5MS Metering Focus Group

9:30am – 3:30pm
Friday 14 June 2019

AEMO Office:
AEMO Melbourne Office - L22, 530 Collins Street, Melbourne
Face-to-face only

Agenda

NO	TIME	AGENDA ITEM	RESPONSIBLE
Preliminary Matters			
1	9:30am - 9:45am	Welcome, Introduction and General Housekeeping	Blaine Miner (AEMO)
Matters for Noting and Discussion			
2	9:45am - 10:15am	Metering Consultation Update	Blaine Miner (AEMO)
3	10:15am - 11:00am	MSATS Standing Data Scenarios	David Ripper (AEMO)
	11:00am - 11:15am	Break	
4	11:15am - 12:00pm	Non-contestable Unmetered Loads	David Ripper (AEMO)
5	12:00pm - 12:30pm	Proposed Metering Data Quantity and Quality SLAs	Blaine Miner (AEMO)
	12:30pm – 1:00pm	Lunch	
6	1:00pm – 1:30pm	RM Reports	Simon Tu (AEMO)
7	1:30pm – 2:00pm	Readiness Workstream	Greg Minney & Emily Brodie (AEMO)
	2:00pm - 2:15pm	Break	
8	2:15pm – 3:00pm	Preparing for 1 July 2021	Blaine Miner (AEMO)
9	3:00pm – 3:30pm	General Business and Next Steps	Blaine Miner (AEMO)

Metering Consultation Update

Blaine Miner

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Metering Consultations Overview

- Package 1 –
  - 5MS Only
    - Contained 5 procedures all with an effective date of 1 July 2021
      - Met Part A, Met Part B, MDFF Spec, Meter Data Provision and Glossary & Framework

- Package 2 – Co-consultation
  - ICFs
    - Contains 8 procedures with an effective date of May 2020

  - 5MS/GS/Changes in the delivery of metering data to AEMO
    - Contains 12 procedures with various effective dates
      - 4 with an effective date of Dec 2020
        - To allow for transitional periods for changes in the delivery of metering data to AEMO
      - 7 with an effective date of Feb 2022
      - 1 with an effective date of Late 2019

How Does It All Fit Together….?

Legend
Package 1 - 5MS
Package 2 - ICFs
Package 2 - 5MS/GS

	Effective Date				
Procedure	2019	May-20	Dec-20*	Jul-21	Feb-22
Metrology Part A		v6.05		v7.0	v7.1
Metrology Part B		v6.1		v7.0	v7.1
MDFF Specification			v2.1	v2.0	
Meter Data Provision				v2.0	
Glossary & Framework				v3.0	v3.1
MDM Procedures			v4.0		
MDM Format & Upload Process			v2.0		
NMI Procedure					**v7.0**
CATS		v4.8			**v5.0**
WIGS		v4.8			**v5.0**
RoLR Processes Part A					v2.0
SLP MDP		v1.8	v2.0		
SLP MP		v1.4			
SLP ENM		v1.1			
Exemption - Meter Install. Malfunctions		v1.1			
Exemption - Data Storage	v1.0				

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How Does It All Fit Together update....?

Procedure	Current Version	Effective Date	Included in ICF Package	ICF Version	Effective Date	Included in Metering Package 1	MP1 Version	Effective Date	Included in Metering Package 2	MP2 Version	Effective Date
Metrology Part A	6.04	1-Dec-17	Yes	6.05	20-May-20	Yes	7.0	1-Jul-21	Yes	7.1	6-Feb-22
Metrology Part B	6.0	1-Dec-17	Yes	6.1	20-May-20	Yes	7.0	1-Jul-21	Yes	7.1	6-Feb-22
MDFF Specification	4.7	20-May-19	Yes	4.8	20-May-20	No			Yes	5.0	6-Feb-22
Meter Data Provision	4.7	20-May-19	Yes	4.8	20-May-20	No			Yes	5.0	6-Feb-22
Glossary & Framework	1.7	1-Dec-17	Yes	1.8	20-May-20	No			Yes	2.0	6-Feb-22
MDM Procedures	1.3	1-Dec-17	Yes	1.4	20-May-20	No			No		
MDM Format & Upload Process	1.0	1-Dec-17	Yes	1.1	20-May-20	No			No		
NMI Procedure	1.0	1-Dec-17	Yes	1.1	20-May-20	No			No		
CATS	1.06	1-Dec-17	No			Yes	2.0	1-Jul-21	Yes	2.1	1-Dec-20
WIGS	2.1	1-Dec-17	No			Yes	3.0	1-Jul-21	Yes	3.1	6-Feb-22
RoLR Processes Part A	1.0	1-Mar-16	No			Yes	2.0	1-Jul-21	No		
SLP MDP	3.3	1-Dec-17	No			No			Yes	4.0	1-Dec-20
SLP MP	1.1	1-Dec-17	No			No			Yes	2.0	1-Dec-20
SLP ENM	6.0	1-Dec-17	No			No			Yes	7.0	6-Feb-22
Exemption - Meter Install. Malfunctions	1.4	1-Dec-17	No			No			Yes	2.0	6-Feb-22
Exemption - Data Storage	N/A	N/A	No			No			Yes	1.0	Late 2019

Metering Consultation Update

- Metering Package 2 focuses on implementing:
  - The Five-Minute Settlement (5MS) Rule - for items not considered in Package 1
  - The Global Settlement (GS) Rule
  - Changes to the delivery, format and content of the meter data files sent to AEMO, as identified in the Metering Package 1 consultation.

