

UFE Focus Group Meeting

23 June 2022



Welcome & Housekeeping

- Welcome
- Housekeeping
 - These meetings will be recorded for minute-taking purposes
 - Please keep yourself on mute when you are not speaking
 - Feel free to use the chat or come off mute should you have any questions or comments
 - Questions which cannot be answered on the day will be captured and answered asap
 - We will endeavour to circulate 'Notes' within a week of the focus groups
 - Actions will be captured, shared and completed as required
 - Any questions, concerns or suggested agenda items can be sent to GSMSDR@aemo.com.au

Agenda

| NO. | AGENDA ITEM | RESPONSIBLE |
|-----|---|-----------------------------|
| 1 | Welcome | Greg Minney |
| 2 | Summary of Trends in UFE Report | David Ripper Paul Lyttle |
| 3 | Approach to Guidelines establishment | David Ripper |
| 4 | GS / UFE summary observations | Darren Gatty |
| 5 | UFE Focus Group Next Steps / General Business | Greg Minney |

UFE Trends Report - Update

David Ripper & Paul Lyttle

Trend Report Publication

- The first UFE trend report has been published to the AEMO website
 - <https://www.aemo.com.au/-/media/files/electricity/nem/data/metering/ufo/2022/ufo-report-june-2022.pdf?la=en>
- Report Duration :
 - In accordance with the Rule Final Determination, the reporting period for this report is for the first six months of the global settlements “soft start”, i.e. 1 October 2021 to 1 April 2022
- Report Summary:
 - Report on the total UFE for each *local area*
 - Identify source of UFE in each *local area*
 - Determine UFE benchmarks upon which further reports would be based, and
 - Recommend actions to reduce UFE for each *local area*
- All local area results have been calculated in accordance with formulations prescribed in NER 3.15.5

Trend Interpretation

- All underlying values within the UFE trend charts are available to participants in the MSATS RM46 Reports published with each settlement case.
- Impacts to trend reports:
 - Cross boundary energy flow metering data was not available for all cross boundary connection points from 1 October 2021 (Global Settlements soft start). Metering data for 21 cross boundary connection points was not available for the reporting period.
- Analysis has been completed on the impact of these omitted cross boundary reads and the results are detailed in the following slides.

AUSNET Cross Boundary Analysis

- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 12,138,678.73 | 15,470,678.09 | 15,740,217.10 | 14,441,201.50 | 13,545,551.86 | 13,143,238.89 | 14,445,291.41 |
| DDME Report | 481,547.01 | 542,683.51 | 541,404.23 | 549,630.19 | 557,126.12 | 572,106.33 | 494,720.25 |
| ADME Report | 11,678,578.97 | 14,933,043.31 | 15,182,232.38 | 13,791,337.35 | 12,861,900.39 | 12,356,726.98 | 13,927,297.25 |
| UFE Report | -21,447.24 | -5,048.72 | 16,580.49 | 100,233.97 | 126,525.34 | 214,405.57 | 23,273.92 |
| ADMELA Report | 17,891,360.29 | 19,937,877.22 | 19,869,825.11 | 19,863,776.65 | 19,846,918.29 | 19,874,400.00 | 19,135,732.12 |
| UFEF Report (UFE/ADMELA) | -0.001198749 | -0.000253223 | 0.000834456 | 0.005046068 | 0.006375062 | 0.010788028 | 0.001216254 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 12,138,678.73 | 15,470,678.09 | 15,740,217.10 | 14,441,201.50 | 13,545,551.86 | 13,143,238.89 | 14,445,291.41 |
| DDME Amend | 472,911.29 | 533,881.87 | 532,756.89 | 540,196.55 | 547,933.50 | 563,516.71 | 485,950.19 |
| ADME Report | 11,678,578.97 | 14,933,043.31 | 15,182,232.38 | 13,791,337.35 | 12,861,900.39 | 12,356,726.98 | 13,927,297.25 |
| UFE Amend | -12,811.52 | 3,752.92 | 25,227.83 | 109,667.61 | 135,717.96 | 222,995.19 | 32,043.98 |
| ADMELA Report | 17,891,360.29 | 19,937,877.22 | 19,869,825.11 | 19,863,776.65 | 19,846,918.29 | 19,874,400.00 | 19,135,732.12 |
| UFEF Report (UFE/ADMELA) | -0.000716073 | 0.000188231 | 0.001269655 | 0.005520985 | 0.006838238 | 0.011220223 | 0.001674562 |

