BSUoS Fixed Tariff Webinar

11th January 2024

A recording of this webinar is available by clicking HERE

ESO

Agenda

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- ***We will be recording the session*** *– available HERE*
- ***Please use teams chat to ask any questions & we*** *will have time at the end to run through them*
- ***If you want to ask a question verbally*** *during the Q&A session please raise your hand to be unmuted*

BSUoS Fixed Tariff Recap

BSUoS Fixed Tariff
Final Tariff 4 - Oct 2024 - Mar 2025
Draft Tariff 5 - Apr 2025 – Sep 2025

Published 22nd December 2023

Introduction

From 1st April 2023 BSUoS costs have been recovered under a new fixed tariff methodology as defined by CMP361. The CMP361 decision determined that the tariff should be fixed for 6 months with 9 months' notice of the tariff values being provided by the ESO. This report defines the final BSUoS tariff for the Oct 2024 to Mar 2025 period as well as providing a draft view of the Apr 2025 to Sept 2025 tariff period. We are calling these BSUoS Fixed Tariffs 4 and 5 respectively.

Background

The costs of balancing the system change and are difficult to predict. This makes the BSUoS charge also difficult to predict.

CMP361 introduced an ex-ante fixed volumetric BSUoS tariff set over a total fixed and notice period of 15 months which was designed to deliver the recommendations of the Second BSUoS Task Force. The decision on implementing CMP361 was made by Ofgem on the 15th December 2022.

The decision was made to implement WACM3 (Workgroup Alternative CUSC Modification) from the 1st April 2023. WACM3 fixed BSUoS for 6 months with 9 months' notice and defined that there would be no BSUoS fund to support the tariff.

Final BSUoS tariffs for Apr 2023 to Sep 2023 (Fixed Tariff 1) and Oct 2023 to Apr 2024 (Fixed Tariff 2) were published at the end of January 2023.

Final BSUoS tariff for Apr 2024 to Sep 2024 (Fixed Tariff 3) was published at the end of June 2023.

Webinar – 11th January

We will be running a webinar on the 11th January to discuss this final and draft tariff and answer any questions that you may have about it.

Click the button below to register for the webinar.

Register for the BSUoS Tariff Webinar Here

1. BSUoS Fixed Tariffs Overview/Calculation

The forecasting model we have developed is used to determine balancing costs for the fixed tariff period ahead. The central forecast number determines the cost that goes into the tariff.

1

Document or Webpage	Links
CMP308 – BSUoS charged on final demand only from 2023/24	Web link
BSUoS Fixed Tariff Model Methodology	Download
BSUoS Fixed Tariff Model Q&A	Download
BSUoS Fixed Tariff Model Consultation 2	Download
CMP361/362 – Ofgem minded-to 21/09/2022	Web link
CMP361/362 – Ofgem update on minded-to 15/11/2022	Web link
Draft BSUoS Fixed Tariff Published 31/10/2022	Download
CMP406/407 – Raised but rejected	Web link
Draft Tariff Webinar Held 23/11/2022	Download
Ofgem Decision CMP361	Download
CMP408 Raised – Change tariff notice period to 3 months	Web Link
Final BSUoS Fixed Tariff Published 31/01/2023	Download
Final Tariff Webinar Held 07/02/2023	Download
BSUoS Fixed Tariff 3 Published 30/06/2023	Download
BSUoS Fixed Tariff 4 Published 22/12/2023	Download

Final Fixed Tariff 4

	Financial Year 2024/25 - Tariff 4 - Final	
	Description	Final Tariff
Fixed Tariff 4 Oct - Mar	Balancing Costs (Central) £m	1,502.5
	Internal Costs £m	359.2
	Forecast over-recovery by end of FT2, less any adjustment already made for FT1 in FT3	-182.0
	Winter Security of Supply	25.0
	2021/22 Under-Recovery of BSUoS	21.7
	Total BSUoS £m	**1,726.4**
	Estimated BSUoS Volume TWh	141.8
	BSUoS Tariff £/MWh	**£12.17**

