

# CMP405 - TNUoS Locational Demand Signals for Storage

**16<sup>th</sup> February 2023**

**Online Meeting via Teams**



# WELCOME







# **Actions Overview**

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# ESO data analysis

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# Storage Behaviour



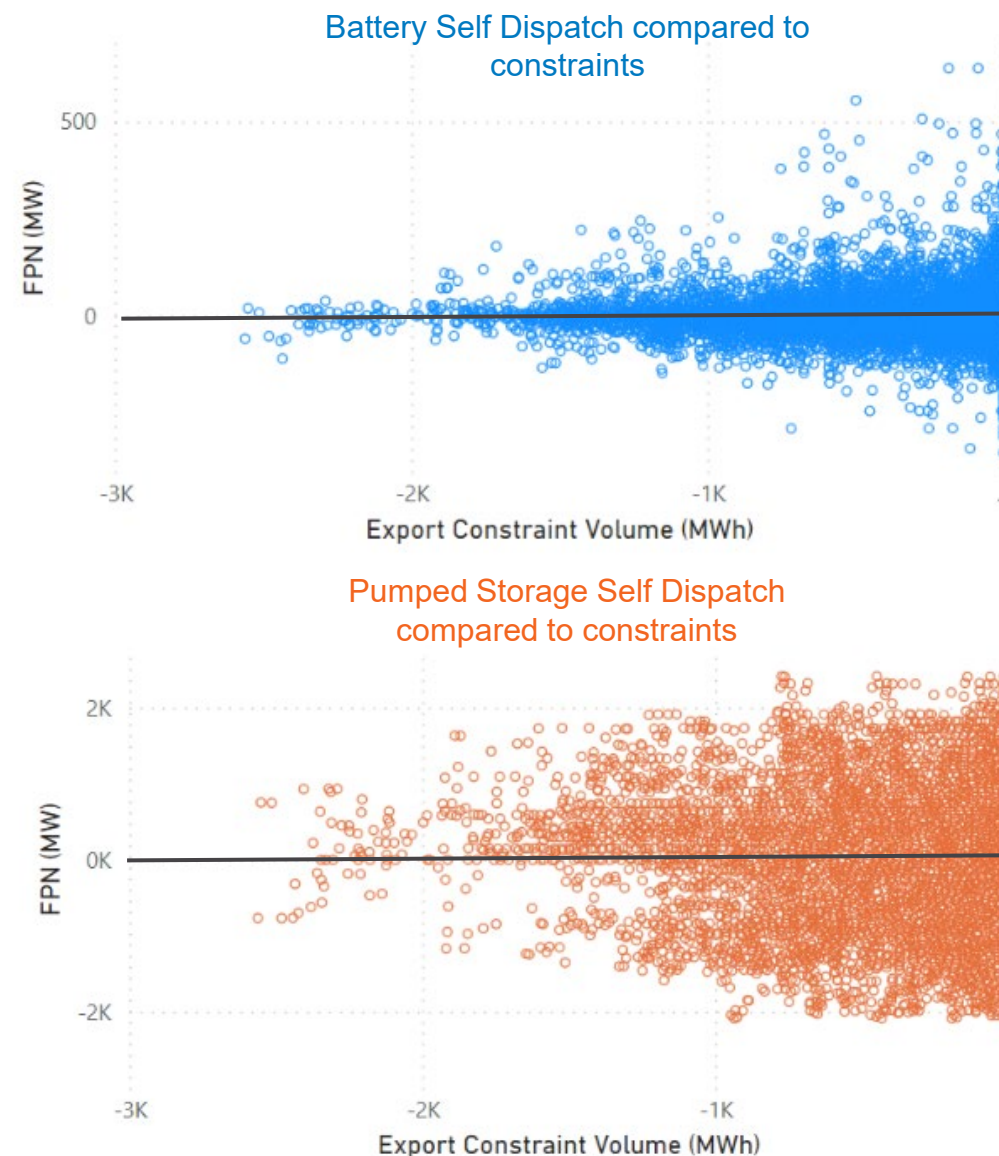


# Self Dispatch Behaviour

**The self dispatch behaviour (FPN) for storage units does not directly support or exacerbate constraint conditions.**

For **Battery units** there is a clear reduction in the magnitude of their FPNs as required export constraint volumes increase in a settlement period. This means units are typically available to support constraint management but do not directly alleviate the condition either.