CitiPower Cross Boundary Analysis



- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| TME Report | 12,634,200.55 | 14,614,799.86 | 14,309,643.97 | 14,126,088.61 | 14,073,551.38 | 13,892,707.41 | 12,623,772.83 |
| DDME Report | -233,578.20 | -252,184.23 | -249,679.13 | -246,559.35 | -243,692.85 | -247,403.45 | -248,719.23 |
| ADME Report | 13,033,279.68 | 15,161,780.86 | 14,805,705.93 | 14,618,921.30 | 14,543,748.70 | 14,383,575.52 | 13,044,570.77 |
| UFE Report | -165,500.93 | -294,796.76 | -246,382.83 | -246,273.33 | -226,504.47 | -243,464.66 | -172,078.71 |
| ADMELA Report | 13,264,849.02 | 15,269,309.46 | 14,880,547.64 | 14,748,202.95 | 14,703,413.48 | 14,520,260.45 | 13,073,391.34 |
| UFEF Report (UFE/ADMELA) | -0.012476654 | -0.019306489 | -0.016557376 | -0.016698532 | -0.01540489 | -0.016767238 | -0.013162515 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 12,634,200.55 | 14,614,799.86 | 14,309,643.97 | 14,126,088.61 | 14,073,551.38 | 13,892,707.41 | 12,623,772.83 |
| DDME Amend | -462,005.80 | -514,076.77 | -519,574.33 | -515,116.83 | -523,745.85 | -530,526.78 | -508,330.10 |
| ADME Report | 13,033,279.68 | 15,161,780.86 | 14,805,705.93 | 14,618,921.30 | 14,543,748.70 | 14,383,575.52 | 13,044,570.77 |
| UFE Amend | 62,926.66 | -32,904.22 | 23,512.37 | 22,284.15 | 53,548.53 | 39,658.67 | 87,532.16 |
| ADMELA Report | 13,264,849.02 | 15,269,309.46 | 14,880,547.64 | 14,748,202.95 | 14,703,413.48 | 14,520,260.45 | 13,073,391.34 |
| UFEF Report (UFE/ADMELA) | 0.004743866 | -0.002154926 | 0.001580074 | 0.001510974 | 0.003641911 | 0.002731264 | 0.006695444 |

Jemena Cross Boundary Analysis

- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 9,451,121.04 | 11,836,781.49 | 11,992,615.80 | 11,771,805.91 | 11,708,191.92 | 11,626,615.77 | 10,965,580.85 |
| DDME Report | 491,400.37 | 568,384.35 | 557,825.33 | 579,892.70 | 650,729.62 | 670,373.84 | 664,955.79 |
| ADME Report | 8,922,103.09 | 11,235,418.64 | 11,397,297.88 | 11,155,991.67 | 11,021,037.70 | 10,905,731.14 | 10,235,905.42 |
| UFE Report | 37,617.57 | 32,978.51 | 37,492.59 | 35,921.55 | 36,424.59 | 50,510.79 | 64,719.63 |
| ADMELA Report | 9,891,558.33 | 11,771,328.28 | 11,800,545.00 | 11,725,773.99 | 11,643,510.90 | 11,458,406.14 | 10,393,951.57 |
| UFEF Report (UFE/ADMELA) | 0.003802998 | 0.002801596 | 0.003177192 | 0.003063469 | 0.003128317 | 0.004408187 | 0.006226663 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 9,451,121.04 | 11,836,781.49 | 11,992,615.80 | 11,771,805.91 | 11,708,191.92 | 11,626,615.77 | 10,965,580.85 |
| DDME Amend | 454,300.07 | 531,991.91 | 519,732.19 | 544,681.12 | 615,965.69 | 634,251.11 | 622,561.73 |
| ADME Report | 8,922,103.09 | 11,235,418.64 | 11,397,297.88 | 11,155,991.67 | 11,021,037.70 | 10,905,731.14 | 10,235,905.42 |
| UFE Amend | 74,717.88 | 69,370.95 | 75,585.73 | 71,133.12 | 71,188.52 | 86,633.52 | 107,113.69 |
| ADMELA Report | 9,891,558.33 | 11,771,328.28 | 11,800,545.00 | 11,725,773.99 | 11,643,510.90 | 11,458,406.14 | 10,393,951.57 |
| UFEF Report (UFE/ADMELA) | 0.007553702 | 0.005893213 | 0.006405274 | 0.006066391 | 0.006114009 | 0.007560696 | 0.010305387 |

