

ESO Forward Plan 2019-20

Monthly Reporting - July

21 August 2019



Foreword

Welcome to our monthly performance report for July 2019.

Each month we report on a subset of metrics, which have data available at monthly granularity.

Our first quarterly report of this year was published¹ in July, and detailed our performance against our wider metric suite together with an update on our progress against the deliverables set out in our current Forward Plan².

A summary of our monthly metrics covering July is shown in Table 1 below.

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Metric	Performance	Status
Balancing cost management	£65.4m outturn against £85.6m benchmark	●
Energy forecasting accuracy	Demand forecast error met target; Wind forecast error met target.	●
Month-ahead BSUoS forecast	20.1% forecasting error	●
System access management	1.12/1000 cancellations	●
Connections agreement management	100%	●
Right first time connection offers	87%	●

●	Exceeding expectations
●	Meeting expectations
●	Below expectations

Table 1: Summary of monthly metrics

You can find out about our vision, plans, deliverables and full metric suite in the Forward Plan pages of our website³.

We welcome feedback on our performance reporting to box.soincentives.electricity@nationalgrideso.com.



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¹ <https://www.nationalgrideso.com/document/148691/download>

² <https://www.nationalgrideso.com/document/140736/download>

³ <https://www.nationalgrideso.com/about-us/business-plans/forward-plans-2021>

Role 1 Managing system balance and operability

Operate the system safely and securely, whilst driving overall efficiency and transparency in balancing strategies across time horizons

Support market participants to make informed decisions by providing user friendly, comprehensive and accurate information

Metric 1 – Balancing cost management

July 2019 Performance

For monthly breakdown of costs, please refer to our [balancing costs webpages](#)⁴.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Benchmark cost (£m)	83.2	97.5	75.3	85.6	87.4	96.6	103.3	98.4	91.0	82.6	81.9	81.1	1064
Additional cost forecast due to WHVDC fault (£m)	11.3	11.2	1	0	0	0	0	0	0	0	0	0	23.5 ⁵
Benchmark adjusted for WHVDC (£m)	94.5	108.7	76.3	85.6	87.4	96.6	103.3	98.4	91.0	82.6	81.9	81.1	1087.5
Outturn cost (£m)	78.7	60.4	84.9	65.4									289.4 [YTD]

Table 2: Monthly balancing cost benchmark and outturn.

Note that we are including an adjusted benchmark figure due to the fault outage of the Western HVDC link during April and May, as this event is outside our control.

To apply seasonality to the monthly benchmark figures, we have apportioned the calculated benchmark for the year (£1064m) across the 12 months in the same ratio as our [year-ahead monthly BSUoS forecast](#)⁶.

⁴ <https://www.nationalgrideso.com/balancing-data>

⁵ The number has been corrected on 11 Dec 2019.

⁶ <https://www.nationalgrideso.com/document/141946/download>

Supporting information

Energy costs (including energy imbalance) for July 2019 out-turned at around £35.5m, a decrease of £3m from the previous month, with an average daily spend of £1.1m. All the energy category costs showed little variance from the previous month. A £2.5m decrease in Energy Imbalance costs was the main driver behind the difference in energy costs from the previous month.

The total constraints cost for July 2019 was approximately £30m, which is a decrease of around £16m from the previous month. Approximately £7m was spent in England and Wales, £0.1m for Cheviot, £3.3m for Scotland, £6.7m for Sterilised Headroom, around £11.5m on RoCoF (Rate of Change of Frequency), and approximately £1m on Ancillary Services costs.

The highest daily constraint costs were recorded on the following days: Monday 1st July, Sunday 21st July and Monday 22nd July. Monday 1st July and Sunday 21st July both had an out-turn cost of around £3m, and Monday 22nd July had an out-turn cost of around £5m.

High wind levels in Scotland during low demand periods resulted in a large volume of wind generation being constrained through BM (Balancing Mechanism) actions over these high cost days. Additionally, on the 22nd July actions were required to solve power flow restrictions in the South of England following limited availability of an interconnector.