Draft Fixed Tariff 5

	Financial Year 2025/26 - Tariff 5- Draft	
	Description	Draft Tariff
Draft Tariff 5 Apr-Sep	Balancing Costs (Central) £m	1,267.4
	Internal Costs £m	271.8
	Forecast under-recovery from FT3 in FT5	73.0
	Total BSUoS £m	1,612.2
	Estimated BSUoS Volume TWh	129.2
	BSUoS Tariff £/MWh	**£12.48**

Inputs and Uncertainties for Final and Draft Tariff

Balancing Costs – Final and Draft Tariff

- There has been significant change in the forward curve of GB wholesale electricity over the past year, with the potential for further change in advance of Fixed Tariff 5 setting (due to be set in June 2024)

Internal ESO Costs - Final and Draft Tariff

- The final details of the funding as part of the creation of the new, independent Future System Operator have yet to be determined for the period covered by Tariff 5 (see slide 9)

Forecast Over/Under-Recovery – Final and Draft Tariff

- Final over/under-recovery to be included within Fixed Tariff 5 will be determined based on the latest available outturn data and monthly BSUoS forecast as at Final Fixed Tariff 5 setting (June 2024)
- There remains the possibility of a tariff reset should forecast recovery position fall between now and the end of Fixed Tariff 3 and Fixed Tariff 4

Winter 24/25 Security of Supply – Final Tariff

