

Gas System  
Operator

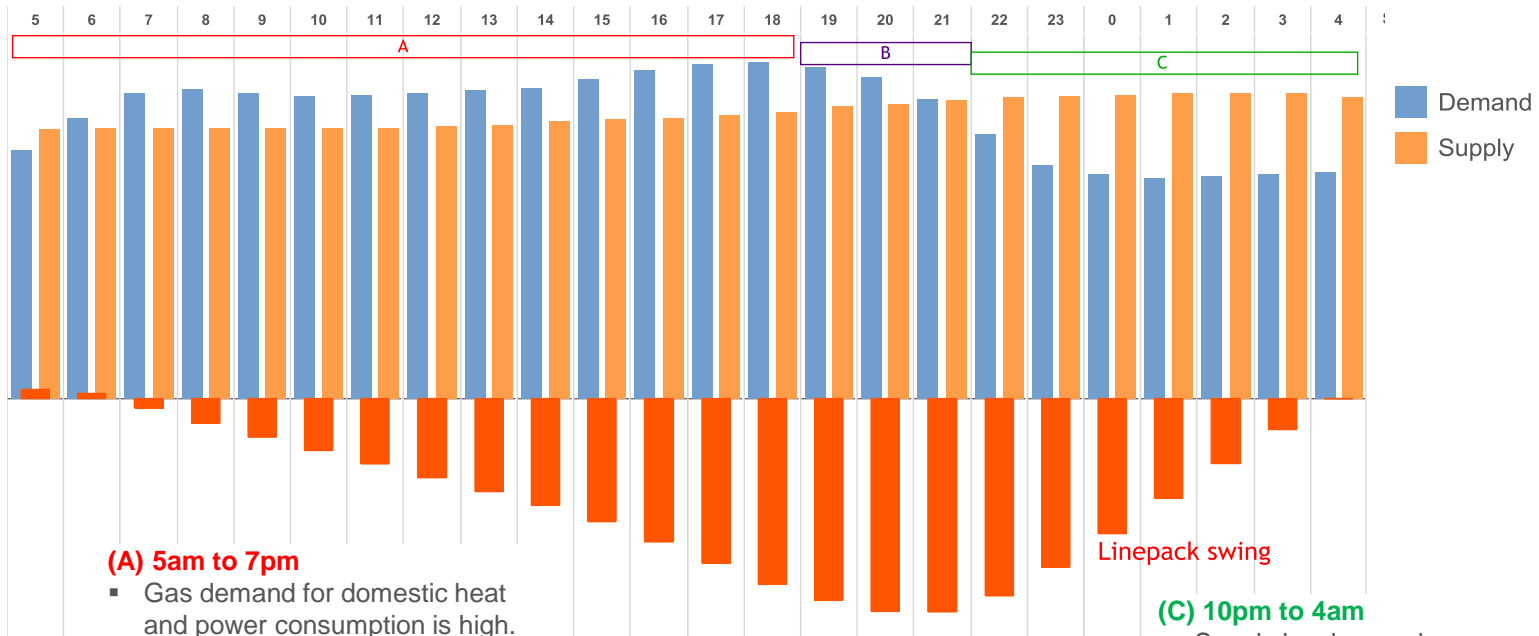
# GFOP within-day behaviour study

Changing within-day  
behaviour and linepack  
swing

nationalgrid



## Between 6am and 10pm, demand is high and supply is below average. This imbalance leads to a swing in linepack.



### (A) 5am to 7pm

- Gas demand for domestic heat and power consumption is high.
- Supply is slightly lower than average.

This reduces linepack.

### (B) 7pm to 10pm

- Supply begins to pick up at 7pm.
- Domestic demand declines.