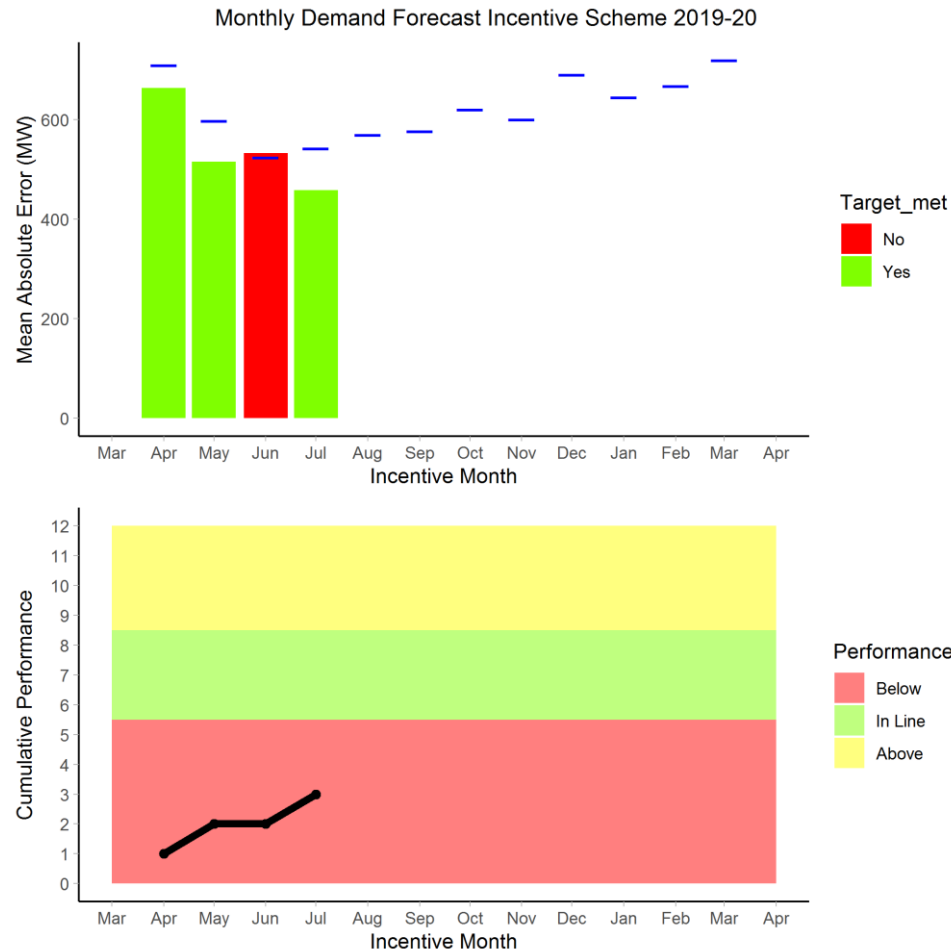
The RoCoF spend for July 2019 out-turned at around £11.5m which is decrease of around £6m from the previous month. High cost days for this category occurred on Saturday 20th and Sunday 21st, coming in at around £1.2m for both days.

Voltage management costs in July 2019 out-turned at around £5m to deliver around 283GWh of energy with voltage supporting capabilities, of which approximately 60% of that volume was obtained via forward trading. The highest daily cost for this category was recorded on Monday 22nd July with a spend of around £0.7m.

Metric 3 – Energy forecasting accuracy

July 2019 Demand Forecasting Performance

Figure 1: Demand Forecasting Performance, shows our performance for July as the green histogram against the blue target line.



Supporting information

In July 2019, our day ahead demand forecast performance was within the target of 542.1 MW MMAE (monthly mean absolute error), July's MMAE was 458.5 MW. This was the 3rd month for this financial year (2019-20) for which this target has been met.

Despite the exceptionally hot spell from the 22nd to the 26th, much of July saw relatively settled conditions, which contributed to accurate demand forecasts. Demand forecasting errors over the heat wave period were slightly elevated as consumer behaviour became less predictable.

The forecasting team is trialling new a forecasting tool to help improve accuracy. So far it has given us encouraging results.

Figure 1: Demand Forecasting Performance

July 2019 Wind Generation Performance

Figure 2: Wind Forecasting Performance, shows our performance this month as the green histogram, against the blue monthly target.

