



**Energy Transformation
Implementation Unit**

Metering Code Industry Forum

9 December 2020





Ground rules and virtual meeting protocols

- Please place your microphone on mute, unless you are asking a question or making a comment.
- Please keep questions relevant to the agenda item being discussed.
- If there is not a break in discussion and you would like to say something, you can 'raise your hand' by typing 'question' or 'comment' in the meeting chat. Questions and comments can also be emailed to rebecca.white@energy.wa.gov.au after the meeting.
- The meeting will be recorded. However no minutes will be issued.
- Please state your name and organisation when you ask a question.
- If you are having connection/bandwidth issues, you may want to disable the incoming and/or outgoing video.

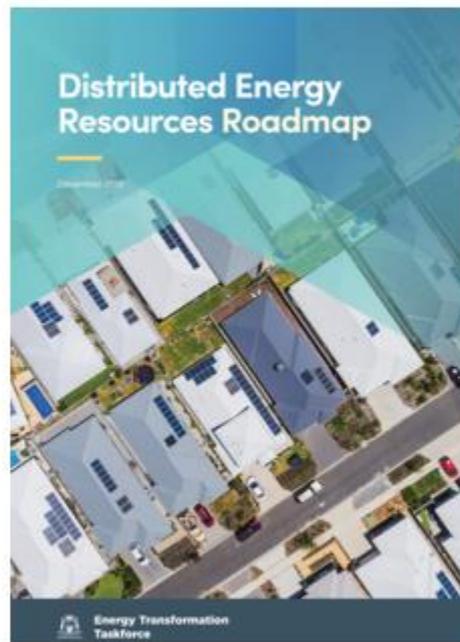
Energy Transformation Strategy

The WA Government's **Energy Transformation Strategy**
A two-year program of work across three interrelated workstreams

