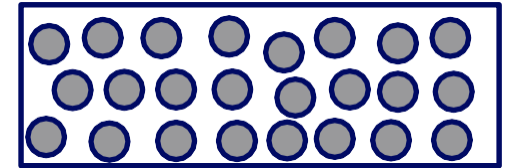
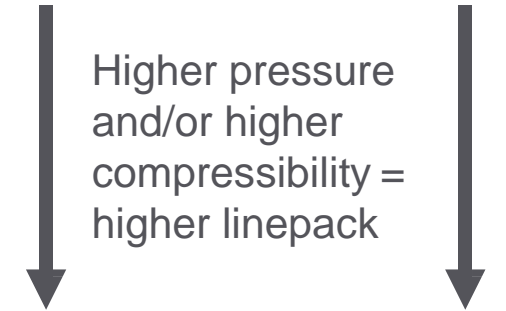
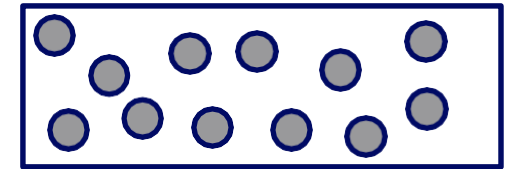
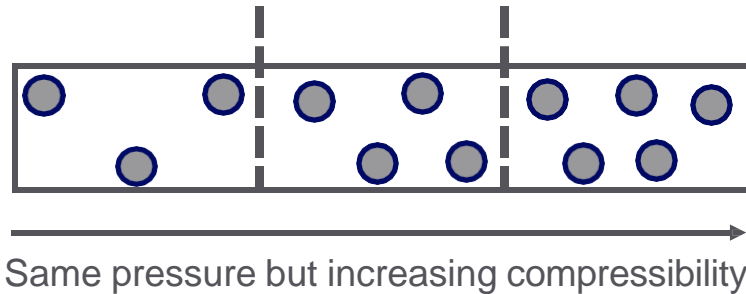


What is Linepack?

Linepack describes the total of **volume of gas** contained within the system. The methodology for calculating actual linepack is set out in our **Transporters License** and is publicly available.

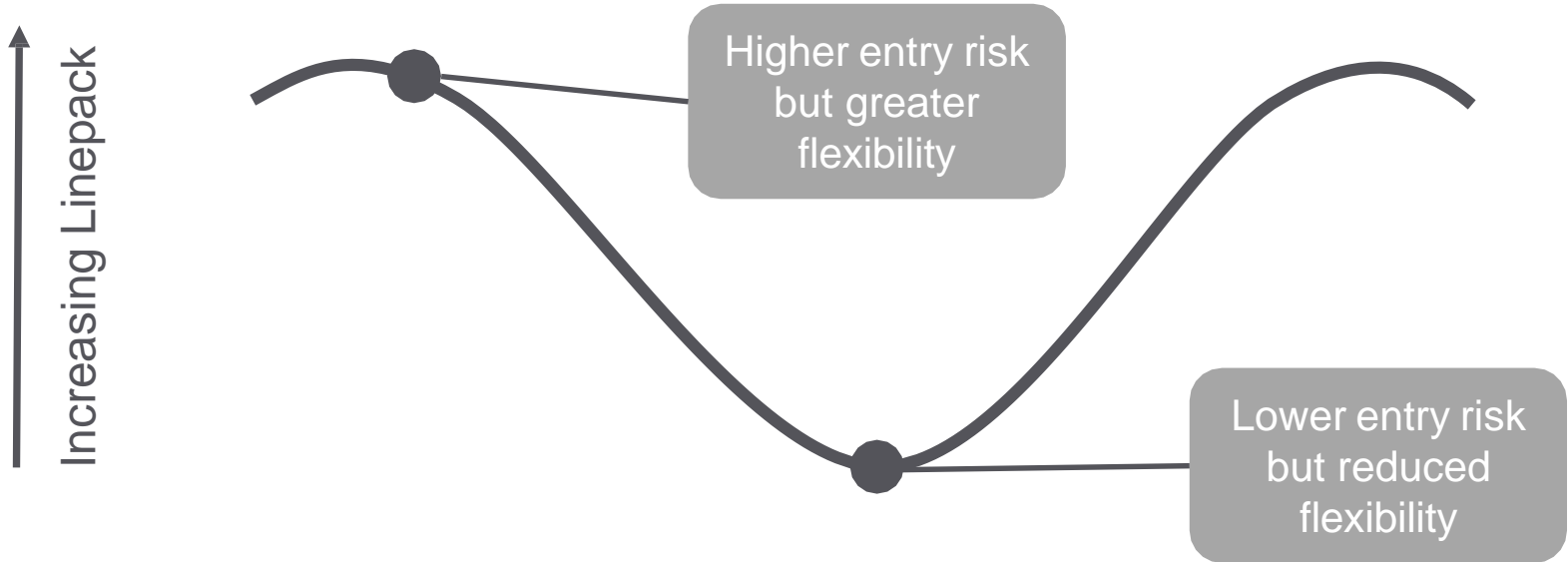
Linepack considers only volume and is measured in **millions of cubic meters**, which is the volume the gas would cover at standard atmospheric pressure.



