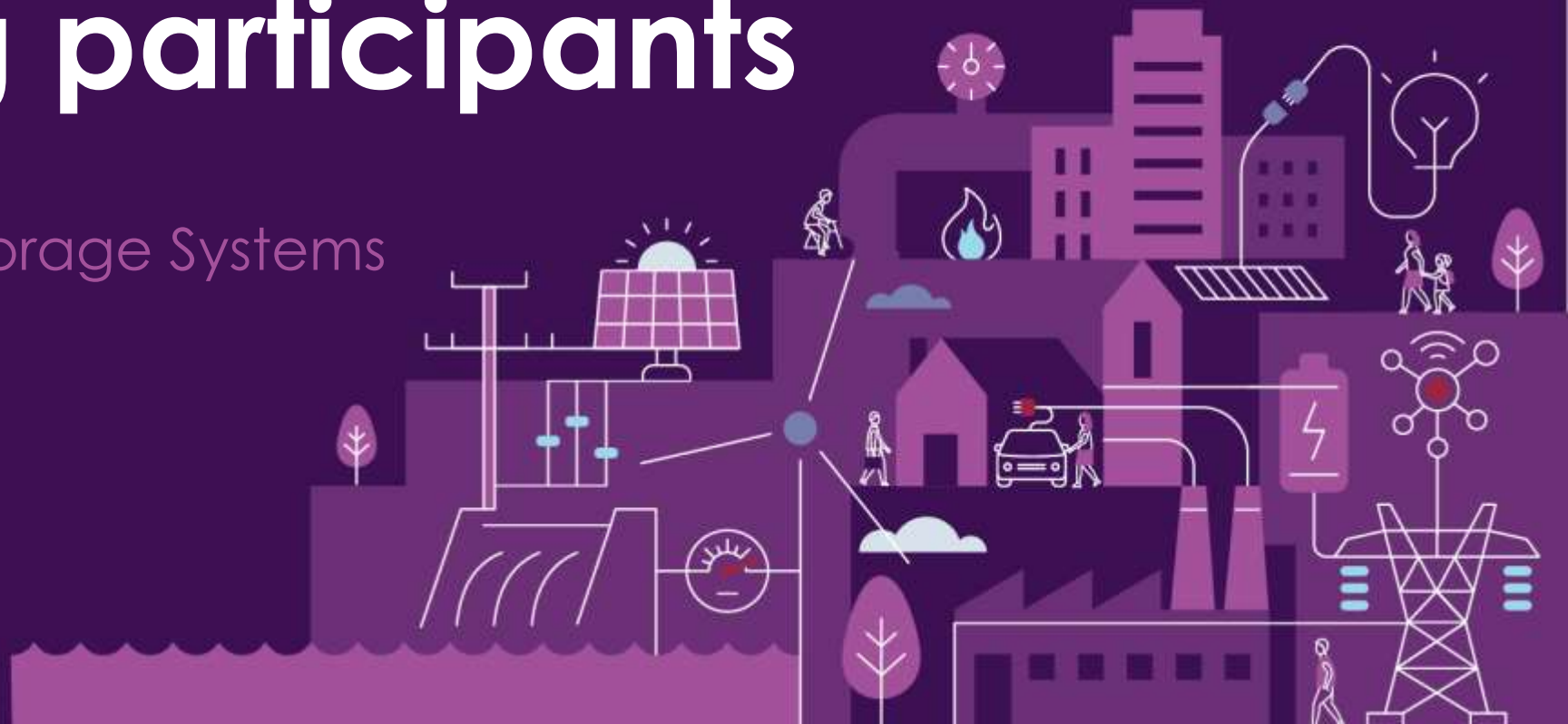
IESS Settlement briefing for emerging participants

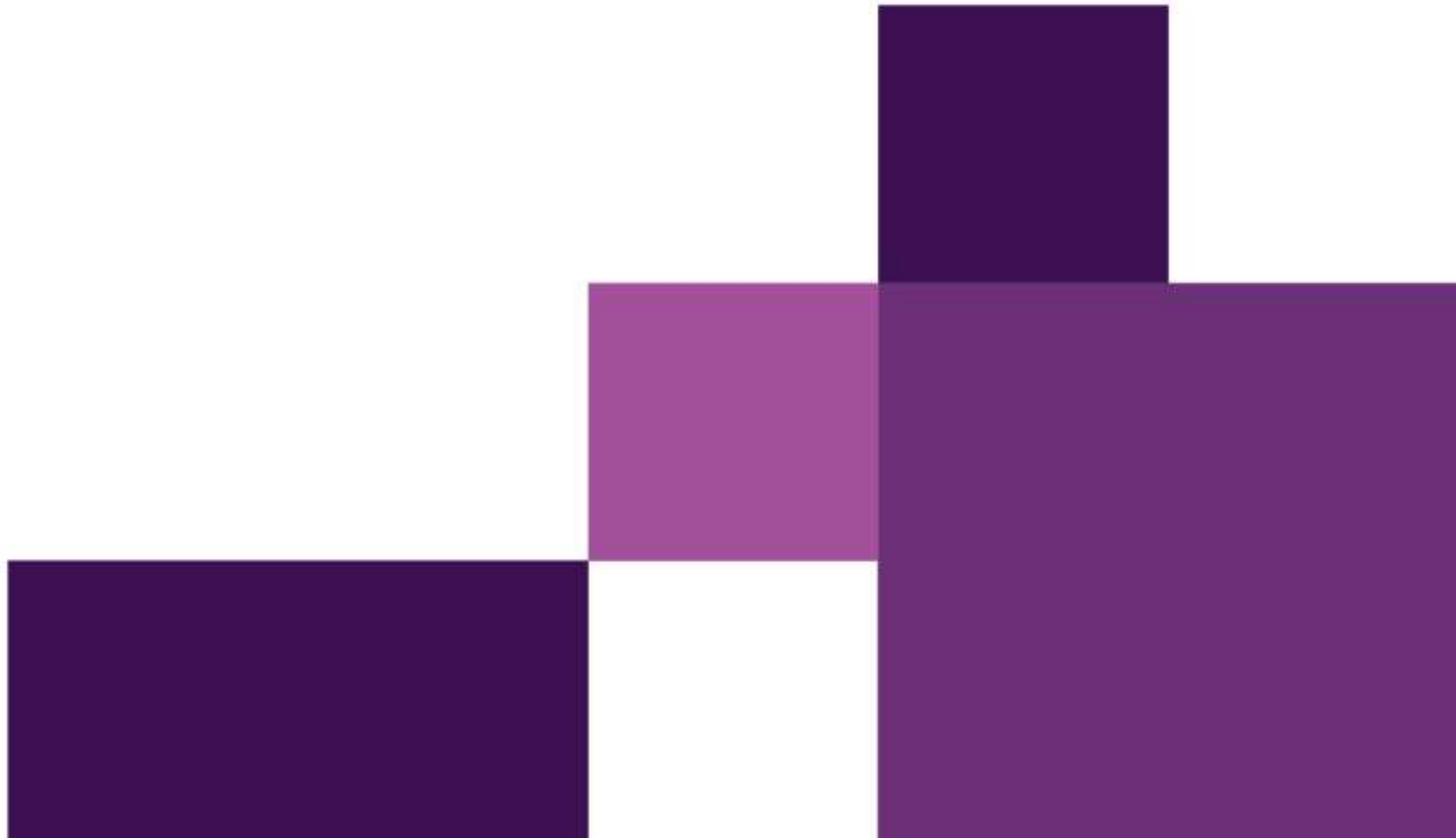
Integrating Energy Storage Systems

Thu 07 Dec 2023



Welcome

Emily Brodie



We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders past, present and emerging.