Deliverable	Indicative date
Issues Paper published	20 May 2019
Submissions due on Issues Paper	24 June 2019
Draft Report published	5 August 2019
Submissions due on Draft Report	19 August 2019
Final Report published	30 September 2019

- Key items discussed in the Consultation Paper:
  - Implementing and transitioning to the changes in delivery of metering data to AEMO
  - Treatment of Non-contestable Unmetered Loads
  - Proposed changes to Quantity and Quality metering data requirements
  - The introduction of the "Exemption Procedure: Metering Provider Data Storage Requirements"

Implementing and transitioning to the changes in delivery of metering data to AEMO

- No later than 1 July 2021:
  - MDFF NEM12 files to be the required file format for all interval metering data being delivered to AEMO
  - NEM12 interval metering data to be delivered at the register level and as per the meter's configuration i.e. 5, 15 or 30-minute intervals
  - Import and Export Active energy (kWh) and Import and Export Reactive energy (kVarh) will be required to be sent to AEMO, where applicable
  - All new records created in the CNDS table are to be created at the register level e.g. E and B
- AEMO is proposing to include transitional arrangements in the relevant procedures, to allow MDPs to move to the new arrangements prior to that date

- Procedures affected to implement these changes:
  - Service Level Procedure: Metering Data Provider Services
    - Includes details regarding MDPs having to deliver to AEMO all Datastreams related to settlements ready data and any other metering data configured in the metering installation to support UFE calculations for all connection points the MDP is responsible for
  - Meter Data File Format Specification NEM12 & NEM13
    - Enables AEMO as being a recipient of MDFF files
  - MDM File Format and Load Process
    - Specifies the:
      - Processing, loading and validation of MDFF files
      - Removal of references to Net values and Net datastreams
      - Removal of requirements for MDPs to aggregate metering data to 30-minute intervals
      - Removal of the option to send MDMF to AEMO for interval metering data by 1 July 2021
  - National Metering Identifier Procedure
    - Removes references to Net data

Treatment of Non-contestable Unmetered Loads

- GS Requirements
  - Non-contestable unmetered loads to be processed through MSATS
  - The load profile and size of these loads to be agreed upon by the customer, DNSP, retailer and AEMO in accordance with AEMO's updated metrology procedures and unmetered load guidelines
  - AEMO to update the unmetered load guidelines and metrology procedures in accordance with the Rules consultation procedures.

- Consultation questions:
  - How should non-contestable unmetered loads be processed and maintained in MSATS?
    - Should non-contestable unmetered loads with photoelectric (PE) cells be treated in a similar manner to Type 7 unmetered loads?
    - Should non-contestable unmetered loads which do not have photoelectric (PE) cells be treated differently to those that do? If yes, how should these loads be treated?
  - What should be considered in creating and assigning non-contestable unmetered NMIs in MSATS?
  - What would be the most accurate methodology for calculating and applying a load profile to non-contestable unmetered loads?

- Key procedures affected by the inclusion of these loads:
  - Met Part A and Met Part B
  - CATS Procedures Principles and Obligations
  - SLP – MDP and
  - NMI Procedure

Proposed changes to Quantity and Quality metering data requirements

- Remotely read interval metering now provides data for over a quarter of all small customers in the NEM, and this number is increasing daily
- AEMO considers that it is important for the requirements for delivery of settlement ready data to reflect these changes in the metering landscape and ensure that the settlements process is enhanced as a result.
- Current requirements do not delineate between remotely read meters and manually read meters nor do they reflect an expected level of improvement in both the quantity and quality of settlement ready data delivered during the settlement cycle e.g. Final vs Revision 1 (R1) vs Revision 2 (R2).

Exemption Procedure: Metering Provider Data Storage Requirements

- In accordance with the NER and procedures authorised by the NER, a Metering Provider must ensure that a metering installation includes facilities for storing interval energy data for a period of:
  - At least 35 days if the metering installation is registered as a type 1, 2, 3 or 4 metering installation
  - At least 200 days or such other period as specified in the metrology procedure if the metering installation is registered as a type 4A or type 5 metering installation.

- Under the 5MS rule AEMO must publish a procedure for applying for an exemption from these storage requirements. AEMO may only exempt metering installations installed prior to 1 July 2021 that are types 1, 2, 3, and a subset of 4

- Key considerations:
  - Minimum number of days of storage
    - AEMO is proposing to consider exemptions for installations with between 30 and <35 days storage. Less than 30 days will not be considered.
  - When exemptions requests can be submitted and approved
    - Nothing specifically mentioned in the Rule. Our logic:
      - The procedure is to be published by 1 December 2019
      - The ability to exempt does not take effect until clause 7.8.2(a1) commences on 1 July 2021
      - The requirement to store 5 minute data for 35 days also commences on 1 July 2021, so the MP will be non-compliant from that date unless exempt.
      - There is nothing in the Rule to prevent AEMO from receiving and deciding on exemption applications prior to the commencement date, however the exemptions can only take effect from the commencement date
  - MCs/MPs should be making data storage assessments now

Metering Package 3 Update

- Metering Package 3 includes a number of guidelines and reference documents which are not covered by NER 8.9
  - AEMO will be publishing documents shortly for comment only
  - AEMO will consider comments received and then publish the final versions to the AEMO website

- Documents being reviewed for potential inclusion are:
  - Standing Data for MSATS
  - Guide to MSATS and B2B Terms
  - MSATS -CATS Hints and Tips and NMI Discovery
  - Understanding Load Profiles Published from MSATS
  - Guide to the Role of the Metering Coordinator (MC)
  - Accreditation Checklists - Metering Providers, Metering Data Providers & Embedded Network Managers
  - Guidelines to the National Measurement Act
  - Special Sites and Technology Related Conditions within the National Electricity Market
  - Unmetered Load Guideline - Determination of Device Load and Annual Energy Consumption for Unmetered Device Types
  - NMI Standing Data Schedule
  - Technical Guide to Bulk Data Tool in MSATS

- Certain documents listed above may not be including in package 3 due to:
  - No changes being required for a particular document
  - A dependency not being completed in time to support MP3 timings
    - Any documents in this category would be released at a later date

MSATS Standing Data Scenarios

David Ripper

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MSATS Standing Data Scenarios

- AEMO has been considering and documenting MSATS Standing data scenarios required to support Global Settlements
  - This analysis has been conducted to ensure that AEMO's Metering and Settlement systems can accurately allocate energy associated to various types of loads

- In considering the various scenarios, AEMO has taken into consideration if the NMI is:
  - Transmission or distribution connected
  - A cross boundary/border supply
  - An embedded parent or child
  - A generator or a load