- For winter 2022/23 and 2023/24 the ESO has received requests from the Secretary of State to undertake enhanced actions to ensure ongoing security of supply across the winter period. In anticipation of a potential similar request for winter 2024/25 we have included £25m in fixed tariff 4 for winter security of supply costs.

2021/22 Under-Recovery of BSUoS – Final Tariff

- We have identified an under recovery of £21.7m due to a calculation error in the 2021/22 charging year. This amount will now be recovered in Fixed Tariff 4.

Uncertainties - Modifications

CMP408 – Final and Draft Tariff

- CMP 408 looks to change the BSUoS notice period from 9 months to 3 months. If approved, the proposer's preferred option would be to reset any tariffs that fall within the current 9 months' notice period and the revised 3 month notice period that this modification would enforce.

CMP420 – Draft Tariff

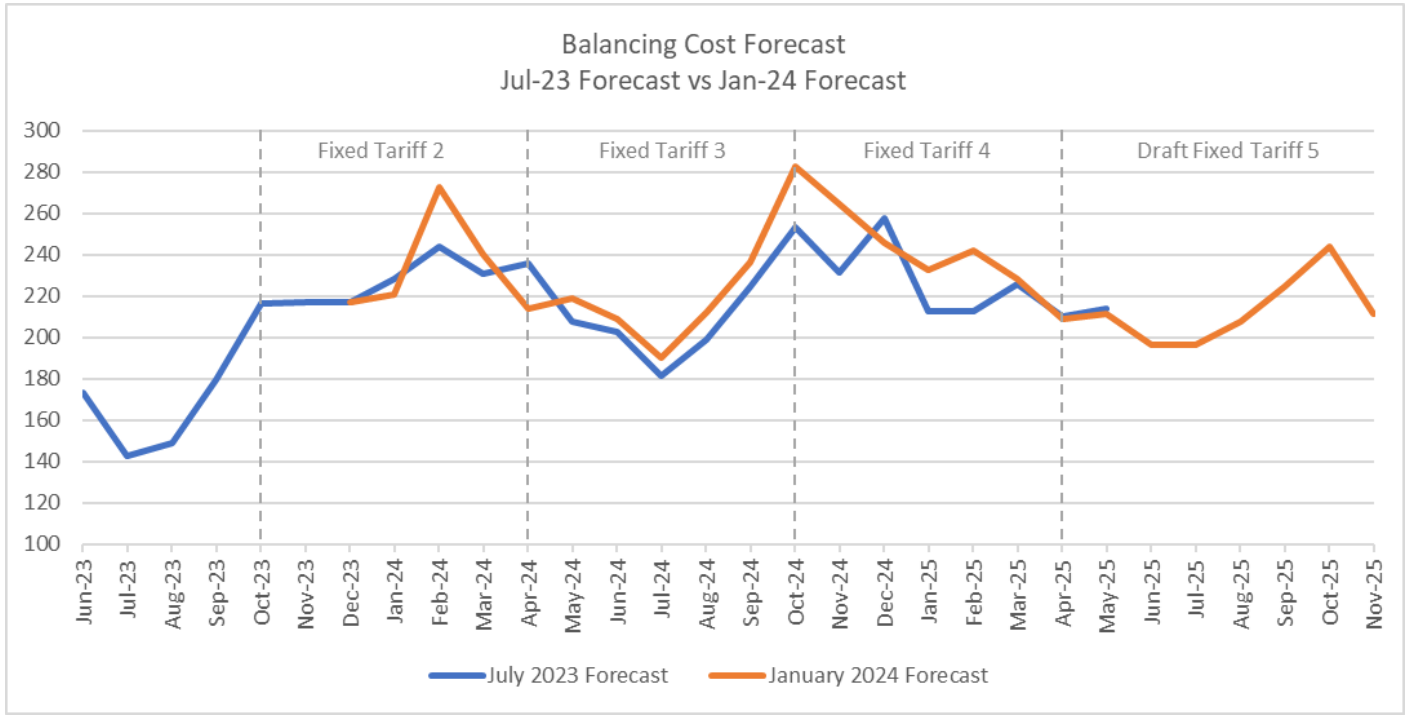
- This modification looks to codify the treatment of over-recovery and allow the potential use of over-recovery to reduce the risk of reopening prices during a future Fixed Period.
- This modification also seeks to add interest on the amount of over-recovery seen over a financial year. The interest could firstly be included in Fixed Tariff 5. Based on the current forecast over-recovery position as at the end of Fixed Tariff 2, this could amount to an additional £15m to be returned within Fixed Tariff 5.