AGENDA

#	Timing (AEST)	Topic	Presenters
1	5 mins	**Welcome**	Emily Brodie
2	10 mins	**Context** • IESS timeline • Overview of changes	Emily Brodie
3	20 mins	**Changes to settlement under IESS**	Darren Gatty
4	10 mins	**Industry transition and readiness** • Transition arrangements • Participant support	• Darren Gatty • Emily Brodie
5	15 min	**Questions and close**	Emily Brodie
A	IESS glossary		
B	IESS settlements: Transition logic example		
C	AEMO competition law meeting protocol		

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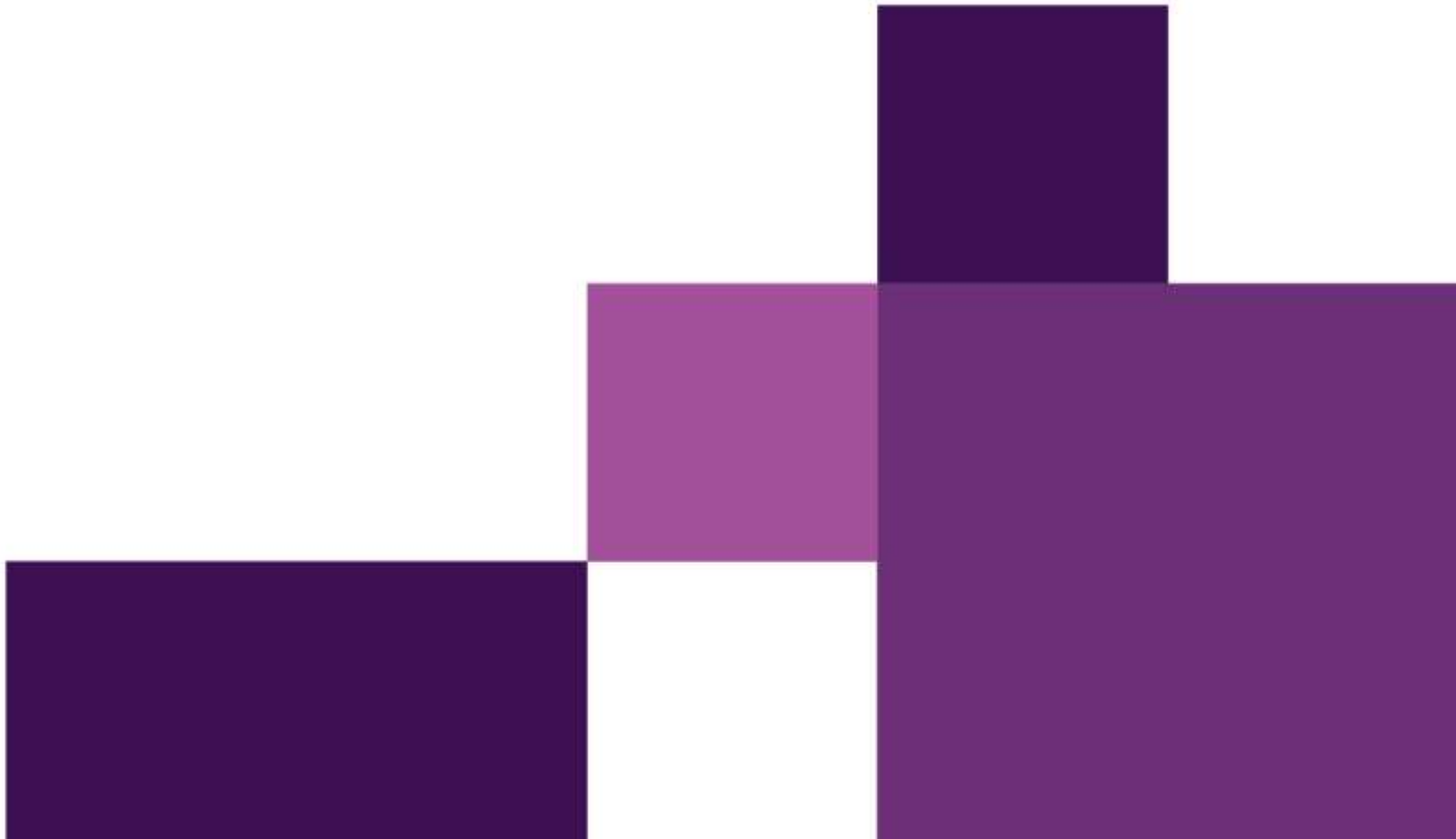
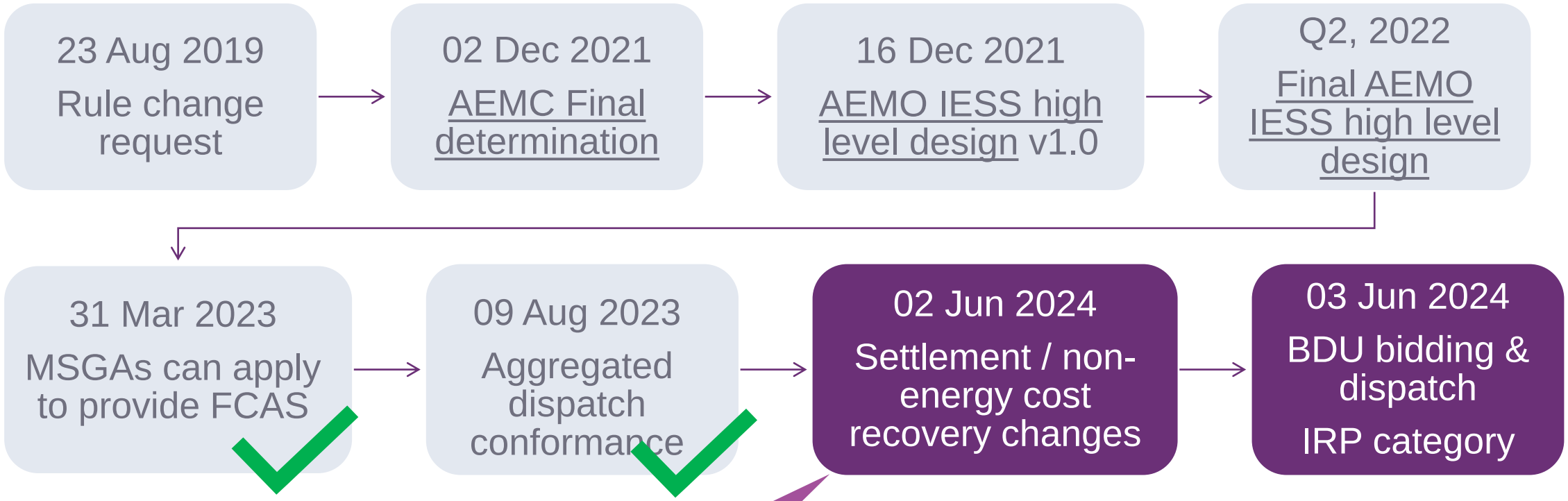
Context

Emily Brodie



BACKGROUND: IESS high-level Timeline



MSGA	Market small generation aggregator
FCAS	Frequency control ancillary service/s
IRP	Integrated resource provider
BDU	Bidirectional unit

Focus of this session

REFERENCES

- **AEMC** IESS rule change
- **AEMC** Implementing IESS rule change
- **AEMO** IESS High Level Design and Implementation Strawperson
- **AEMO** IESS Participant Toolbox

REFRESHER: Major settlement changes

IESS rule significantly alters the calculation method used for **Non-Energy Cost Recovery** (NECR) items:

- Recovery calculations are to consider the gross (consumption separate from generation) energy amounts of all participants, rather than currently using net energy (generation – consumption) of specific participant types.
- **Major AEMO database structure changes** required to enable the new calculations, these changes will flow into the Data Model and affect participant reconciliation and reporting activities and also AEMO data provision.
- Embedded network management needs to change to ensure that the parent has the appropriate gross energy volumes available for settlement, which has resulted in the netting of children reads moving to AEMO's Metering system.

IESS rule:

- **Does** change the non-energy cost recovery calculations
- **Does not** change the outcome for settlement of base energy
- **Does not** change metering data interfaces or most reconciliation "RM" reports
- **Does** change the MMS Data Model data structures related to the Settlement of base energy, potentially affecting participants' downstream processes.

Changes to settlement under IESS

Darren Gatty

IESS settlement related changes

- Data flow
- Data model tables
- New energy transactions table fields
- New genset detail table example
- Comparative examples of energy settlements
- Non-energy cost recovery changes
- Embedded network management calculations
- Settlement Report (SR) changes

Data flow changes from 02 Jun 2024

Current Data Structure:

Participant Type	Market Customer	Market Customer (Battery - Load Only)	Market Generator (Battery - Gen Only)	Market Generator	Market Small Generator Aggregator
MSATS Configuration	AggFlag = Y Class: SMALL, etc	AggFlag = Y Class: WHOLESAL	AggFlag = N Class: GENERATR	AggFlag = N Class: GENERATR	AggFlag = Y Class: NREG (PID must end *SGA)
Reads Received	Aggregate Reads (imports & exports)	Aggregate Reads (exports only)	Individual Reads (imports only)	Individual Reads (imports & exports)	Aggregate Reads (imports & exports)
Table Reads Settled In	setcpdata	setcpdata	setgendata	setgendata	setsmallgendata
Billing Week Summary	billingcpdata	billingcpdata	billinggendata	billinggendata	billinggendata

- The current data split into 3 settlement tables allows separation of the participant types for things like data requests and fee calculations
- With IESS all reads will be settled via a single **Energy Transactions** table, with an IRP registered participant able to have all of these read types
- Market registered batteries will be updated for IESS to have a single NMI and DUID, as shown below