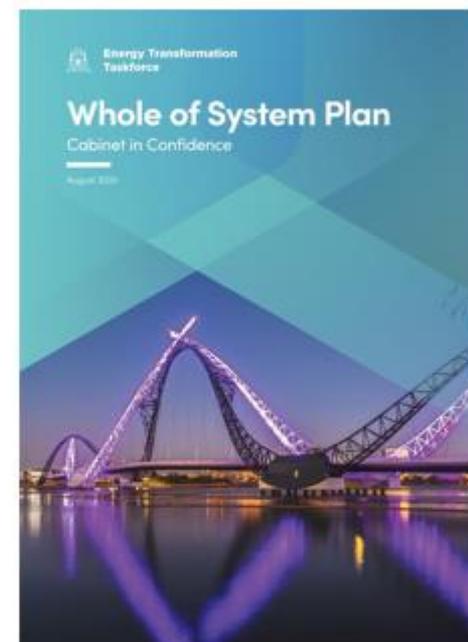
Wholesale Market Redesign



Market Start October
2022



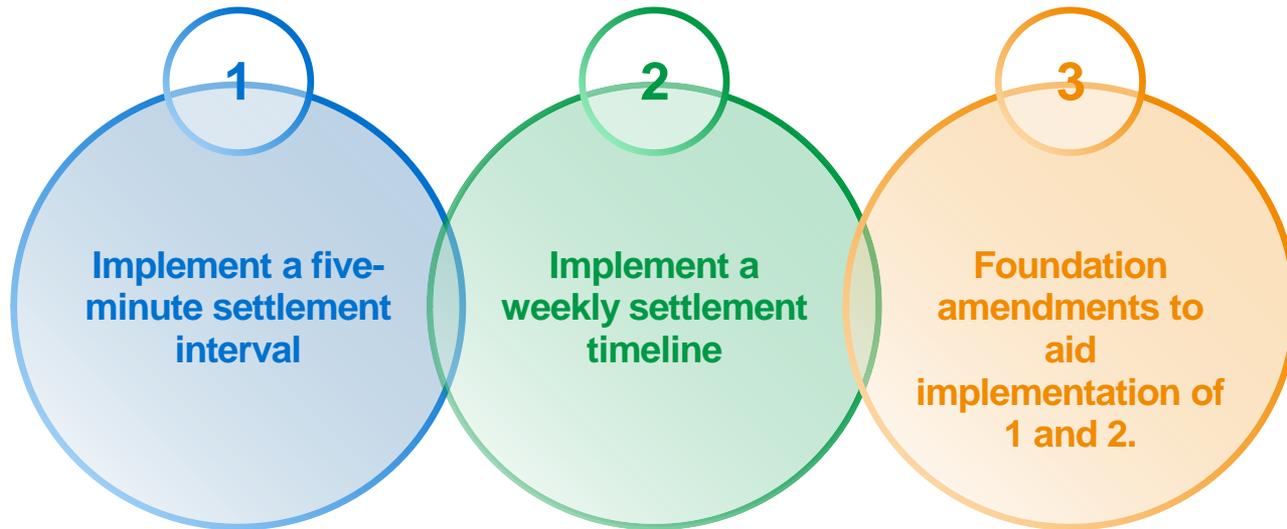
April 2020



October 2020

Metering Code
amendments

Scope of proposed amendments



Agenda



Background



Foundation amendments



Amendments to enable settlement at five-minute intervals

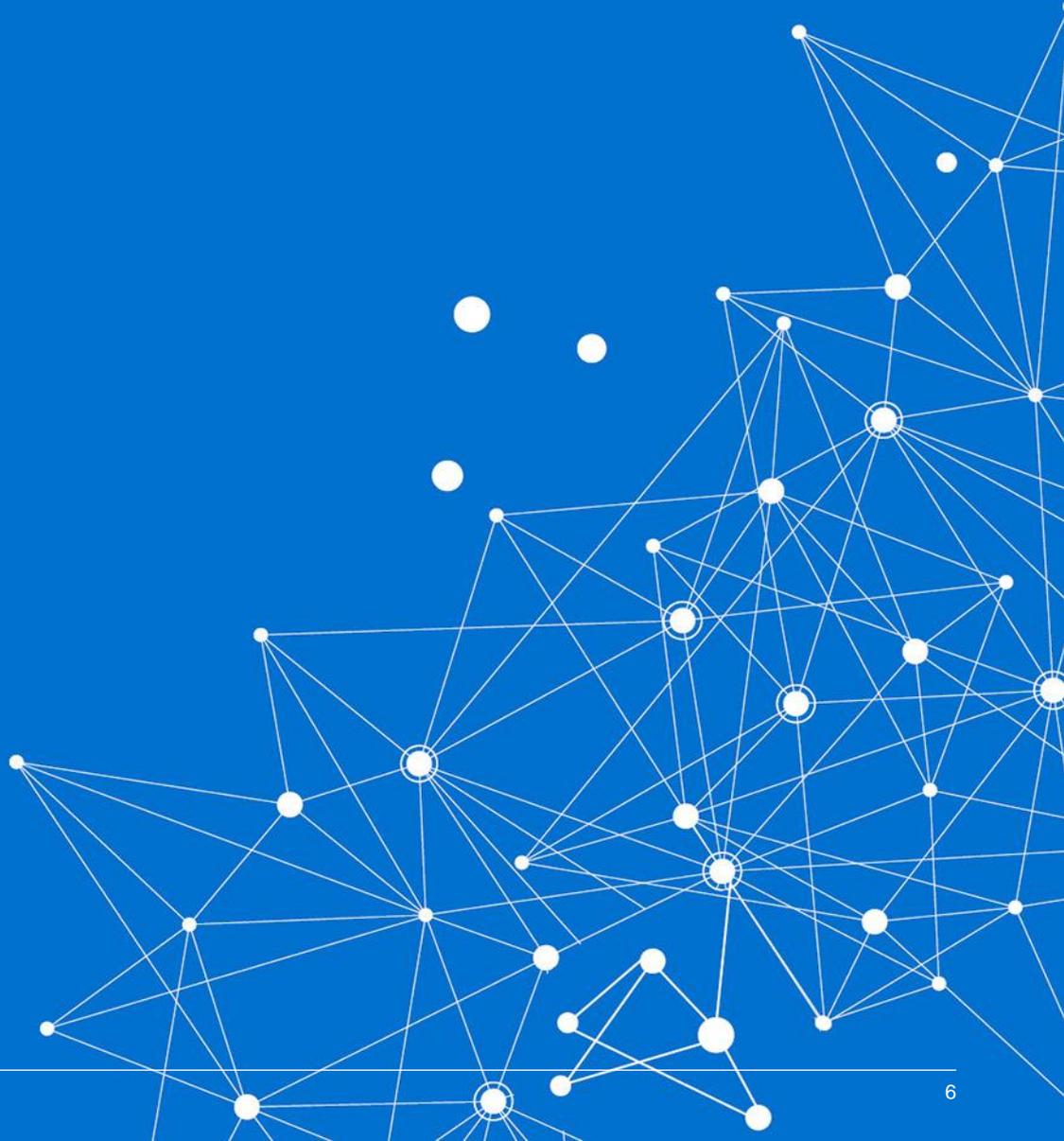


Amendments to enable a weekly settlement timeline



Next steps

Background





Taskforce decisions



- Information Paper: Foundation Market Parameters (August 2019)
 - A five-minute dispatch interval will be adopted in the WEM and **further consideration will be given to five-minute settlement.**
- Information Paper: Foundation Settings for Market Settlement (September 2019)
 - **Dispatch and settlement intervals will be aligned to both be five-minutes.** This applies to generators and contestable loads.
 - **Settlement of all WEM components will occur on a weekly basis,** with the first adjustment period to occur two months after the relevant trading week.
- Information Paper: Implementation of Five-minute Settlement, Uplift Payments and Essential System Services Settlement (December 2019)
 - **Five-minute settlement will commence on 1 October 2025 using five-minute meter data.**

Taskforce decisions – Five-minute settlement

- At Market Start (1 October 2022) the Dispatch Interval will be five minutes.
- A misalignment between the dispatch and settlement intervals can lead to:

Dilution of investment signals for fast responding technologies

Less accurate calculation of Uplift Payments

Disorderly bidding

Less accurate ESS cost recovery calculations



Taskforce decisions – Weekly settlement

- There is currently a two-month lag between the end of a Trading Month and when market settlement occurs.
 - This requires AEMO to hold 70 days of credit support to account for risk of non-payment.
 - High prudential requirements can be a barrier to entry for new Market Participants and can affect the amount of working capital for existing Market Participants.
- The maximum Credit Limit has been reduced from 70 days to 35 days to reflect the decreased exposure due to:
 - Weekly settlement
 - Decreased lag between the Trading Week and Settlement Day
 - Aligning STEM and NSTEM settlement
- The prudential burden on Market Participants has been decreased by about half to \$40 million.

