

IESS Settlements Change Summary

Updated December 2023



Disclaimer

This presentation includes material outlining AEMO's interpretation of indicative impacts of Integrating Energy Storage System (IESS) reform to the calculation method to be used for the Non-Energy Cost Recovery (NECR) items, as at December 2023.

The interpretations expressed in this presentation are not binding on AEMO. The interpretation of the impact of the IESS reform may change at any time.

Anyone participating or intending to participate in the NEM should obtain detailed advice about the application of the National Electricity Rules and applicable laws, procedures and policies to their specific circumstances.

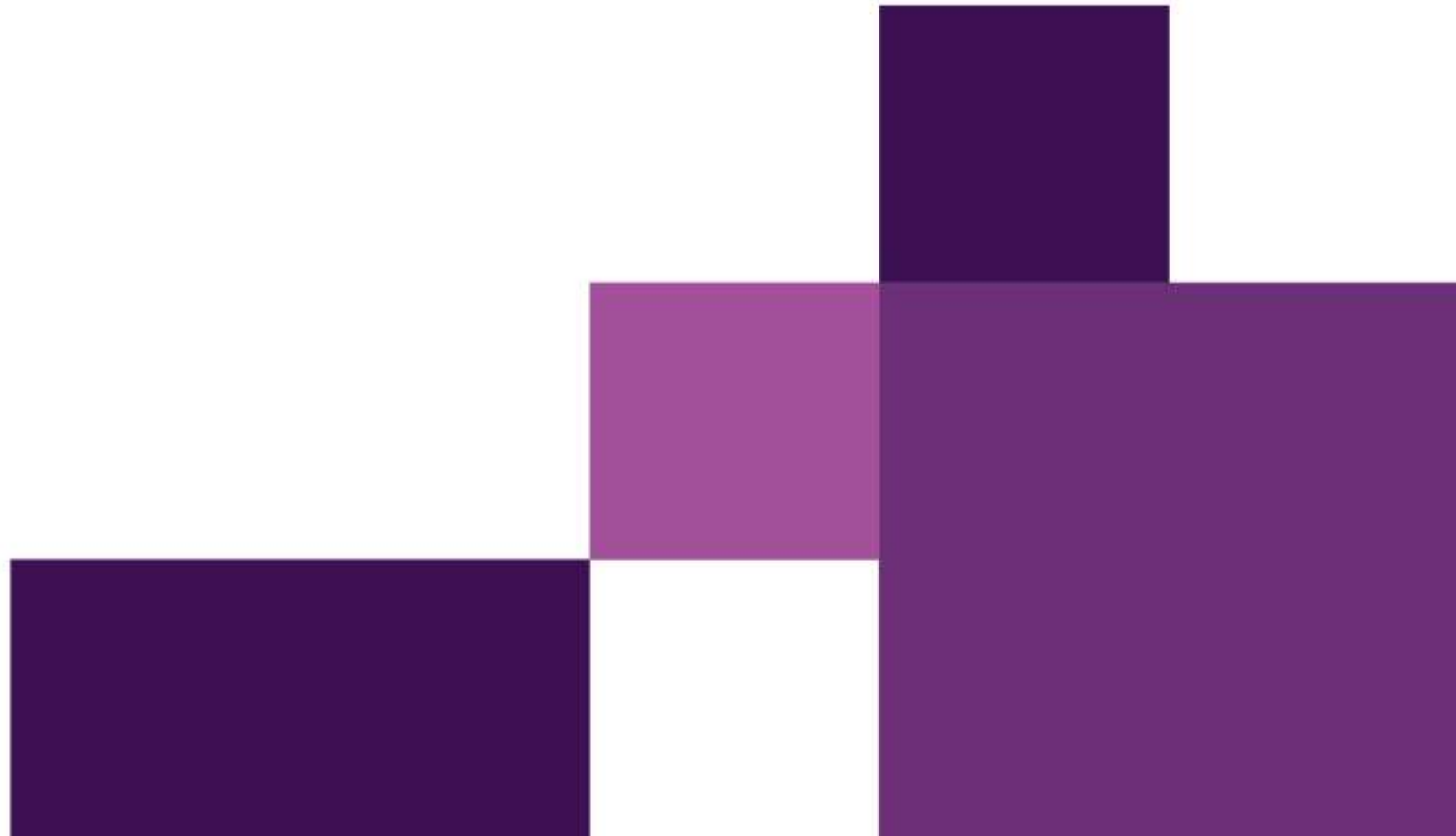
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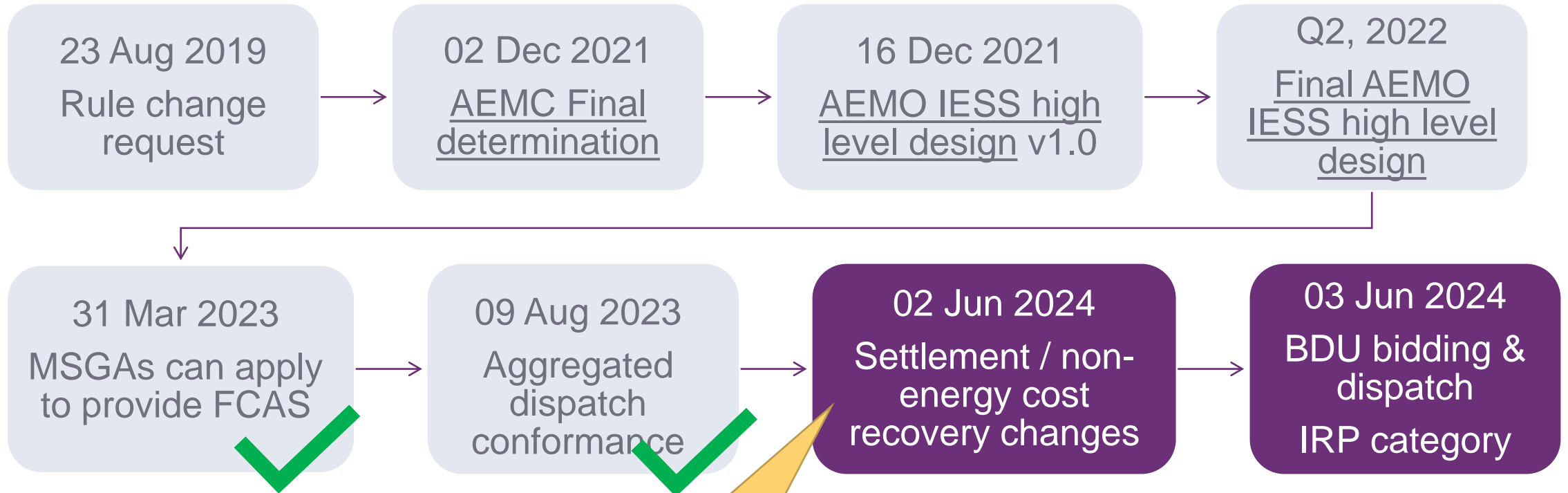
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Context & Change summary