More molecules in the same space

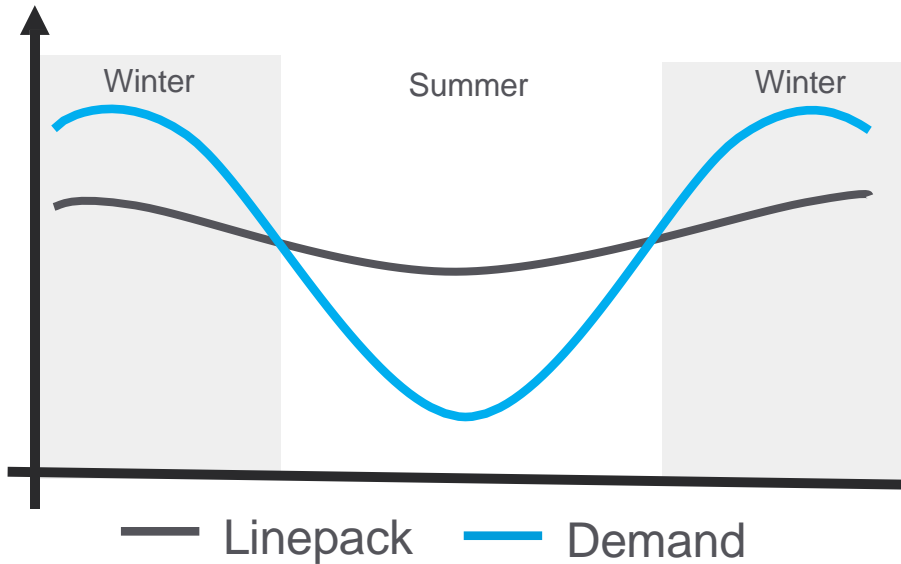
Physical considerations for Linepack

As linepack is analogous to average pressure across the network, it is key to the physical operation of the network.



Seasonal Variation in Linepack

Lower in the summer, higher in the winter

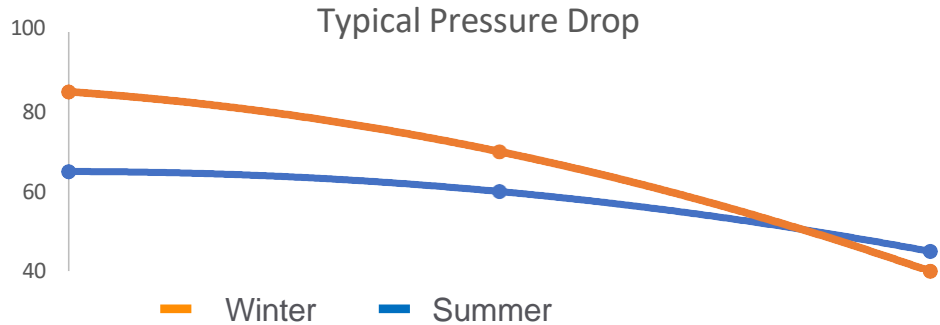


With winter comes:

- Higher demands
- Changing diurnal demand profiles
- Increased pressure drops
- Larger daily linepack swings

To protect exit pressures we must maximise flexibility of the NTS

Summer Linepack



Lower demands result in:

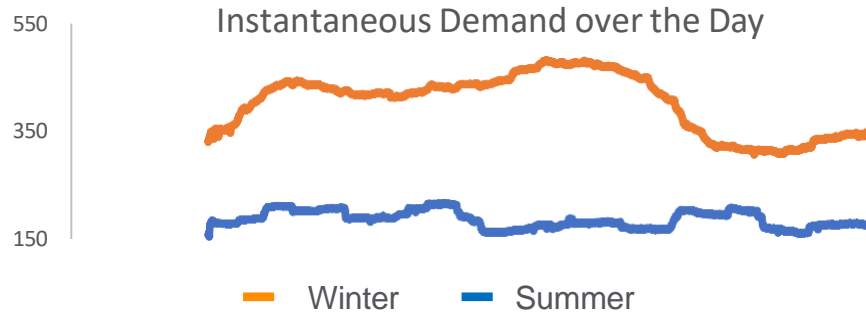
- Lower pressure drops
- Lower natural flow rates
- Compression to manage high entry flows

Context?

