Transmission Workgroup
2nd March 2017

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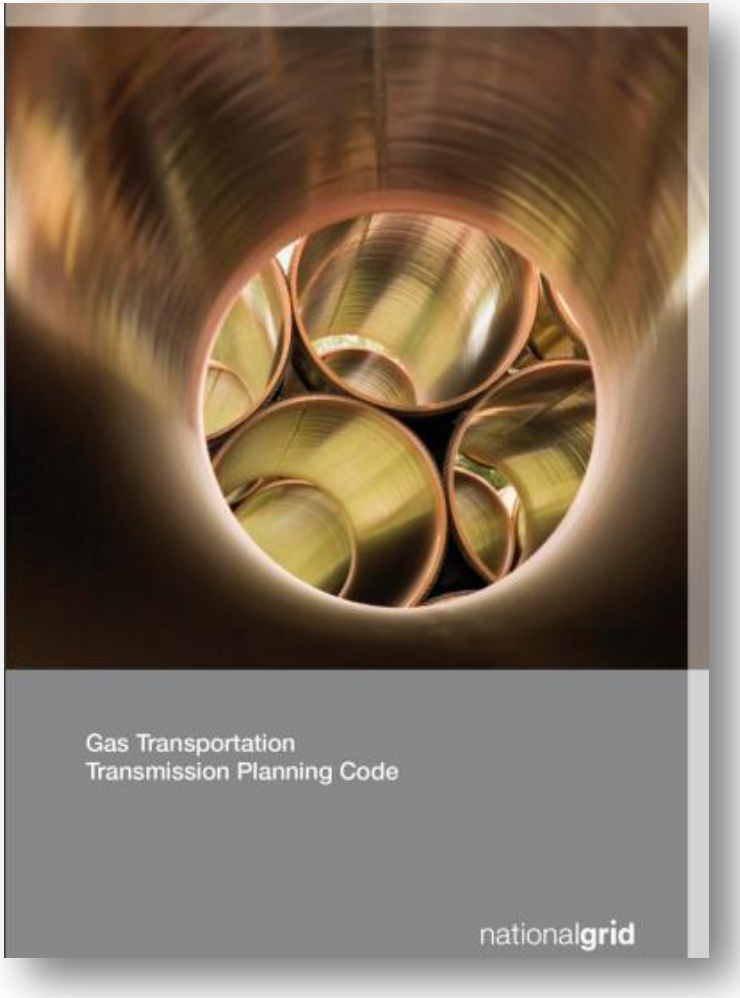
Gas Planning & Operating Standard Project