IESS Data Structure:

Participant Type	Market Customer	IRP (Single NMI / DUID for Battery)	Market Generator	IRP
MSATS Configuration	AggFlag = Y Class: SMALL, etc	AggFlag = N Class: TIRS, DIRS	AggFlag = N Class: GENERATR, etc	AggFlag = Y Class: NREG
Reads Received	Aggregate Reads (imports & exports)	Individual Reads (imports & exports)	Individual Reads (imports & exports)	Aggregate Reads (imports & exports)

IESS data model table changes

V.03 of the Draft data model spec **EMMS - Technical Specification - Data Model v5.3 - April 2024** is now available

Current Tables*	Replacement Tables**
SETCPDATA	**SET_ENERGY_TRANSACTIONS** (table for settling all ACE & ASOE, by ParticipantID/ConnectionPointID) **SET_ENERGY_GENSET_DETAIL** (additional detail at the genset level for the market generators, including DUID and Station information, as per current setgendata)
SETGENDATA	
SETSMALLGENDATA	
SETCPDATAREGION	**SET_ENERGY_REGION_SUMMARY** (all participants energy transactions grouped by RegionID, public data)
SETGENDATAREGION	
BILLINGCPDATA	**BILLING_ENERGY_TRANSACTIONS** (Sum for the billing week grouped by ParticipantID/ConnectionPointID) **BILLING_ENERGY_GENSET_DETAIL** (Sum for the billing week grouped by ParticipantID/GenSetID)
BILLINGGENDATA	

* Reference: MMS Data Model v5.1 and v5.2 from May 2023 Technical specification

** Subject to change pending development and testing outcomes.

Data Model table DAILY_ENERGY_SUMMARY will remain with new columns added, similarly additional fields will be required in many of the recovery tables.

New energy transactions table fields

Field name *	Data type	Description
SettlementDate	DATE	The Settlement Date
VersionNo	INTEGER	The Settlement Run Number
PeriodId	INTEGER	The Settlement 5Min Period Id (1 to 288)
ParticipantId	VARCHAR	The Participant ID Identifier
ConnectionPointId	VARCHAR	The Connection Point ID for the Participant, this may be a TNI or the generators Connection Point ID
RegionId	VARCHAR	The Region ID associated with the ConnectionPointId
CE_MWh	NUMBER	The Consumed Energy in MWh, sum of the DLF adjusted metered exports from the grid (always negative)
DME_MWh	NUMBER	Distribution Metered Energy in MWh, the portion of CE_MWh that is distribution connected for UFE allocation
UFEA_MWh	NUMBER	The Unaccounted For Energy Allocation in MWh (negative with normal UFE, positive with negative UFE)
ACE_MWh	NUMBER	The Adjusted Consumed Energy in MWh **[CE_MWh + UFEA_MWh]**
ASOE_MWh	NUMBER	The Adjusted Sent Out Energy in MWh, sum of the DLF adjusted metered imports to the grid (always positive)
Total_MWh	NUMBER	The Total Energy in MWh **[ACE_MWh + ASOE_MWh]**
RRP	NUMBER	The Regional Reference Price
TLF	NUMBER	Transmission Loss Factor Applied for the energy amount**
ACE_Amount	NUMBER	The ACE dollar value amount with TLF applied **[ACE_MWh x RRP x TLF]**
ASOE_Amount	NUMBER	The ASOE dollar value amount with TLF applied **[ASOE_MWh x RRP x TLF]**
Total_Amount	NUMBER	The total dollar value amount with TLF applied **[ACE_Amount + ASOE_Amount]**
Case_Id	NUMBER	The Meter Case ID associated with the Settlement Run Number
Meter_Type	VARCHAR	Indicator of the type of energy (Generator/Customer/NREG/BDU) for fee calculation purposes only
Aggregate_Read_Flag	INTEGER	Indicator of whether the read record was received as part of the Aggregate Reads
Individual_Read_Flag	INTEGER	Indicator of whether the read record was received as part of the Individual Reads
LastChanged	DATETIME	The Date time of the record update

* Subject to change pending development and testing outcomes.

** TLF applied will be derived from the net energy flow at the TNI when dual TLFs exist i.e. the sum of ASOE and ACE where negative (ACE > ASOE) results in the primary (load) TLF being applied and where positive in the secondary (generation) TLF being applied.

New genset detail example

- The new SET_ENERGY_GENSET_DETAIL table will be at the genset level, as per the current setgendata table, where genset and NMI are one-to-one.
- As well as STATIONID/DUID/GENSETID identifiers currently stored in setgendata, the new table will also contain the NMI (in MeterID field) and the ConnectionPointID, to facilitate reconciliation.
- The below example attempts to show the relationship between the 2 new tables, noting this is from the draft design, so the final data model may end up looking slightly different.

New main settlement table aggregated to ConnetionPointID: SET_ENERGY_TRANSACTIONS

Settlement Date	Version No	Period Id	Participant Id	Connection PointId	Region Id	CE_ MWh	DME_ MWh	UFEA_ MWh	ACE_ MWh	ASOE_ MWh	Total_ MWh	RRP	TLF	ACE_ Amount	ASOE_ Amount	Total_ Amount	Case_Id	Meter_Type	Aggregate_ Read_Flag	Individual_ Read_Flag	LastChanged
2/06/2024	5	1	XXXBATT	VCPID1	VIC1	-20	-20	0	-20	30	10	$10	0.98	-$196	$294	$98	9999	BDU	N	Y	3/06/2024
2/06/2024	5	1	XXXGEN	VCPID2	VIC1	-0.5	-0.5	0	-0.5	40	39.5	$10	0.98	-$5	$392	$387	9999	GENERATOR	N	Y	3/06/2024

New detailed settlement table at GenSet level: SET_ENERGY_GENSET_DETAIL

Settlement Date	Version No	Period Id	Participant Id	StationID	DUID	GenSetId	MeterID	Connection PointId	Region Id	CE_ MWh	DME_ MWh	UFEA_ MWh	ACE_ MWh	ASOE_ MWh	Total_ MWh	RRP	TLF	ACE_ Amount	ASOE_ Amount	Total_ Amount	LastChanged
2/06/2024	5	1	XXXBATT	BATT1	BATT1	BATT1	NMI1111111	VCPID1	VIC1	-20	-20	0	-20	30	10	$10	0.98	-$196	$294	$98	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN1	NMI1111112	VCPID2	VIC1	0	0	0	0	20	20	$10	0.98	$0	$196	$196	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN2	NMI1111113	VCPID2	VIC1	-0.5	-0.5	0	-0.5	10	9.5	$10	0.98	-$5	$98	$93	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN3	NMI1111114	VCPID2	VIC1	0	0	0	0	10	10	$10	0.98	$0	$98	$98	3/06/2024

Energy settlement example

Current Calculations

Market Customer
Imports = 10MWh
Exports = 30MWh
TA = AGE x TLF x RRP
TA = (10 - 30) x 0.95 x $50
TA = -$950

Market Generator
Imports = 27MWh
Exports = 5MWh
TA = AGE x TLF x RRP
TA = (27 - 5) x 0.95 x $50
TA = $1045

Total Statement Amount
= -$950 + $1045
= $95

New Rule

All Participants
TA = AGE x TLF x RRP
Where AGE = ACE + ASOE
ACE = - (30 + 5) = -35MWh
ASOE = 10 + 27 = 37MWh

TA = (-35 + 37) x 0.95 x 50
TA = $95

Total Statement Amount
= $95

IESS Calculations

All Participants
TA = (ACE x TLF x RRP) +
(ASOE x TLF x RRP)

ACE TA = -35 x 0.95 x $50
= -$1662.50

ASOE TA = 37 x 0.95 x $50
= $1757.50

Total Statement Amount
= -$1662.50 + $1757.50
= $95

Changes to non-energy cost recovery

Non-Energy Cost	Current Recovery	IESS Recovery
FCAS Contingency Lower Services	Market Customer participants based on the **net energy** (imports – exports) from **setcpdata**	All participants based on **ACE** from **Energy_Transations**
NMAS Network Support Control Ancillary Services (NSCAS) including test payments		
Energy or FCAS Contingency Lower Directions		
RERT (Reliability and Emergency Reserve Trader)		
Market Suspension		
APC (Administered Price Claim)		
FCAS Contingency Raise Services	Market Generator and Market Small Generator Aggregator participants based on the **net energy** (imports – exports) from **setgendata** and **setsmallgendata**	All participants based on **ASOE** from **Energy_Transations**
FCAS Contingency Raise Directions		
NMAS System Restart Ancillary Services (SRAS) including test payments	All participants based on the **net energy** (imports – exports) from **setcpdata, setgendata** and **setsmallgendata**	All participants based on **ACE** and **ASOE** from **Energy_Transations**
Non-Energy and Non-AS Directions		
FCAS Regulation Services Costs	“Causer Pays” method from those participants with Market Participant Factors (MPFs), with the residual from Market Customers **net energy** (imports – exports) from **setcpdata**	Same, but with the residual from all participants **ACE**

Note: Unaccounted for Energy (UFE) while technically not a NECR item, does also move from being only allocated to Market Customers (when their NMIs are consuming energy in an interval only) to being allocated to all participants based on the DME (distribution connected consumed energy). Generator auxiliary load can now result in UFE being allocated to generator participants, for their distribution connected (embedded) generators only.