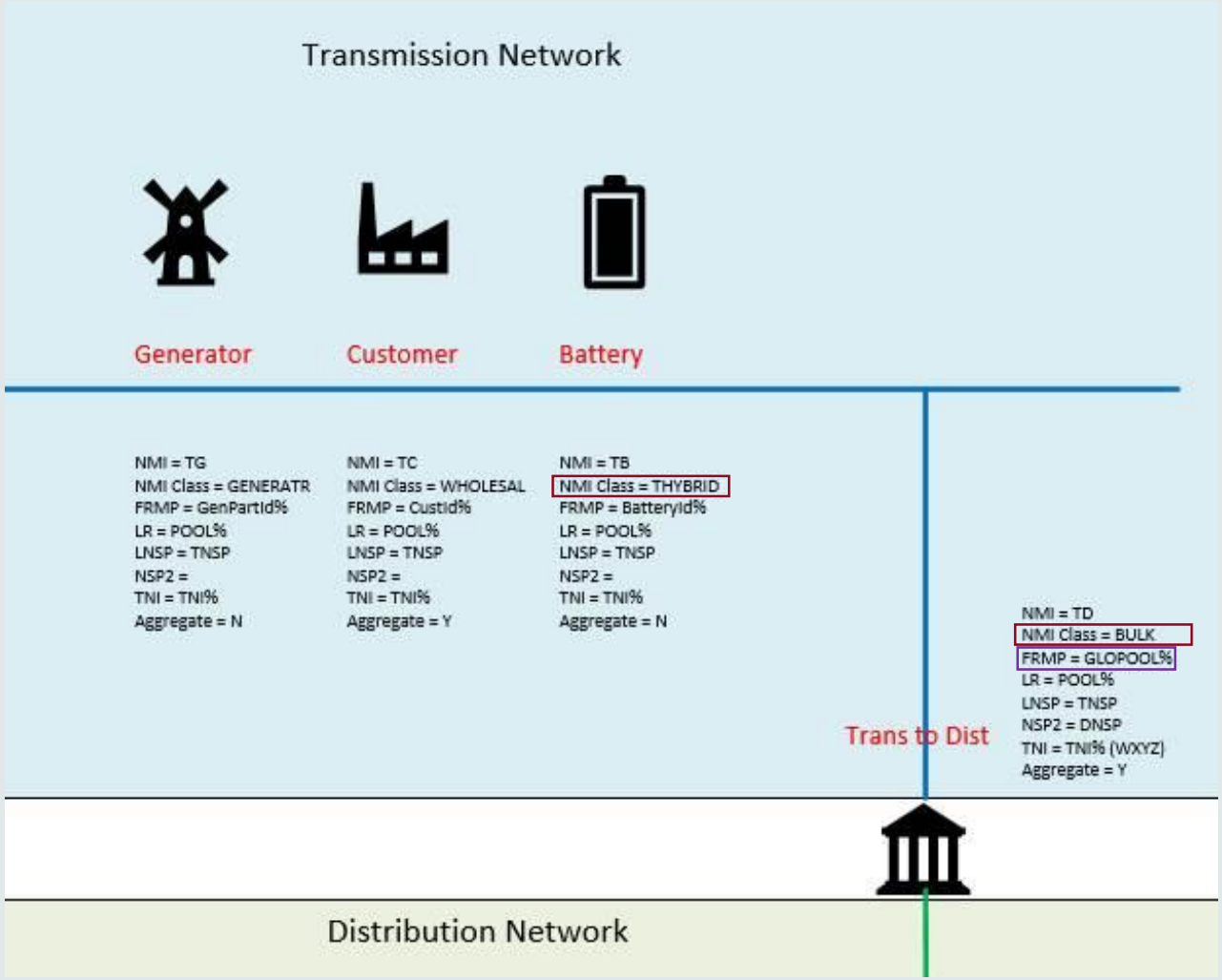
- Based on AEMO's considerations to date, a number of new NMI Classification Codes will be required to be implemented

- AEMO has also considered the implications to the market participant fields i.e. LR and FRMP as a consequence of the GS Rule

- As AEMO is required to publish UFE from 1 July 2021, any required data updates e.g. NMI Classification Codes will need to occur prior to that date