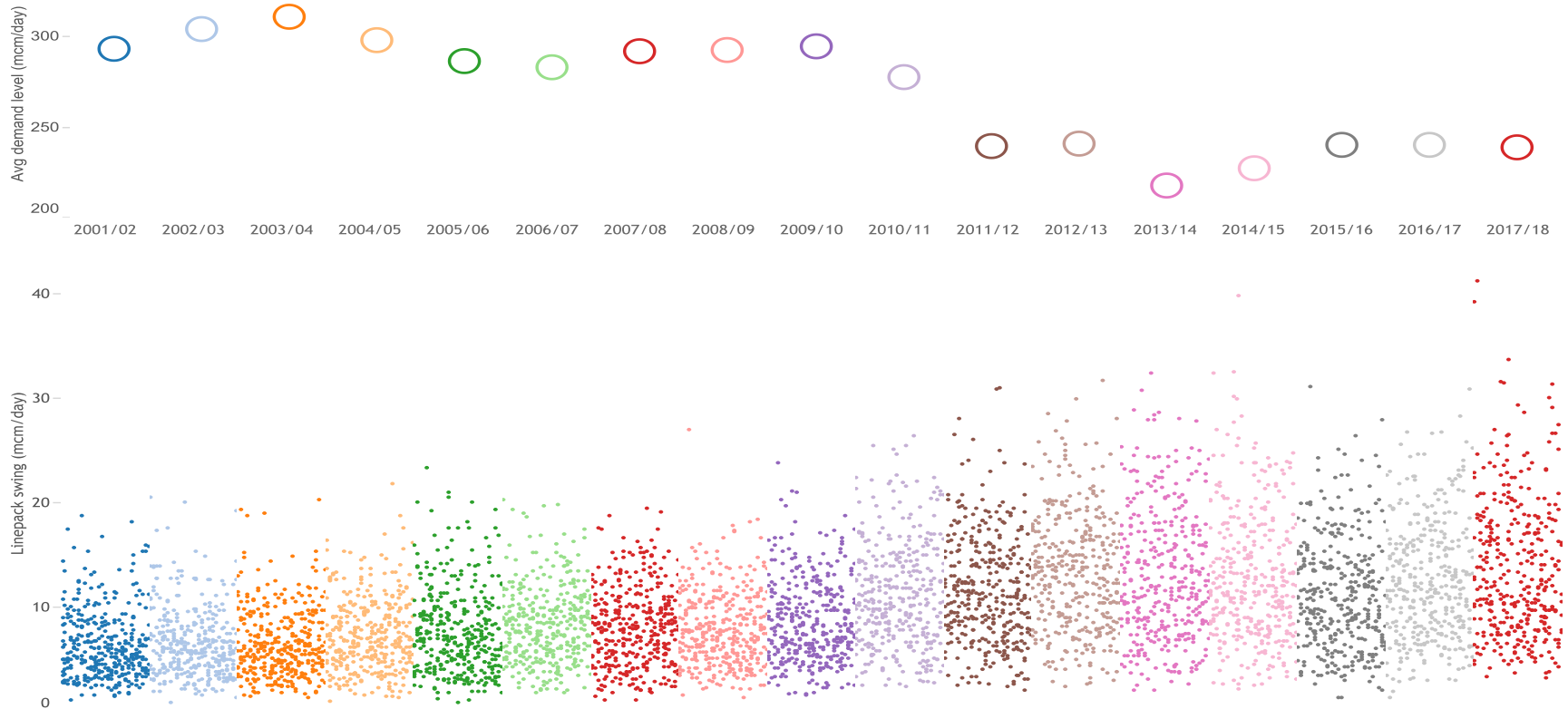
This reduces the rate of linepack reduction.

### (C) 10pm to 4am

- Supply levels are above average.
- Demand is significantly reduced overnight.

This drives linepack replenishment.

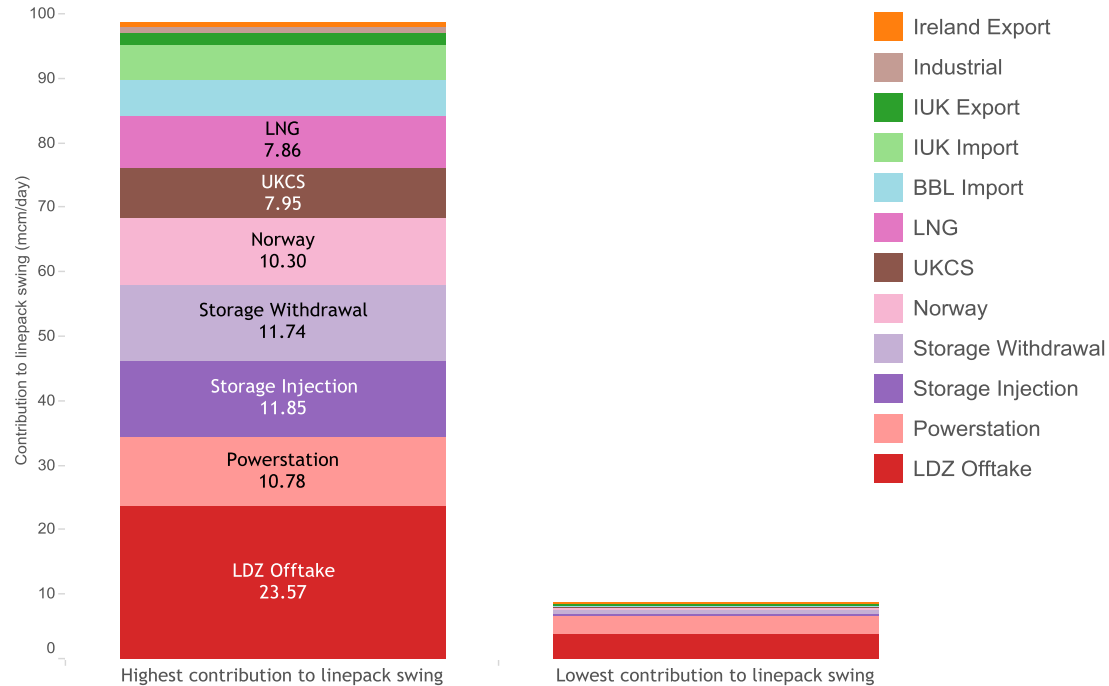
**Over the last two decades linepack swing has increased despite gas demand decreasing. This shows we now accommodate much wider imbalances in supply and demand during a gas day.**



# How gas is brought on or off the network is influenced by many factors. A source's contribution to linepack swing can therefore vary significantly.