Changes to embedded network management calculations

- The embedded network calculations for the parent NMIs will move from the Settlements system to the Metering system, so that the parent calculation is completed before being aggregated with the other reads of the parent FRMP
- Embedded network children are unaffected by the changes for IESS, the Local Retailer (LR) on their read is no longer relevant for settlements
- A simplified example below shows the reads for a single parent and child NMI on an embedded network, plus a single non-embedded NMI:

NMI	FRMP	LR	TNI	Imports	Exports	
NMI0000001	PARENTFRMP	GLOPOOL	VXXX	1	4	Single embedded network Parent NMI
NMI0000002	CHILDFRMP	PARENTFRMP	VXXX	2	2	Single embedded network Child NMI
NMI0000003	PARENTFRMP	GLOPOOL	VXXX	0.5	3	non-embedded normal NMI

Current Settlements calculation, aggregating all classes at once with parent netting:

FRMP	LR	TNI	Imports	Exports
PARENTFRMP	GLOPOOL	VKT2	-0.5	5

negative imports (1 - 2 + 0.5 = -0.5) moved to exports

FRMP	LR	TNI	Imports	Exports	Net
PARENTFRMP	GLOPOOL	VXXX	0	5.5	-5.5

current volumes billed

With IESS first Metering will net the child from the parent:

FRMP	LR	TNI	Imports	Exports
PARENTFRMP	GLOPOOL	VXXX	-1	2
PARENTFRMP	GLOPOOL	VXXX	0	3

negative imports (1 - 2 = -1) move to exports

final netted parent read

Then Metering will aggregate this netted parent with other reads:

FRMP	LR	TNI	Imports	Exports	Net
PARENTFRMP	GLOPOOL	VXXX	0.5	6	-5.5

final volumes to bill by Settlements

- There will be a change to the RM16 report as this will contain the Parent read after the children NMIs have been subtracted. This change also applies to parents of child NMIs that are market generators.
- Participants will still be able to reconcile RM16 with settlements values in statements, but will no longer be able to easily reconcile RM16 against RM21/27, without first performing the embedded network parent calculations
- Most embedded network parents will not see any change in the total energy $ amount billed however for the very limited embedded networks having children with a different TNI than the parent, the altered energy volumes applying each TLF, will result in a change.

Settlement Report (SR) changes

- Updates required to reflect ACE and ASOE changes, additional changes have been made to improve clarity
- Unrelated to IESS, an unused column “FCAS Comp.” has been removed from the FCAS payments by connection point section and the Direction information section has been redesigned, as per the next slide
- A copy of the template SR as shown below has been added to the [IESS Participant Toolbox website]
- Note that no change is currently expected to the pdf statements for IESS

INDICATIVE FORMAT ONLY

SETTLEMENT REPORT

REPORT FOR <Participant Name>

NNNNNN Settlements ref YYYY/WEEKNO/BILLRUNNO/PARTICIPANTID
MSATS CASEID:NNNNNN

DD-Month-YYYY to DD-Month-YYYY Week No NN

Energy Transactions

	Aggregate Energy (MWh)	Aggregate Amount($)	UFEA (MWh)
Total Adjusted Sent Out Energy	NNNNNNNN.NN	$N,NNN,NNN.NN	NNNNNNNN.NN
Total Adjusted Consumed Energy	NNNNNNNN.NN	$N,NNN,NNN.NN	NNNNNNNN.NN
Nett Sales (Purchases)	NNNNNNNN.NN	$N,NNN,NNN.NN	NNNNNNNN.NN

Energy by Transmission Connection Point

Connection Point	Description	Total Amount($)	Load Wtd Avg. Price ($/MWh)	Total Energy (MWh)	UFEA (MWh)	ASOE (MWh)	ACE (MWh)	ASOE Amount($)	ACE Amount($)
NNNN	NNNNNN	$N,NNN,NNN.NN	NN.NN	NN.NN	NN.NN	NN.NN	NN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN

Market Frequency Control Ancillary Services by Transmission Connection Point (Payments By AEMO)

Connection Point	Very fast raise	Very fast lower	Fast raise	Fast lower	Slow raise	Slow lower	Delayed raise	Delayed lower	Reg raise	Reg lower	Total
NNNN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN
Total	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN

Market Ancillary Service Transactions - Recovery

Service Provided	ACE Amount ($)	ASOE Amount ($)	MPF Amount ($)	Total Amount ($)
NNNNNN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN
Total Recovery(Payment to AEMO)	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN

Non Market Ancillary Service Transactions - Recovery

NMAS Type	ACE Amount($)	ASOE Amount($)	Total Amount($)
NNNNNN	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN
Total Recovery (Payment To AEMO)	$N,NNN,NNN.NN	$N,NNN,NNN.NN	$N,NNN,NNN.NN

