About this Report

This report – Roadmap for Advanced Metering Standards Report – July 2016, was prepared by Standards Australia.

Financial support for the Roadmap for Advanced Metering Standards from Standards Australia’s co-resourcing partners (Vector, Landis+Gyr, EDMI, ENA and Origin) is gratefully acknowledged.

Roadmap funding partners:
Foreword

Dr Bronwyn Evans, Chief Executive Officer, Standards Australia

The rapidly developing energy sector represents major challenges and opportunities for the Australian public, government and industry stakeholders. For many Australians, the key to accessing the new features, benefits and services that will be facilitated through the establishment of the smart grid is the installation of advanced meters. These new ‘smart’ meters have the potential to enable greater interconnectedness by supporting communication between appliances, permitting the use of alternative and renewable energy sources, allowing remote meter reading and managing energy demand response.

Economic efficiencies, improvements in standards of living and increased use of alternative clean energies are just some of the benefits we could see emerge over the next few years as a result of the changing energy sector.

As we enter into a new energy environment, it is essential that energy sector innovators are encouraged to develop new technologies and suppliers are able to make these technologies speedily available to the public. At the same time, it is critical that the uptake of innovations is managed through a safe, reliable and efficient process. Enabling this safe, reliable and efficient adoption of smart meters relies upon the ability of regulators, stakeholders and standards developers to implement appropriate measures designed to build public confidence and establish market certainty.

This report explains the methodology and process utilised by Standards Australia to develop a Roadmap for Advanced Metering Standards in Australia. It highlights the critical role Australian Standards have in supporting the Australian economy, enabling the spread of technology and supporting the country’s critical infrastructure. This report also demonstrates Standards Australia’s ability as an independent facilitator to deliver innovative market based policy recommendations and voluntary standards-based solutions to address contemporary matters of public priority in Australia.

This report and the Roadmap were made possible with the support of industry funding partners as well as the participation and contributions of a broad base of Australian energy sector stakeholders. Standards Australia is proud to have facilitated the development of the Roadmap for Advanced Metering Standards.
<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About this Report</td>
<td>2</td>
</tr>
<tr>
<td>Foreword</td>
<td>3</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>5</td>
</tr>
<tr>
<td>Background</td>
<td>6</td>
</tr>
<tr>
<td>Methodology</td>
<td>7</td>
</tr>
<tr>
<td>Developing the Roadmap</td>
<td>8</td>
</tr>
<tr>
<td>Forum March 2016</td>
<td>8</td>
</tr>
<tr>
<td>EL-011 Metering Equipment Meeting April 2016</td>
<td>10</td>
</tr>
<tr>
<td>Work Stream Meetings April 2016</td>
<td>11</td>
</tr>
<tr>
<td>Forum June 2016</td>
<td>13</td>
</tr>
<tr>
<td>Roadmap</td>
<td>14</td>
</tr>
<tr>
<td>Priority 1</td>
<td>14</td>
</tr>
<tr>
<td>Priority 2</td>
<td>15</td>
</tr>
<tr>
<td>Priority 3</td>
<td>16</td>
</tr>
<tr>
<td>Roadmap Summary</td>
<td>17</td>
</tr>
<tr>
<td>Conclusion</td>
<td>18</td>
</tr>
<tr>
<td>Forward Planning</td>
<td>18</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>19</td>
</tr>
<tr>
<td>More Information</td>
<td>19</td>
</tr>
<tr>
<td>About Standards Australia</td>
<td>19</td>
</tr>
</tbody>
</table>
Executive Summary

This report provides a Roadmap for Advanced Metering Standards in Australia (Roadmap). It also provides a background to advanced metering standards and explains the process of developing the Roadmap.

The standards identified for development as part of the Roadmap are designed to address metering standards-related issues including: safety; tariffs and load control; testing; Australian community expectations; temperature ranges; and other relevant matters.

Standards Australia facilitated the development of a Roadmap for Advanced Metering between March 2016 and June 2016. The work was designed to support the safe and efficient roll out of smart meters in Australian cities and communities as the country progressively transitions to a smarter economy.

Over the course of a number of years there had been technological developments relating to metering equipment and the International Electrotechnical Commission Technical Committee 13 (IEC TC 13 Metering Equipment) has developed a series of contemporary International Standards that incorporate these technological advancements. Despite these advancements, the Australian Standards for metering had not been updated by Standards Australia technical committee EL-011 Metering Equipment (EL-011) since 2006.