Balancing costs

- Based on an average of forward price curve derived between 1st and 7th December 2023

- Since Draft Tariff 4, our balancing cost forecast for Fixed Tariff 4 has increased
- Despite a decrease in wholesale market prices, the increase has mainly been driven by increases in constraint costs

- For Fixed Tariff 5, balancing costs will be reforecast at tariff setting (June 2024)



Internal ESO Costs

- Internal costs (allowed revenue) are calculated in the Price Control Financial Model (PCFM) process as determined by the current RIIO-2 price control period.

- The costs for the 2024/25 charging year are currently based on the December 2023 PCFM.

Uncertainties for Draft Tariff 5

- Costs for 2025/26 are currently based on the December 2023 PCFM.

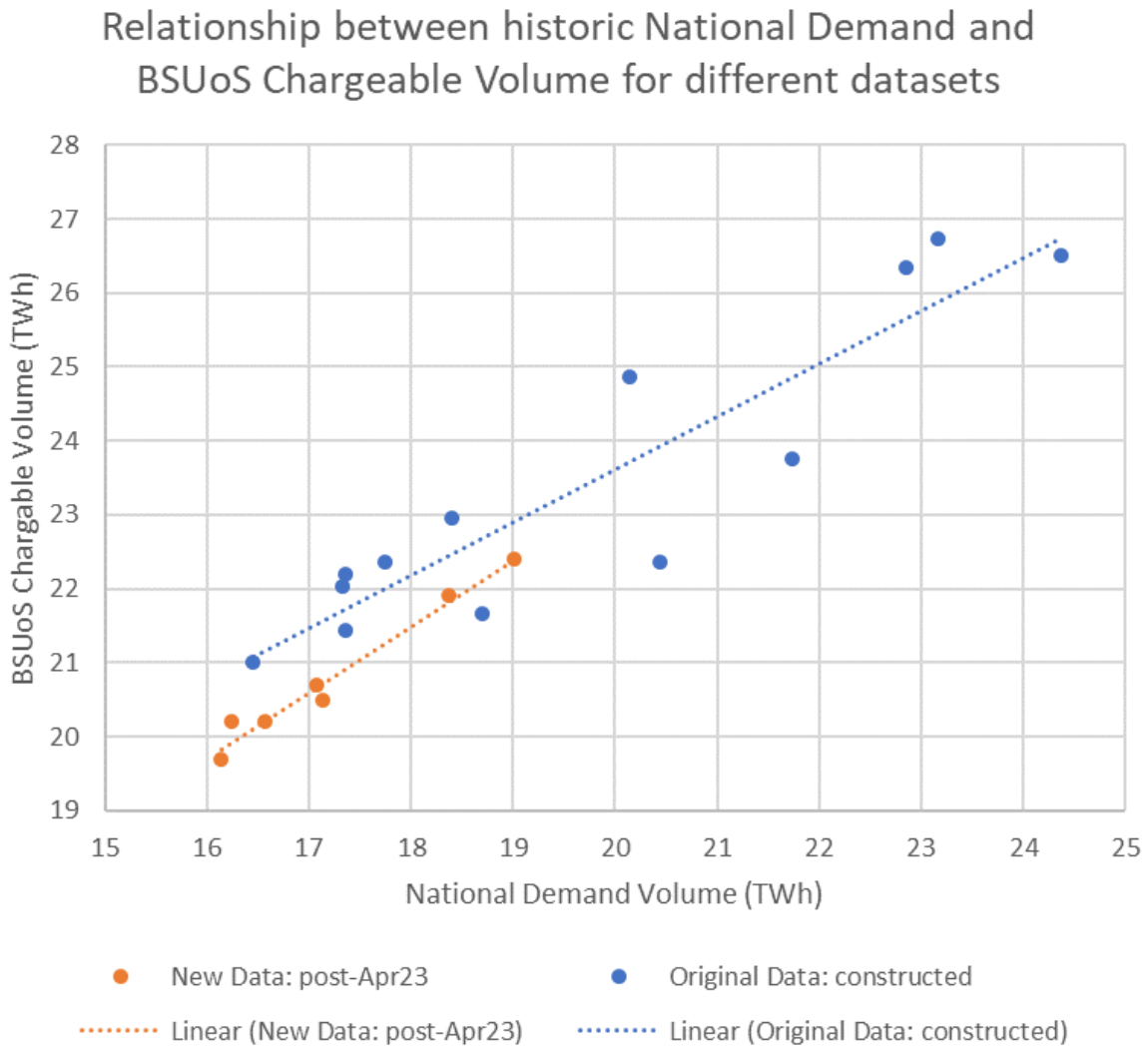
- In April 2022, Ofgem and the Department for Energy Security and Net Zero (DESNZ) jointly decided to proceed with the creation of a new, independent Future System Operator (FSO). All the details of the implementation of the FSO and the funding of it have yet to be agreed.

Volume Forecast

From April 2023, the charging of BSUoS moved onto “Final Demand”[1] only.

Since then, BSUoS chargeable volume has been estimated using a simple linear regression, with the ESO national demand forecast as the explanatory variable (relationship for historic data shown on the right).