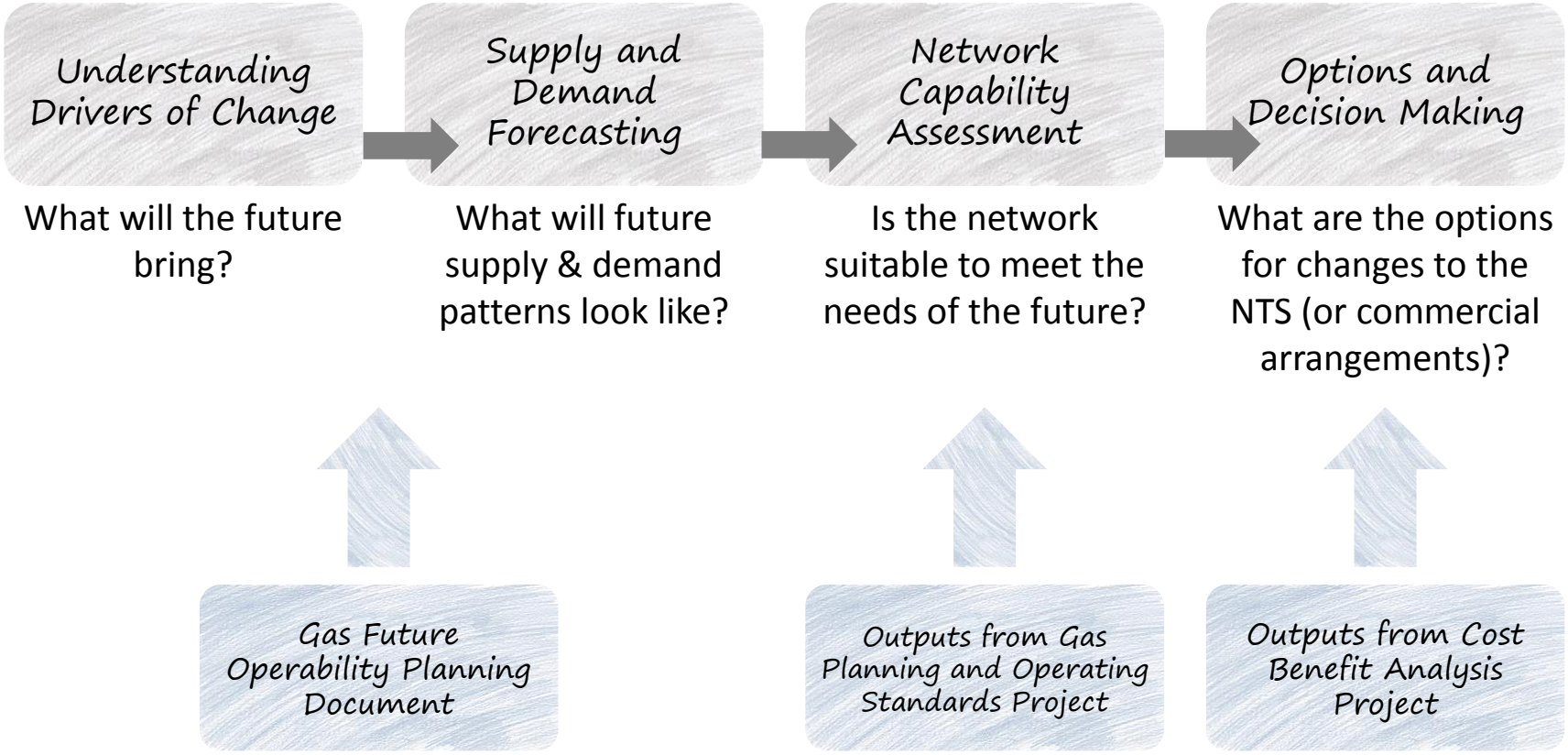
An Overview

- To deliver further clarification around our existing Pipeline Security Standard & further align our planning and operational approaches to ensure suitability for future network operation.
- Through this, develop a clearer set of rules, that we can articulate externally, under which we plan and operate the network



Where does this link into our planning processes?

A high level description of our network capability assessment process



Gas Planning and Operating Standards Project – Motivation and Aims

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- To deliver further clarification around our existing Pipeline Security Standard
- Required due to the evolving use of the NTS
  - Reduced bulk transportation, increased use as within – day flexible storage
- Ensure that our planning processes continue to take into account the operational conditions experienced by our control room
- Be able to articulate our planning processes more clearly through Transmission Planning Code document

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Gas Planning and Operating Standards Project

What does our current security standard contain?

Standard Special Condition A9. Pipe-Line System Security Standard

The peak aggregate daily demand which is likely to be exceeded (whether on one or more days) only in 1 year out of 20 years	Including, but not limited to, within day gas flow variations on that day	Taking account of such operational measures as are available to the licensee
Is "peak" the only demand level we should be considering, given the changing use of the NTS?	What sources of within day variation should we consider?	Do we need to update how we treat linepack management in planning processes?
How does this compare to what the control room actually experience?	How should we treat uncertainties around within day variation?	Can we create clearer links to Operating Margins Requirements?
What supply patterns should we be considering?	Is the existing 2% flow margin still fit for purpose?	

Some of the questions that we asked ourselves

Gas Planning and Operating Standards Project

What else should we be considering ?

Not specified in the Pipe-Line System Security Standard, but described in TPC

The maximum and minimum limits within which we should operate the NTS

Asset Availability and Reliability

Some of the questions that we asked ourselves

What limits do our customers need us to operate within?

Can we improve the way that we demonstrate System Security and Efficient Operation?

How should we account for operational processes to change minimum pressures in planning processes?

What should we assume with regard to asset availability and how should this change across planning horizons?

How should we treat uncertainties around asset reliability?

