



UFE Focus Group Meeting #1

12 November, 2021

Welcome & Housekeeping

- Welcome:
 - Welcome back to those of you that were part of the initial 5MS/GS journey, and a warm welcome to those of you who have just joined us
 - These meetings are not one way conversations, we value your thoughts and opinions and appreciate your engagement
 - We are very fortunate to have access to SMEs from AEMO and Industry to continue the UFE conversation
- Housekeeping:
 - Please keep yourself on mute when you are not speaking
 - Feel free to use the chat or come off mute should you have a question or comment
 - Notes will be circulated within a week of the focus groups
 - Actions will be captured, shared and completed as required
 - Treat each other with respect

Agenda

NO	AGENDA ITEM	RESPONSIBLE
1	Welcome	Blaine Miner
2	May 2022 Program	Greg Minney
3	Global Settlements 101	Blaine Miner
4	How AEMO Calculates UFE and UFEF	Paul Lyttle
5	RM Reports	Paul Lyttle
6	UFE in Settlements	Darren Gatty
7	UFE Management	Blaine Miner
8	Next Steps and General Business	Blaine Miner

Attendee	Organisation	Attendee	Organisation	Attendee	Organisation	Attendee	Organisation
Blaine Miner	AEMO	Sarah Lawley	BlueNRG	Therese Sato	Alinta Energy	Hasitha Gajanayake	Brave Energy
Peta Hatzikides	AEMO	Hieu Ngo	BlueNRG	Kathryn Griffiths	Alinta Energy	Sujatha Vutukoor	Brave Energy
Paul Lyttle	AEMO	Jayden Harrod	BlueNRG	Michael Firth	Alinta Energy	Mathew Tanzer	Energy Queensland
Darren Gatty	AEMO	Stan Rychlik	BlueNRG	Ravi Govindu	Alinta Energy	Nick Hickman	Energy Queensland
Sarah Pearson	AEMO	Peter Docking	BlueNRG	Evelina Nordholm	Alinta Energy	Nick Gustafsson	Red Energy
Greg Minney	AEMO	Craig Steele	Aurora Energy	Justine Murrin	Alinta Energy	Mark Reid	Red Energy
Anne-Marie McCague	AEMO	Kevin Boutchard	Aurora Energy	Robert Tammetta	Alinta Energy	Christophe Bechia	Red Energy
David Ripper	AEMO	Alexander Riseley	Aurora Energy	Sue Richardson	Alinta Energy	Andrew Lenga	ENGIE
Stephen Harrison	AEMO	Lori Scarano	AGL	Malcolm Brown	Alinta Energy	Libby Cheng	Arrow Energy
Stephen Harrison	AEMO	Jeff Roberts	AGL	Zulfi Syed	Alinta Energy	Krishna Vishwanatham	Tally Group
May Cotoner	AEMO	Christy Yan	Infigen	Huw Adler	Alinta Energy	Ingrid Farah	Ergon
Meyer Rafael	AEMO	Anthony Croce	Infigen	Sen Rajendran	Alinta Energy		
Zahara Magriplis	Energex	Arunesh Choubey	Travellers Aid	Shireen Malik	Alinta Energy		
Ciby Varghese	Stanwell	Ashleigh Sampson	EnergyAustralia	Irina Domaingue	Alinta Energy		
Sara Yakimoff	Stanwell	Justin Chin	EnergyAustralia	Tim Lloyd	Essential Energy		
Justin King	Stanwell	Deepak Gupta	EnergyAustralia	Adrian Honey	TasNetworks		
Anatoliy Tsymay	Stanwell	Kingson Asirrajan	EnergyAustralia	Paul Willacy	TasNetworks		
Damien Didier	Stanwell	Sullivan, Jo	EnergyAustralia	Dino Ou	Endeavour Energy		
Megan Ide	ElectraNet	Dean Knight	Powerlink	Paul Greenwood	Vector Metering		
Fergus Stuart	Origin	Karel Mallinson	Powerlink	Andrew Wilkins	SA Water		
Greg Szot	Powercor	Justin Betlehem	Ausnet Services	Andrew Mair	Next Business Energy		
Inger Wills	Powercor	Dan Hillier	Powershop	Wayne Turner	Ausgrid		

May 2022 Program

Greg Minney

Approach

- AEMO is proposing to provide a coordinated approach for all key initiatives scheduled to commence in May 2022
- Consolidated milestones, transition and industry go-live plans to be developed (subject to confirmation of individual initiative timing and scope)
- Issues and risks will be developed and managed across all initiatives
- AEMO does not propose a formal readiness reporting regime for this Go-live as was the case with 5MS, but will consult further with RWG to confirm approach to readiness management
- Readiness for Rule Commencement for GS is a key priority, with impacts of other initiatives to be managed at RWG as implementation risks

Governance Structure



- May 2022 RWG will be the equivalent of a consolidated 5MS PCF and RWG
- An Executive Forum is not proposed given the scope and impact of the changes. Participants will be responsible for briefing their Executives
- Focus Groups will be established and closed as required, in consultation with RWG

UFE Focus Group

- Purpose :
 - To consider and provide advice to the RWG/TFG regarding key concepts and mechanisms associated to:
 - UFE settlement
 - UFE reporting
 - UFE management
 - Provide a forum to support participant implementation of key concepts and mechanisms
- Membership: Open to all participants, with a focus on those areas directly impacted by UFE from a delivery and utilisation perspective
- The expectation is that members will be familiar with the concepts and requirements of Global Settlements
- Frequency of meetings
 - As required – based on the jointly agreed program of work
- Key responsibilities
 - To provide specialist knowledge on key elements associated to Rule implementation and UFE activities

Meeting Notes

AEMO noted that:

- Although AEMO is publishing Global Settlements (GS) related RM reports & TNI level UFE volumes in weekly participant statements, incomplete participant related transitional activities e.g., cross boundary supplies and ongoing 5MS participant implementation issues e.g., metering data quality and availability are affecting the UFE values published.
- The purpose of the GS soft-start, in part, is to allow time for these issues to be addressed prior to financial settlement occurring from 1 May 2022.