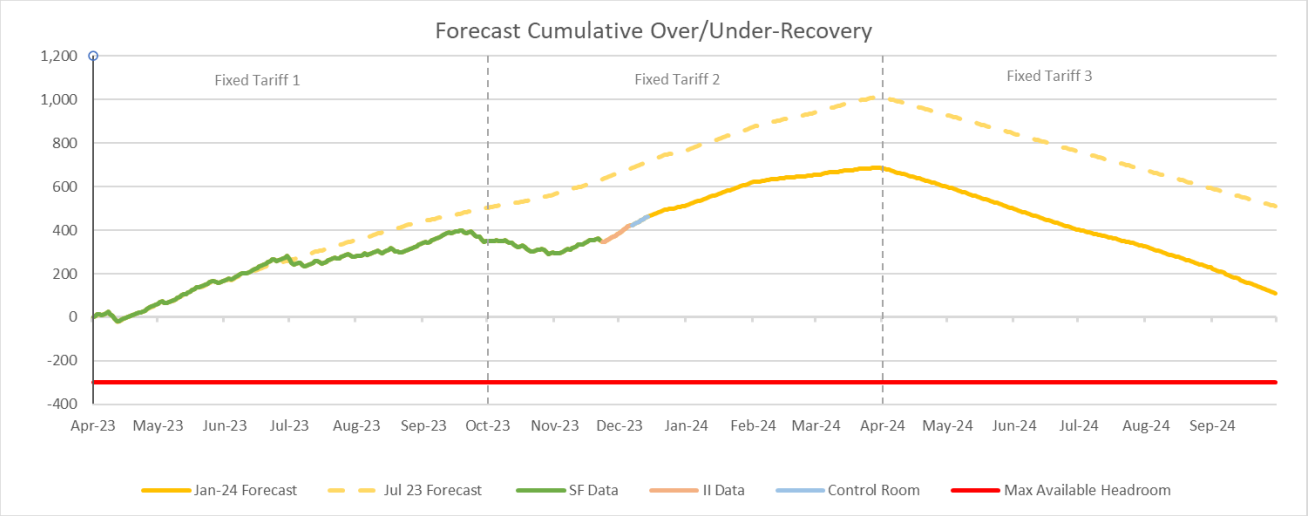
In the latest forecast we have updated the data used to estimate the linear regression. The relationship is now estimated using only BSUoS chargeable volume and national demand from after April 2023 (i.e. settlement outturns). The impact of this update, combined with a drop in the ESO national demand forecast, has reduced the estimated BSUoS volume slightly for Fixed Tariff 4.

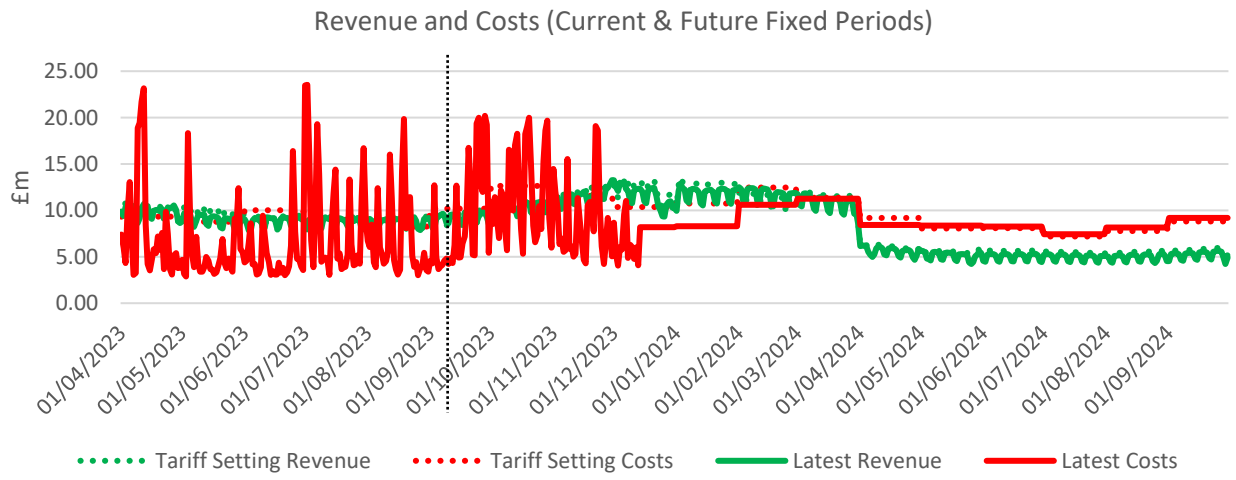


1: defined as electricity consumed other than for the purposes of generation or export onto the electricity network