Implementation of Taskforce decisions on Market Settlement

Taskforce decision	WEM Rules	Metering Code
Five-minute settlement	Amending WEM Rules for five-minute settlement will be drafted and consulted on following Market Start (1 October 2022).	Amendments to the Metering Code are required as a priority to enable metering and ICT upgrades, which have long lead times.
Weekly settlement	Amending WEM Rules for weekly settlement have been consulted on and will be Gazetted in December 2020.	Amendments to the Metering Code are required so that Western Power can estimate weekly meter data for manually read meters and to require Western Power to provide meter data submissions at least weekly.

Current practice

Responsibilities

Western Power

Installing and maintaining meters
Reading meters
Storing meter data
Providing meter data to AEMO

AEMO

Use meter data for market settlement



Current practice

Meter requirements

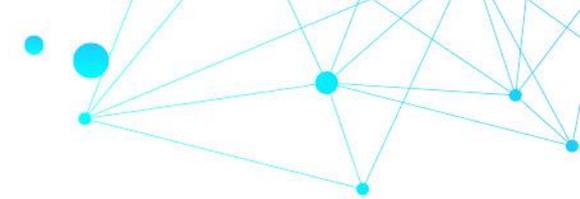
- There must be an interval meter at all connection points with an annual throughput of $\geq 50\text{MWh}$ (type 1-5 meters).
- Some connection points with an annual throughput of $< 50\text{MWh}$ have interval meters.
- Type 1-4 meters must have communications links.
 - AMI meters meet type 4 specification.

Type	Annual throughput at connection point	Maximum allowable overall error (+/- %) at full load		Minimum acceptable class or standard of components	Clock error (seconds per month)	Minimum meter types	Measurement for reactive energy required
		Active	Reactive				
1	1000GWh and above	0.5	1.0	0.2 CT ⁵ /VT ⁶ /Meter Wh 0.5 Meter varh	+/- 5	Interval meter	Yes
2	100GWh to but not including 1000GWh	1.0	2.0	0.5 CT/VT/Meter Wh 1.0 Meter varh	+/- 7	Interval meter	Yes
3	750MWh to but not including 100GWh	1.5	3.0	0.5 CT/VT 1.0 Meter Wh 2.0 Meter varh	+/- 10	Interval meter	Yes
4	300MWh too but not including 750MWh	1.5	NA	Either 0.5 CT and 1.0 Meter Wh; or whole electric current connected General Purpose Meter Wh with a Data Logger	+/- 20	Interval meter	No
5	50MWh to but not including 300MWh	1.5	NA	Either 0.5 CT and 1.0 Meter Wh; or whole electric current connected General Purpose Meter Wh with a Data Logger	+/- 20	Interval meter	No
6	Less than 50MWh	1.5	NA	Whole electric current connected General Purpose Meter Wh	NA	Accumulation meter	No