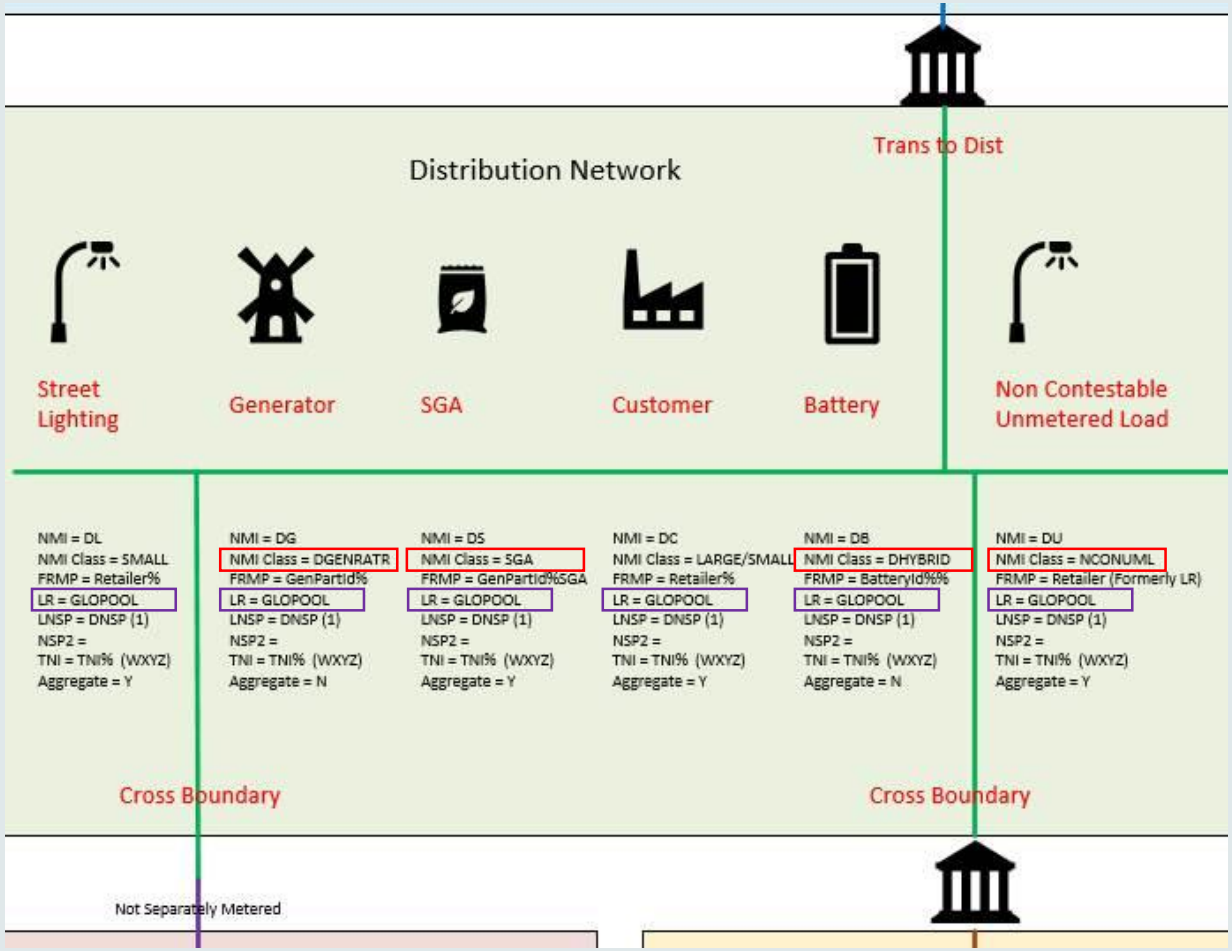
Transmission Connected Scenarios

- Changes for Transmission Connected NMIs
  - New NMI Classification Code for Battery Connections (THYBRID)
    - Requiring only 1 NMI for the installation, the other NMI will be made Extinct.
  - Transmission to Distribution Connections will be changed to BULK to differentiate them from WHOLESAL customer connections
- Participant Changes – Global Settlements
  - Transmission to Distribution Connections will have the FRMP changed to GLOPOOL



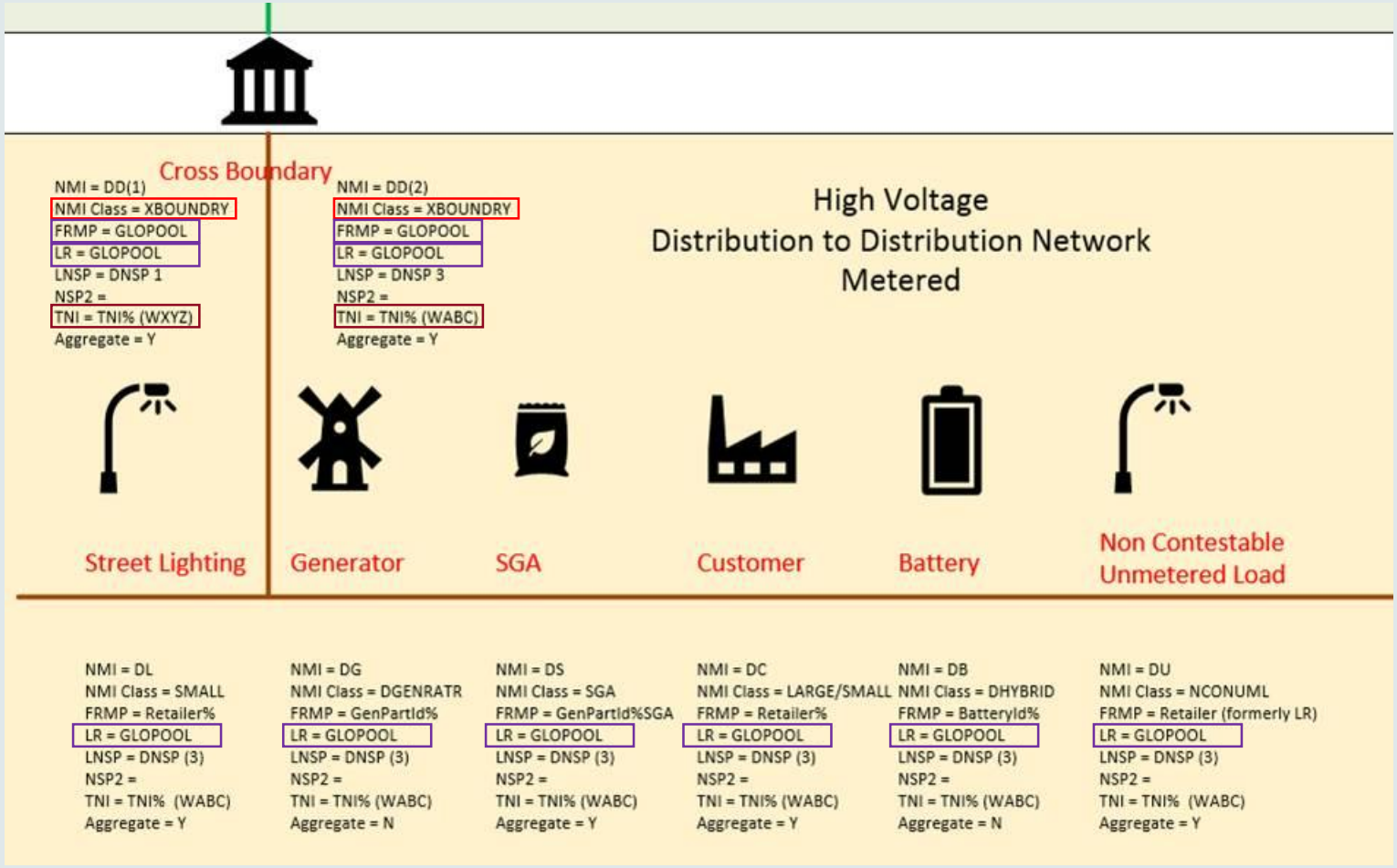
Distribution Connected Scenarios

- Changes for Distribution Connected NMIs
  - New NMI Classification Code for Battery Connections (DHYBRID)
    - Requiring only 1 NMI for the installation, the other NMI will be made Extinct.
  - New NMI Classification Code for Generator Connections (DGENRATR)
  - New NMI Classification Code for Small Generator Aggregators (SGA)
  - New NMI Classification Code for Non-Contestable Unmetered Loads (NCONUML)
- Participant Changes – Global Settlements
  - Local Retailers will be changed to GLOPOOL for all distribution connected NMIs Except embedded network children