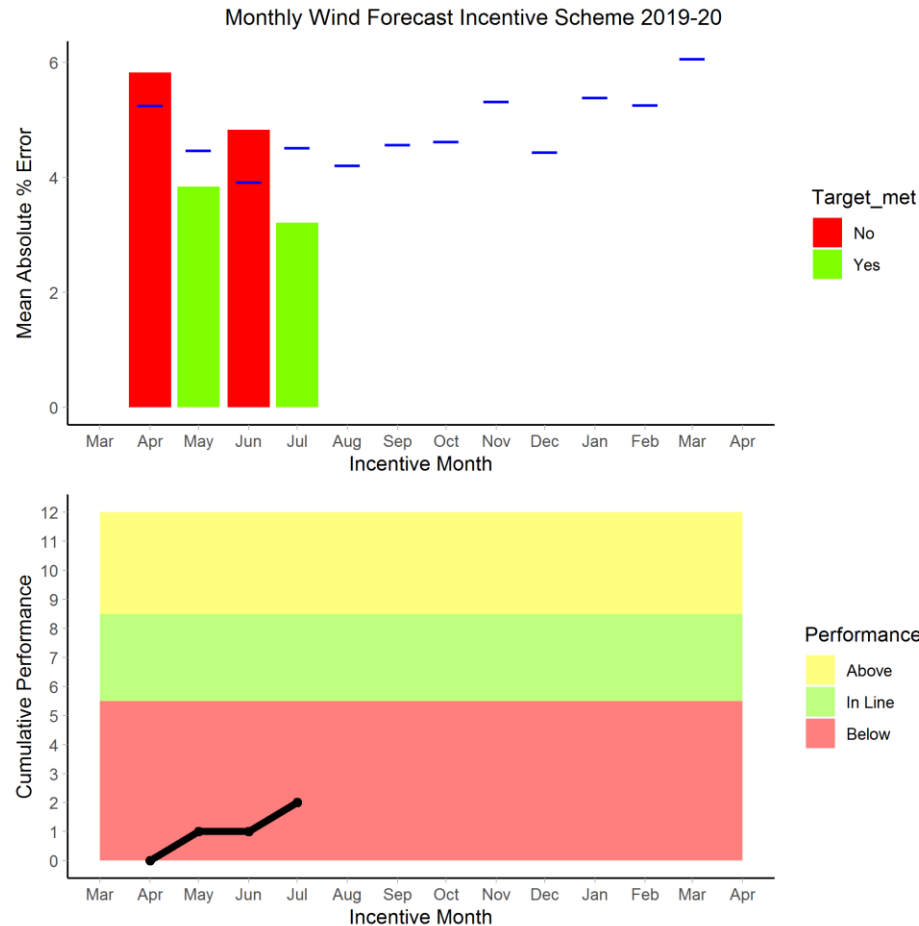


Figure 2: Wind Forecasting Performance

Supporting information

In July 2019, our day ahead wind forecasts were below the target of 4.52% MMAPE (monthly mean absolute percentage error). July's MMAPE was 3.21%.

Light wind conditions remained for much of July and thus accurate wind power forecasts were easier to achieve. The record temperatures on the 25th July had no impact on the wind power forecasting accuracy. Although there was some thunderstorm activity towards the end of July, it was much less than for June.

Also, some additional weather stations were added into a portfolio of weather sites that we use for the wind power generation forecast. All the additional weather stations are located on wind generation sites. That should reduce any errors which are due to the distance between a wind generation site and its nearest weather station location.

Performance benchmarks

At the end of the year, we will count how many months we have met our targets and apply the benchmarks:

Below benchmark: 0-5 months;

In line with benchmark: 6-8 months;

Exceeds benchmark: 9-12 months.

Notable achievements and events this month/quarter

On 1st July NGESO hosted the Electricity Transmission Operational Forum, where attendees heard presentations about topics including the Operability Strategy Report and the Platform for Ancillary Services. The event was well attended, and we received positive feedback from stakeholders who were present.

In response to continued positive feedback from attendees, we have also continued to host monthly visits of the ENCC, giving stakeholders the opportunity to see our control room and better understand its day-to-day operations.