Maximum flow is achieved when one end of a pipe is at its max pressure and the other end is at its minimum.

The range of maximum to minimum pressures can be as high as 45 bar in the winter but only around 20 bar in the summer.

Winter Linepack



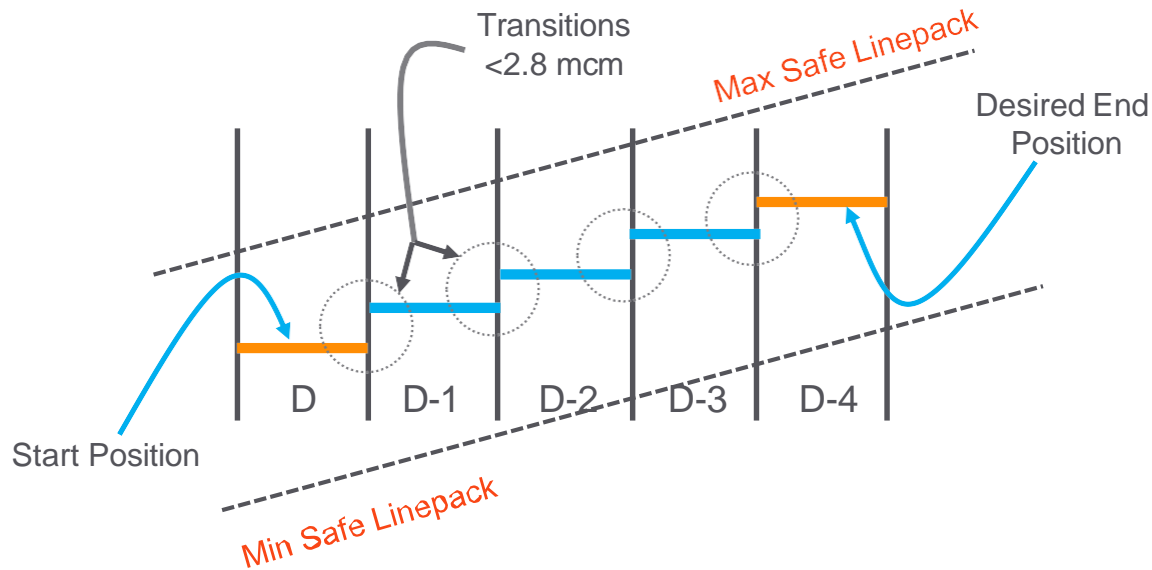
High demands and strong diurnal profile results in:

- Large pressure drops
- Large linepack swings
- Lower extremity pressure due to frictional losses
- Requirement to maintain higher pressures in the middle of the network

Context?

The differential between supply and demand at tea time on a cold winters can result in as much as 5 mcm being lost from linepack every hour. This is enough gas to supply 4000 households for a year!

Managing the transition



- Requires PCLP to be different from OLP
- Avoid sharp changes within an 'efficiency' zone
- Large transitions could be required if stock level has drifted over a period of days
- Balance safety, efficiency and minimise entry into market

Transparency

Trading behaviour

Very simply when we **buy gas** we need **more linepack**, when we **sell gas** we need **less linepack**. This is normally because we are **transitioning** between desired linepack regions (for efficiency) or need to arrest a steady increase or decline in linepack.

But how much more/less gas do you need?

We don't publish 'target' as to minimise our influence in the market but....

- Trends on **OLP, PLCP and Demand** can give an indication
- Just because PCLP is largely different to OLP doesn't indicate a trade

System Status		
	Today	Tomorrow
	21/11/2018	22/11/2018
‣ GDW	NONE	
‣ MN Trigger	451.00	
Forecast		Graph
Demand (mscm)		
‣ Forecast Demand	316.3 (10:08)	
‣ Seasonal Normal Demand	256.0	257.0
Supply (mscm)		
‣ Forecast Flow	336.8 (10:00)	
‣ Physical Flow	323.3 (10:00)	
Linepack (mscm)		
‣ PCLP	377.6 (10:08)	
Long Term Demand		
System Entry Point Flow Data		
Linepack (mscm)		Graph
‣ Opening		21/11/2018
		357.2