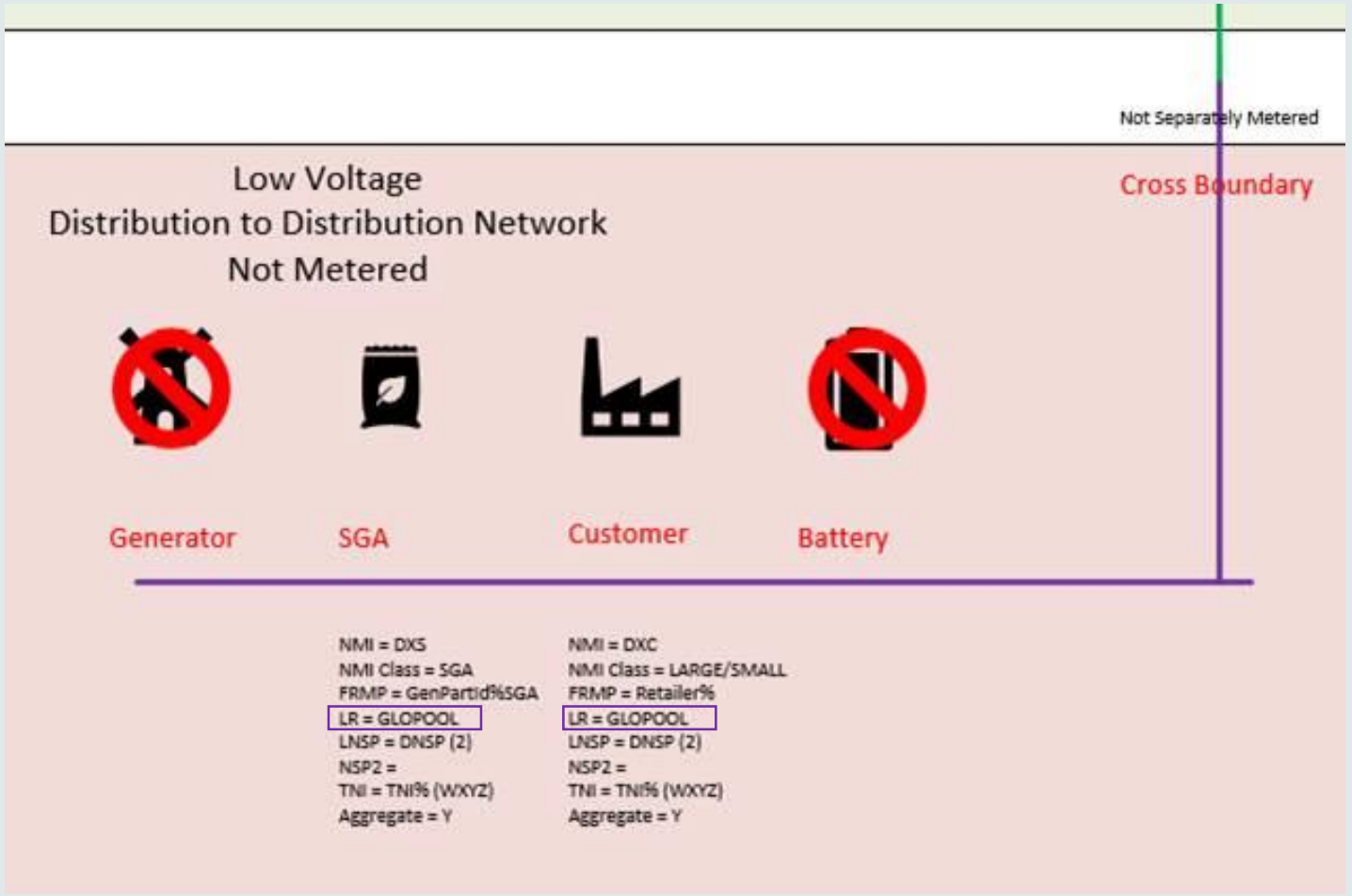
High Voltage Distribution to Distribution Connections Scenarios

- Changes for Distribution Connected NMIs
  - Distribution to Distribution High Voltage connections will need to be metered
  - A separate NMI will be set up for each Distribution network
  - New NMI Classification Code for Cross Boundary situations (XBOUNDRY)
  - A different TNI code will be assigned to end use NMI in the receipt Distribution network (Network not connected directly to TNI)
- Participant Changes – Global Settlements
  - The LR and FRMP will be changed to GLOPOOL for all Cross Boundary NMIs
  - Local Retailers will be changed to GLOPOOL for all distribution connected NMIs except embedded network children



Low Voltage Distribution to Distribution Connections Scenarios

- Changes for Distribution Connected NMIs
  - Distribution to Distribution Low Voltage connections may be unmetered
  - TNI codes for each of the end use NMIs MUST have the TNI code of connection to the Transmission Network
  - Generator and Battery connections are not allowable without boundary metering
- Participant Changes – Global Settlements
  - Local Retailers will be changed to GLOPOOL for all distribution connected NMIs Except embedded network children