This report was produced as a result of a series of forums and stakeholder consultations between March and June 2016 which offered industry, consumer and government stakeholders the opportunity to assess the current Australian Standards and identify relevant International Standards for adoption and use in Australia.
Background

Throughout 2014 and 2015 the Australian Energy Market Operator (AEMO) worked with the Minimum Functionality and Shared Protocol (MFSP) reference group in forming advice to the Council of Australian Governments (COAG) Energy Council on the requirements for a minimum functionality specification for advanced meters.

The roles of Standards Australia and the National Measurement Institute on an advanced metering specification were considered by AEMO through the review. AEMO considered Standards Australia to be the appropriate body to facilitate the development or adoption of standards for the functional design of advanced metering technology.

Standards Australia hosted a forum in November 2014 to discuss standards for advanced metering. For the development of relevant advanced metering specifications in Australia, the forum of sector stakeholders agreed:

- Contemporary, internationally aligned Australian Standards were required for smart meters;
- Australia’s Participation Membership of IEC TC 13 Metering Equipment was necessary; and
- Standards Australia technical committee EL-011 would be responsible for developing the relevant Australian Standards.

The forum also agreed that there was a need to assess the existing Australian Standards and relevant International Standards for suitability of use and subsequent adoption in Australia.

The development of an IEC standard for metering safety (IEC 62052-31, Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 31: Product safety requirements and tests) was also discussed at the forum. Stakeholders agreed that this safety standard IEC 62052-31 would partially supersede existing metering equipment standards and as such a full review of all standards for metering equipment in Australia would be necessary moving forward.

Through 2015 five key industry partners (Vector, Landis+Gyr, EDMI, ENA and Origin) agreed to co-resource the development of a Roadmap with the following actions:

1. Stakeholder consultations for metering standards;
2. Reconstitution of EL-011 and commencement of safety project for metering equipment;
3. Development of a Roadmap including a work program for metering equipment standards to be developed by EL-011; and
4. Publication of a Roadmap including the work program and priority list of Australian Standards required to support the roll out of smart meters in Australia.
Methodology

The development of the Roadmap involved a series of forums and industry-wide consultations which allowed for stakeholders to consider which standards would be necessary to support Australia’s advanced metering equipment infrastructure.

The development of the Roadmap was an inclusive process allowing government and industry (including all parts of the supply chain) as well as consumer and research organisations to fully participate in stakeholder consultations moderated and hosted by an independent and neutral facilitator, Standards Australia.

Stakeholder consultations commenced formally in March 2016 and the draft Roadmap was released in June 2016.
Developing the Roadmap

Forum March 2016

Australian stakeholders came together on Thursday 3 March 2016 to set a clear path towards safer, more efficient and market-ready smart meters at the first forum of Standards Australia’s Roadmap for Advanced Metering Standards.

The forum participants considered the key standards-related issues regarding the roll out of smart meters and agreed to focus their activities in four work streams:

- Safety;
- General Requirements, Tariff & Load Control;
- Accuracy & Protocol; and
- Acceptance & Dependability.

The forum agreed that focused work on safety would be undertaken by EL-011 which is comprised of a balanced representation from government, industry and consumers. Research and investigative work would be undertaken by relevant technical experts in the other work streams. A report on the outcomes and the findings of the four work streams would be presented at the next stakeholder forum.
Forum March 2016 Speakers

Mr Neil Fraser, Energy Safe Victoria; Mr Roy Kaplan, Australian Energy Market Operator and Chair of EL-011; Mr Andrei Lachsz, Origin Energy

Mr David Maclean, Landis+Gyr; Mr Doug Ross, Vector; Mr David Sands, EDMI

Ms Susan Streeter, Energy Networks Association; Mr Varant Meguerditchian, Standards Australia
EL-011 Metering Equipment Meeting April 2016

The EL-011 committee met on 19 April 2016 to kick off the project for the modified adoption of IEC 62052-31. The committee appointed Mr Roy Kaplan representing AEMO to the role of Chair of EL-011; Mr Boris Kobal representing the Energy Networks Association was appointed to lead document drafting.

The following organisations are represented or allocated positions on EL-011:

- Energy Networks Association
- Australian Energy Council
- Australian Chamber of Commerce and Industry
- Australian Energy Market Commission
- Australian Energy Market Operator
- National Measurement Institute
- Electrical Regulatory Authorities Council
- Department of Industry, Innovation and Science (Australian Government)
- National Electrical and Communications Association
- Master Electricians Australia
- Electrical Compliance Testing Association
- Australian Industry Group
- Consumers Federation of Australia

The EL-011 committee agreed to undertake the project with consideration given to:

- International alignment is a key policy for Standards Australia as set out by the WTO;
- Modifications can be made for Australian environmental conditions; and
- Metering conditions in Australia differ as most of the network is above ground.