Global Settlements 101

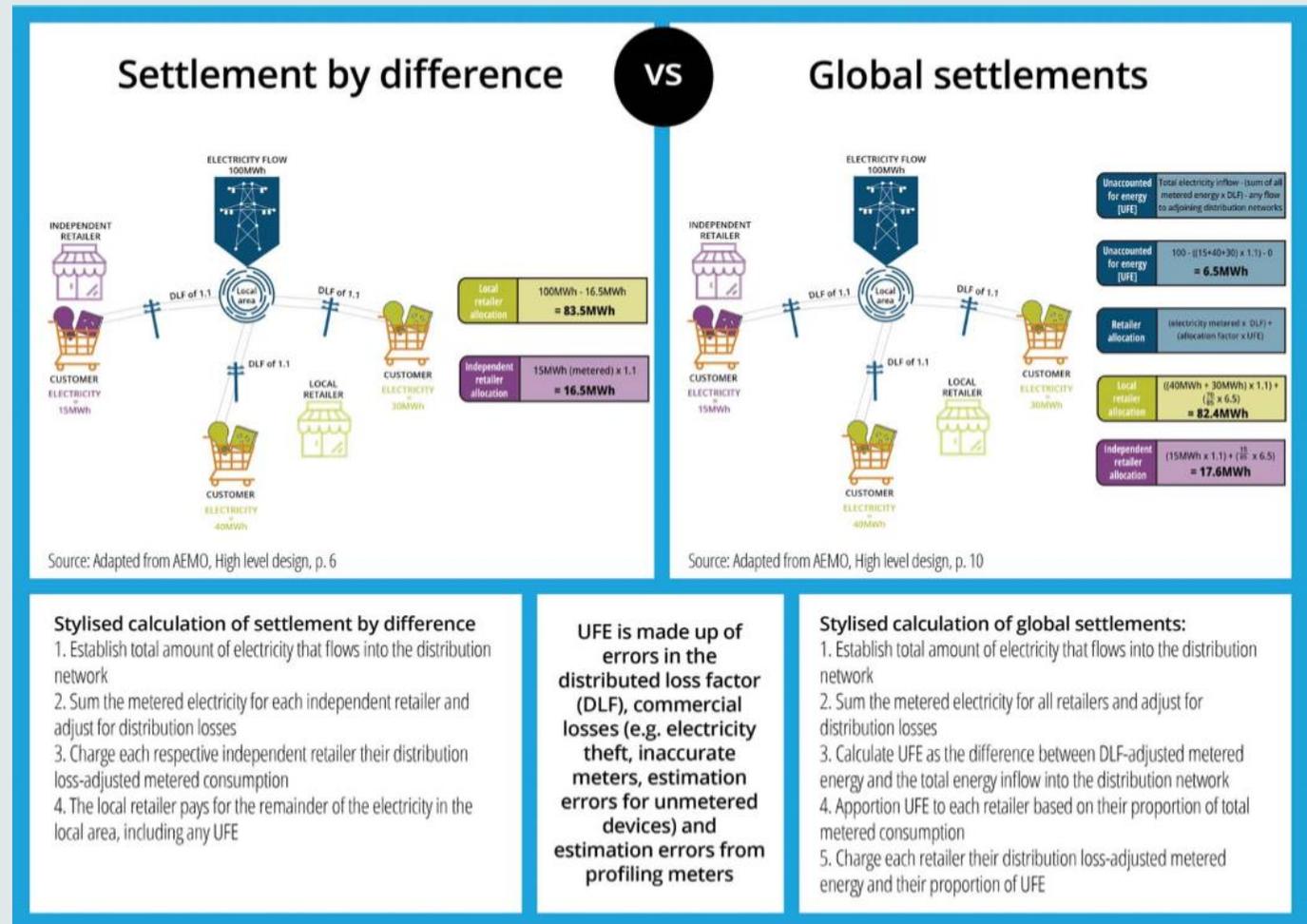
Blaine Miner

Settlements by Difference vs Global Settlements

Under Global Settlements, the reconciliation process becomes a 'bottom up' process from datastream to meter to NMI to TNI to Local Area.

In broad terms, UFE is made up of errors in distribution loss factors and commercial losses, e.g.:

- Electricity theft
- Inaccurate/faulty meters
- Estimation errors associated to unmetered devices and profiling



For more information please refer to the AEMC's website:
<https://www.aemc.gov.au/rule-changes/global-settlement-and-market-reconciliation>

Some Initial FAQs

- What level is UFE allocated?
 - UFE is calculated and allocated at the local area level (i.e. distribution network)
- Who and how is UFE allocated?
 - UFE will be allocated across all market customers (i.e. FRMPs) in each local area, pro-rated based on their accounted-for energy for each Trading Interval, associated to:
 - Distribution Connection Points
 - Embedded Network Parent connection points
 - Embedded Network On-Market Child connection points
- In what instances is UFE not allocated?
 - UFE will not be allocated:
 - To Transmission Connection Points
 - To market and distribution-connected generators i.e. NMs with a classification of GENERATR or NREG
 - To Embedded Network Off-Market Child connection points
 - Where the Net Energy is negative for a trading interval on a distribution network connection point, the ME- (metered energy) quantity is set to 0
- How is UFE calculated?
 - $UFE = TME - DDME - ADME$
 - TME is the amount of energy flowing at each of the transmission network connection points in the local area
 - DDME is the amount of energy flowing at each of the distribution network connection points in the local area which are connected to an adjacent local area i.e. cross boundary supplies
 - ADME is the aggregate metered energy (ME) x DLF

Some Initial FAQs

- What can Participants do to ensure UFE is as representative as possible?
 - Ensure all connection points have been created, and are being actively managed in a timely manner, in MSATS
 - This includes Tier 1 basic meters, non-contestable unmetered loads and cross boundary supplies
 - Ensure all required metering data is being provided to AEMO so energy can be allocated as much as possible
- What is AEMO's obligations under the NER re UFE reporting?
 - At least once each year AEMO must in accordance with the UFE reporting guidelines (guidelines to be consulted on in late 2022, published by 1 March 2023), prepare and publish on its website a report (first report due 1 June 2022) setting out:
 - AEMO's summary and analysis of the total unaccounted for energy amounts in each local area over the reporting period
 - AEMO's analysis of the unaccounted-for energy amounts in each local area in the reporting period against benchmarks determined by AEMO acting reasonably
 - AEMO's analysis of the sources of unaccounted for energy in each local area
 - AEMO's recommendations to improve visibility of unaccounted for energy in each local area
 - AEMO's recommended actions to reduce the amounts of unaccounted for energy in each local area, including without limitation any actions that AEMO recommends ought to be taken by Market Participants, Network Service Providers, the AER or AEMO
- What are Participant's obligations under the NER re UFE reporting?
 - Network Service Providers, Market Participants, Metering Data Providers, Metering Providers, Embedded Network Managers and large customers must provide to AEMO such information and assistance as AEMO reasonably requires to prepare the report

Meeting Notes

AEMO confirmed that:

- The UFE reports published during the soft start are for reference only, GS financial settlement only commences from 1 May 2022.
- The percentage of total annual demand associated to UFE is not yet known, as prior to 1 Oct 2021 there wasn't a means to estimate this figure.
- With the commencement of the GS soft-start, AEMO and Industry will be able to learn more about UFE in the various local areas.
- For embedded networks, specifically off-market child connection points, the FRMP of the parent NMI is responsible for the UFE related to the off market portion of the embedded network. In loose terms, embedded networks are still settled using 'settlement by difference'.
 - The energy used by the parent Embedded NMI will include the UFEA for all off-market children NMIs. The on-market NMIs (assigned to a different Retailer) will be allocated UFEA separately.
- UFE is calculated and published as part of each applicable settlement run (Prelim, Final, R1 and R2)
- It is not possible for AEMO to provide Industry a financial comparison between 'settlement by difference' and global settlement.
- The GS soft-start allows:
 - AEMO time to ensure calculations and outputs are robust and accurate
 - For Industry to complete any outstanding transitional activities
 - For Industry to ensure that MSATS standing data is correct and that metering data is complete and of a high quality
- GS will not impact illegal consumption invoices, as these relate to NUOS network charges not wholesale charges.
 - Retailers and distributors need to continue to work together to identify and resolve energy theft early.
- Under the NER, AEMO must publish a UFE trend reporting at least once a year
 - The first report is due June 2022, with guidelines to be established in March 2023
 - Additional time was provided by the AEMC to establish the guidelines in order to allow for learnings from the first report.