BACKGROUND: IESS high-level Timeline



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

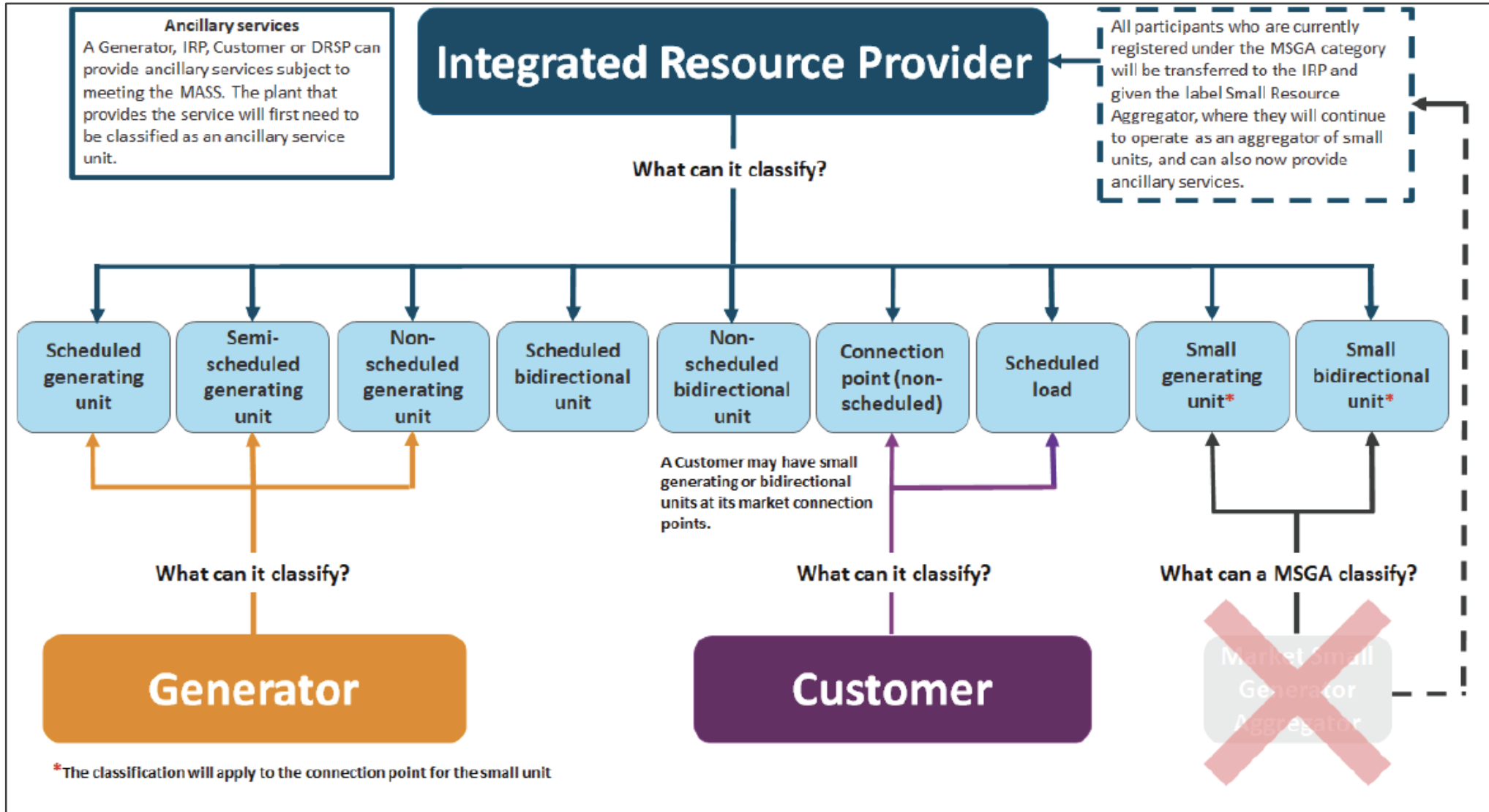
This document relates to Settlements changes

REFERENCES

- [AEMC IESS rule change](#)
- [AEMC Implementing IESS rule change](#)
- [AEMO IESS High Level Design and Implementation Strawperson](#)
- [AEMO IESS Participant Toolbox](#)

IRP classification from 3 June 2024

Source: Australian Energy Market Commission, [IESS Final Determination](#), 02 Dec 2021. p iv.



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.

IESS Settlement related 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.04 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)
BILLINGGENDATA	BILLING_ENERGY_GENSET_DETAIL (Sum for the billing week grouped by ParticipantID/GenSetID)

* 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_Transactions
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_Transactions
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_Transactions
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	negative imports (1 - 2 = -1) move to exports
PARENTFRMP	GLOPOOL	VXXX	0	3	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									
DO-Month-YYYY to DO-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 (\$)	HPF 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 YYYYMMDD.DNO%	Status NNNNNN	Recovery \$N,NNN,NNN.NN	Payment \$N,NNN,NNN.NN	Total \$N,NNN,NNN.NN	Payment Class 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			

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

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	IESSE 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 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 **setsmallgenda**
- 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 ConnectionPointID: 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 NMI) 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

Post-IESS fee calculation approach

- The new settlements table structure has been designed to allow the calculation of the fee amounts to continue in the same way they are currently calculated once the IESS rule commences*
- As an example, batteries currently only have their consumption recorded in setcpdata so the generation is ignored in the calculation of the customer \$/MWh fees, which are currently charged on the absolute value of the net energy (generation – consumption) in setcpdata.
- Post IESS go live a new fee id will be created to charge the same fee \$/MWh amount, but only on the ACE value of the batteries, so the calculation will continue to ignore the generation.