For **Pumped Storage** units there is not a strong correlation between constraint volumes and FPNs indicating that their self dispatch behaviour will both exacerbate or alleviate constraints dependant on market conditions.



# Bid Acceptance Data

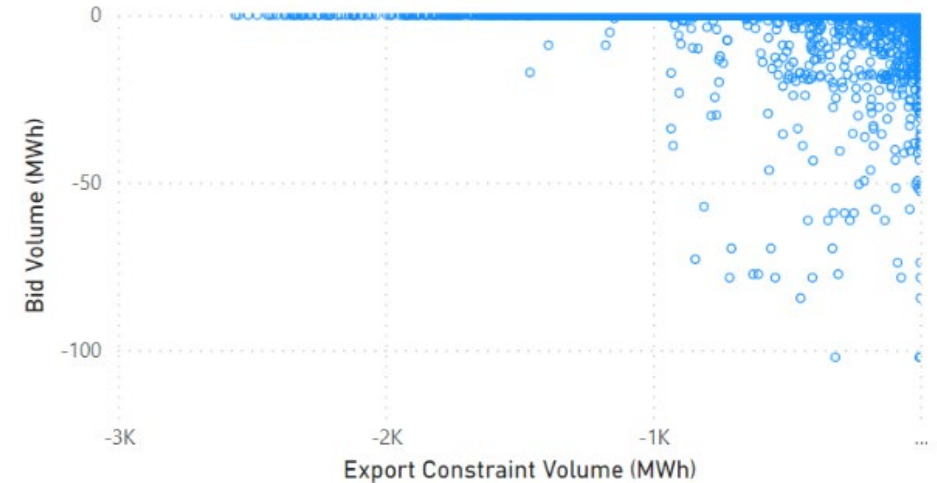
## Battery units and pumped storage units are bid similarly irrespective of constraint conditions

For **Battery units** there is a slight reduction in the utilisation of these units as constraint volumes required increase significantly. This may be due to the duration of storage capacity becoming less useful the more likely the constraint is to persist.

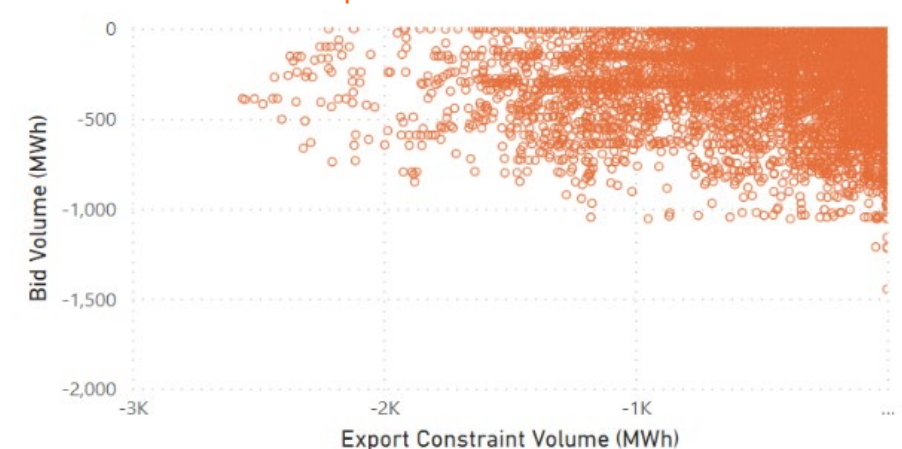
For **Pumped Storage** there is a consistent utilisation as the volume of actions required to manage constraint conditions increases. However, there are limited examples of very high constraint volume requirements.