How AEMO Calculates UFE and UFEF

Paul Lyttle

UFE Acronyms Relevant to this Agenda Item

Term	Description
UFE	The total unaccounted for <i>energy</i> for each <i>trading interval</i> i.e. residual energy associated to a local area after all metered energy has been allocated ($UFE = TME - DDME - ADME$)
TME	The amount of electrical energy flowing at each of the transmission network connection points in the local area i.e. sum of all TNI energy into and out of a local area
DDME	The amount of electrical energy flowing at each of the distribution network connection points in the local area which are connected to an adjacent local area i.e. sum of all Cross Boundary metered energy into and out of a local area
ADME	The aggregate of the amounts represented by (Metered Energy (ME) x DLF) for that trading interval for each connection point assigned to the transmission network connection point or virtual transmission node i.e. sum of all NMI energy flows within a local area adjusted by DLF
UFE Allocated	$UFEA = UFE \times (DME/ADMELA)$
DME	DME is the amount represented by (ME- x DLF) for the relevant connection point and trading interval. The ME- quantity is the Net Energy quantity for a distribution network connection point for a TI but only when it is negative (i.e. has load). So, ME- is subject to the 'Floored Load' and is zero for: (a) GENERATR or NREG NMI classification codes and (b) NMIs where local generation (e.g. from solar panels) exceeds the load.
ADMELA	The aggregate of the amounts represented by $-ME \times DLF$ for that trading interval for each market connection point in that local area i.e. sum of all net NMI energy loads within a local area, net generation is set to 0 for the trading interval
UFEF	A factor to determine the allocation of UFE to each (or group of) <i>energy</i> loads at each <i>market connection point</i> (adjusted by DLF) for each <i>trading interval</i> i.e. factor that can be applied to applicable loads within the local area to determine its allocation of UFE ($UFEF = UFE / ADMELA$)

AEMO's Calculation of UFE and UFEF - EasyLand (TI 1)

Local Area 1 = EasyLand (TI 1)

TNIs

- MPET = +100
- MPEB = +150

TME = +250

Cross Boundary

E2WNW2E1 = +62

DDME = +62

NMIs (DLF adjusted)

- MPET ELCP0001 = +30
- MPET ELCP0002 = +20
- MPET ELCP0003 = +40
- MPEB ELCP0004 = +25
- MPEB ELCP0005 = +35
- MPEB ELCP0006 = +30

ADME = +180

NMIs with Net Load

ADMELA = +180

Rules Clause 3.15.5(a)

$$UFE = TME - DDME - ADME$$

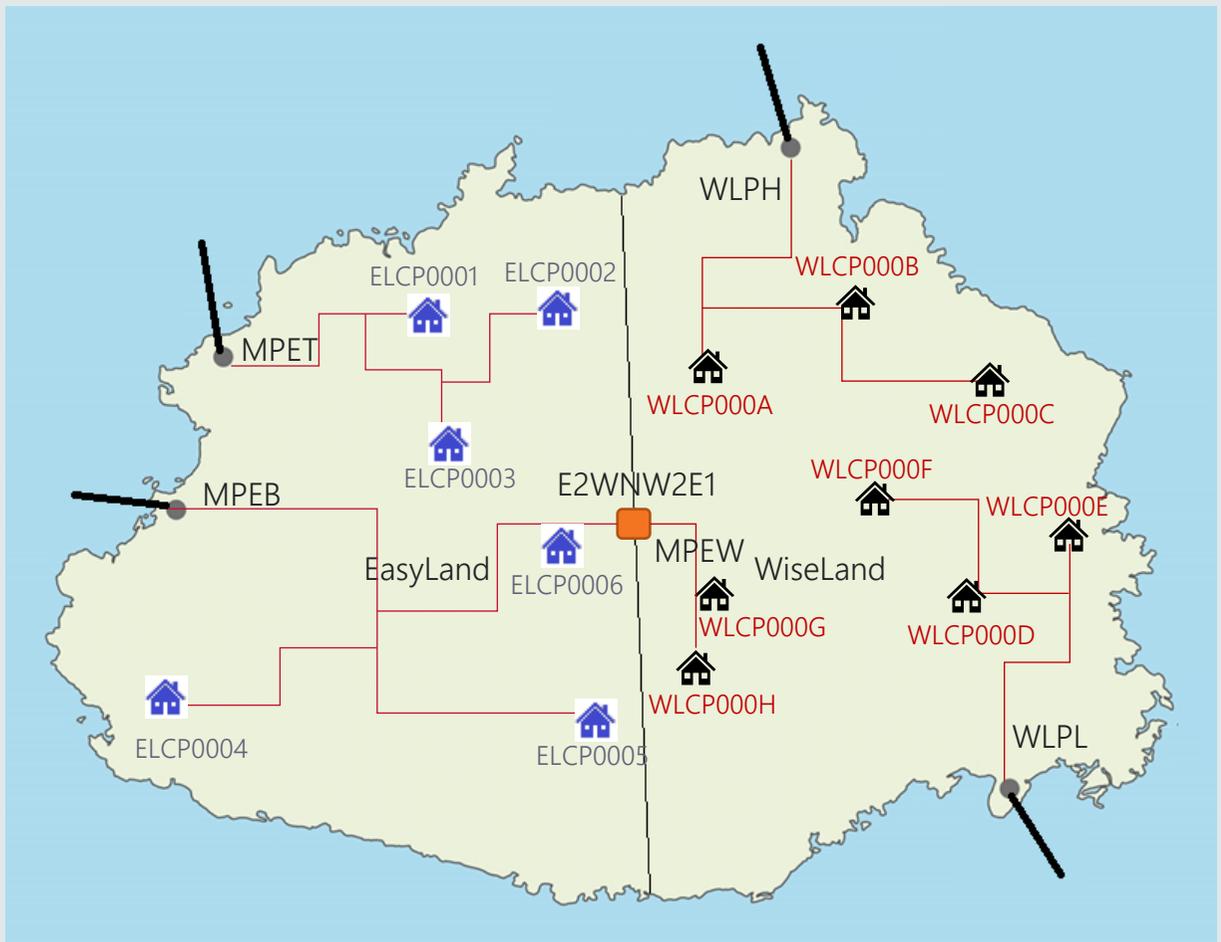
$$UFE = 250 - 62 - 180$$

$$UFE = +8$$

$$UFE \text{ Factor (UFEF)} = UFE / ADMELA$$

$$UFEF = 8 / 180$$

$$UFEF = 0.0444444444$$



AEMO's Calculation of UFE and UFEF - EasyLand (TI 2)

Local Area 1 = EasyLand (TI 2)