Role 2

Facilitating Competitive Markets

Ensure the rules and processes for procuring balancing services maximise competition where possible and are simple, fair and transparent

Promote competition in wholesale and capacity markets

Metric 9 – Month ahead forecast vs outturn monthly BSUoS

July 2019 Performance

Month	Actual	Month-ahead Forecast	APE	APE>20%	APE<10%
April-19	2.82	3.02	0.07	0	1
May-19	2.46	3.12	0.27	1	0
June-19	3.34	3.07	0.08	0	1
July-19	2.69	3.23	0.201	1	0

Table 3: Month ahead forecast vs. outturn BSUoS (£/MWh) July 2019 Performance

Performance benchmarks

Exceeds benchmark: Exceeding is meeting baseline performance and five or more forecasts less than 10% APE.

In line with benchmark: Of the 12 forecasts over a financial year, baseline performance is less than five forecasts above 20% APE.

Below benchmark: five or more forecasts above 20% APE.

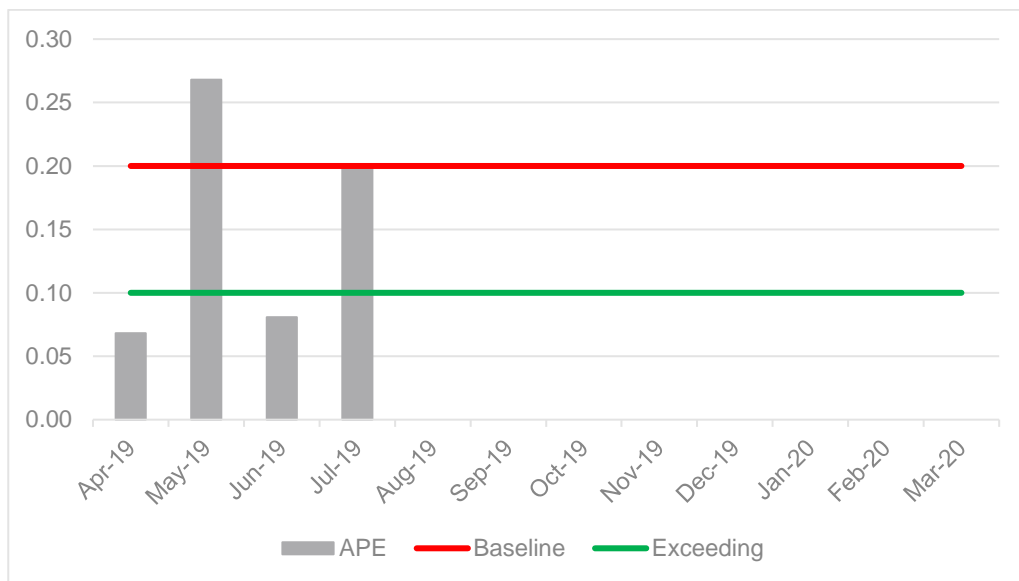


Figure 3: Monthly BSUoS forecasting performance

Supporting information

The forecast error for July 2019 was 20.1%.

The amount of wind generation experienced in July 2019 was lower than expected, which meant the constraint costs being lower than forecast. In addition, the lower than expected wind generation has led to Response and STOR costs being lower than forecast due to these services not being called on to manage the wind volatility as often as predicted.

RoCoF costs were lower than forecast, against seasonal expectations where the lower than expected wind generation resulted in higher than expected levels of inertia.

Notable achievements and events this month

Charging Futures

On 4th July we hosted a Charging Futures Forum for electricity network users. The forum gave an overview of the latest developments in strategic reform of electricity network charging and focussed on building the understanding of new parties that had not previously been actively involved in charging reform and giving them the tools to engage going forwards. 20% of attendees hadn't attended a forum previously.

The forum was organised at short notice following a request from the Chair of Charging Futures (Ofgem) and received an average rating from attendees of 7.1/10; slightly below our baseline set last year of 7.3/10. We anticipate that the next forum being organised for September will create better opportunities for attendees to contribute towards the reforms that they have come to expect from Charging Futures.

CACoP

Also in July, the Code Administrator Code of Practice (CACoP) hosted an industry engagement event. CACoP consists of representatives of all energy code administrators and is chaired this year by National Grid ESO. This year we have introduced a forward work plan to CACoP to give clearer direction on how it is improving how Code Administrators work.

At the event, we shared products that are being produced by CACoP currently, asked code users to share their challenges with navigating the codes, and what we can do to deliver a better service to them. This feedback is now being integrated in an updated forward work plan.