Gas Planning and Operating Standards Project - Work to date

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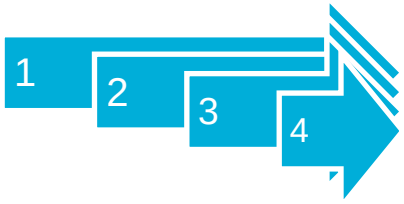
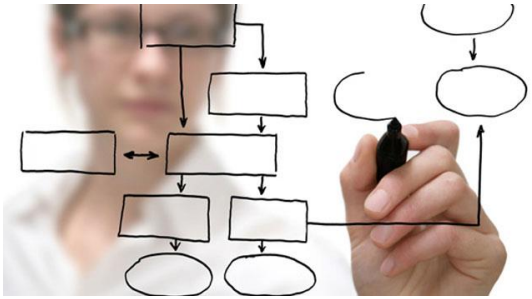
Identification of workstreams



Historical data gathering and analysis undertaken

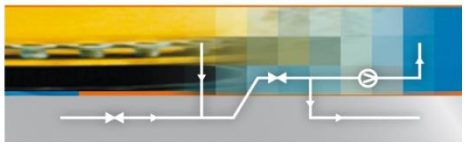
Engagement with DNOs

Methodologies Developed



Network analysis completed and proposals made

SIMONE 6.0
SOFTWARE
Simulation and Optimization on Networks



Wider Industry Engagement

Gas Planning and Operating Standards Project – Key Proposals

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- Improved means of ensuring resilience for uncertainties (within day gas flow variations & asset reliability?

2% National Flow Margin

Locational Pressure cover at systems extremities

- Covering for supply losses, forecast demand turn-up, compressor trips
- Defined methodologies for calculation
- Can be applied consistently across time horizons
- Clear link to Operating Margins

Gas Planning and Operating Standards Project – Key Proposals

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- Inclusion of additional minimum limits (System Security & Efficient Operation)

Both Assured Pressures and appropriate lower pressures, linked to LDZ demand, for DNs to be used as standard in planning processes

- Consideration of a wider range of supply and demand patterns

Network capability (and investment options) to be assessed against a range of probable supply and demand patterns (up to levels specified in current Pipe-Line System Security Standard)

Take probability into account when undertaking cost benefit analysis of investment options

Gas Planning and Operating Standards Project – Key Proposals

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- Consideration of a wider range of linepack levels

Planning processes to consider a range of opening national linepack levels to assess future linepack management requirements

- Inclusion of supply profiling, in addition to current assumptions

We do not currently include profiled supplies, as a standard approach, in our planning processes

Planning processes to consider the impact of supply driven linepack depletion (Supply profiling) as well as demand driven linepack depletion

Gas Planning and Operating Standards Project – Key Proposals

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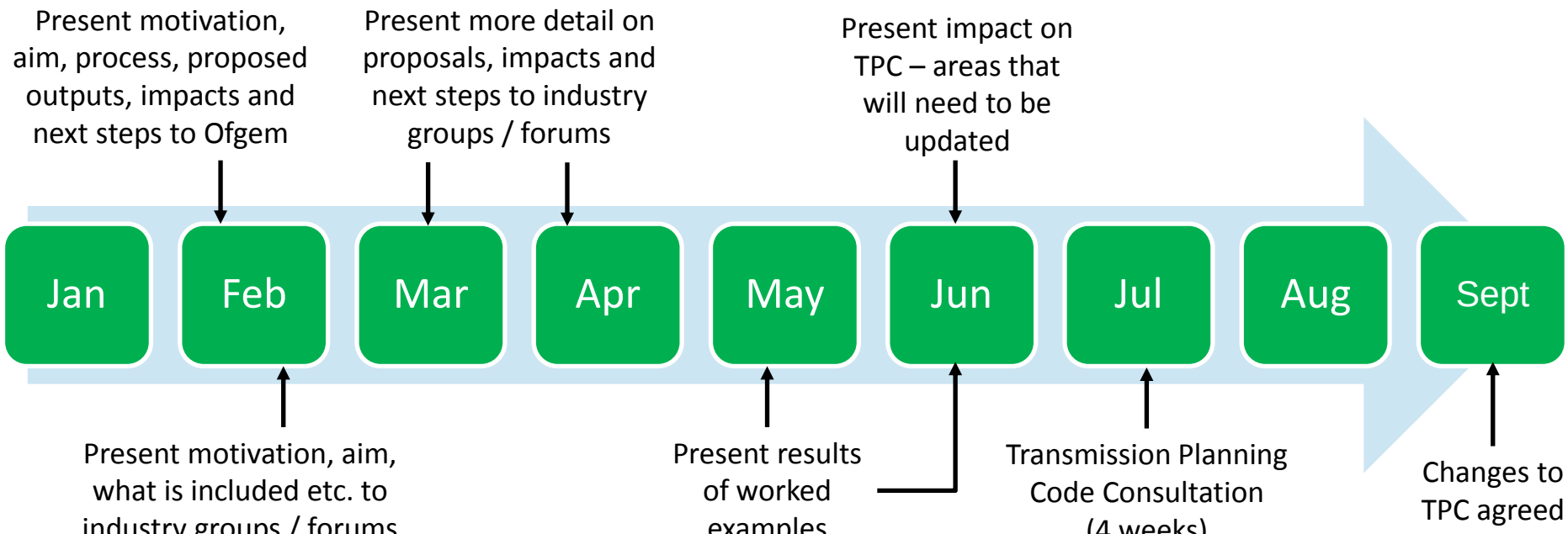
- Further details on the Proposals can be found in the Appendix slides