TNIs

MPET = +110

MPEB = +180

TME = +290

Cross Boundary

E2WNW2E1 = +58

DDME = +58

NMIs (DLF adjusted)

MPET ELCP0001 = +17

MPET ELCP0002 = +37

MPET ELCP0003 = +42

MPEB ELCP0004 = +7

MPEB ELCP0005 = +77

MPEB ELCP0006 = +42

ADME = +222

NMIs with Net Load

ADMELA = +222

Rules Clause 3.15.5(a)

$$UFE = TME - DDME - ADME$$

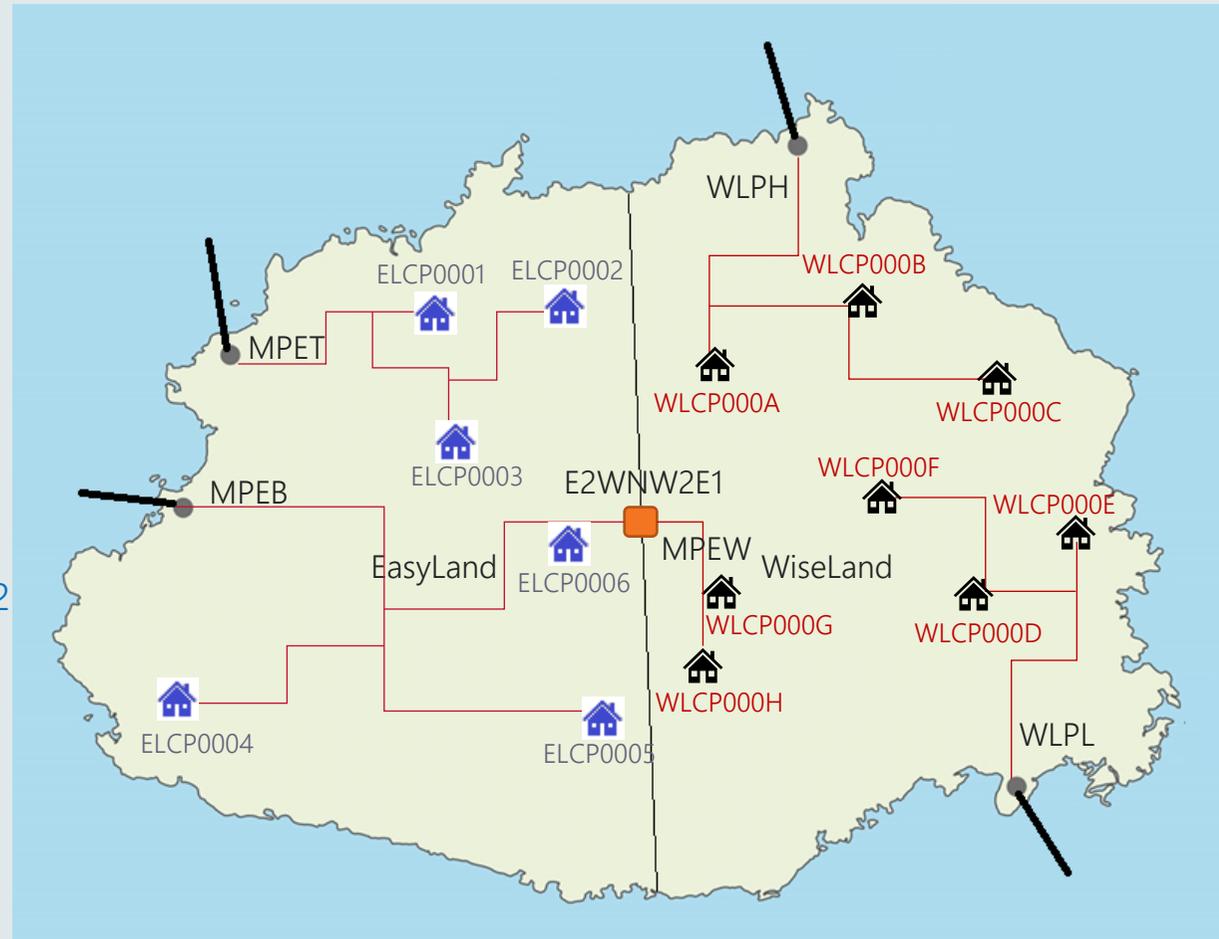
$$UFE = 290 - 58 - 222$$

$$UFE = +10$$

$$UFE \text{ Factor (UFEF)} = UFE / ADMELA$$

$$UFEF = 10 / 222$$

$$UFEF = 0.0450450505$$



AEMO's Calculation of UFE and UFEF - WiseLand (TI 1)

Local Area 1 = WiseLand (TI 1)

TNIs

WLPH = +100

WLPL = +100

TME = +200

Cross Boundary

E2WNW2E1 = -62

DDME = -62

NMIs (DLF adjusted)

WLPH WLCP000A = +10

WLPH WLCP000B = +20

WLPH WLCP000C = +40

WLPL WLCP000D = +50

WLPL WLCP000E = +15

WLPL WLCP000F = +45

MPEW WLCP000G = +10

MPEW WLCP000H = +50

ADME = +240

NMIs with Net Load

ADMELA = +240

Rules Clause 3.15.5(a)