The project schedule for modified adoption of IEC 62052-31

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<td>2</td>
<td>3</td>
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Aged Standards Review Outcomes

The EL-011 committee also reviewed 16 aged Australian Standards for metering equipment to consider whether the standards should be withdrawn, revised or reconfirmed.

The EL-011 committee’s Aged Standards Review recommended the Revision of 3 Australian Standards.
Work Stream Meetings April 2016

Works Stream meetings for assessing IEC standards developed by international technical committee IEC TC 13 Metering Equipment were held on 20 April 2016. The Work Stream Meeting was open to all stakeholders and included the participation of more than 30 contributors from across the industry supply chain, government and user groups. Stakeholders shared their views on the relevance of the respective IEC standards for Australia and ranked them in order of priority for development and adoption.

General Requirements, Tariff & Load Control Work Stream Outcomes

The General Requirements Work Stream met on 20 April 2016 to assess the suitability of 12 General Requirements, Tariff and Load Control IEC standards for adoption in Australia.

**GENERAL REQUIREMENTS – CONSIDERATIONS**

- IEC general requirements standards are partially superseded by the IEC 62052-31 safety standard
- IEC general requirements standards are being edited to remove references to safety
- The edited IEC general requirements standards should be published in mid 2016
- Standards Australia EL-011 will be in a position to seek to adopt (with modifications) when published

The General Requirements Work Stream recommended 2 Direct Text Adoptions and 5 Modified Adoptions.
Accuracy & Protocol Work Stream Outcomes


ACCURACY & PROTOCOL – CONSIDERATIONS

- IEC Standards can be an alternative to OIML standards
- Edited accuracy and protocol standards should be published in mid 2016
- Standards Australia EL-011 to monitor these standard and may consider adopting in the future


Acceptance Testing & Dependability Work Stream Outcomes


ACCEPTANCE & DEPENDABILITY – CONSIDERATIONS

- The acceptance and dependability standards may already be covered by NITP14
- Standards Australia EL-011 will monitor developments relating to NITP14

The Acceptance Testing and Dependability Work Stream recommended 2 Direct Text Adoptions and 15 Modified Adoptions.
Forum June 2016

Australian stakeholders came together on Thursday 16 June 2015 for the second forum in the Roadmap for Advanced Metering Standards.

The forum provided an update on the work undertaken by EL-011 on the modified adoption of IEC 62052.31. Reports from the three other Work Streams were presented and the draft Roadmap was released for consideration by stakeholders.

A question and answer session at the forum was dedicated to discussing the forward plan including the support Standards Australia would provide to guide stakeholders with preparing project proposal submissions.

The Roadmap including a Work Program involving the development of 23 Australian Standards was released in draft at the Forum June 2016.
Roadmap

The Roadmap for Advanced Metering Standards includes a comprehensive work program involving the development of 23 Australian Standards by EL-011 in order of priority.

Standards listed for development as part of the Roadmap for Advanced Metering are categorised into three classes of priority.

Priority 1

- Safety Standard – Modified adoption of IEC 62052-31, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 31: Product safety requirements and tests*

- General Requirements, Tariff & Load Control Standard – Modified adoption of IEC 62052-11, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 11: Metering equipment*

- General Requirements, Tariff & Load Control Standard – Modified adoption of IEC 62052-21, *Electricity metering equipment (a.c.) – General requirements, tests and test conditions – Part 21: Tariff and load control equipment*

- Accuracy & Protocol Standard – Modified adoption of IEC 62053-21, *Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)*

- Accuracy & Protocol Standard – Modified adoption of IEC 62053-22, *Electricity metering equipment (a.c.) – Particular Requirements – Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)*

- Accuracy & Protocol Standard – Modified adoption of IEC 62053-23, *Electricity metering equipment (a.c.) – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)*

- Accuracy & Protocol Standard – Modified adoption of IEC 62053-24, *Electricity metering equipment (a.c.) – Particular requirements – Part 24: Static meters for reactive energy at fundamental frequency (classes 0,5 S, 1S and 1)*
Priority 2

- General Requirements, Tariff & Load Control Standard – Identical adoption of IEC 62053-31, *Electricity metering equipment (a.c.) – Particular requirements – Part 31: Pulse output devices for electromechanical and electronic meters (two wires only)*