SR direction section changes

- All participant specific payment/recovery information will be shown in a single “Determination Amounts” section, currently direction payments at Provisional and Final Determination status are separated into two tables, with participant recovery amounts included in the lower detail section
- The generic information of the directions common to all participants will then be shown in a significantly shorter “Determination Transactions” section

```
Direction Transactions
-------------------------------------------------------------------------------------------------------------------------------
Determination Amounts

Direction ID                                Status          Recovery          Payment             Total          Payment Class
YYYYMMDD.DNO%                               NNNNNN       $N,NNN,NNN.NN     $N,NNN,NNN.NN    $N,NNN,NNN.NN          NNNNNN
-------------------------------------------------------------------------------------------------------------------------------
Total                                                    $N,NNN,NNN.NN     $N,NNN,NNN.NN    $N,NNN,NNN.NN
===============================================================================================================================

Determination Transactions
-------------------------------------------------------------------------
(This section is repeated for each direction in the Billing Period)
Direction ID & Service              YYYYMMDD.DNO%       NNNNNN
Direction Description               NNNNNN
Start Date & Period                 DD/MM/YYYY          PeriodID       NN
End Date & Period                   DD/MM/YYYY          PeriodID       NN
Compensation Recovery Amount        $N,NNN,NNN.NN
-------------------------------------------------------------------------
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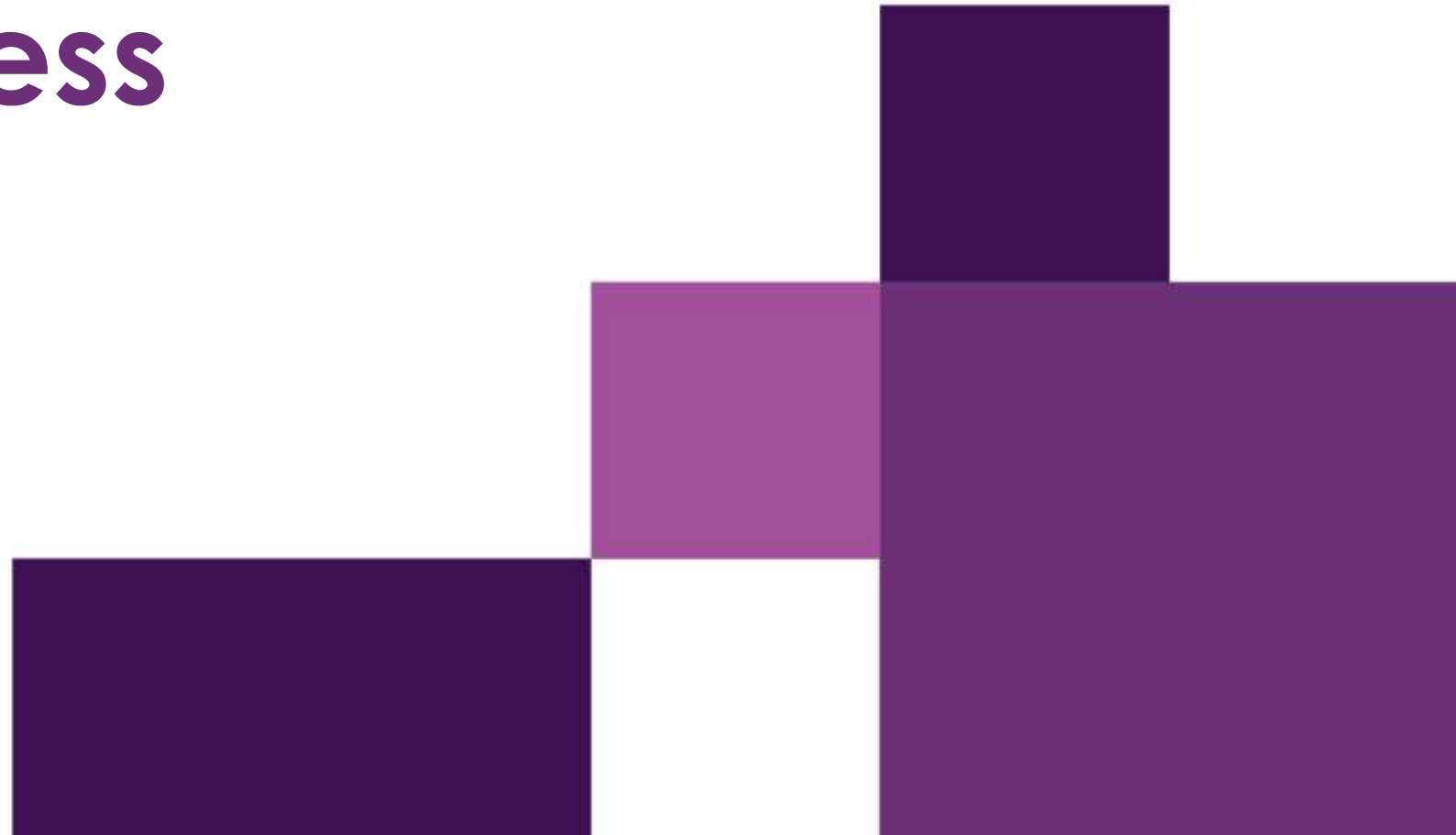
Industry transition and readiness

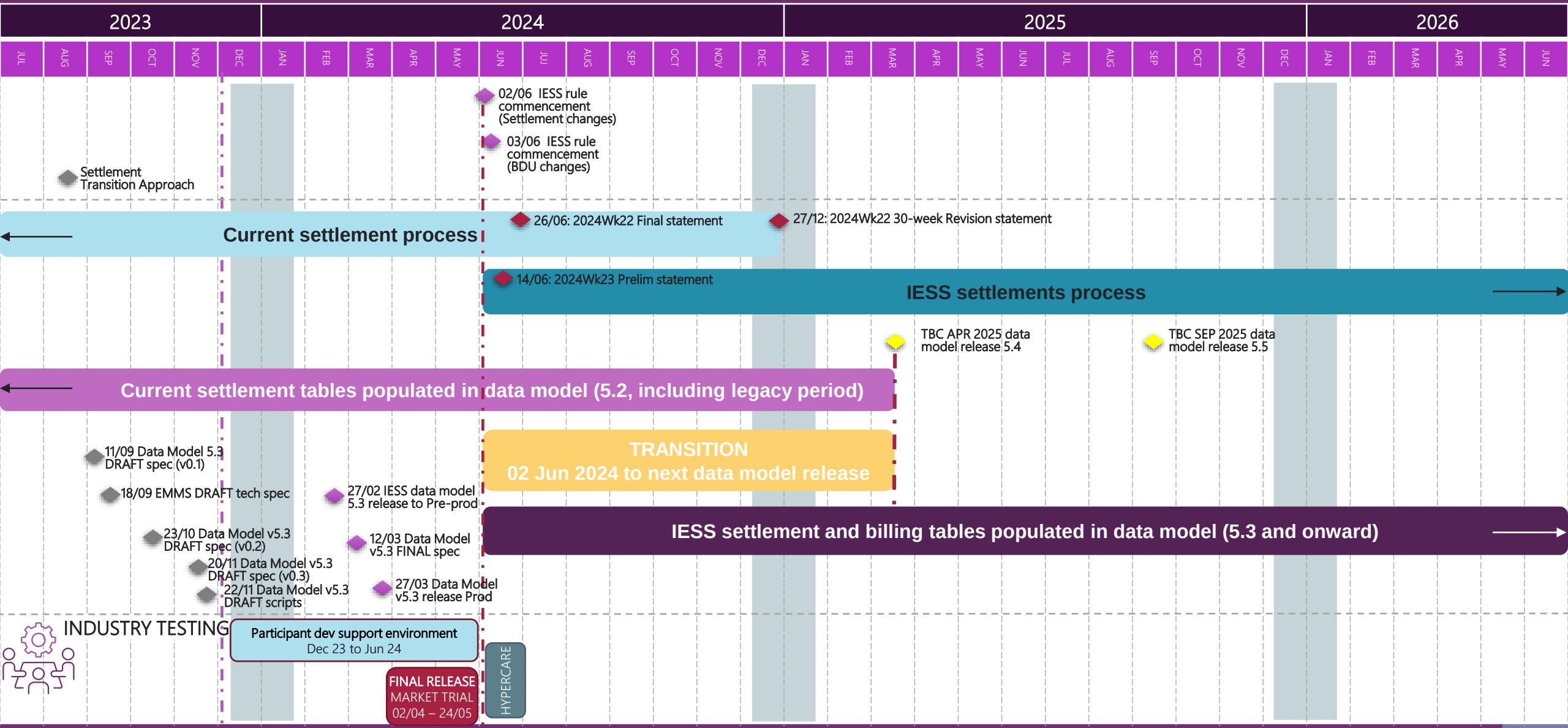
Darren Gatty / Emily Brodie



Planned transition approach

- From IESS settlement start (02 Jun 2024), the data model legacy settlements reports (for all published runs) will continue to populate setcpdata, setgendata and setsmallgendata from the data in the new IESS table structure
- These legacy reports will remain in place only until the following data model release, 6-12 months after the IESS data model go-live
- Other deprecated tables, such as setcpdataregion and billingcpdata, will **not** continue to be updated from IESS commencement
- All market battery reads would be populated to setgendata once current dual NMI configuration is replaced by the IESS single NMI/DUID structure
- Generator exports (field EXPENERGY in setgendata) will be populated with ACE value, so will not always reconcile with the DLF adjusted meter reads as currently occurs, due to the impact of UFEA

IESS settlement transition



IESS Confirmed
Indicative

Concurrent initiatives
Completed activities

Summer holiday periods: Avoid industry IESS activities where possible

Market trial (Pre-production)
02 Apr to 25 May 2024

Transition mappings

- An updated mapping file Data Model Settlements tables mapping explainer of the key new and altered settlement and billing tables has been published to the AEMO website
- Included is a mapping of how the new tables will be used to populate the setcpdata, setgendata and setsmallgendata tables during the transition period
- As per examples from the mapping table shown below, there will not always be a direct mapping of the old fields to the new fields
- Where the equivalent field will have the opposite sign in the new table, this will be reversed in the process of populating the legacy reports
- Some other minor calculations will be performed to populate existing fields

Existing Table	Existing Field Name	Existing Table.Field	New Data Model Table.Field Mapping	Transition Population of Existing Fields	AEMO Notes
SETCPDATA	INENERGY	SETCPDATA.INENERGY	none	SET_ENERGY_TRANSACTIONS.ASOE_MWH	IESS has no UFE impact to imports, so current UFE adjusted net import field has no direct mapping
SETCPDATA	XNENERGY	SETCPDATA.XNENERGY	SET_ENERGY_TRANSACTIONS.ACE_MWH	calculated field: ACE_MWH * -1	Net Exports UFE adjusted, so same as ACE though UFE treatment changes, also opposite sign
SETGENDATA	CPRRP	SETGENDATA.CPRRP	none	calculated field: RRP * TLF	
SETGENDATA	EXPENERGY	SETGENDATA.EXPENERGY	SET_ENERGY_GENSET_DETAIL.CE_MWH	SET_ENERGY_GENSET_DETAIL.ACE_MWH	CE_MWh matches EXPENERGY, but as UFE impacts embedded generators, ACE_MWh is settled volume

Transition approach impacts

BENEFITS

- Allows participants more time to manage downstream settlement data impacts
- Allows participants to use data from the ‘old’ tables that would be closely aligned with the ‘new’ IESS settlement information (ACE/ASOE)

DRAWBACKS

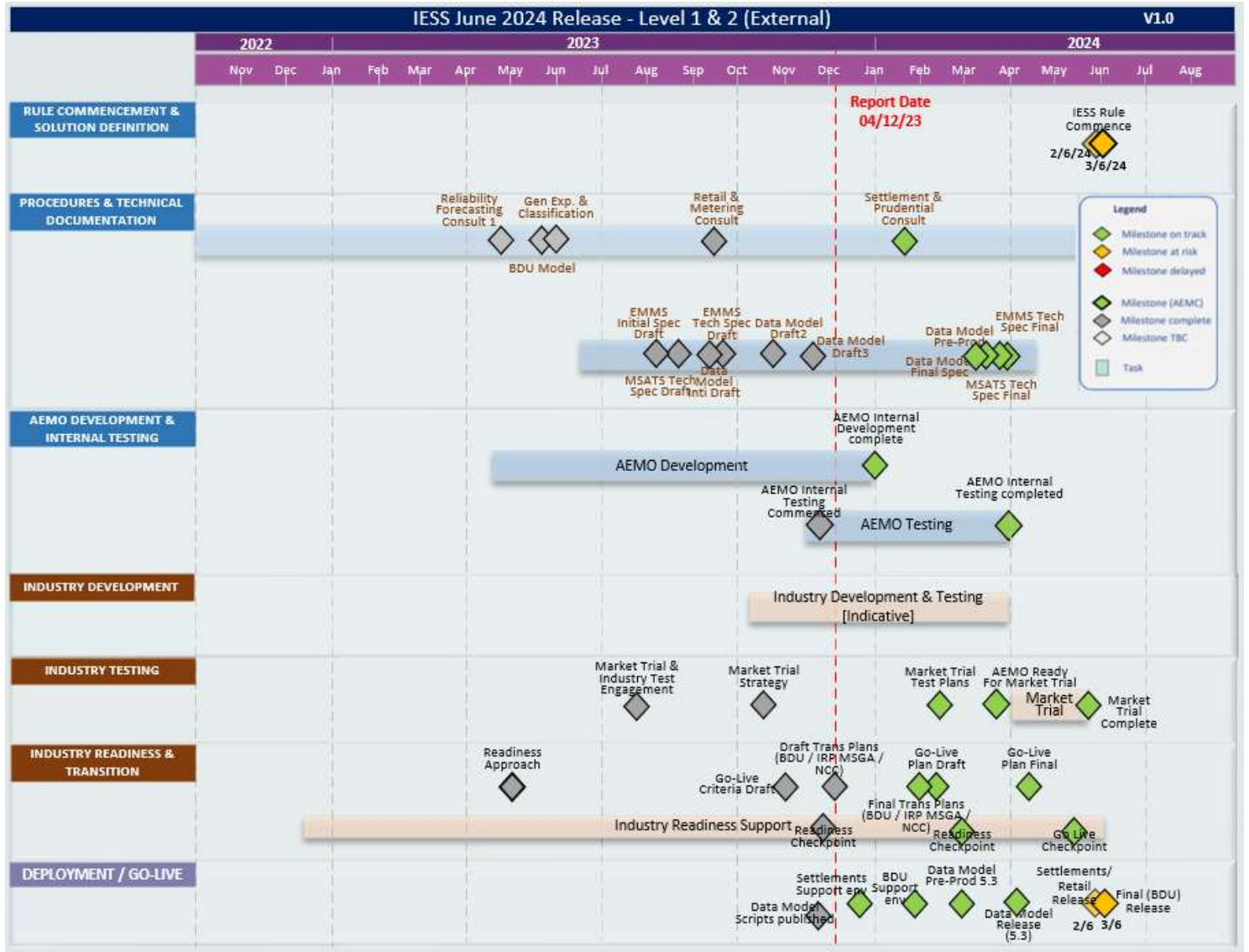
- From IESS settlement start, would not allow participants using the ‘old’ tables to fully reconcile against the new IESS settlement statements in the same way
- Participants would need to carefully assess and understand the data impacts on any downstream processes that are dependent on the ‘old tables’
- From IESS commencement, AEMO Settlements team would not be able to provide reconciliation support to participants using the ‘old’ tables

Key areas of participant support

- ✓ Engagement via forums, workshops, 1to1 discussions etc
- ✓ Technical documentation*
- ✓ Transition, test and go-live plans*
- ✓ Settlement participant development support environment from 15 Dec 2023
  - PDSE is a non-production environment scaled to support interface development testing