Battery Bid Acceptance compared to constraints



Pumped Storage Bid Acceptance compared to constraints



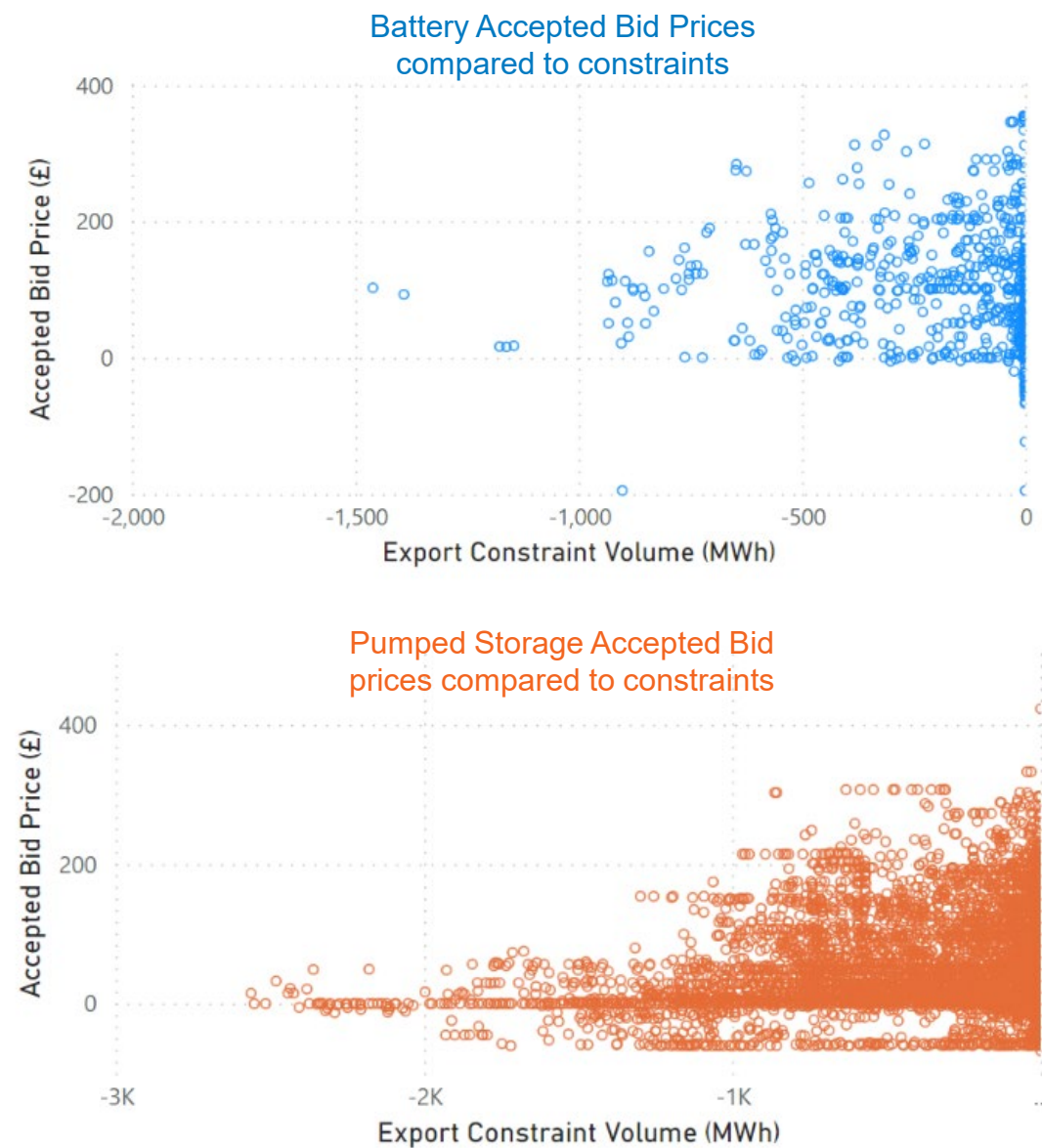
# Bid Pricing Behaviour

## Accepted Bid prices are lower during a constraint period

As the volume of constraint requirements increase so there is a slight decrease in the accepted offer prices accepted on **Battery** units however this is not a strong correlation.

As the volume of constraint requirements increase so there is a strong correlation in lower accepted bid prices for **Pumped Storage** units.

In both of these instances this is likely to be reflective of requirements to purchase energy further down the bid stack as the constraint volume is higher and the likely lower market prices during a higher wind period which is a principle driver of constraint volumes.





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## **Overall storage units typically offer an option to resolve constraint conditions but do not self dispatch to resolve constraints**

Given the short term duration of storage capability for batteries a constraint period is likely to last longer than the state of charge would support potentially leading to under utilisation compared with pumped storage however given the limitations of this analysis it may also represent their installed location.

Neither unit category inherently self dispatches in a method that supports constraint resolution directly but there is no evidence from this dataset of them dispatching in a method that exacerbates constraint conditions.

Pricing behaviour indicates that as constraint periods involve greater actions so the accepted bid price reduces. However, this is more distinct in pumped storage than battery units.