$UFE = TME - DDME - ADME$

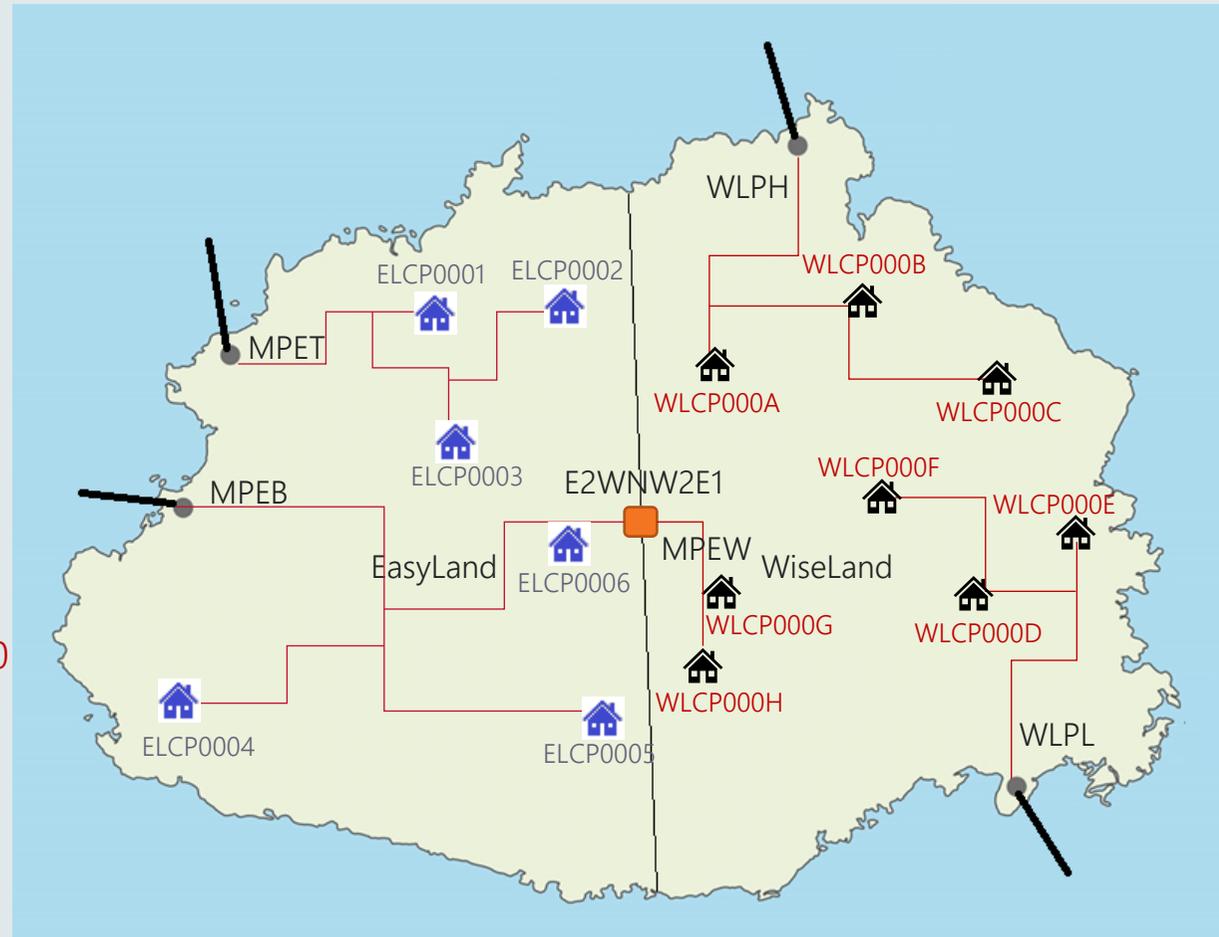
$UFE = 200 - (-62) - 240$

$UFE = +22$

$UFE\ Factor\ (UFEF) = UFE / ADMELA$

$UFEF = 22 / 240$

$UFEF = 0.0916666667$



AEMO's Calculation of UFE and UFEF - WiseLand (TI 2)

Local Area 1 = WiseLand (TI 2)

TNIs

WLPH = +120

WLPL = +130

TME = +250

Cross Boundary

E2WNW2E1 = -58

DDME = -58

NMIs (DLF adjusted)

WLPH WLCP000A = +47

WLPH WLCP000B = +17

WLPH WLCP000C = +37

WLPL WLCP000D = +67

WLPL WLCP000E = +57

WLPL WLCP000F = +52

MPEW WLCP000G = +52

MPEW WLCP000H = -40

NMIs with Net Load

ADME = +289

ADMELA = +329

Rules Clause 3.15.5(a)

$UFE = TME - DDME - ADME$

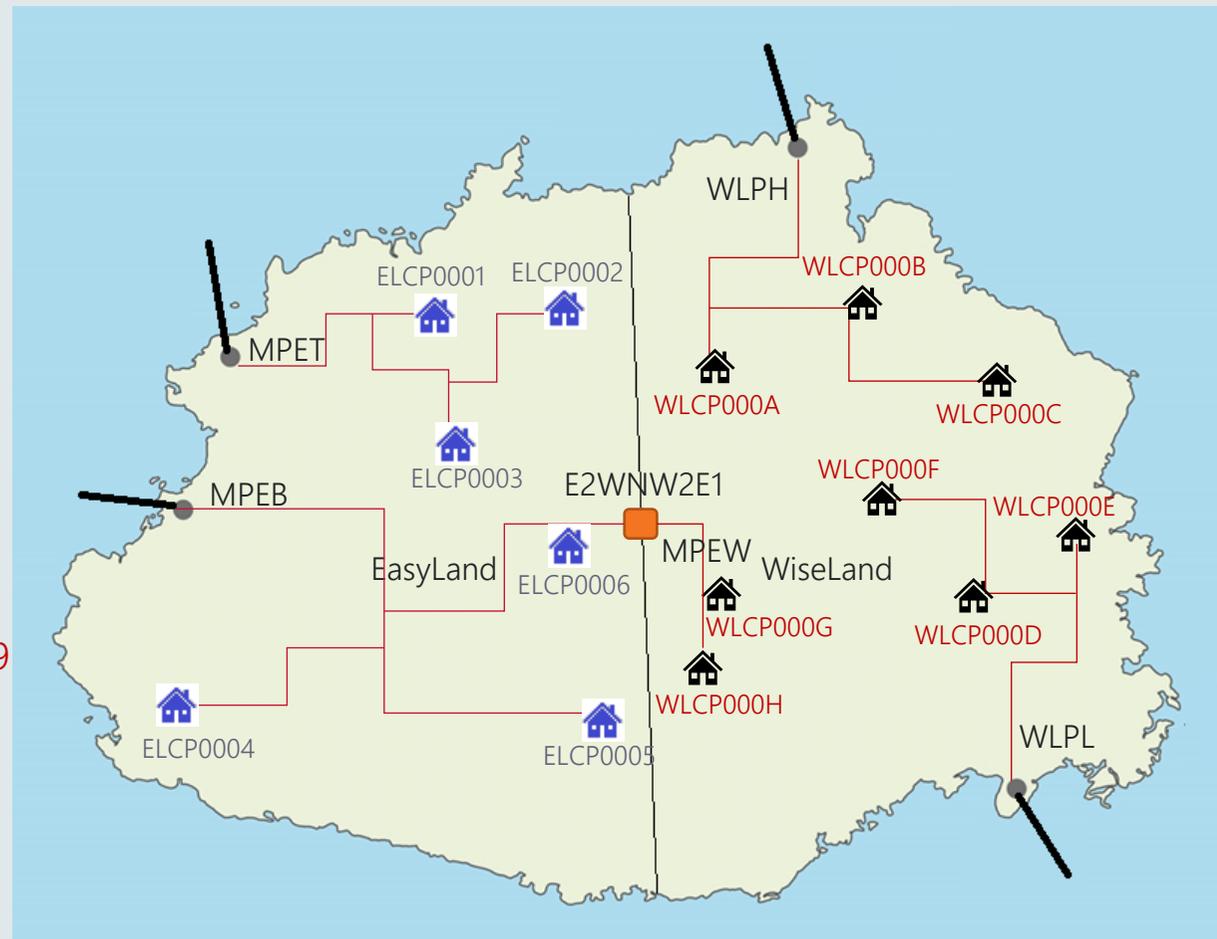
$UFE = 250 - (-58) - 289$

UFE = +19

$UFE\ Factor\ (UFEF) = UFE / ADMELA$

$UFEF = 19 / 329$

UFEF = 0.0577507598



Meeting Notes

AEMO confirmed that:

- All unmetered connection points, previously not maintained in MSATS (NCONUML), now have NMLs in MSATS
 - Associated metering data is now being provided by MDPs to AEMO to ensure they are accounted for as part of the UFE calculations in the Retail Solution.
- UFE can be negative – this can be caused by several variables, including where a large amount of solar generation occurs within a local area and where the DLF over recovers for a particular trading interval.
- In cases of non-contestable unmetered load, the Local Retailer (LR) would be assigned as the FRMP.
 - The FRMP/LR has the responsibility to ensure they are assigned to the FRMP role correctly.