  - PDSE fact sheet explains what is and is not available in the environment
  - PDSE provides FRMPs with insight to the structure of settlement data under IESS rule changes
  - Please note the PDSE is not a substitute for IESS industry testing and market trial activities in pre-production. There only will be one code drop to the PDSE and the code will not be maintained.
- ✓ Market trial (pre-production) from 02 Apr to 24 May 2024

*Publication dates and links available on following slide and via monthly Implementation Forum

June 2024 – IESS final release



IESS milestones are monitored and discussed monthly via the [Implementation Forum] and [Program Consultative Forum]

- Nominate via email to nemreform@aemo.com.au

IESS external milestones as at 04/12/23

IESS Project - Level 1 & 2 Milestones (External)							
Level	**Milestone ID**	**Milestone**	**Target Date**	**Expected Date**	**RAG**	**Tentative / Confirmed**	**Comments**
Level 1	IES-100	AEMC Final Determination Published (Integrating energy storage systems into the NEM)	2-Dec-2021	2-Dec-2021	Complete		
Level 2	IES-110	IESS High level Design final	7-Jul-2022	7-Jul-2022	Complete		
	IES-210	Reliability Forecasting Consultation 1	28-Apr-2023	28-Apr-2023	Complete		
Level 1	IES-120	BDU Model Finalised	31-May-2023	31-May-2023	Complete		
Level 2	IES-211	Guide to Gen. Exp. & Classification - Final documents published	1-Jun-2023	1-Jun-2023	Complete		
	IES-300	MSATS Technical Specification draft available	7-Aug-2023	23-Aug-2023	Complete		
Level 2	IES-301	EMMS Data Model 5.3 specification - Initial Draft	11-Sep-2023	11-Sep-2023	Complete		
	IES-302	EMMS June 24 Technical Specification (Draft)	18-Sep-2023	18-Sep-2023	Complete		
	IES-213	Retail Metering Procedures Final Published	18-Sep-2023	18-Sep-2023	Complete		
	IES-303	Industry Test and Market Trials Strategy Draft published	22-Sep-2023	22-Sep-2023	Complete		
	IES-304	EMMS Data Model 5.3 specification - Draft 2	9-Oct-2023	23-Oct-2023	Complete		
	IES-305	Industry Test and Market Trials Strategy complete	17-Oct-2023	17-Oct-2023	Complete		
Level 2	IES-306	Go-Live Criteria draft/establish	30-Oct-2023	30-Oct-2023	Complete		
Level 2	IES-307	EMMS Data Model 5.3 specification - Draft 3	13-Nov-2023	20-Nov-2023	Complete		
	IES-308	AEMO Internal Testing commenced	20-Nov-2023	28-Nov-2023	Complete		Complete this period
	IES-309	Draft Data Model 5.3 scripts published	22-Nov-2023	22-Nov-2023	Complete		Complete this period
	IES-310	Initiative Readiness Checkpoint	28-Nov-2023	28-Nov-2023	Complete		Complete this period
	IES-311	Transition Plan Draft (BDU / IRP MSGA / NCC)	15-Dec-2023	1-Dec-2023	Complete		Complete this period
	IES-312	Settlements Participant Support Environment available	15-Dec-2023		Green	Confirmed	
	IES-217	AEMO Internal Development complete	22-Dec-2023		Green	Confirmed	Participant facing capability to be completed , some internal support and minor updates to be completed in Jan
	IES-313	BDU Participant Development Support Environment available	22-Jan-2024		Green	Confirmed	
	IES-314	Settlements & Prudentials Procedures published	29-Jan-2024		Green	Confirmed	
	IES-315	Transition Plan Final (BDU / IRP MSGA / NCC)	31-Jan-2024		Green	Confirmed	Draft Published 1/12
	IES-316	Market Trial Test Plan complete	16-Feb-2024		Green	Confirmed	
	IES-317	Industry Go-Live Plan Draft published	26-Feb-2024		Green	Confirmed	
	IES-218	EMMS Data Model 5.3 Released to Pre-Production	27-Feb-2024	13-Mar-2024	Green	Confirmed	
Level 1	IES-318	Initiative Readiness Checkpoint	1-Mar-2024		Green	Confirmed	
Level 1	IES-319	EMMS Data Model 5.3 final specification available	12-Mar-2024		Green	Confirmed	
Level 2	IES-219	EMMS Data Model 5.3 Released to Production	27-Mar-2024	10-Apr-2024	Green	Confirmed	
Level 2	IES-107	AEMO Internal Development & Testing complete	28-Mar-2024		Green	Confirmed	
	IES-320	AEMO Ready for Market Trial	2-Apr-2024		Green	Confirmed	
Level 1	IES-321	MSATS Technical Specification final available	2-Apr-2024		Green	Confirmed	
	IES-322	EMMS Settlement Technical Specification final	2-Apr-2024		Green	Confirmed	
	IES-108	Market Trial start	2-Apr-2024		Green	Confirmed	
Level 1	IES-214	Reliability Forecasting Consultation finalised	12-Apr-2024		Green	Confirmed	
Level 2	IES-323	Settlement Certification complete	19-Apr-2024		Green	Confirmed	
Level 2	IES-324	Industry Go-Live Plan Final published	19-Apr-2024		Green	Confirmed	
	IES-325	Go-Live Checkpoint	1-May-2024		Green	Confirmed	
	IES-326	Market Trial complete	24-May-2024		Green	Confirmed	
	IES-220	IESS Settlements Go-Live	2-Jun-2024		Green	Confirmed	
Level 2	IES-327	Rule Commencement Date - Settlements [NECR]	2-Jun-2024		Green	Confirmed	
Level 2	IES-221	IESS BDU Go-Live	3-Jun-2024		Amber	Confirmed	Reflects compressed schedule
	IES-109	IESS Final Release [BDU] - Rule Commencement	3-Jun-2024		Amber	Confirmed	Reflects compressed schedule

Where to access available resources

Guides

- IESS Settlements change summary
- IESS Data Model Settlements Mapping Explainer
- Settlement Report – Format updated for IESS

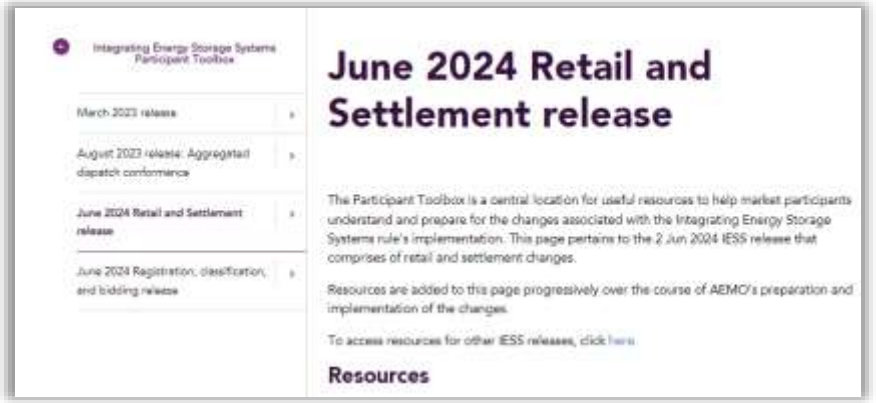
Industry readiness & Go-Live

- IESS June 2024 Readiness approach – note updated version to be published by Friday 6 October.

Technical documentation

- EMMS Technical Specification - June 2024
- MSATS Technical Specification - June 2024 v0.01
- EMMS - Technical Specification - Data Model v5.3

Resources available through IESS Participant Toolbox at AEMO's website



Link: https://aemo.com.au/initiatives/major-programs/integrating-energy-storage-systems-project/integrating-energy-storage-systems-faqs/june-2024-retail-and-settlement-release