Embedded Network Connections Scenarios

- Changes for Embedded Network Connected NMIs
  - Embedded Network Child NMI Classification Codes will reflect those detailed in the Transmission and Distribution slides
- Participant Changes – Global Settlements
  - Local Retailers for All Embedded Network Child NMIs will remain unchanged
  - Local Retailers for Transmission Connected Embedded Network Parent NMIs will remain unchanged
  - Local Retailers for Distribution Connected Embedded Network Parent NMIs will be changed to GLOPOOL

MSATS Standing Data Scenarios

- In summary, the proposed new NMI Classification Codes are:

  - THYBRID – Transmission Connected Batteries
  - DHYBRID – Distribution Connected Batteries
  - SGA – Small Generator Aggregator
  - NCONUML – Non-Contestable Unmetered Load
  - BULK – Bulk supply points from Transmission to Distribution connection points
  - XBOUNDRY – Cross boundary connection points for High Voltage connection to another Distribution Network
  - DGENRATR – Distribution connected Generator

Non-contestable Unmetered Loads

David Ripper

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Non-contestable Unmetered Loads

- How will these loads be processed through MSATS?
  - Non-contestable unmetered loads with photoelectric (PE) cells
    - To be treated in a similar manner to Type 7 unmetered loads?
  - Non-contestable unmetered loads which do not have photoelectric (PE)
    - How should these loads be treated?
  - The creation and assignment of NMIs in MSATS
    - An unmetered load NMI may contain different market loads or different Unmetered Device types, but they must have the same FRMP, End User, LNSP, TNI and distribution loss factor.

- How will the treatment of these unmetered loads improve over time?

- How will the load profile and size of these loads be agreed between the customer, DNSP, retailer and AEMO
  - Have the discussions between the DNSP and end user commenced?
  - What would be the most accurate methodology for calculating and applying a load profile to non-contestable unmetered loads?
  - What are the main challenges DNSPs are encountering?
  - How will these challenges be overcome?
  - How will DNSPs administer these loads going forward?

Proposed Metering Data Quantity and Quality SLAs

Blaine Miner

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Proposed Metering Data Quantity and Quality SLAs

- Current Arrangements - as per the 'Service Level Procedure: Meter Data Provider Services'

Aspect	Preliminary	Final	Revision 1 (R1) or 4 month	Revision 2 (R2) or 6 month
Quantity of Settlements Ready Data	98%	98%	98%	98%
Quantity of Settlements Ready Data with 'A' or 'F' quality flag	-	-	98%	98%

- AEMO does not believe that the current arrangements are adequate to achieve the required level of accuracy in the NEM settlement process in a 5MS/GS environment
  - They don't delineate between remotely read meters and manually read meters
  - They don't reflect the expected level of improvement in both the quantity and quality of settlement ready data delivered between the settlement cycles e.g. Final vs Revision 1 (R1) vs Revision 2 (R2).

Proposed Metering Data Quantity and Quality SLAs

- Proposed Arrangements

Metering Data Type	Aspect	Preliminary	Final	Revision 1 (R1)	Revision 2 (R2)
Remotely Read Metering Data	Quantity of Settlements Ready Data	98%	100%	100%	100%
	Quality of Settlements Ready Data with 'A' or 'F' quality flag	95%	98%	100%	100%
Manually Read Metering Data	Quantity of Settlements Ready Data	99%	99%	100%	100%
	Quality of Settlements Ready Data with 'A' or 'F' quality flag	-	-	95%	100%

- Consultation questions:
  - Will AEMO's proposed arrangements likely result in more accurate market settlements and why?
  - What other data quality mechanisms should AEMO consider to supporting improved accuracy in market settlements?

RM Reports

Simon Tu

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RM Reports

- 4 new participant facing RM reports will be developed
- 3 existing participant facing RM reports will be retired
- 7 existing participant facing RM reports will be updated

Unimpacted Participant facing RM reports	Retired Participant facing RM reports	New Participant facing RM reports	Updated Participant facing RM reports	
RM9	RM14	RM37	RM16	Updated to reflect Settlement trading intervals (i.e. 5, 30 minute)
RM11	RM15	RM38	RM17	
RM21	RM18	RM39	RM20	
RM27		RM43	RM22	
			RM25	
			RM13	Updated to reflect meter read intervals (i.e. 5, 15, 30 minute)
			RM26	The quality 'Flag' field shall be able to support 288 quality flags values

RM Reports

Report	Description	Comments
RM37	High Priority Missing Data Report for Wholesale, Interconnector and Generator NMI's	1 day prior to "Prelim" Settlement
RM38	DataStream Missing Data Report	2 days prior to "Final" Settlement
RM39	Mismatch Data Report – Identifies where AEMO has received readings that do not match the standing data.	2 days prior to "Final" Settlement
RM43	UFE Factors by Profile Area	This report will provide AEMO and Participants with the profile of each interval within each TNI, Profile area for each settlement run. The report will be automatically triggered to be delivered to the current FRMPs and MDPs for each settlement run. Report shall be able to be manually requested via the MSATS browser by AEMO, FRMP, MDP, LNSP participants.

RM Reports

- Requesting Reports
  - Participants shall continue to be able to request RM reports via the MSATS Browser and FTP File Share
  - Participants shall be able to request RM reports via a new set of B2M APIs (Push)

- Reports Delivery
  - Participants shall continue to be able to receive RM reports via the FTP File Share and email (RM30)
  - Participants shall be able to request RM reports via a new set of B2M APIs (Push and Pull)
  - MDP Missing Data reports will be Pushed to Participants (API or FTP) prior to the Initial (RM37) and Final (RM11, 38, 39) settlement run for each settlement week
  - AEMO is pushing these missing data reports to improve settlement integrity from Prelim to Final