Gas Planning and Operating Standards Project – Next Steps



Develop worked examples

- Asset Investment
- Capacity Release
- Operating Margins

Industry Forums

- Transmission Workgroup
- Distribution Workgroup
- Operational Forum
- Storage Operators Group
- DN / NTS Liaison Meetings

Operational Forum
23rd February 2017

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Appendix 1 - Gas Planning and Operating Standards Project - Proposals

Gas Planning and Operating Standards Project - Proposals

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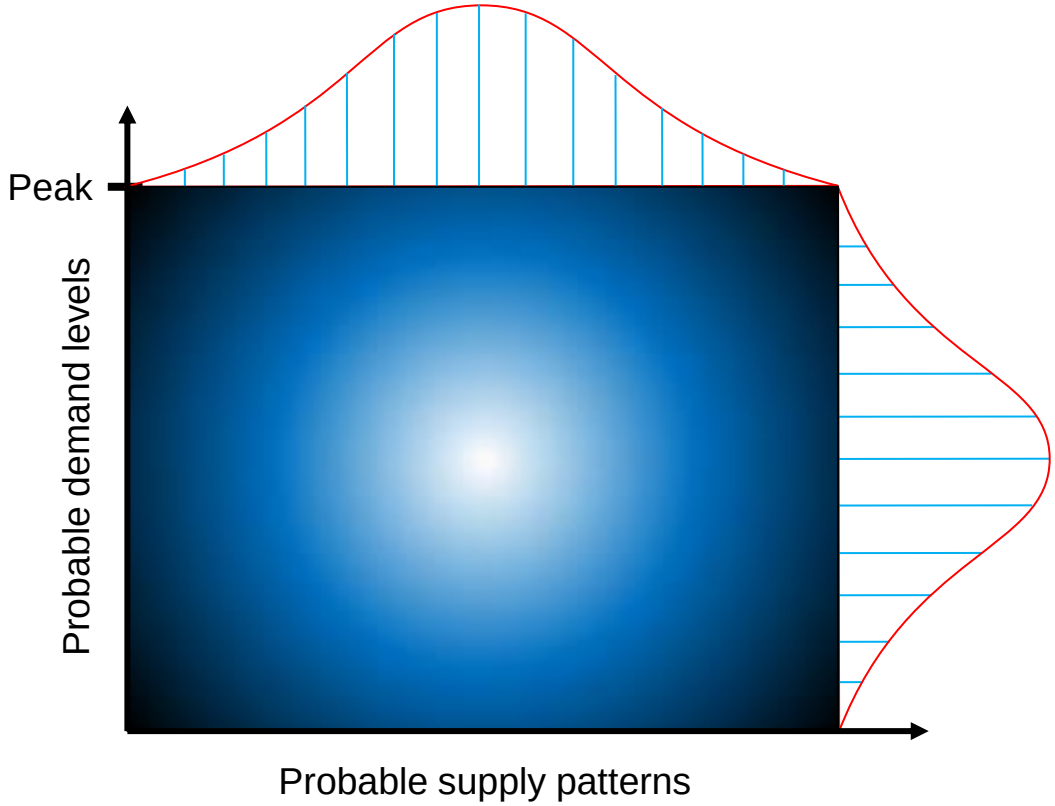
The peak aggregate daily demand which is likely to be exceeded (whether on one or more days) only in 1 year out of 20 years

Is "peak" the only demand level we should be considering, given the changing use of the NTS?