Current practice

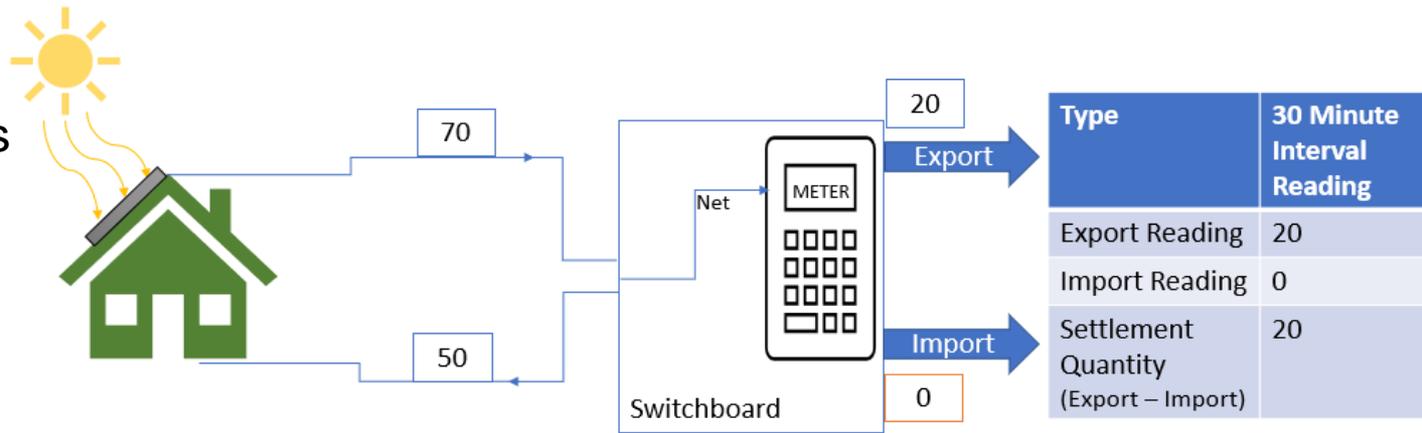
Meter data provision

- Western Power must provide meter data for all interval meters to AEMO for market settlement.
 - Western Power is not required to provide AEMO energy data for accumulation meters (as they are settled through the Notional Wholesale Meter).
 - Western Power can deem an interval meter an accumulation meter (and therefore is not required to provide meter data to AEMO for settlement as the meter is settled through the Notional Wholesale Meter).
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Current practice

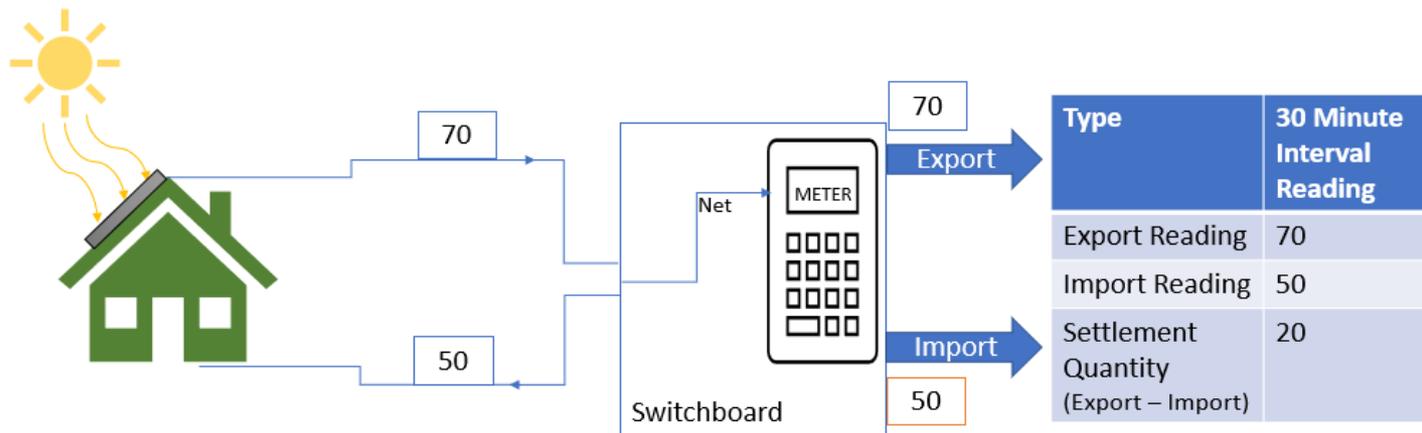
Bidirectional flows

- A meter with bidirectional flows must separately measure the **net** electricity production transferred into the network and the **net** electricity consumption transferred out of the network (e.g. the net flows through the connection point)
- Current practice is:

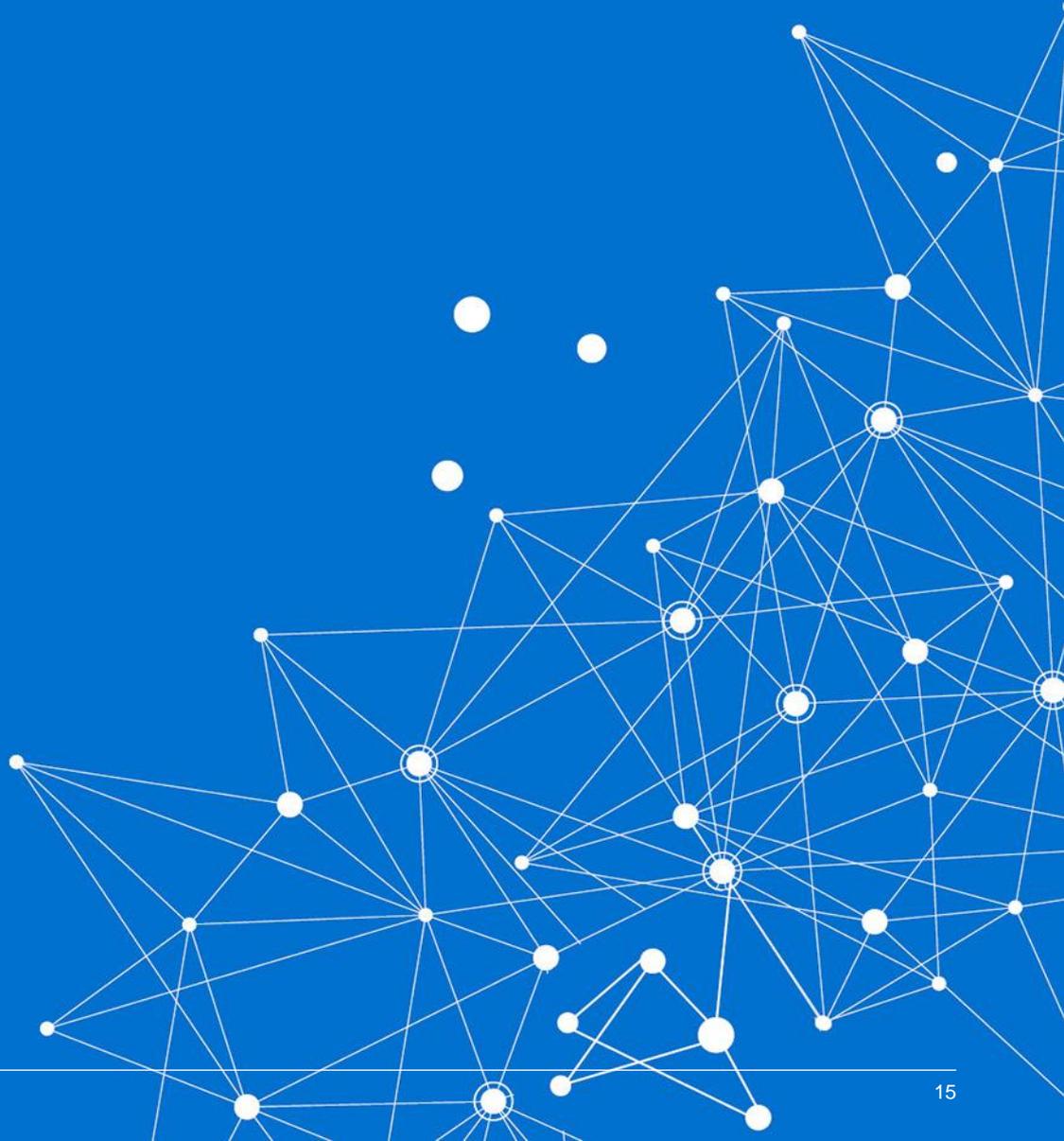


Meter reading

Meter data



Foundation amendments





Meter type definitions

Definition of throughput

- Throughput is not currently defined in the Metering Code.
- Throughput will be defined as the sum of the energy sent into the network and the energy consumed from the network (sum of import and export channels).
 - This is the total flow of energy through the connection point.
- This is particularly important in the case of transmission connected batteries
 - which will likely have a near zero net flow per year.
- This definition will apply throughout the Code – and therefore apply to areas outside the SWIN.