Power Park Best Practice Guide

We have been working with the Wind Advisory Group to produce a "Signal Best Practice Guide" for Power Park Modules (PPMs). We have now published the guide (<https://www.nationalgrideso.com/document/149181/download>). This guide is intended to improve the accuracy with which PPMs share data with the NGENO Electricity National Control Centre (ENCC) and inform the reader about the importance of sharing accurate signals for control room operations. The next steps are to continue to develop the Quality Standard document with the aim to publish this in March 2020.

Roles 3 & 4

Facilitating whole system outcomes and supporting competition in networks

Coordinate across system boundaries to deliver efficient network planning and development

Coordinate effectively to ensure efficient whole system operation and optimal use of resources

Facilitate timely, efficient and competitive network investments

Metric 11 – System access management

July 2019 Performance

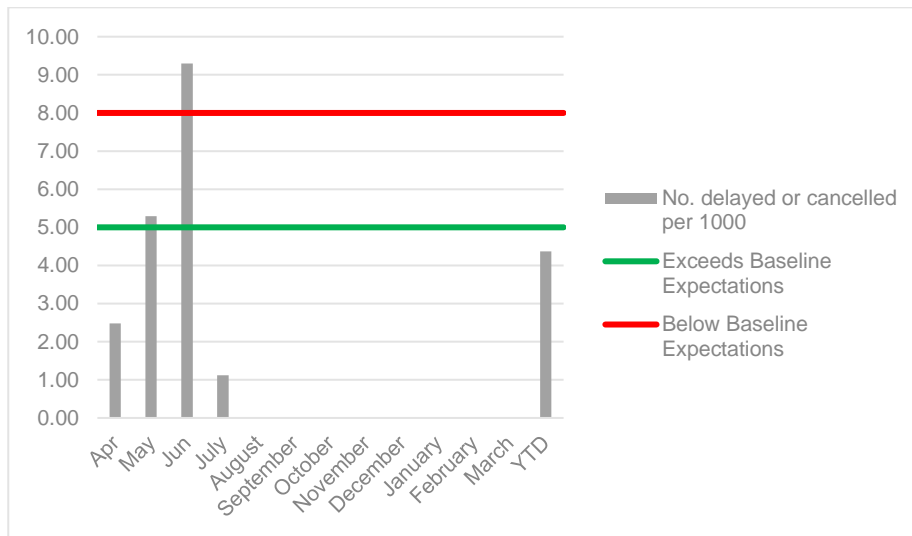


Figure 4: Number of outages delayed by > 1 hour, or cancelled, per 1000 outages

Supporting information

This month we exceeded the benchmark for this metric. We only cancelled one outage in the control phase. We cancelled this outage due to a faulted circuit, because if the outage had been released in conjunction with the fault, system constraints would have been significantly worsened.

Additional significant cost would have been incurred to manage the outage, therefore we took the decision to cancel it.

Performance benchmarks

Exceeds benchmark: Less than or equal to 5 per 1,000 outages

In line with benchmark: Between 5 and 8 per 1,000 outages

Below benchmark: More than 8 per 1,000 outages

Metric 13 – Connections agreement management

July 2019 Performance

Number of agreements that need updating	Number of agreements that need updating identified 9 months ago	Number of agreements updated within 9 months	Percentage of agreements updated within 9 months	Status
3	0	2	100%	●

Table 4: Connections agreement management performance

Performance benchmarks

2018-19 performance: = 86%.

Exceeds benchmark: >90% of agreements to be updated within nine months of notification.

In line with benchmark: 80-90% of agreements to be updated within nine months of notification.

Below benchmark: < 80% of agreements to be updated within nine months of notification.

Supporting information

Ensuring that connection agreements correctly reflect any changes to the transmission system benefits consumers by preventing unnecessary constraint costs.

This metric measures the number of connection agreements updated within 9 months of notification.

So far 3 agreements have been identified as requiring an update:

- one was completed in April 2019, within the 9-month timeframe.
- the second one was signed by customer in July, within the 9-month timeframe.
- the remaining one is in progress.

Further agreements are being checked and should a requirement to change the agreement be identified then this will be captured in the metric accordingly.