Powercor Cross Boundary Analysis

- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 17,532,526.81 | 21,094,876.44 | 22,729,021.51 | 17,055,281.62 | 15,619,899.52 | 14,859,456.68 | 17,284,160.88 |
| DDME Report | 135,000.57 | 75,453.42 | 44,190.21 | -98,862.28 | -199,769.25 | -239,452.72 | -151,554.83 |
| ADME Report | 17,144,586.63 | 20,833,956.93 | 22,453,177.16 | 16,785,047.54 | 15,326,901.37 | 14,647,179.67 | 17,174,179.60 |
| UFE Report | 252,939.61 | 185,466.10 | 231,654.13 | 369,096.37 | 492,767.40 | 451,729.73 | 261,536.11 |
| ADMELA Report | 27,246,512.05 | 30,619,169.94 | 30,856,881.62 | 29,425,276.82 | 30,845,047.10 | 29,922,017.60 | 27,609,477.43 |
| UFEF Report (UFE/ADMELA) | 0.009283376 | 0.006057189 | 0.007507373 | 0.012543514 | 0.015975576 | 0.015096901 | 0.009472693 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|--------------------|---------------------|---------------------|--------------------|--------------------|--------------------|---------------------|
| TME Report | 17,532,526.81 | 21,094,876.44 | 22,729,021.51 | 17,055,281.62 | 15,619,899.52 | 14,859,456.68 | 17,284,160.88 |
| DDME Amend | 368,323.57 | 332,176.47 | 312,343.27 | 164,746.97 | 78,684.39 | 41,782.30 | 115,694.48 |
| ADME Report | 17,144,586.63 | 20,833,956.93 | 22,453,177.16 | 16,785,047.54 | 15,326,901.37 | 14,647,179.67 | 17,174,179.60 |
| UFE Amend | 19,616.61 | -71,256.96 | -36,498.92 | 105,487.12 | 214,313.75 | 170,494.71 | -5,713.20 |
| ADMELA Report | 27,246,512.05 | 30,619,169.94 | 30,856,881.62 | 29,425,276.82 | 30,845,047.10 | 29,922,017.60 | 27,609,477.43 |
| UFEF Report (UFE/ADMELA) | 0.000719968 | -0.002327201 | -0.001182846 | 0.003584915 | 0.006948077 | 0.005697968 | -0.000206929 |

United Energy Cross Boundary Analysis



- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| TME Report | 15,283,446.90 | 18,994,537.73 | 19,266,990.15 | 18,720,401.18 | 18,759,636.95 | 18,607,905.80 | 17,710,521.95 |
| DDME Report | -384,462.13 | -425,647.27 | -425,910.35 | -426,466.16 | -443,935.85 | -436,519.86 | -298,261.33 |
| ADME Report | 15,699,024.35 | 19,501,322.94 | 19,759,894.32 | 19,219,131.74 | 19,275,315.73 | 19,117,769.15 | 18,035,844.58 |
| UFE Report | -31,115.32 | -81,137.94 | -66,993.82 | -72,264.41 | -71,742.93 | -73,343.50 | -27,061.30 |
| ADMELA Report | 17,835,127.15 | 20,832,917.37 | 20,709,666.34 | 20,404,935.65 | 20,853,543.68 | 20,652,664.45 | 18,616,129.65 |
| UFEF Report (UFE/ADMELA) | -0.001744609 | -0.003894699 | -0.003234906 | -0.003541516 | -0.003440323 | -0.003551285 | -0.001453648 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| TME Report | 15,283,446.90 | 18,994,537.73 | 19,266,990.15 | 18,720,401.18 | 18,759,636.95 | 18,607,905.80 | 17,710,521.95 |
| DDME Amend | -487,700.68 | -539,699.29 | -538,335.43 | -538,200.79 | -551,464.96 | -547,159.76 | -408,077.99 |
| ADME Report | 15,699,024.35 | 19,501,322.94 | 19,759,894.32 | 19,219,131.74 | 19,275,315.73 | 19,117,769.15 | 18,035,844.58 |
| UFE Amend | 72,123.23 | 32,914.08 | 45,431.26 | 39,470.22 | 35,786.18 | 37,296.40 | 82,755.36 |
| ADMELA Report | 17,835,127.15 | 20,832,917.37 | 20,709,666.34 | 20,404,935.65 | 20,853,543.68 | 20,652,664.45 | 18,616,129.65 |
| UFEF Report (UFE/ADMELA) | 0.004043887 | 0.001579907 | 0.002193722 | 0.001934347 | 0.001716072 | 0.001805888 | 0.004445358 |