RM reports

Paul Lyttle

RM43 - UFE Factor Values By Local Area

RM43 UFE Factor Value by Local Area:

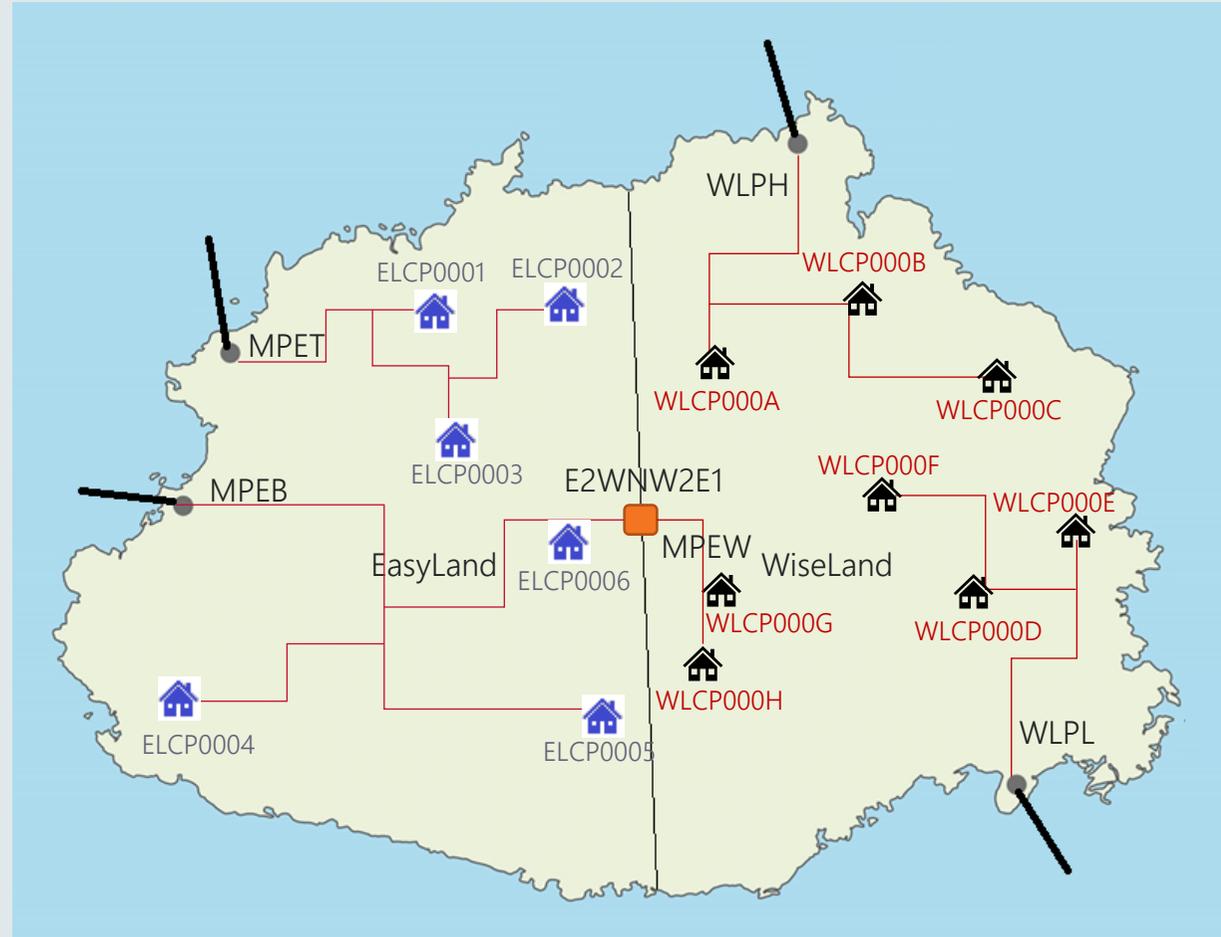
EasyLand (TI 1)	UFEF = 0.044444444
EasyLand (TI 2)	UFEF = 0.04504505
WiseLand (TI 1)	UFEF = 0.09166667
WiseLand (TI 2)	UFEF = 0.05775076

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RM46 - UFE Validation Report

- Purpose to provide values to support the calculation of UFE and UFEF.
- New report to Identify each Local Area for each TI

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RM46 UFE Factor Value by Local Area

	(TI 1)	(TI 2)
EasyLand		
TME	250	290
DDME	62	58
ADME	180	222
UFE	8	10
ADMELA	180	222
UFEF	0.044444444	0.04504505

	(TI 1)	(TI 2)
WiseLand		
TME	200	250
DDME	-62	-58
ADME	240	289
UFE	22	19
ADMELA	240	329
UFEF	0.091666667	0.05775076

How to calculate UFEA - Example 1

The RM17 is a:

- NMI level settlement data report
- Providing interval data

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Calculation of UFEA (ELCP0001 ti1)

$$\begin{aligned} \text{UFEA} &= \text{Net Energy ti} \times \text{UFEF ti} \\ &= 30 \times 0.0444444444 \\ &= 1.33333 \end{aligned}$$

The RM43 is a:

- UFE Factor report
- Providing a UFE factor for each time interval

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9876, F, WISELAND, 2019/10/08, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 13
9876, F, WISELAND, 2019/10/09, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 14
```

</csv data>

How to calculate UFEA - Example 2

The RM17 is a:

- NMI level settlement data report
- Providing interval data

<csv data>

```
SettlementDate,NMI,Suffix,CreationDT,Period001,Period002,Period..., StatusFlags,SeqNo
2019/10/03, WLCP000H,N1,2019/10/20,30,-40,,,,,AA.....,1
2019/10/04, WLCP000H,N1,2019/10/20,n0000,n0000,,,,,AA.....,2
2019/10/05, WLCP000H,N1,2019/10/20,n0000,n0000,,,,,AA.....,3
2019/10/06, WLCP000H,N1,2019/10/20,n0000,n0000,,,,,AA.....,4
2019/10/07, WLCP000H,N1,2019/10/20,n0000,n0000,,,,,AA.....,5
2019/10/08, WLCP000H,N1,2019/10/20,n0000,n0000,,,,,AA.....,6
2019/10/09, WLCP000H,N1,2019/10/20,n0000,n0000,,,,,AA.....,7
```

</csv data>

Calculation of UFEA (WLCP000H ti1)

UFEA = Net Energy ti x UFEF ti

$$= 30 \times 0.0916666667$$

$$= 2.7500001$$

Calculation of UFEA (WLCP000H ti2)

UFEA = Net Energy ti x UFEF ti

$$= 0 \times 0.0577507599$$

$$= 0$$

Net Energy for period is "Floored" to 0
therefore no UFE is allocated

The RM43 is a:

- UFE Factor report
- Providing a UFE factor for each time interval

<csv data>

