions as to the best implementation of this function versus function 20. SCO requests that the technical stakeholder review of performance and service levels consider this function and its aggregate costs and benefits with function 20.	Request further consideration with function 20.
23	Interoperability - application layer	Allows IT systems to use one set of application layer commands and be able to communicate to multiple smart metering systems. Allows alternative sources of supply for meters	Further work	Interoperability is a core issue strongly supported by stakeholders. However a mature and appropriate international open standard is not yet supported by a range of providers. A range of options will be considered as part of Phase 2 to ensure development toward interoperability is maximised and ongoing competition in meter manufacture is promoted.	Further consideration in Phase 2
24	Interoperability - devices	Hardware components can operate with components from different manufacturers – for example communications modules and meters.	Further work	Interoperability is a core issue strongly supported by stakeholders. However a mature and appropriate international open standard is not yet supported by a range of providers. A range of options will be considered as part of Phase 2 to ensure development toward interoperability is maximised and ongoing competition in meter manufacture is promoted.	Further consideration in Phase 2
25	Remote configuration	Meter settings can be changed remotely. Enables use other meter functionalities, including load management (14), supply capacity control (13) and quality of supply	Include	Agree – based on a benefits case. However there is a need for a technical stakeholder review of performance and service levels .	Support inclusion

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		recording (19).			
26	Remote software upgrades	The software in the meter can be upgraded remotely by the responsible person over the communications link, without the need for a site visit or action from the customer.	Include	Agree – based on a benefits case. However there is a need for a technical stakeholder review of performance and service levels.	Support inclusion
27	Separate base plate	The provision of a standard base-plate into which the meter can be plugged. It may be possible for the communications unit to be plugged into the base plate as well. Future upgrades to the meter or communications unit could then be undertaken by plugging in the new units, rather than replacing the whole installation.	Not included	Agree –Accept findings and stakeholder views that a long term benefits case for base plates is difficult to justify.	Do not support inclusion
28	Non meter board install	Instead of the meter being mounted on the wall of the premises it is mounted elsewhere (eg, on the power pole supplying the premises).	Not included	Agree – Accept findings and stakeholder views that while non-meter board deployment may be relevant in some cases there is no case for an alternative wide-scale deployment mechanism.	Do not support inclusion
29	Plug and play commissioning	Allows meters to be activated and registered on the system remotely once installed, rather than manually.	Include	Agree – based on a benefits case. However there is a need for a technical stakeholder review of performance and service levels.	Support inclusion