Forecast Over Recovery from Fixed Tariff 1 and Fixed Tariff 2

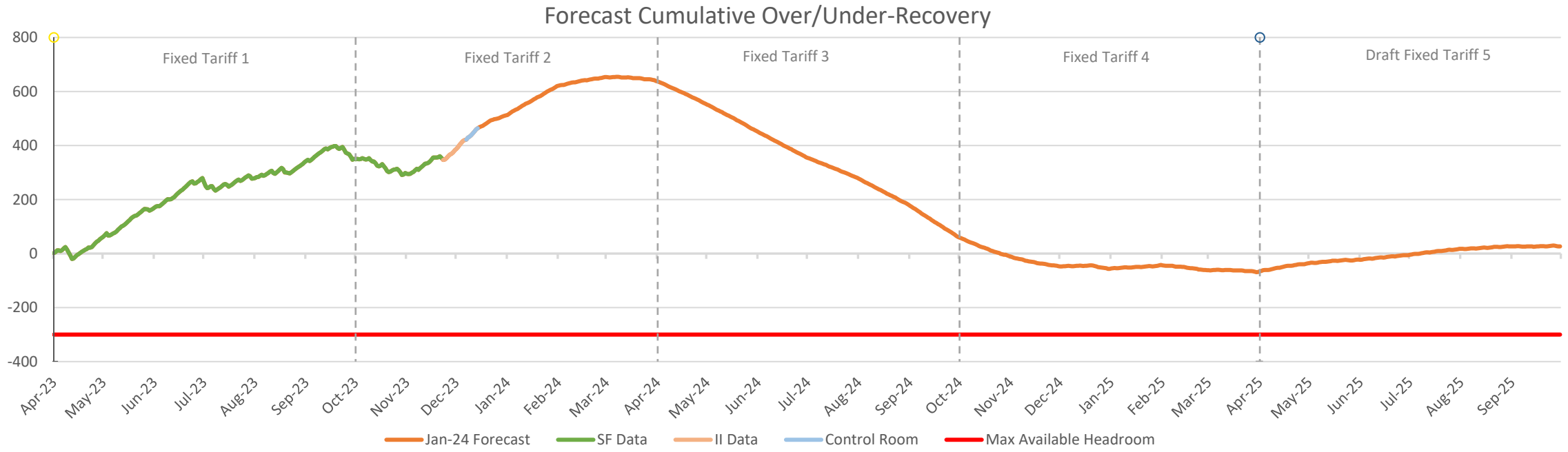
- Since Fixed Tariff 3 and Draft Tariff 4 were published in June, there has been a decrease in our forecast over-recovery position
- Costs for the remainder for Fixed Tariff 1 outturned c. £153m above our July -23 forecast, mainly driven by an increase in constraint costs
- Costs for the remainder of Fixed Tariff 2 and Fixed Tariff 3 are are also forecast to be higher than at July-23 forecast. Despite a decrease in wholesale average costs, improvements to the constraints forecast has resulted in increases in the balancing cost forecast
- There has also been a decrease in our forecast volume





Forecast Cash Position for Fixed Tariffs 2, 3, 4 and Draft Tariff 5

- We have included within Fixed Tariff 4 the forecast over-recovery as at the end of Fixed Tariff 2, less the amount of over-recovery to be returned within Fixed Tariff 3
- This will result in a net negative position at the end of Fixed Tariff 4, as a result of the under-recovery forecast within Fixed Tariff 3
- The forecast under-recovery from Fixed Tariff 3 has been included within Draft Tariff 5



Please note, our forecast cash position does not return exactly to zero. This is due to the balancing cost forecast used in the tariffs being a central 6-month forecast, whereas our comparative costs are forecast by individual month. The central 6-month forecast is not the same as the sum of the central cases across individual months.

Revenue vs Cost Report

Weekly report is available on the ESO website

Shows the latest forecast over/under recovery position based on:

- Control Room Data (+1 WD)
- II Cost and Volume Data (+5 WD)
- SF Cost and Volume Data (+16 WD)
- Monthly BSuoS Forecast (15th of each month)