Meter type definitions

Meter types and specifications (1)

- Western Power will not be able to install any new type 5 or 6 meters in the SWIN.
 - This reflects the baseline for a modern electricity network.
 - AMI meters are type 4 specification.
 - This requirement will apply in the SWIN only, and be from 1 January 2022.
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Meter type definitions

Meter types and specifications (2)

- New table 3 in Appendix 1 – applies to the SWIN only.

Type	Annual throughput at connection point	Other Specifications
1	1000GWh and above	
2	100GWh to but not including 1000GWh	
3	750MWh to but not including 100GWh	
4	Less than 750 MWh or, where installed prior to 1 January 2022, 300 MWh to but not including 750MWh	Unchanged
5	50 MWh to but not including 300 MWh where installed prior to 1 January 2022	
6	Less than 50 MWh where installed prior to 1 January 2022	

- The requirements in the Code for type 5 and 6 meters continue to apply for those meters until they cease to exist.
- Existing Table 3 in Appendix 1 becomes Table 3A – applies outside the SWIN and is unchanged.



Hardware requirements

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- All new meters installed from 1 January 2022 must have hardware capable of providing interval energy data at five-minute granularity.
 - The associated software/firmware does not need to be installed and/or configured.
 - This future-proofs the metering stock and codifies current practice.
 - This requirement applies to the SWIN only.

Communication requirements

- All type 1-4 meters must have a communications link unless an exclusion applies.

Reason	Is an exclusion available?	
	Contestable metering installation	Non-contestable metering installation
A communications link supported by Western Power is not available (or could not reasonably be made available)	✓	✓
A communications link supported by Western Power is unable to support the necessary reliability requirements	✓	✓
Opted by the user	✗	✓

- This requirement applies come the commencement of the amendments.



Contestability

- A contestable metering installation is any metering installation associated with a contestable customer.
 - If there are more than one metering points associated with a connection point, a metering installation is contestable if the consumption of all the meters at the connection point is greater than 50MWh a year.
 - For example, if there are two metering installations at a connection point that each have consumption of 30MWh a year, then the connection point (and therefore customer) is contestable.
 - The delineation between type 5 and 6 meters is not necessarily the contestability threshold (meter types are based on throughput, contestability is based on consumption).
 - A type 5 meter can be contestable or non-contestable. E.g. 60MWh a year throughput but only 40MWh a year consumption.
 - Under the new framework, all meters under 750MWh a year throughput will be type 4 meters.
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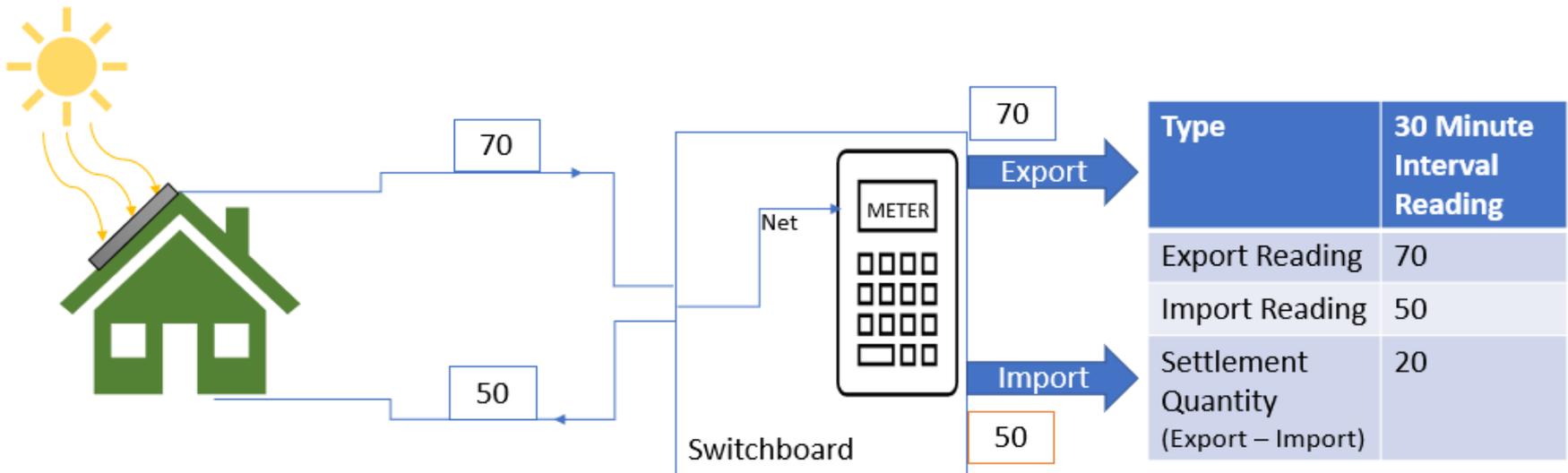