- General Requirements, Tariff & Load Control Standard – Identical adoption of IEC 62053-61, *Electricity metering equipment (a.c.) – Particular requirements – Part 61: Power consumption and voltage requirements*

- General Requirements, Tariff & Load Control Standard – Modified adoption of IEC 62056-21, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange*


Priority 3

- Acceptance & Dependability Standard – Review IEC 62058-21, *Electricity metering equipment (AC) – Acceptance inspection – Part 21: Particular requirements for electromechanical meters for active energy (classes 0,5, 1 and 2)*
- Acceptance & Dependability Standard – Review IEC 62058-31, *Electricity metering equipment (AC) – Acceptance inspection – Part 31: Particular requirements for static meters for active energy (classes 0,2 S, 0,5 S, 1 and 2)*
## Roadmap Summary

A table summary of the Roadmap for Advanced Metering

<table>
<thead>
<tr>
<th>Priority 1</th>
<th>Priority 2</th>
<th>Priority 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Standard</td>
<td>IEC 62052-31</td>
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<tr>
<td>Acceptance Testing and Dependability Standards</td>
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<td>IEC 62058-11 IEC 62058-21 IEC 62058-31</td>
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<td>Aged Standards Review</td>
<td>AS 1284.1 AS 1284.11 AS 1284.12</td>
<td></td>
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</tbody>
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Note: The above standards will be Adopted, Adopted with Modifications, Revised, or Identified for Monitoring under the Roadmap for Advanced Metering Standards. For details on the standards and the Roadmap refer to the priority list on pages 14–16.
Conclusion

The Roadmap for Advanced Metering Standards was developed through a collaborative and inclusive process involving the participation and contributions of key stakeholders representing government, industry, research and consumer organisations.

The stakeholders collectively assessed the potential use and adoption or development of metering equipment standards covering technical issues including: safety; general requirements; tariff & load control; accuracy & protocol; and acceptance & dependability.

The agreed Roadmap includes a comprehensive work program involving the development of 23 Australian Standards.

The Roadmap serves as a guide to inform stakeholders of the proposed path toward the development of advanced metering standards to support the roll out of smart meters in Australia.

Forward Planning

The publication of this Roadmap for Advanced Metering Standards paves the way for stakeholders to submit proposals for the development of contemporary Australian Standards for advanced metering.

Standards Australia will be working with EL-011 and other stakeholders over the coming 2 to 3 year period to prepare and submit project proposal forms, and to develop contemporary Australian Standards for advanced metering. The proposal forms and standards development activities will be informed by the work program and priority projects as set out in the Roadmap.

Standards Australia recognises that stakeholders may ultimately seek to not develop Australian Standards for advanced metering exactly in accordance with the Roadmap.
Acknowledgements

This report benefited from significant inputs and insights provided by Standards Australia's EL-011 Metering Equipment technical committee.

Useful comments and suggestions on various aspects of this report and Roadmap were provided by Mr Roy Kaplan (Australian Energy Market Operator), Mr Boris Kobal (Ausgrid) and Mr Doug Ross (Vector).

The report does not reflect the views of Standards Australia, AEMO, Ausgrid, Vector, Landis+Gyr, EDMI, ENA or Origin.

More Information

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Mr Varant Meguerditchian is a public affairs and management professional. In his role at Standards Australia, he is responsible for engaging with government and industry stakeholders to address various issues of public interest. Mr Meguerditchian has made representations to government and worked to influence and shape key policies across a number of sectors including energy, information technology, communications, health and business. He has represented the Australian government and industry stakeholder interests at public forums and ISO & IEC policy meetings in Australia, the Asia-Pacific, Europe and South America. Mr Meguerditchian has previously held positions in the Australian commercial banking industry and also served as Executive Director of ANC Australia.

Mr Meguerditchian holds a Master of Management from Macquarie University and a Master of International Relations from Griffith University. He has served as an Infantryman in the Australian Army Reserve. Mr Meguerditchian is currently based in Sydney.

About Standards Australia

Founded in 1922, Standards Australia is an independent, not-for-profit organisation, recognised by the Commonwealth Government as the peak non-government Standards development body in Australia. It is charged by the Commonwealth Government to meet Australia's need for contemporary, internationally-aligned Standards and related services. The work of Standards Australia enhances the nation's economic efficiency, international competitiveness and contributes to community demand for a safe and sustainable environment.

www.standards.org.au