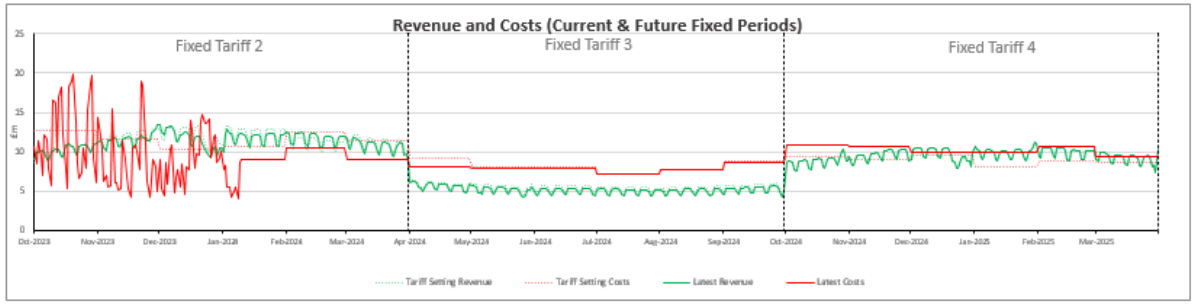
Costs at daily granularity are also available through our web prices file for II and SF Data

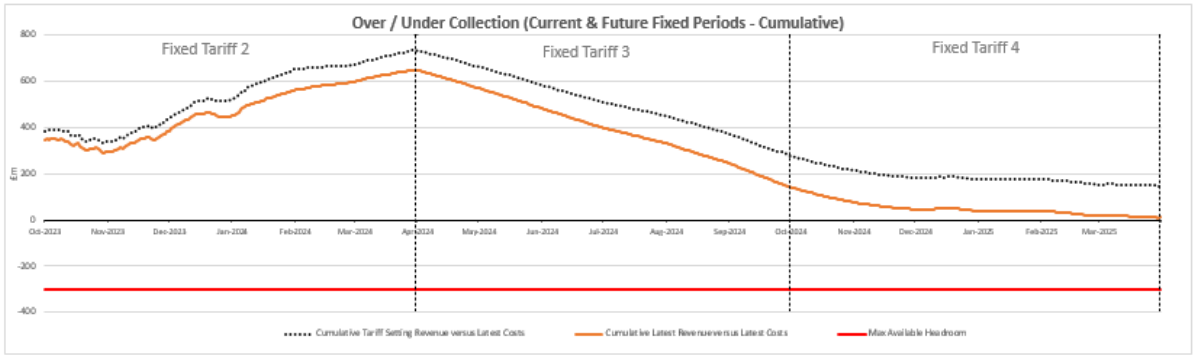
Illustrative Revenue vs Cost Report

Please Note: This Report contains a mixture of actual outturn costs and revenue as well as forecasts of both costs and revenue to produce a projection of what costs v revenue may be in the future. It's important to note that these are projections based on forecast information and final positions could differ significantly based on market/system conditions, weather and other factors.

Report Date	04/01/2024
Latest Revenue in Fixed Period to date	2,722,231,442
Latest Costs in Fixed Period to date	2,240,559,280
Over / (Under) Recovery to Date	481,672,162

Last date Control Room data available	03/01/2024
Last date II data entered	26/12/2023
Last date SF data entered	07/12/2023
Latest published forecast	January 24





Data

SF Data
February 24 Forecast
II Data
Tariff Setting
Control Room Data
Calculation

Date	Balancing Mechanism	Trade	Ancillary Services	Internal Costs	Other	Total Costs	Volume	Tariff	Revenue	Over/(under) collection
01/04/2023	2,055,350	1,333,792	2,793,737	1,180,055	2,936	7,366,531	722,667	13.41	9,690,967	2,324,436
02/04/2023	793,158	1,553,060	2,443,572	1,180,055	2,936	5,984,781	699,543	13.41	9,380,866	3,396,085
03/04/2023	364,340	187,710	1,335,512	1,180,055	2,936	4,331,153	772,948	13.41	10,365,238	6,034,084
04/04/2023	5,276,868	1,223,742	2,025,203	1,180,055	2,936	9,708,804	763,818	13.41	10,323,264	614,460
05/04/2023	7,643,041	2,415,740	1,810,208	1,180,055	2,936	13,057,980	731,807	13.41	10,618,127	-2,439,853
06/04/2023	3,313,698	726,376	1,864,200	1,180,055	2,936	7,087,864	761,948	13.41	10,217,716	3,129,852
07/04/2023	-408,211	272,090	1,376,135	1,180,055	2,936	3,023,064	676,318	13.41	9,069,424	6,046,360
08/04/2023	-342,259	500,171	1,303,525	1,180,055	2,936	3,250,429	651,226	13.41	8,732,940	5,482,511
09/04/2023	14,786,747	730,104	2,188,812	1,180,055	2,936	18,889,655	642,548	13.41	8,616,564	-10,273,090
10/04/2023	13,898,580	2,047,145	2,314,962	1,180,055	2,936	19,443,678	681,165	13.41	9,134,419	-10,309,259
11/04/2023	16,364,470	1,625,007	2,530,114	1,180,055	2,936	21,702,582	765,452	13.41	10,264,705	-11,437,877