Deemed accumulation meters

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- Western Power will only be able deem non-contestable interval meters as accumulation meters.
 - This will prevent any meters served by another retailer being rolled up into the Notional Wholesale Meter.
 - This only applies in the SWIN and applies from commencement of the amendments.

Bidirectional flows

- Both import and export channels must be recorded by a meter reading bidirectional energy flows.
 - This codifies current practice.
 - This will apply to all meters covered by the Metering Code, not just in the SWIN.



Foundation amendments summary

Amendment	Jurisdiction	Commencement
Annual throughput will be defined as the total flow of electricity through the meter.	All meters	Commencement of amendments
A network operator must record both the import and export channels for a meter measuring bidirectional energy flows.	All meters	Commencement of amendments
New Table 3 in Appendix 1.	SWIN	Commencement of amendments
Western Power can only deem a non-contestable interval meter as an accumulation meter.	SWIN	Commencement of amendments
All new meters in the SWIN must have hardware capable of reading energy data at five-minute granularity.	SWIN	1 January 2022
Western Power cannot install any new type 5 or 6 meters	SWIN	1 January 2022
Western Power cannot install any new manually read meters unless an exclusion applies.	SWIN	1 January 2022

Proposed amendments to enable five-minute settlement





5MS meters

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- The Metering Code will define 5MS meters (five-minute settlement meters) as all metering points in the SWIN associated with a generator or contestable customer.
 - 5MS meters will be required to have five-minute interval capability – both hardware plus software/firmware installed and configured from 1 October 2025 (five-minute settlement commencement).
 - Western Power will have to replace or reconfigure existing meters that do not meet this requirement.
 - Except meters that fall under the existing grandfathering arrangements in the Code – being 10 metering installations.
 - The ERM estimated the cost to replace these as being \$40 million.
 - There is no obligation for Western Power to replace manually read meters that can provide energy data at five-minute granularity.

5MS meters

Metering Installation Type	Throughput/ year	Meters to be replaced	Meters to be reconfigured	Total contestable and generator meters installed
1	>1,000GWh	10	4	14
2	100GWh up to but not including <1,000GWh	48	68	116
3	750MWh up to but not including <100GWh	1,090	484	1,574
4	300MWh up to but not including <750MWh	9,478	3,524	13,002
5 ¹⁴	50MWh up to but not including <300MWh	12,183	3,137	15,320
Total		22,809	7,217	30,026

Type 5 include includes from meters that are currently classified as type 6 but have a consumption that exceeds the contestability threshold. This table was accurate as of August 2020.



Cost recovery

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- Western Power estimates the cost of the meter replacements/reconfiguration and ICT system upgrades to be \$25.5 million over 4.5 years.
 - The cost of these works will be recovered from network users as follows:
 - For metering updates: from applicable contestable customers over 15 years.
 - For ICT works: from all network users over 6 years.
 - This is consistent with current practice.
 - The residual value of meters being replaced is \$2.37 million.

Provision of energy data to AEMO

Meter category	Current requirement	Requirement from 1 October 2025
Accumulation	Western Power is not required to provide accumulation energy data to AEMO.	No change
Interval meter	Western Power must provide interval energy data to AEMO at 30-minute granularity	For 5MS meters (contestable load and generator): Five-minute granularity For all other meters (non-contestable): 30-minute granularity