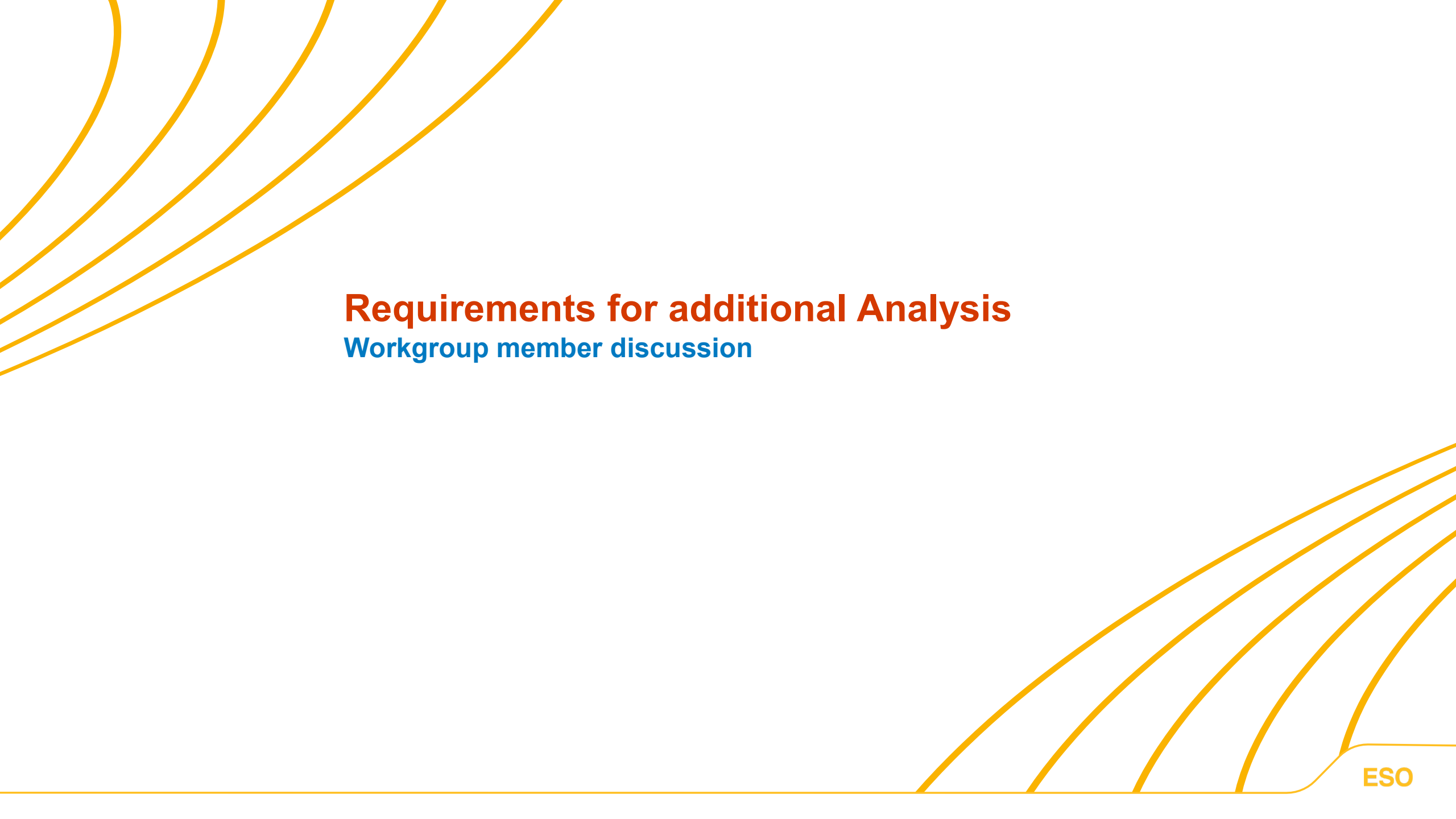
## Data Limitations

The data set covers a 1 year period, longer time series could be provided but given battery storage installation rates this may not be consistent with current trends/patterns.

This data set makes use of the total volume of constraint actions taken only by settlement period. It does not consider if the constraint is applicable to the BM Unit or if the actions taken are directly to resolve the constraint period.

This is intentional to include a comprehensive overview and allow for anonymous constraint data to be shared given that we do not currently publish specific constraint variations or BMUs which can resolve them.





# Requirements for additional Analysis

## Workgroup member discussion



## **AOB & Next Steps**

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