```
CASEID, SETTLEMENTTYPE, LOCALAREA, SETTLEMENTDATE, CREATIONDATE, PERIOD001,
PERIOD002, PERIOD..., SEQ
9876, F, EASYLAND, 2019/10/03, 2019/10/20, 0.04444444444, 0.0450450505,,,,, 1
9876, F, EASYLAND, 2019/10/04, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 2
9876, F, EASYLAND, 2019/10/05, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 3
9876, F, EASYLAND, 2019/10/06, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 4
9876, F, EASYLAND, 2019/10/07, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 5
9876, F, EASYLAND, 2019/10/08, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 6
9876, F, EASYLAND, 2019/10/09, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 7
9876, F, WISELAND, 2019/10/03, 2019/10/20, 0.0916666667, 0.0577507599,,,,, 8
9876, F, WISELAND, 2019/10/04, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 9
9876, F, WISELAND, 2019/10/05, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 10
9876, F, WISELAND, 2019/10/06, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 11
9876, F, WISELAND, 2019/10/07, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 12
9876, F, WISELAND, 2019/10/08, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 13
9876, F, WISELAND, 2019/10/09, 2019/10/20, 0.0nnnn, 0.0nnnn,,,,, 14
```

</csv data>

Using the UFEF with one or many NMIs

UFE Factors Value for EASYLAND

Applying UFEF to a single NMI Load

TNI	NMI	TI 1	TI 2
MPET	ELCP0001	+30	+17
	UFEF	0.0444444444	0.0450450505
	UFEA	1.33333	0.73577

Applying UFEF to a FRMP's Load

TNI	NMI	TI 1	TI 2
MPET	ELCP0001	+30	+17
MPET	ELCP0003	+40	+42
MPEB	ELCP0004	+25	+7
MPEB	ELCP0005	+35	+77
	Total	+130	+148
	UFEF	0.0444444444	0.0450450505
	UFEA	5.77777	6.66667

UFE Factors Value for WISELAND

Applying UFEF to a single NMI Load

TNI	NMI	TI 1	TI 2
WLPH	WLCP000C	+40	+37
	UFEF	0.0916666667	0.0577507599
	UFEA	3.66666	2.13677

Applying UFEF to a FRMP's Load

TNI	NMI	TI 1	TI 2
WLPH	WLCP000C	+40	+37
WLPL	WLCP000E	+15	+57
WLPL	WLCP000F	+45	+52
MPEW	WLCP000H	+50	0 *
	Total	+150	+146
	UFEF	0.0916666667	0.0577507599
	UFEA	13.75	8.43161

WLCP000H has a Net Energy inflow (Generation) of -40
 (UFE is only allocated where there is load (in a TI),
 therefore WLCP000H is 'Floored' to 0 KWh)

RM16 – Level 1 Settlement Reconciliation

RM27 – Level 2 Settlement Reconciliation

The **RM16**:

- Is an aggregated TNI settlement data report
- Provides interval data for each FRMP, LR & MDP combination

```
<csv data>
TNI,DataType,FRMP,LR,MDP,CreationDT,SettlementDate,Period001,Period002,.....,SeqNo
WLPH,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/03,70,101,.....,1
WLPH,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/04,0nnnn,0nnnn,.....,2
WLPH,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/05,0nnnn,0nnnn,.....,3
WLPH,I,FRMP1,.....,7
WLPL,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/03,110,176,.....,8
WLPL,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/04,0nnnn,0nnnn,.....,9
WLPL,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/05,0nnnn,0nnnn,.....,10
WLPL,I,FRMP1,.....,14
MPEW,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/03,60,12,.....,15
MPEW,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/04,0nnnn,0nnnn,.....,16
MPEW,I,FRMP1,LR1,MDP123,2019/10/20,2019/10/05,0nnnn,0nnnn,.....,17
MPEW,I,FRMP1,.....,21
</csv data>
```

The **RM27**:

- Is a NMI Level daily settlement data report
- Provides total daily NMI data