- Reports Format
  - aseXML to remain identical.
  - <csvdata> element will reflect the Settlement trading and meter read intervals i.e. 48, 96, 288

```
<ReportResults xsi:type="ase:CSVReportFormat">
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…..,Period48,StatusFlags,SeqNo,A_H
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Readiness Workstream

Greg Minney and Emily Brodie

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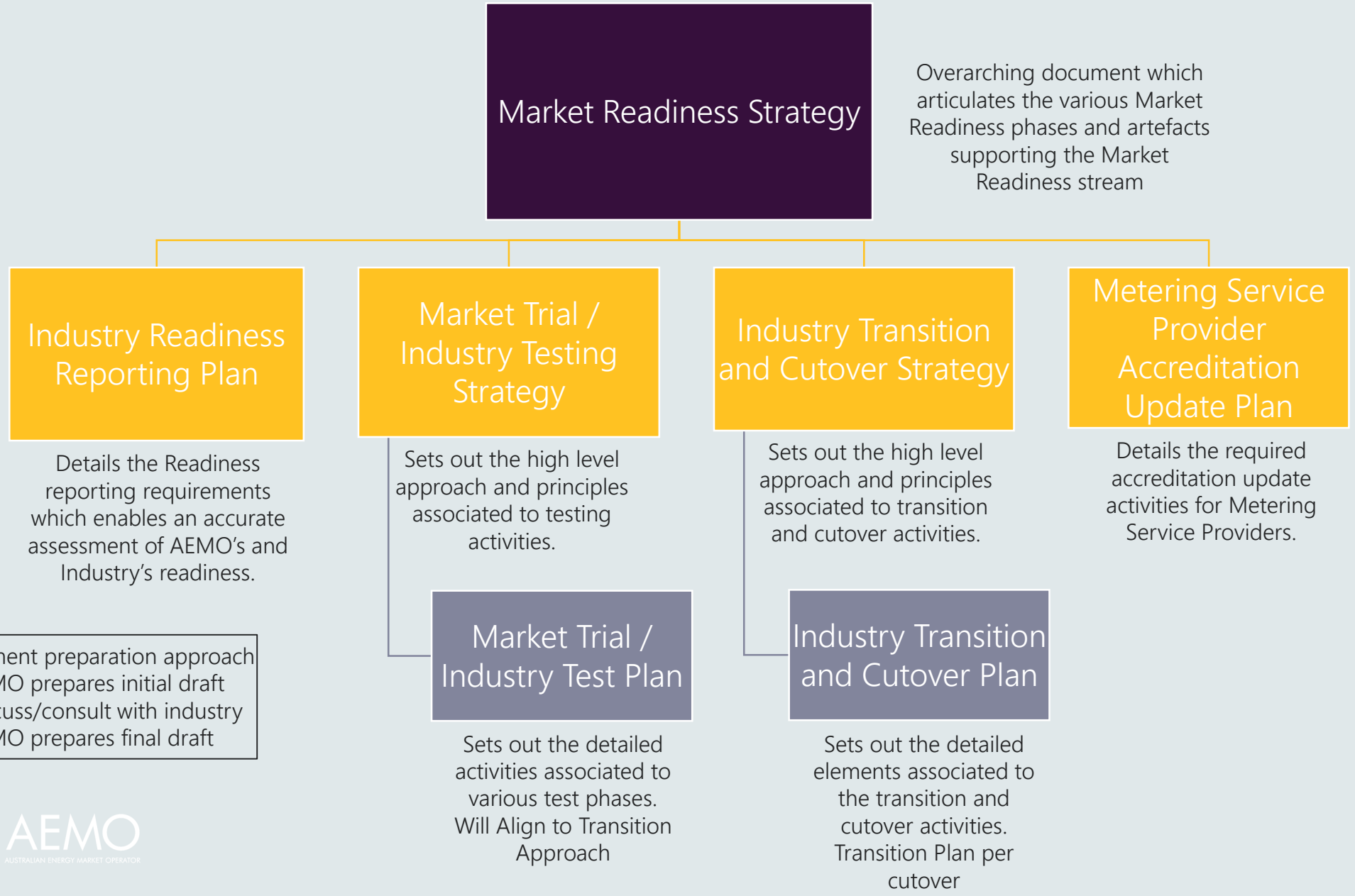
5MS/GS Readiness objective and scope

- Readiness workstream is responsible for 5MS and GS commencement and transition activities.

- **Scope** of readiness includes :
  - Market readiness strategy and plan
  - Readiness reporting and issues management
  - Industry and market testing
  - Transition and cutover planning and conduct
  - Metering accreditation updates

5MS/GS Readiness

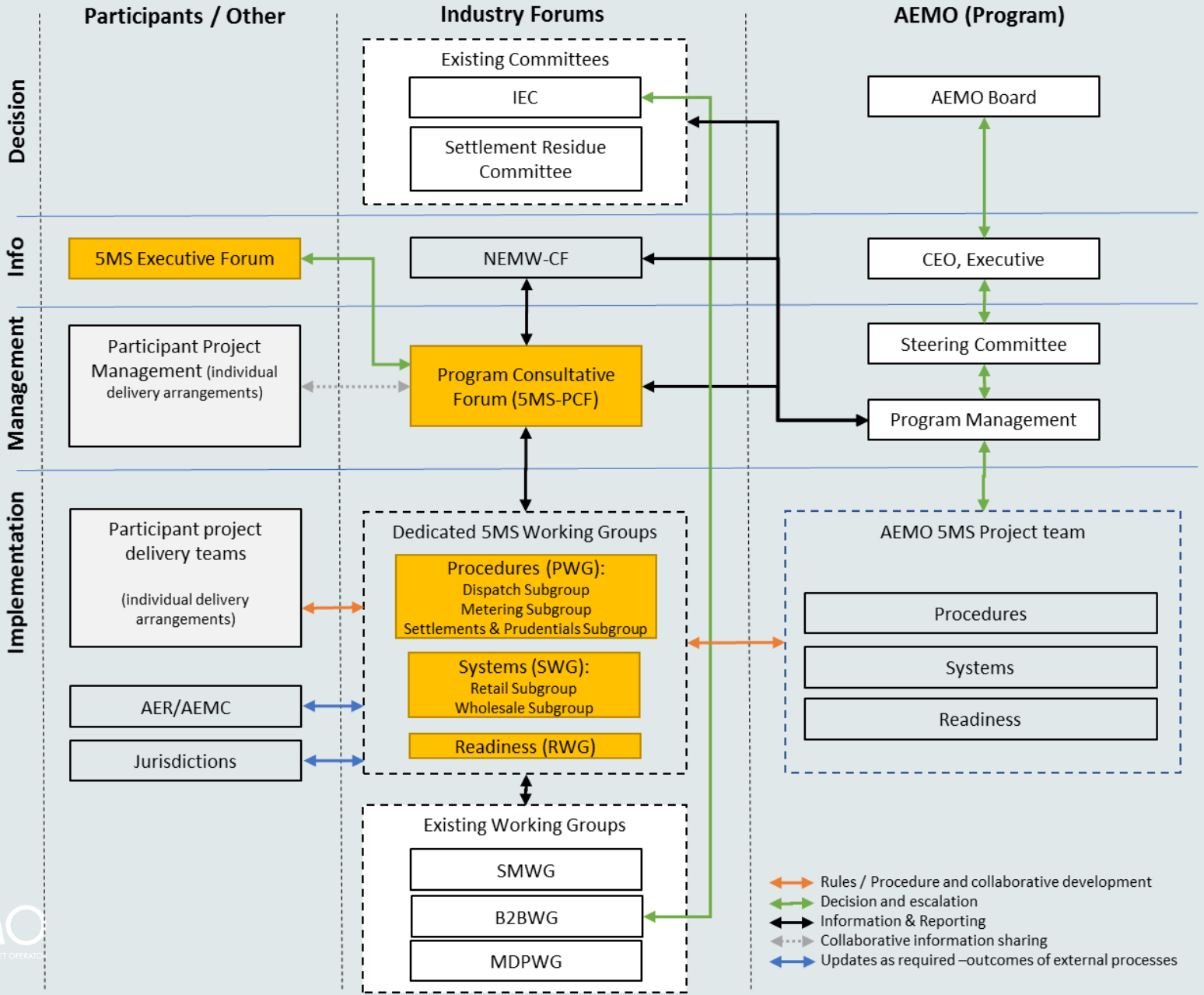


Indicative timelines

NOTE: Deliverable dates are currently draft/proposed dates

Item	Engagement Commences	Draft Paper Released	Final Paper Released
Market Readiness Strategy	June 19	30 August 19	29 Nov 19
Industry Test Strategy	June 19	30 August 19	31 Oct 19
Transition & Go-Live Strategy	July 19	30 Sept 19	31 Jan 20
Market Trial Strategy	August 19	29 Nov 19	28 Feb 20
Metering Service Provider Accreditation Update Plan	August 19	29 Nov 19	31 Mar 20
Industry Readiness Reporting Plan	Sept 19	29 Nov 19	31 Jan 20

Refresher: 5MS and GS industry engagement overview



Readiness working group (RWG)

- **Readiness working group** coordinates, assists and prepares AEMO and participants for the transition to 5MS and GS :
  - First meeting 27 June 2019, then monthly.
  - Terms of reference being consulted with PCF.
  - Nominations for RWG closed 31 May (31 organisations have nominated reps).
  - Key requirements for RWG representatives:
    - Overall understanding of AEMO's and their own 5MS/GS programs
    - Authorisation to commit and mobilise their internal readiness activities
    - Ability to consistently attend RWG and focus group meetings and activities
  - RWG sub groups:
    - Testing focus group will address market and industry testing plans
    - Focus groups will be assembled to address specific activities e.g. detailed cutover planning

Metering focus group and readiness

- Expect the MFG to continue in a similar form under the RWG.
- MFG membership can change as appropriate as move out of procedural work and into 5MS/GS implementation.
- Potential interactions with MFG:
  - Development of transition/cutover strategy and plan for metering
  - Validation of proposed metering transition approaches