Or contact the project directly at IESS@aemo.com.au

NEM Reform Program engagement

Forums	Forum focus	Cadence	Approach
Executive Forum	Program overview and status update	Three times yearly	Nomination
Reform Delivery Committee (RDC)	Long term strategic perspective	Quarterly	Nomination
Program Consultative Forum (PCF)	Inflight initiatives status & co-ordination	Monthly	Open
Implementation Forum	Implementation of reforms	Monthly	Open
Electricity Wholesale (EWCF) & Electricity Retail (ERCF) Consultati Forums	Procedures working groups	Monthly	Open
Testing working group	Testing	Monthly	Open
Working groups	Initiatives	As appropriate	As appropriate

Focus/working Groups for initiatives include:

- Initiative working groups
- Strategic and foundational focus groups (IDX/IDAM/PC)

To learn more and get involved, please visit

- AEMO | NEM Reform Program Stakeholder Engagement
- AEMO | Industry meeting calendar
- or contact the program at NEMReform@aemo.com.au.

Questions & Close

Emily Brodie

Stakeholder questions

#	Pre-submitted questions	AEMO's initial response
1	Summarise the changes a typical FRMP will need to make to their existing settlements-related processes to maintain the status quo post-IESS, e.g. mapping between the old and new columns in each table.	Each FRMP has different systems and processes and will therefore need to assess impacts and prepare for IESS changes differently. A FRMP could: • Update to Data Model to 5.3 • Re-link existing reconciliation logic to the new tables and new fields within existing tables • Change/add reconciliation steps for the impacts of NECR changes • Update processes to reflect changes • Review and understand changes to the SR, SGAs and embedded network data management (if affected). A mapping explainer has been published to assist participants at the IESS Participant Toolbox. Current version is available here: https://aemo.com.au/-/media/files/initiatives/integrating-energy-storage-systems-project/aemo-iess-data-model-settlements-mapping-explainer---9-november-2023.xlsx?la=en Noting that an update may be published so refer back to the toolbox page for the latest version.
2	How will Non-Energy Cost Recovery be impacted by ASOE?	An example is covered in Section 3 of this pack.
3	More clarity on IESS settlement impact.	Covered in Section 3 of this pack. In addition, the published IESS June 2024 Participant Impact Assessment provides a description of impacts.

Come along to our Settlements Q&A session

- AEMO is welcoming participants to a Q&A session on the changes to NEM Settlements stemming from the Integrating Energy Storage Systems (IESS) project.

- ***When:*** *Tuesday 12 December 11am-12pm AEDT via Teams*
- ***Purpose****: Session builds on previous engagements with participants and provides an opportunity to seek clarification regarding NEM Settlement changes. No new information will be presented in the session, however additional participant settlement examples will be published ahead of the session. Note, the session will focus on settlements changes only, any test related questions are welcome through the NEM Reform industry testing working group.*
- ***Audience****: This session will benefit any FRMP undertaking detailed planning for changes in June 2024.*
- *If you'd like to receive an invite, reach out to us at IESS@aemo.com.au.*

FAQs

Note that FAQs are available through the IESS Participant Toolbox at AEMO's website. These are updated on an ongoing basis.

Link: https://aemo.com.au/initiatives/major-programs/integrating-energy-storage-systems-project/integrating-energy-storage-systems-faqs

Or contact the project directly at IESS@aemo.com.au

Session close

IESS@aemo.com.au

AEMO | IESS Participant toolbox

APPENDIX A

Glossary

IESS Glossary

Term	Definition
5MPD	5-minute pre-dispatch
ADC	Aggregated Dispatch Conformance
ADG_ID	Aggregate Dispatch Group identifier for an Aggregate System
AGC	Automatic generation control
ASL	Ancillary service load
ASU	Ancillary service unit
B2B	Business-to-business
B2M	Business-to-market
BDU	Bidirectional unit
BESS	Battery energy storage system
CR	Change request
CRMP	Cost recovery market participant
DRSP	Demand response service provider
DUID	Dispatchable unit identifier
FRMP	Financially responsible market participant
IESS	Integrating Energy Storage Systems rule
IRP	Integrated resource provider

Term	Definition
IRS	Integrated resource system
MSATS	Market settlements and transfer solutions
MSGA	Market small generation aggregator
MT PASA	Medium-term PASA
NCC	NMI classification code
NECR	Non-energy cost recovery
NEM	National electricity market
NEMDE	National electricity market dispatch engine
NMI	National metering identifier
PAE	Profiling and allocation engine
PASA	Projected assessment of system adequacy
PD	Pre-dispatch
PDM	Participant Data Model
PMS	Portfolio management system
SCADA	Supervisory control & data acquisition
SoC	State of charge
UFE	Unaccounted for energy
WDRU	Wholesale demand response unit

APPENDIX B

IESS SETTLEMENTS: TRANSITION LOGIC EXAMPLE

Transition logic example (1/3)

- Records from SET_ENERGY_TRANSACTIONS where AGGREGATE_READ_FLAG = "Y", the ParticipantID ends with "SGA" and the METERTYPE = “NREG” will be populated to the table **setsmallgendata**
- Export energy and cost fields are currently included in this table as positive values, so the negative IESS table ACE values will have the sign reversed in the legacy report

New main settlement table aggregated to ConnetionPointID: SET_ENERGY_TRANSACTIONS