How does this compare to what the control room actually experience?

What supply patterns should we be considering?



Assess network capability (and investment options) against a range of probable supply and demand patterns (up to peak levels)

Take probability into account when undertaking cost benefit analysis of investment options

Gas Planning and Operating Standards Project - Proposals

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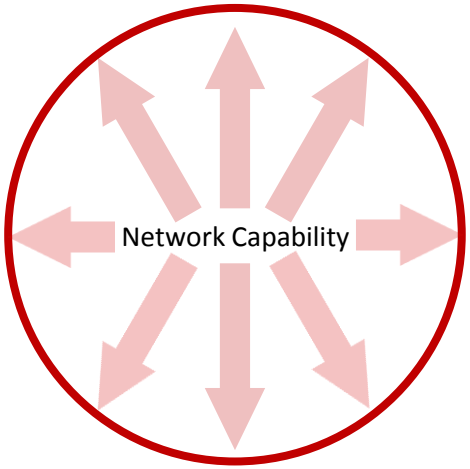
The maximum and minimum limits within which we should operate the NTS

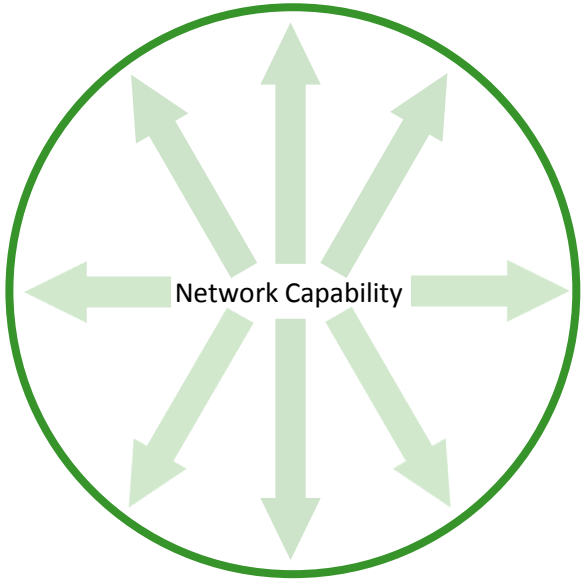
What limits do our customers need us to operate within?

Can we improve the way that we demonstrate System Security and Efficient Operation?

How should we account for operational processes to change minimum pressures in planning processes?



Assess Network Capability using Assured Offtake Pressures (System Security)



… and appropriate lower levels of pressure depending on demand levels (efficient operation)