Five-minute settlement amendments summary

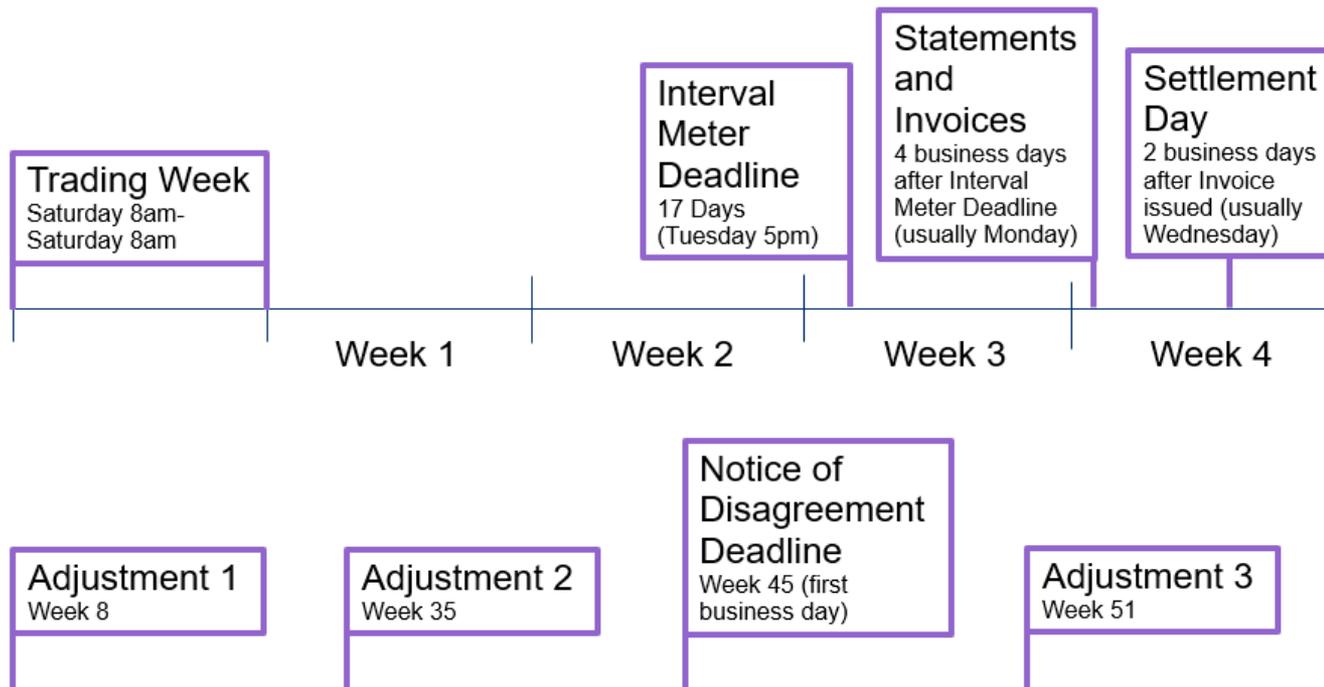
Amendment	Jurisdiction
All 5MS meter (generators and contestable loads) must be capable of reading energy data at five-minute granularity from five-minute settlement commencement (1 October 2025)	SWIN
Existing metering installations subject to grandfather arrangements are not required to be replaced.	SWIN
From 1 October 2025, Western Power must provide AEMO interval energy data at five-minute granularity for all 5MS meters.	SWIN

Proposed amendments to enable weekly settlement



Meter data submission timing

- AEMO requires meter data at least weekly to enable it to implement a weekly settlement timeline.
- The Metering Code will be amended to require Western Power to provide meter data at least weekly.
- The WEM Rules are being amended to include a meter data submission deadline of 17 days following the end of the relevant Trading Week.





Manually read meters

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- There are 6,352 contestable load meters that are currently manually read and do not have the capability to be remotely read.
 - Reading these meters weekly would be prohibitively expensive.
 - The Metering Code only enables Western Power to use an estimation method in specific circumstances, for example if data is corrupt.
 - The Metering Code will be amended to:
 - require Western Power to include in its Metrology Procedure a method to estimate weekly data from monthly meter readings; and
 - enable Western Power to use that estimation method.
 - Western Power must submit the revised Metrology Procedure to the ERA no later than 1 October 2021.

Weekly settlement amendments summary

Amendment	Jurisdiction
Western Power must read meters on at least a weekly basis.	SWIN
Western Power must develop an estimation method to calculate weekly energy data for manually read meters.	SWIN

Next steps





Next steps

- Consultation closes Monday 1 February 2021
 - Email, phone/meeting, postal (see consultation paper for details)
 - Incorporate stakeholder feedback – February 2021
 - Gazettal and commencement – targeting March/April 2021
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