Ergon Cross Boundary Analysis

- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| TME Report | 32,263,084.07 | 34,011,020.19 | 33,649,272.01 | 32,861,124.58 | 32,302,131.71 | 32,933,128.83 | 30,323,947.96 |
| DDME Report | -113,430.00 | -120,913.92 | -129,696.20 | -110,301.47 | -98,273.13 | -116,109.34 | -90,240.35 |
| ADME Report | 31,794,910.37 | 33,468,110.08 | 33,087,141.16 | 32,105,156.26 | 31,514,659.88 | 32,182,528.39 | 29,603,292.36 |
| UFE Report | 581,603.70 | 663,824.03 | 691,827.05 | 866,269.79 | 885,744.96 | 866,709.79 | 810,895.95 |
| ADMELA Report | 36,782,205.20 | 40,102,135.15 | 40,154,249.76 | 39,110,585.72 | 39,142,585.35 | 39,556,289.42 | 37,310,511.49 |
| UFEF Report (UFE/ADMELA) | 0.015812095 | 0.016553334 | 0.017229236 | 0.022149241 | 0.022628678 | 0.021910796 | 0.021733713 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| TME Report | 32,263,084.07 | 34,011,020.19 | 33,649,272.01 | 32,861,124.58 | 32,302,131.71 | 32,933,128.83 | 30,323,947.96 |
| DDME Amend | 99,613.80 | 125,945.18 | 106,781.40 | 167,136.73 | 193,032.97 | 216,190.46 | 216,498.75 |
| ADME Report | 31,794,910.37 | 33,468,110.08 | 33,087,141.16 | 32,105,156.26 | 31,514,659.88 | 32,182,528.39 | 29,603,292.36 |
| UFE Amend | 368,559.90 | 416,964.93 | 455,349.45 | 588,831.59 | 594,438.86 | 534,409.99 | 504,156.85 |
| ADMELA Report | 36,782,205.20 | 40,102,135.15 | 40,154,249.76 | 39,110,585.72 | 39,142,585.35 | 39,556,289.42 | 37,310,511.49 |
| UFEF Report (UFE/ADMELA) | 0.01002006 | 0.010397574 | 0.011340006 | 0.015055555 | 0.0151865 | 0.013510114 | 0.013512462 |

Essential Energy Cross Boundary Analysis

- Reported Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| TME Report | 20,672,586.95 | 22,726,095.94 | 24,402,672.53 | 21,566,019.84 | 19,505,997.63 | 17,600,001.77 | 17,308,635.63 |
| DDME Report | -939,052.31 | -997,205.36 | -948,297.19 | -863,139.98 | -794,201.96 | -842,390.42 | -1,045,544.19 |
| ADME Report | 22,100,252.22 | 24,139,717.77 | 25,866,755.06 | 22,830,500.97 | 20,721,838.96 | 18,778,613.92 | 18,743,572.27 |
| UFE Report | -488,612.97 | -416,416.48 | -515,785.33 | -401,341.15 | -421,639.38 | -336,221.73 | -389,392.45 |
| ADMELA Report | 28,481,093.63 | 31,578,248.05 | 32,557,002.30 | 31,800,373.37 | 31,432,713.57 | 30,362,596.90 | 29,202,035.99 |
| UFEF Report (UFE/ADMELA) | -0.017155696 | -0.013186814 | -0.015842531 | -0.012620643 | -0.01341403 | -0.01107355 | -0.013334428 |