```
<csv data>
TNI,LR,MDP,SettlementDate,NMI,DataType,MSATS_Est,Total_Energy,SeqNo
MPET,LR1,MDP123,2019/10/03, ELCP0001,I,N,47,1
MPET,LR1,MDP123,2019/10/04, ELCP0001,I,N,n0000,2
MPET,LR1,MDP123,2019/10/05, ELCP0001,I,N, n0000,3
MPET,LR1,MDP123,2019/10/06, ELCP0001,I,N, n0000,4
MPET,LR1,MDP123,2019/10/07, ELCP0001,I,N, n0000,5
MPET,LR1,MDP123,2019/10/08, ELCP0001,I,N, n0000,6
MPET,LR1,MDP123,2019/10/09, ELCP0001,I,N, n0000,7
</csv data>
```

Notes:

- RM16 and RM27 are used to reconcile Energy Sales and Purchases, however, they are unable to be used to calculate UFEA. This is because the data contained in these reports are aggregated to daily and participant combination levels respectively, which is not the necessary level of granularity to reconcile UFEA.
- RM17 and RM43 reports are to be used for UFEA purposes.

Meeting Notes

AEMO confirmed that:

- While UFEA is published on the settlement statement at TNI level, the allocation of UFE is at the local area level.
- For prelim, final, rev 1 and 2 statements, containing a trading day from 1 Oct 2021 onwards, AEMO will produce RM43 and RM46 reports.
- RM43 contains UFE factor (UFEF) values for each trading interval for each settlement day for each local area.
- The maximum decimal places for UFE values is:
 - 8 decimals within the settlements system (in MWh)
 - 5 decimals within the RM reports (in kWh = 8 decimals MWh)
 - 10 decimals for the UFE factor
- If a particular meter has 15- or 30-minute metering data, Participants will need to profile the metering data to 5min granularity, using the applicable five-minute load profile (5MLP) and then apply the applicable DLF, in order to mimic AEMO's published values
- The application of UFEF is not advisable against RM16 and RM27 reports, as these reports are aggregated energy reports which do not support the accurate use of 5min UFEF
 - The use of RM17 and RM43 reports are recommended for getting appropriate values
- AEMO is working with participants to complete transitional activities as quickly as possible

UFE in Settlements

Darren Gatty

UFE in Settlements

- The calculation of the RM reports is based on Metering data provided to AEMO's Retail solution
 - From 1 October 2021, the vast majority of Tier 1 meters have been activated in MSATS and the Retail solution has been receiving associated metering data. These reads are then used in the creation of RM reports, irrespective of whether they are for Tier 1 or Tier 2 NMLs/meters.
- AEMO's Settlements system calculates the settlement of the market and receives a mixture of individual and aggregated reads from the Retail solution to support this process
 - As the market is currently settled using the 'settlements by difference' approach, the aggregated reads for Tier 1 meters are not received from AEMO's Retail solution, as these are not currently required for settlements.
- During the soft start period Settlements instead uses a settlement by difference approach to calculate the Tier 1 DME values required for the allocation of the UFE
 - This means the DME values calculated by Settlements for Tier 1 retailers will already include a portion of UFE and so differ from the RM calculation
 - This is visible in the ADMELA (the sum of DME values) published in the RM46 report, being different than the ADMELA published in the MMS Data Model table SETLOCALAREAENERGY
- The difference also means the UFEF published in the RM43 report (where $UFEF = UFE / ADMELA$) will not be able to be used to reconcile to the UFE allocation from Settlements, due to the difference in ADMELA between the two systems
 - The RM43 published UFEF could be used to calculate the UFE allocation under the more correct Retail solution methodology of calculating the ADMELA, should this be desired
- The impact of Settlements not having access to the Retail solution Tier 1 meter data will generally be:
 - Tier 1 Retailer to be over-allocated the UFE
 - The remaining retailers will be under-allocated
- This difference between the calculations of the two systems will stop at the start of full Global Settlements (1 May 2022)
 - When Settlements starts receiving and settling Tier 1 metering data, at which point the ADMELA calculations are expected to align between both systems

Settlements GS Outputs

- The MMS Data Model now includes the below new and changed tables to publish the GS data from the Settlements System
 - **SETLOCALAREATNI** (new table)
 - Contains the TNIs being included in each Local Area for each settlement date and run number
 - **SETLOCALAREAENERGY** (new table)
 - Contains the Local Area level data for each trading interval and each settlement run
 - Includes fields for the UFE, TME, DDME and ADME calculated by the Retail Solution
 - A defect is present in the population of the ADME field meaning it currently only shows NULL values, which is planned for resolution in a future AEMO system release
 - The ADMELA included is the value calculated by the Settlements System
 - **SETCPDATA** (altered table)
 - New fields UFEA and DME are being populated with the Settlements System calculated values
 - New field AFE is the Accounted For Energy so excludes the UFEA and so will remain the same after full GS go-live on 1 May 2022, as during the soft start period
 - New field AGE is the Adjusted Gross Energy and will only include the calculated UFEA after full GS go-live, during the soft start period $AGE = AFE$
 - At GS go-live other fields in this table (INENERGY, XNENERGY, TA, EP, etc) will see the UFEA included in the calculations

Meeting Notes

AEMO confirms that:

- The difference in the SETLOCALAREAENERGY published ADMELA value to the RM43 reported value is also present in the new DME column in SETCPDATA, as the ADMELA published from Settlements is the sum of these DME values.
- AEMO does not have any plans to create a new RM report to calculate the FRMP UFEA values or provide a “net load” report from the Retail Solution. From the beginning of financial GS on 1 May 2022, the settlements reports energy volumes will include UFE, as the calculations move to this “net load” value. Additionally, in some reports such as the SR text file, the UFE volumes will be shown separately as well.
- The RM reports are currently considered the best source of UFE data, as the ADMELA calculation from the Retail Solution is more accurate than the values currently used in SETCPDATA for the allocation of the UFE.
- Though UFE values are not yet entirely reliable, due to the factors discussed earlier in the agenda, the AEMC requires AEMO to calculate and publish UFE data from 1 Oct 2021. Although the current values are not yet fully representative, publishing these values allows us to collectively identify areas of concern prior to GS financial start.
- For accuracy, it is vital that all cross-boundary meters are connected, all meters within the profile area are registered and have active datastreams. Further, the implementation of 5MS for some MDPs has resulted in a reduction in metering data availability and quality, these issues are still be addressed by the applicable Participants.
- The causes of negative UFE values are yet to be fully determined. Some factors which may contribute to negative UFE include: DLFs over recovering, cross-boundary supplies not being created in MSATS, high penetration of renewable energy e.g. PV generation and profiling anomalies.

UFE Management

Blaine Miner

UFE Management

- The AEMC introduced Global Settlements for 3 main reasons:
 - Improved transparency, leading to fewer settlement disputes between retailers and lower levels of UFE over time
 - Competition on equal terms
 - Improved risk allocation driving enhanced incentives
- The Commission stated that increased transparency of UFE would allow for analysis and investigation of UFE to take place to reduce UFE
 - The final rule puts in place a reporting framework for AEMO to publish information and analysis of UFE
 - This will allow for actions to be taken by relevant parties to reduce UFE, where it is efficient to do so
- The Commission also stated that generally, risks should be allocated to those parties that are best placed to manage them
 - Under the Commission's global settlements design, UFE is allocated to all retailers in the local area, pro-rated based on their 'accounted-for' energy.
 - By allocating the risk of UFE to retailers they would be provided with incentives to, where possible, reduce UFE, because reductions in UFE results in reductions in the risks borne by them
 - Through this process, it is expected that UFE levels will be lower under global settlement
 - Such an outcome was observed over time in the New Zealand electricity market after global settlement was introduced in 2008

For Discussion

- What do you believe our priorities should be as an Industry during the 'soft start' period, e.g.:
 - For LNSPs, MPs and MDPs to finalise/create and maintain required standing data in MSATS
 - For MDPs to deliver required metering data, in a timely and accurate manner, to ensure the maximum amount of energy is allocated
 - For AEMO to ensure that their systems and reports are fully tested to ensure they are fit for purpose, accurate and reliable
 - For AEMO and Industry to develop analytic capability to allow for the analysis of UFE values
 - For AEMO and Industry to consider how UFE mgt may occur in the short to medium-term
- What are Industry's expectations regarding UFE management prior to 1 May 2022?
- Will FRMPs be actively seeking to reduce UFE prior to 1 May 2022?

Meeting Notes

AEMO confirmed that:

- RM reports are released as part of the settlement run publication.
 - Participants can subscribe to receive UFE RM reports automatically, RM43 and RM46 - if you would like to subscribe, please contact AEMO Support Hub.
 - Reports can also be manually requested via the MSATS Browser.
- From 1 May 2022, UFE will be included in Aggregate Energy (MWh) on the Settlement Report text file and the other reports that include these energy values.
- It would be inappropriate for AEMO to recommend how Retailers should recover UFE from its customers.
- RM17 and RM43 reports enables participants to calculate UFE allocations.
- **Action 1.7.1:** AEMO to prepare a summary of remaining transitional activities for industry in advance of the next UFE FG meeting.

Industry confirmed that:

- Its focus is currently on system development and settlement accuracy, not ongoing UFE management.

Next Steps and General Business

Greg Minney

Next Steps

- Next meeting scheduled for Friday 3 Dec 2021
- Proposed agenda items:
 - Updates on action items
 - Updates on May release implementation approach
 - Items raised in today's focus Group

Meeting Notes

AEMO confirmed that:

- There is still uncertainty as to if UFE will impact WDR baseline calculations
- AEMO incorrectly stated a rule consideration is currently in progress to determine whether the impact of UFE should be removed from WDR, this rule change is actually in relation to the impact of UFE on the RRO.
- Following the conclusion of 5MS activities by AEMO:
 - The 5MS mailbox (5MS@aemo.com.au) is no longer in use.
 - 5MS queries should be raised with AEMO's Support Hub.
- For any queries relating to the May 2022 deliverables (GS, MSDR, MCPI), please contact gsmsdr@aemo.com.au.