How these contributions align determines the level of swing we see on a gas day.

Highest and lowest contribution to linepack swing by source



Data based on the highest 14 linepack swing days in 2017/18, where swing ranged from 21mcm/day to 41mcm/day

## National Grid Contribution to swing calculation:

For demand – if demand is greater than the flat 1/24<sup>th</sup> average demand rate, it is having a negative contribution to linepack (causing it to decline)

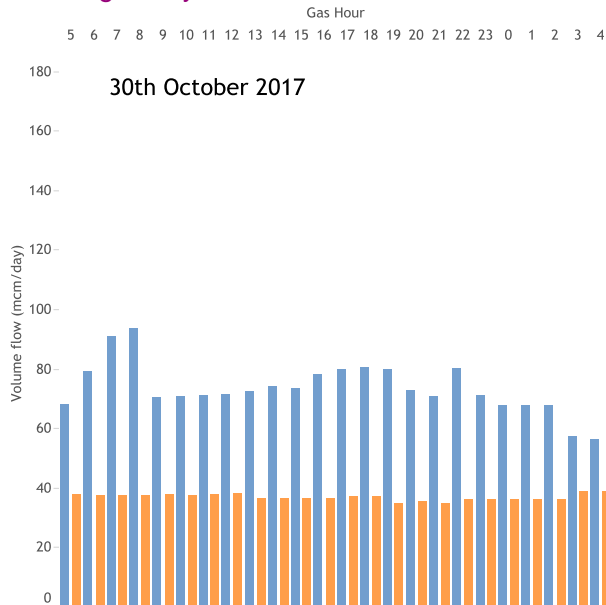
For supply – if supply is less than the flat average supply rate, it is having a negative contribution to linepack (causing it to decline)

# Regionally, we are seeing much greater variation in how gas is brought on and off the network.

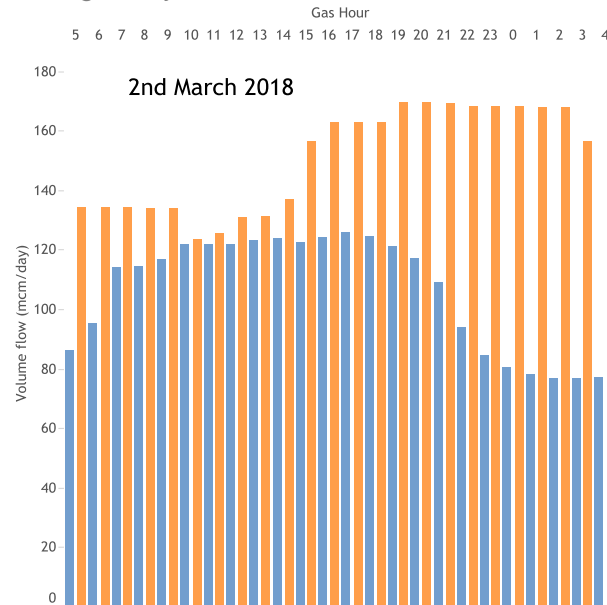
Managing larger local imbalances in supply and demand requires more system management actions (whether physical or market), which in turn can impact your operations.

Examples of varying hourly supply/demand flows in the south east region (in 2017/18 winter)

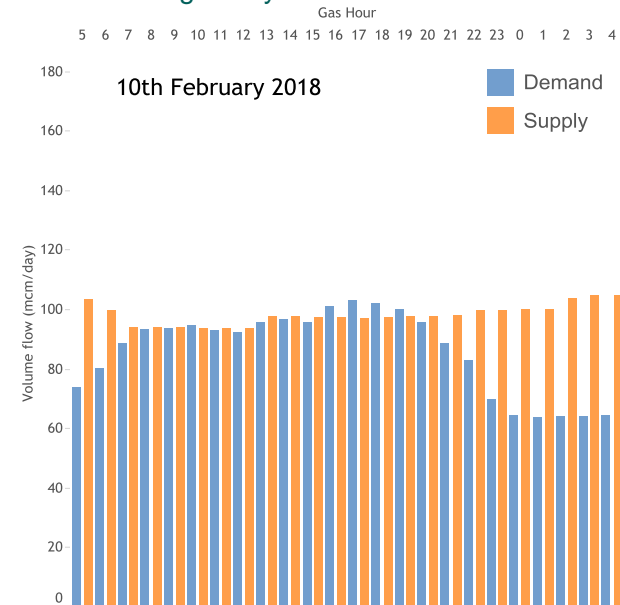
(A) Demand greater than supply throughout the gas day



(B) Supply greater than demand throughout the gas day



(C) Supply and demand in line until the last third of the gas day



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