- Adjusted Values

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| TME Report | 20,672,586.95 | 22,726,095.94 | 24,402,672.53 | 21,566,019.84 | 19,505,997.63 | 17,600,001.77 | 17,308,635.63 |
| DDME Amend | -1,152,096.11 | -1,244,064.46 | -1,184,774.79 | -1,140,578.18 | -1,085,508.06 | -1,174,690.22 | -1,352,283.29 |
| ADME Report | 22,100,252.22 | 24,139,717.77 | 25,866,755.06 | 22,830,500.97 | 20,721,838.96 | 18,778,613.92 | 18,743,572.27 |
| UFE Amend | -275,569.17 | -169,557.38 | -279,307.73 | -123,902.95 | -130,333.28 | -3,921.93 | -82,653.35 |
| ADMELA Report | 28,481,093.63 | 31,578,248.05 | 32,557,002.30 | 31,800,373.37 | 31,432,713.57 | 30,362,596.90 | 29,202,035.99 |
| UFEF Report (UFE/ADMELA) | -0.009675512 | -0.005369436 | -0.008579037 | -0.003896273 | -0.004146421 | -0.00012917 | -0.002830397 |

UFE benchmark analysis

- Analysis of the unaccounted for energy amounts in each local area in the reporting period is to be performed against benchmarks that have been determined by AEMO.
- This form of analysis has proved to be difficult for this first report as AEMO needs to become familiar with UFE within each local area. It is acknowledged that without this analysis UFE numbers may be inconsistent and there could be little basis and direction for both the analysis of UFE and recommendations for action set out below.
- As complete metering data sets have only become available from the late April 2022, the UFE results related to this reporting period cannot be used as a benchmark for future reports. AEMO intends to use the UFE positions for each local area for the **first weeks of May 2022** as the “benchmarks” for the second UFE Trends Report.

UFE source analysis

- AEMO is required to undertake an analysis of the sources of UFE in each local area in order to recommend actions to reduce UFE.
- As complete metering data sets have only become available from the late April 2022, UFE source analysis could not be completed for this reporting period. UFE source analysis will be included in the next UFE Trends Report.
- It is AEMOs intention to analyse any data that is used to transform meter reads that may impact the settlement calculation, these would include:
 - DLF values
 - Profiling methodologies
 - Impacts of replacement meters to 5 minute reads
 - Type 7 and Unmetered loads and methodologies
 - Read quality
 - Emergency cross boundaries