Settlement Date	Version No	Period Id	Participant Id	Connection PointId	Region Id	CE_ MWh	DME_ MWh	UFEA_ MWh	ACE_ MWh	ASOE_ MWh	Total_ MWh	RRP	TLF	ACE_ Amount	ASOE_ Amount	Total_ Amount	Case_Id	Meter_Type	Aggregate_ Read_Flag	Individual_ Read_Flag	LastChanged
2/06/2024	5	1	XXXCUST	VTNI	VIC1	-50	-50	0	-50	5	-45	$10	0.98	-$490	$49	-$441	9999	CUSTOMER	Y	N	3/06/2024
2/06/2024	5	1	XXXCUST	VTNI	VIC1	-2	-2	0	-2	8	6	$10	0.98	-$20	$78	$59	9999	NREG	Y	N	3/06/2024
2/06/2024	5	1	XXXXSGA	VTNI	VIC1	-1	-1	0	-1	20	19	$10	0.98	-$10	$196	$186	9999	NREG	Y	N	3/06/2024
2/06/2024	5	1	XXXXSGA	VTNI	VIC1	-1	-1	0	-1	20	19	$10	0.98	-$10	$196	$186	9999	CUSTOMER	Y	N	3/06/2024
2/06/2024	5	1	XXXBATT	VCPID1	VIC1	-20	-20	0	-20	30	10	$10	0.98	-$196	$294	$98	9999	BDU	N	Y	3/06/2024
2/06/2024	5	1	XXXGEN	VCPID2	VIC1	-0.5	-0.5	0	-0.5	40	39.5	$10	0.98	-$5	$392	$387	9999	GENERATOR	N	Y	3/06/2024

Transition Population of Existing table: SETSMALLGENDATA

Settlement Date	Version No	Period Id	Participant Id	Connection PointId	Region Id	IMPORT ENERGY	EXPORT ENERGY	RRP	TLF	IMPENERGY COST	EXPENERGY COST	LastChanged
2/06/2024	5	1	XXXXSGA	VTNI	VIC1	20	1	$10	0.98	$196	$10	3/06/2024

Transition logic example (2/3)

- Records from SET_ENERGY_TRANSACTIONS where AGGREGATE_READ_FLAG = "Y", excluding the SGA records being populated to setsmallgendata, will be populated to the table **setcpdata**
- Fields not currently populated will continue to show 0 / NULL
- AFE is net energy without UFEA applied, so will be calculated by CE_MWh + ASOE_MWh

New main settlement table aggregated to ConnetionPointID: SET_ENERGY_TRANSACTIONS

Settlement Date	Version No	Period Id	Participant Id	Connection PointId	Region Id	CE_ MWh	DME_ MWh	UFEA_ MWh	ACE_ MWh	ASOE_ MWh	Total_ MWh	RRP	TLF	ACE_ Amount	ASOE_ Amount	Total_ Amount	Case_Id	Meter_Type	Aggregate_ Read_Flag	Individual_ Read_Flag	LastChanged
2/06/2024	5	1	XXXCUST	VTNI	VIC1	-50	-50	0	-50	5	-45	$10	0.98	-$490	$49	-$441	9999	CUSTOMER	Y	N	3/06/2024
2/06/2024	5	1	XXXCUST	VTNI	VIC1	-2	-2	0	-2	8	6	$10	0.98	-$20	$78	$59	9999	NREG	Y	N	3/06/2024
2/06/2024	5	1	XXXXSGA	VTNI	VIC1	-1	-1	0	-1	20	19	$10	0.98	-$10	$196	$186	9999	NREG	Y	N	3/06/2024
2/06/2024	5	1	XXXXSGA	VTNI	VIC1	-1	-1	0	-1	20	19	$10	0.98	-$10	$196	$186	9999	CUSTOMER	Y	N	3/06/2024
2/06/2024	5	1	XXXBATT	VCPID1	VIC1	-20	-20	0	-20	30	10	$10	0.98	-$196	$294	$98	9999	BDU	N	Y	3/06/2024
2/06/2024	5	1	XXXGEN	VCPID2	VIC1	-0.5	-0.5	0	-0.5	40	39.5	$10	0.98	-$5	$392	$387	9999	GENERATOR	N	Y	3/06/2024

Transition Population of Existing table: SETCPDATA

Settlement Date	Version No	Period Id	Participant Id	TCPID	Region Id	IG ENERGY	XG ENERGY	IN ENERGY	XN ENERGY	IPOWER	XPOWER	RRP	EEP	TLF	CPRRP	CPEEP	TA	EP	APC	RESC	LastChanged
2/06/2024	5	1	XXXCUST	VTNI	VIC1	5	50	5	50	0	0	$10	0	0.98	$9.80	0	-45	-$441	NULL	NULL	3/06/2024
2/06/2024	5	1	XXXCUST	VTNI	VIC1	8	2	8	2	0	0	$10	0	0.98	$9.80	0	6	$59	NULL	NULL	3/06/2024
2/06/2024	5	1	XXXXSGA	VTNI	VIC1	20	1	20	1	0	0	$10	0	0.98	$9.80	0	19	$186	NULL	NULL	3/06/2024

RESP	METER RUNNO	HOSTDIST RIBUTOR	MDA	AFE	DME	UFEA	AGE	IMPORTEN ERGYCOST	EXPORTEN ERGYCOST
NULL	9999	NULL	MSATS	-45	-50	0	-45	$49	$490
NULL	9999	NULL	MSATS	6	-2	0	6	$78	$20
NULL	9999	NULL	MSATS	19	-1	0	19	$196	$10

Transition logic example (3/3)

- All SET_ENERGY_GENSET_DETAIL records (for the genset level market generator and BDU individual read NMIs) will be populated to the table **setgendata**
- ACE_MWh can be UFE adjusted, so differ from previous values in EXPENERGY

New detailed settlement table at GenSet level: SET_ENERGY_GENSET_DETAIL

Settlement Date	Version No	Period Id	Participant Id	StationID	DUID	GenSetId	MeterID	Connection PointId	Region Id	CE_ MWh	DME_ MWh	UFEA_ MWh	ACE_ MWh	ASOE_ MWh	Total_ MWh	RRP	TLF	ACE_ Amount	ASOE_ Amount	Total_ Amount	LastChanged
2/06/2024	5	1	XXXBATT	BATT1	BATT1	BATT1	NMI1111111	VCPID1	VIC1	-20	-20	0	-20	30	10	$10	0.98	-$196	$294	$98	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN1	NMI1111112	VCPID2	VIC1	0	0	0	0	20	20	$10	0.98	$0	$196	$196	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN2	NMI1111113	VCPID2	VIC1	-0.5	-0.5	0	-0.5	10	9.5	$10	0.98	-$5	$98	$93	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN3	NMI1111114	VCPID2	VIC1	0	0	0	0	10	10	$10	0.98	$0	$98	$98	3/06/2024

Transition Population of Existing table: SETGENDATA

Settlement Date	Version No	Period Id	Participant Id	StationID	DUID	GenSetId	Region Id	GENERGY	AENERGY	GPOWER	APOWER	RRP	EEP	TLF	CPRRP	CPEEP	NET ENERGY	ENERGY COST	EXCESSENERGYCOST	APC	LastChanged
2/06/2024	5	1	XXXBATT	BATT1	BATT1	BATT1	VIC1	30	0	0	0	$10	0	0.98	$9.80	0	30	$294	0	NULL	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN1	VIC1	20	0	0	0	$10	0	0.98	$9.80	0	20	$196	0	NULL	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN2	VIC1	10	0	0	0	$10	0	0.98	$9.80	0	10	$98	0	NULL	3/06/2024
2/06/2024	5	1	XXXGEN	GEN1	GEN1	GEN3	VIC1	10	0	0	0	$10	0	0.98	$9.80	0	10	$98	0	NULL	3/06/2024

RESC	RESP	EXP ENERGY	EXP ENERGYCOST	METER RUNNO	MDA	SECONDARY_TLF
NULL	NULL	-20	-$196	9999	MSATS	NULL
NULL	NULL	0	$0	9999	MSATS	NULL
NULL	NULL	-0.5	-$5	9999	MSATS	NULL
NULL	NULL	0	$0	9999	MSATS	NULL

APPENDIX C

AEMO Competition Law – Meeting Protocol

AEMO Competition Law - Meeting Protocol

AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA). In any dealings with AEMO, all participants agree to adhere to the CCA at all times and to comply with appropriate protocols where required to do so.

AEMO has developed meeting protocols to support compliance with the CCA in working groups and other forums with energy stakeholders. Before attending, participants should confirm the application of the appropriate meeting protocol.

Please visit: https://aemo.com.au/en/consultations/industry-forums-and-working-groups