- A new field METER_TYPE in the new SET_ENERGY_TRANSACTIONS table enables this functionality. This field is a mapped value of the NMI Class Code from MSATS, the reads of all the NMIs with the same Meter Type will be aggregated together, at the connection point level.

NMI CLASS CODE	METER_TYPE
GENERATR	GENERATOR
DGENERATR	GENERATOR
TIRS	BDU
DIRS	BDU
NREG	NREG
SMALL	CUSTOMER
LARGE	CUSTOMER
DWHOLSAL	CUSTOMER
WHOLESAL	CUSTOMER
NCONUML	CUSTOMER

* On 6 October 2023, following consultation with stakeholders, AEMO published its [Final Determination](#) on a fee structure for the NEM2025 Reform Program

Post-IESS fee example

- Example data for the new SET_ENERGY_TRANSACTIONS table is shown below, along with the calculated fee amounts, assuming the fee is \$0.10/MWh.
 - XXCUST1 is charged the fee on their **CUSTOMER** Total_MWh net energy volumes as currently occurs
 - XXCUST2 is charged the fee on their **NREG** Total_MWh net energy volumes as currently occurs
 - XXSGA1 is not charged the fee on their **NREG** energy volumes as the MSGA's are charged the daily 'generator' type fees
 - XXSGA2 is charged the fee on their **CUSTOMER** Total_MWh net energy volumes, an IRP can have more connection types
 - XXBATT is charged the fee on their **BDU** ACE_MWh energy volume only
 - XXGEN is not charged the fee on their **GENERATOR** energy volumes as they are charged the daily 'generator' type fees

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	\$/MWh Fee
2/06/2024	5	1	XXCUST1	VTNI	VIC1	-50	-50	-6.4	-56.4	5	-51.4	\$10	0.98	-\$552	\$49	-\$503	9999	CUSTOMER	Y	N	3/06/2024	-\$5.14
2/06/2024	5	1	XXCUST2	VTNI	VIC1	-2	-2	-0.3	-2.3	8	5.7	\$10	0.98	-\$22	\$78	\$56	9999	NREG	Y	N	3/06/2024	-\$0.57
2/06/2024	5	1	XXSGA1	VTNI	VIC1	-1	-1	-0.1	-1.1	20	18.9	\$10	0.98	-\$11	\$196	\$185	9999	NREG	Y	N	3/06/2024	\$0.00
2/06/2024	5	1	XXSGA2	VTNI	VIC1	-5	-5	-0.6	-5.6	2	-3.6	\$10	0.98	-\$55	\$20	-\$36	9999	CUSTOMER	Y	N	3/06/2024	-\$0.36
2/06/2024	5	1	XXBATT	VCPID1	VIC1	-20	-20	-2.5	-22.5	30	7.5	\$10	0.98	-\$221	\$294	\$73	9999	BDU	N	Y	3/06/2024	-\$2.25
2/06/2024	5	1	XXGEN	VCPID2	VIC1	-0.5	-0.5	-0.1	-0.6	40	39.4	\$10	0.98	-\$6	\$392	\$386	9999	GENERATOR	N	Y	3/06/2024	\$0.00

UFE example

Below example shows how UFE of -10MWh is shared across more participants in a post IESS period compared to currently, this assumes all sites are distributed connected, so all are allocated UFE

New main settlement table aggregated to ConnectionPointID: SET_ENERGY_TRANSACTIONS

UFE: -10 Sum(DME): -78.5

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	-6.4	-56.4	5	-51.4	\$10	0.98	-\$552	\$49	-\$503	9999	CUSTOMER	Y	N	3/06/2024
2/06/2024	5	1	XXXCUST	VTNI	VIC1	-2	-2	-0.3	-2.3	8	5.7	\$10	0.98	-\$22	\$78	\$56	9999	NREG	Y	N	3/06/2024
2/06/2024	5	1	XXXSGA	VTNI	VIC1	-1	-1	-0.1	-1.1	20	18.9	\$10	0.98	-\$11	\$196	\$185	9999	NREG	Y	N	3/06/2024
2/06/2024	5	1	XXXSGA	VTNI	VIC1	-5	-5	-0.6	-5.6	2	-3.6	\$10	0.98	-\$55	\$20	-\$36	9999	CUSTOMER	Y	N	3/06/2024
2/06/2024	5	1	XXXBATT	VCPIID1	VIC1	-20	-20	-2.5	-22.5	30	7.5	\$10	0.98	-\$221	\$294	\$73	9999	BDU	N	Y	3/06/2024
2/06/2024	5	1	XXXGEN	VCPIID2	VIC1	-0.5	-0.5	-0.1	-0.6	40	39.4	\$10	0.98	-\$6	\$392	\$386	9999	GENERATOR	N	Y	3/06/2024