Guidelines for UFE Trend Reporting - Approach

David Ripper

UFE Guideline

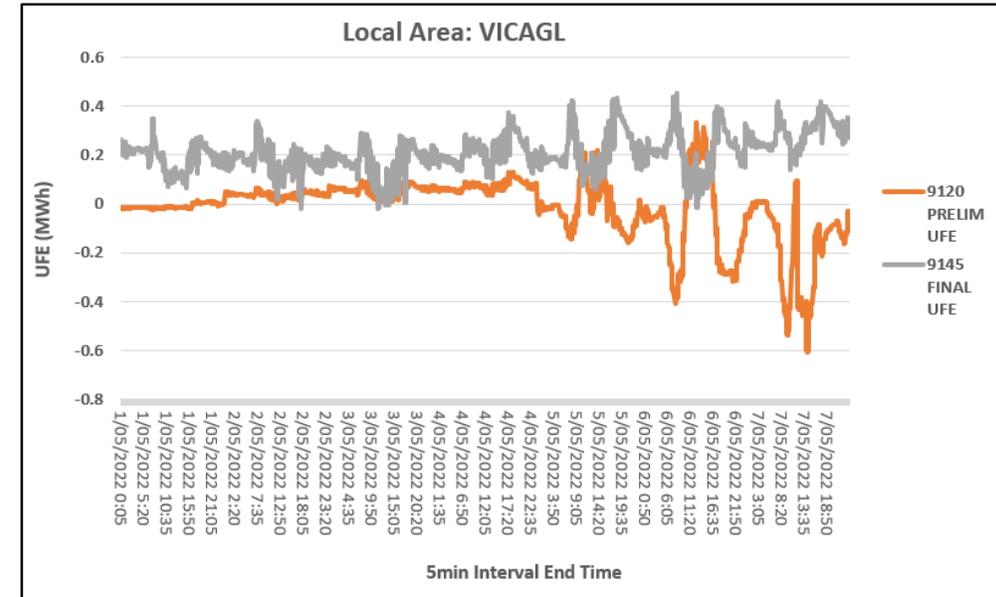
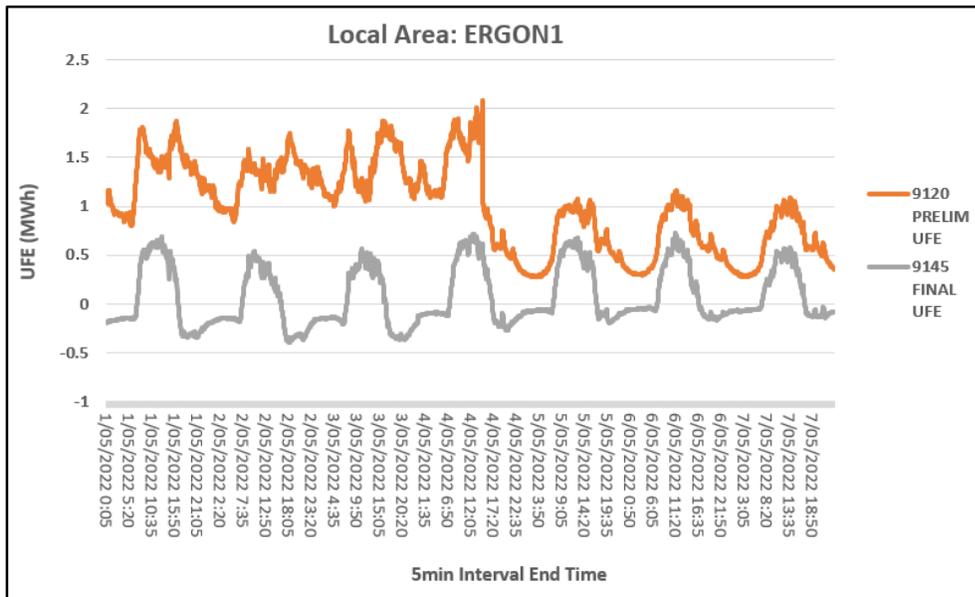
- AEMO to develop UFE reporting guideline via a formal consultation process (NER 3.15.5B)
 - UFE reporting guideline to be published by 1 March 2023
- Consultation content to include:
 - Requirements identified in NER 3.15.5B
 - Identify and analyse variables that modify metered and calculated metering data
 - Report on energy volumes migrated to 5-minute granularity
 - Timing of report
- Indicative timeline (check status of consultation procedure Rule change)
 - Develop initial draft of UFE reporting guideline – 23 July 2022
 - Begin formal consultation process – 6 August 2022
 - Publish UFE reporting guideline – 1 March 2023

Discussion Topics – UFE Results

Darren Gatty

Wk19 FINAL UFE Outcome

- On average across the FINAL run NEM UFE was slightly less negative than seen in the PRELIM run, suggesting meter data updates generally had lower loads than received for the PRELIM
- The step changes seen in the PRELIM run half way through the week in both the ERGON1 and VICAGL local areas were both resolved in the FINAL run
- ERGON1 was fixed by the correction of a cross boundary (with CountryEnergy) NMI configuration and VICAGL was just resolved by a meter data improvement received in the FINAL



Next Steps and General Business

Greg Minney

Next Steps

- UFE Focus Group set up to provide industry support during initial implementation of GS/ UFE introduction
- Industry input into the development of guidelines for UFE reporting will be requested in the timeframes outlined earlier in the pack. Do Participants view this forum as providing input to Initial drafts
- System issues to be raised via Support Hub
- Issues with individual settlement results progressed directly with the Settlements team via AEMO.settlements@aemo.com.au under BAU processes
- Consultations for changes to metrology procedures etc will continue via ERCF
- Are there areas that participants have that require ongoing focus group meetings on monthly basis?
- GSMSDR@aemo.com.au mailbox will continue to be monitored to support MSDR implementation for November



For more information visit

aemo.com.au