Metric 14 – Right first time connection offers

July 2019 Performance

Connections Offers	Results
Year to date number of connections offers	53
Year to date ESO related reoffers	7
Year to date percentage of Right First Time connections offers determined from ESO related reoffers	87%

Table 5: Connections re-offers data

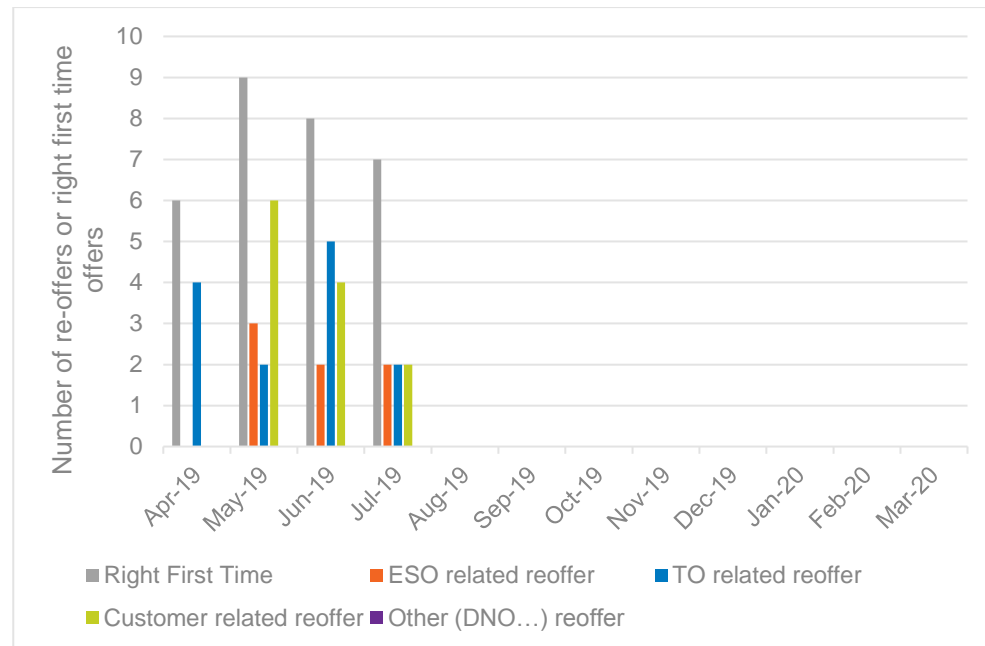


Figure 5: Connections offers monthly performance

Supporting information

The ESO was responsible for 2 re-offers in July – the first re-offer was to provide more clarity in the Construction Agreement and Appendices following post offer negotiations, the second re-offer was due to the minimum generation capacity being wrongly stated in the Appendix O, requiring a re-issue of the Construction Appendices.

Performance benchmarks

2018-19 performance: = 94%.

Exceeds benchmark: >95% of offers right first time.

In line with benchmark: 95% of offers right first time.

Below benchmark: < 95% of offers right first time.

Notable achievements and events this month

Stability Pathfinder

Stability is the ability of the system to withstand a network disturbance and continue operating normally. Traditionally there has been a large number of synchronous generators on the system, which has helped to maintain stability. As we move towards more renewable generation on the system, we need to replace some of the helpful properties of synchronous generators.

On 19th July we published a Request for Information pack (<https://www.nationalgrideso.com/document/148341/download>). In this, we outlined our current thinking and asked for stakeholder input to make it better. The Request for Information describes the process of engaging with market providers to understand what is possible and develop plans for the next stages of tendering that are intended to follow on. We are running webinars in August to follow this up.

Unlocking the Road to Zero Carbon

The Scotland Outage Planning and Customer Connections teams from Networks, ESO have been working together to release capacity to renewable wind generation during electricity transmission outages. We investigated options to minimise the impact of transmission system outages on windfarms. We re-assessed the capability of the network, applying operational standards and using short term ratings enhancements to release capacity. Feasibility studies were completed and modifications made to a generator inter-trip system to provide further capacity. Connection agreements were modified and a novel arrangement, where capacity was transferred from other generation at the same grid supply point, resulted in a further increase in capacity for the windfarms. Our innovative ways of working have saved our customers over £20m to date, whilst facilitating the ESO ambition to transition to a low carbon network by releasing around 300,000 MWh of renewable energy (enough to supply 70,000 homes for a year).

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