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	57.0	0	0	\$10	0	0.98	\$9.80	0	-52.0	-\$510	NULL	NULL	3/06/2024
2/06/2024	5	1	XXXCUST	VTNI	VIC1	8	2	8	2.1	0	0	\$10	0	0.98	\$9.80	0	5.9	\$57	NULL	NULL	3/06/2024
2/06/2024	5	1	XXXBATT	VTNI	VIC1	0	20	0	22.9	0	0	\$10	0	0.98	\$9.80	0	-22.9	-\$224	NULL	NULL	3/06/2024

Sum(DME): -70 UFE: -10

RESP	METER RUNNO	HOSTDIST RIBUTOR	MDA	AFE	DME	UFEA	AGE	IMPORTEN ERGYCOST	EXPORTEN ERGYCOST
NULL	9999	NULL	MSATS	-45	-49	-7.0	-52.0	\$49	\$559
NULL	9999	NULL	MSATS	6	-1	-0.1	5.9	\$78	\$21
NULL	9999	NULL	MSATS	-20	-20	-2.9	-22.9	\$0	\$224

Battery transition example

Below example shows how a battery that is generating 5MWh and consuming 20MWh in a single interval appears currently, then at IESS go-live and finally after it transitions to a single DUID/NMI

Existing table: SETGENDATA

Settlement Date	Version No	Period Id	Participant Id	StationID	DUID	GenSetId	Region Id	G ENERGY	A ENERGY	G POWER	A POWER	RRP	EEP	TLF	CPRRP	CPEEP	NET ENERGY	ENERGY COST	EXCESSENERGYCOST	APC	LastChanged
2/05/2024	5	1	XXXBATT	BATT1	BATT1	BATT1	VIC1	5	0	0	0	\$10	0	0.98	\$9.80	0	5	\$49	0	NULL	3/05/2024
RESC	RESP	EXP ENERGY	EXPENERGYCOST	METER RUNNO	MDA	SECONDARY_TLF															
NULL	NULL	0	\$0	9979	MSATS	NULL															

Existing table: SETCPDATA

Settlement Date	Version No	Period Id	Participant Id	TCPID	Region Id	IG ENERGY	XG ENERGY	IN ENERGY	XN ENERGY	I POWER	X POWER	RRP	EEP	TLF	CPRRP	CPEEP	TA	EP	APC	RESC	LastChanged
2/05/2024	5	1	XXXBATT	VTNI	VIC1	0	20	0	22.9	0	0	\$10	0	0.98	\$9.80	0	-22.9	-\$224	NULL	NULL	3/05/2024
RESP	METER RUNNO	HOSTDIST RIBUTOR	MDA	AFE	DME	UFEA	AGE	IMPORTENERGYCOST	EXPORTENERGYCOST												
NULL	9979	NULL	MSATS	-20	-20	-2.9	-22.9	\$0	\$224												

Prior to BESS Transition - new main settlement table aggregated to ConnectionPointID: 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	XXBATT	VCPID1	VIC1	0	0	0.0	0.0	5	5.0	\$10	0.98	\$0	\$49	\$49	9989	GENERATOR	N	Y	3/06/2024
2/06/2024	5	1	XXBATT	VTNI	VIC1	-20	-20	-2.5	-22.5	0	-22.5	\$10	0.98	-\$221	\$0	-\$221	9989	CUSTOMER	Y	N	3/06/2024

Post BESS Transition - new main settlement table aggregated to ConnectionPointID: 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
2/07/2024	5	1	XXBATT	VCPID1	VIC1	-20	-20	-2.5	-22.5	5	-17.5	\$10	0.98	-\$221	\$49	-\$172	9999	BDU	N	Y	3/07/2024

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-fags/june-2024-retail-and-settlement-release>

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

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



For more information visit

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