  - Metering accreditation update approach and planning

Preparing for 1 July 2021

Blaine Miner

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Preparing for 1 July 2021

Milestone	Activity	Sub-Activity	Start Date	Completion Date
UFE Publication from 1 July 2021	Changes to NMI Classifications Codes for existing NMIs	Engage with TNSPs to determine which TNIs are distribution supplies vs. direct connect customers		
		Engage with DNSPs to identify cross boundary supplies between distribution networks		
		Perform analysis to identify what changes are required		
		Document NCC update approach, including notifications		
		Update required NMI Classifications Codes as per the agreed approach		30 Jun 2021
	Coordinated activation of 1st tier NMIs inc. the provisioning of accumulation metering data	Associated accumulation meter reads e.g. forward estimated must be delivered to AEMO prior to 1 July 2021	1 Mar 2021	
	Non-contestable unmetered loads provisioning for in MSATS	Load profile, size and inventory of these devices must be agreed between applicable parties. DNSPs are to populate inventory and load tables.	Now	
		NMI and metering standing data must be created in MSATS		30 Jun 2021

Preparing for 1 July 2021

Milestone	Activity	Sub-Activity	Start Date	Completion Date
Changes to the delivery of meter data to AEMO	CNDS records updated from Net to Register level for all Type 1, 2, 3 and subset of 4	Import and Export Active energy (kWh) and Import and Export Reactive energy (kVarh) will be required to be sent to AEMO, where applicable		30 Jun 2021
	Delivery of interval metering data via MDFF	MDPs must ensure that the following values in the NEM12 200 records accurately reflect the metering installation configuration prior to sending MDFFs to AEMO • MDMDataStreamIdentifier • NMIConfiguration • NMISuffix		30 Jun 2021

Preparing for 1 July 2021

Milestone	Activity	Sub-Activity	Start Date	Completion Date
Type 1, 2, 3 and subset of 4 meters installed or reconfigured	Applicable meters (circa 19k) need to be installed or reconfigured		Now	30 Jun 2021
	Assess data storage capabilities		Now	31 Dec 2020
	Participant specific aggregation requirements must be agreed and documented Have these discussions commenced between MDPs and individual participants?		Now	

General Business and Next Steps

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General Business and Next Steps

- Workshop outcomes and actions to be circulated
- Call for nominations for Readiness MFG
- Next MFG

Thank you for your attendance and participation!

AEMO
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