Report Specifics

Invoices/Backing Sheet	Fund recovery shown as a separate line item, as will RF interest
BPA Report	Additional information added for fixed tariff
Web Prices	Additional columns for main tariff, fund tariff and volume were added
BCR Report	Currently produced by the system for old methodology (RF runs only)
Monthly Forecast	Continue to be provided for costs
Monthly Outturn	Continue to be provided for costs
Daily Cost Report	Continue to be provided for costs
Weekly Rev v Costs	That we are publishing weekly to show Revenue v Costs

Ongoing Forecast Model Development

We have been working with the Hartree Centre to investigate whether state-of-the-art machine learning techniques could be employed to improve our forecast of balancing costs.

The Hartree project explored:

- A range of input variables e.g. inertia, demand etc.
- Daily granularity forecasts (and if when aggregated this improved monthly forecasts)
- Timeseries forecasting techniques:
  - ARIMA (Auto-Regressive integrated moving average)
  - GARCH (Generalized Auto-Regressive Conditional Heteroskedasticity)
  - 'Prophet'[1]
- Machine learning techniques e.g. Random Forest models
- Deep learning techniques e.g. Recurrent Neural Networks (LSTM, GRU)

UKRI Science and Technology Facilities Council
Hartree Centre

The project concluded in late 2023.

See the ENA portal for more information:
https://smarter.energynetworks.org/projects/nia2_ngeso022/

1: https://facebook.github.io/prophet/

Ongoing Forecast Model Development

Hartree project findings:

- The variables with the best predictive power are the ones used in the live model (renewable generation as a proportion of demand and wholesale electricity prices).
- The best modelling technique was the 'Prophet' modelling package. This gave a modest improvement in accuracy compared to the existing model, however, this is based on using actual (rather than forecast) values for the input variables. When using forecasts instead, the accuracy difference between the models is negligible. Therefore, choosing whether to switch to the new prophet model is not a simple decision. We plan to run both models in parallel to determine if the improvement is tangible enough to justify increasing model complexity.
- GARCH modelling showed some promise for simulating wholesale prices, as it allows for volatility that changes over time. This is an area that needs more research to determine if this method gives an improvement over the existing one.
- Daily granularity forecasts were not able to capture the volatility in daily costs enough to provide useful insight, and aggregating these up to monthly level did not give increased accuracy over just producing a monthly forecast directly.

At a high level, the conclusions are that it is hard to improve upon the existing live balancing cost model. There might be marginal gains to performance if we increase model complexity – this needs further investigation.

Next Steps

- Webinar recording and Q&A published next week
- Ongoing monitoring of current recovery v costs – see our weekly report
- Monitoring published future tariffs v revised forecasts
- Final Tariff for Apr 2025 to Sep 2025 by end of June 2024
- CMP408 raised to change tariff notification period to 3 months
- Ongoing Forecast Model Development
- We are currently reviewing the monthly forecasting process/report
- New system development and integration post go live
- Changeover from existing to new system date tbc

Q&A

- Please enter your questions in teams chat
- If you would like to ask a question verbally then please raise your hand so that you can be unmuted
- If you have any questions or feedback after this webinar please email bsuos.queries@nationalgrideso.com and put “BSUoS Fixed Tariff Webinar” in the subject line of your email

Thank you for your time and input today!


Thank you!