Discussions on these lower levels of pressure started with DNOs

Gas Planning and Operating Standards Project - Proposals

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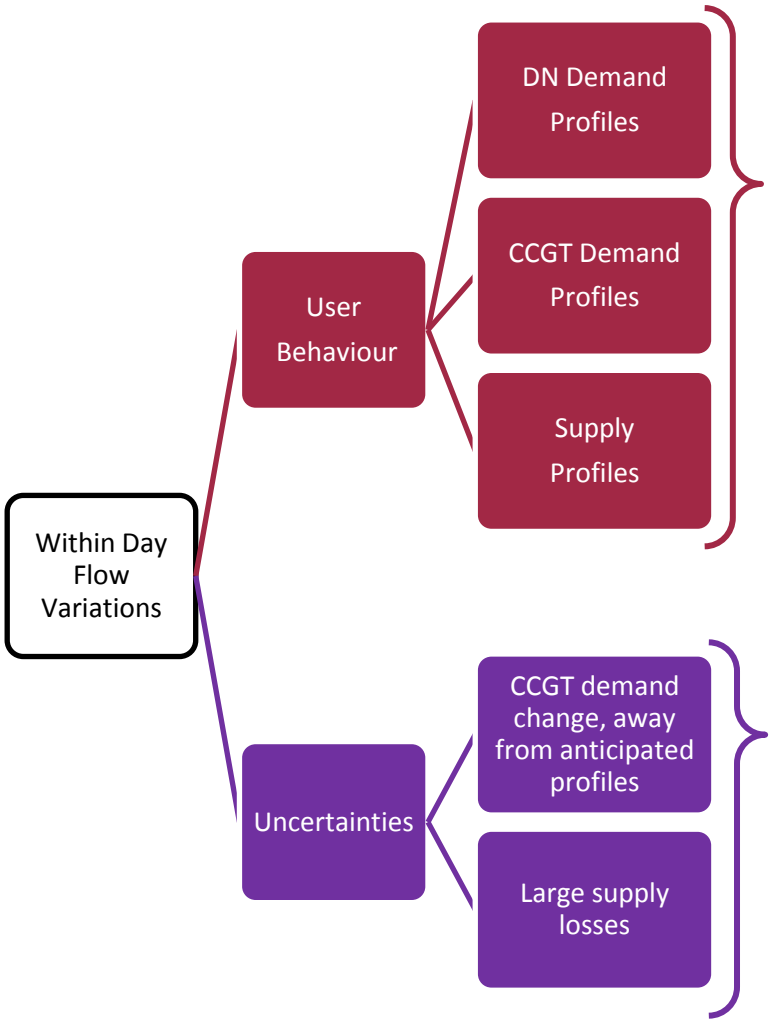
Including, but not limited to, within day gas flow variations on that day

What sources of within day variation should we consider?

How should we treat uncertainties around within day variation?

Is the existing 2% flow margin still fit for purpose?



Proposed that these are simulated explicitly in our network capability assessments

We do not currently include profiled supplies, as a standard approach, in our planning processes

Proposed that these are simulated implicitly in our through pressure covers for each uncertainty

This removes the need for Flow Margin and hence improves consistency across planning horizons

Methodologies determined for calculating magnitude of uncertainty and associated pressure covers

There is also a clearer link to Operating Margins

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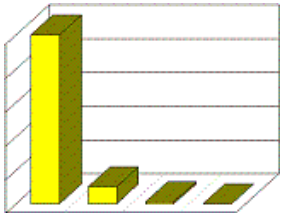
Including, but not limited to, within day gas flow variations on that day

What sources of within day variation should we consider?

What magnitude of within day variation should we plan for?

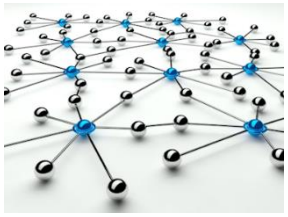
How should we treat uncertainties around within day variation?

Calculation of pressure cover…….



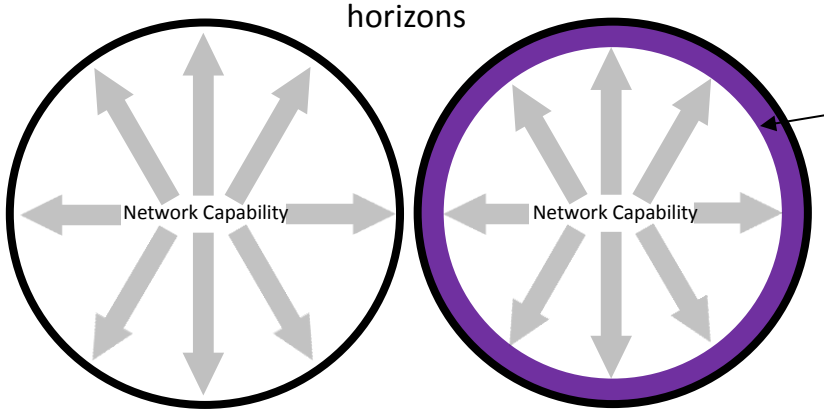
Uncertainties identified

Methodologies for determining magnitude and duration developed



Network analysis to calculate pressure cover undertaken

Consistent application of pressure covers in planning and operating time horizons



Without Pressure Cover for uncertainties

With Pressure Cover for uncertainties around within day variation?

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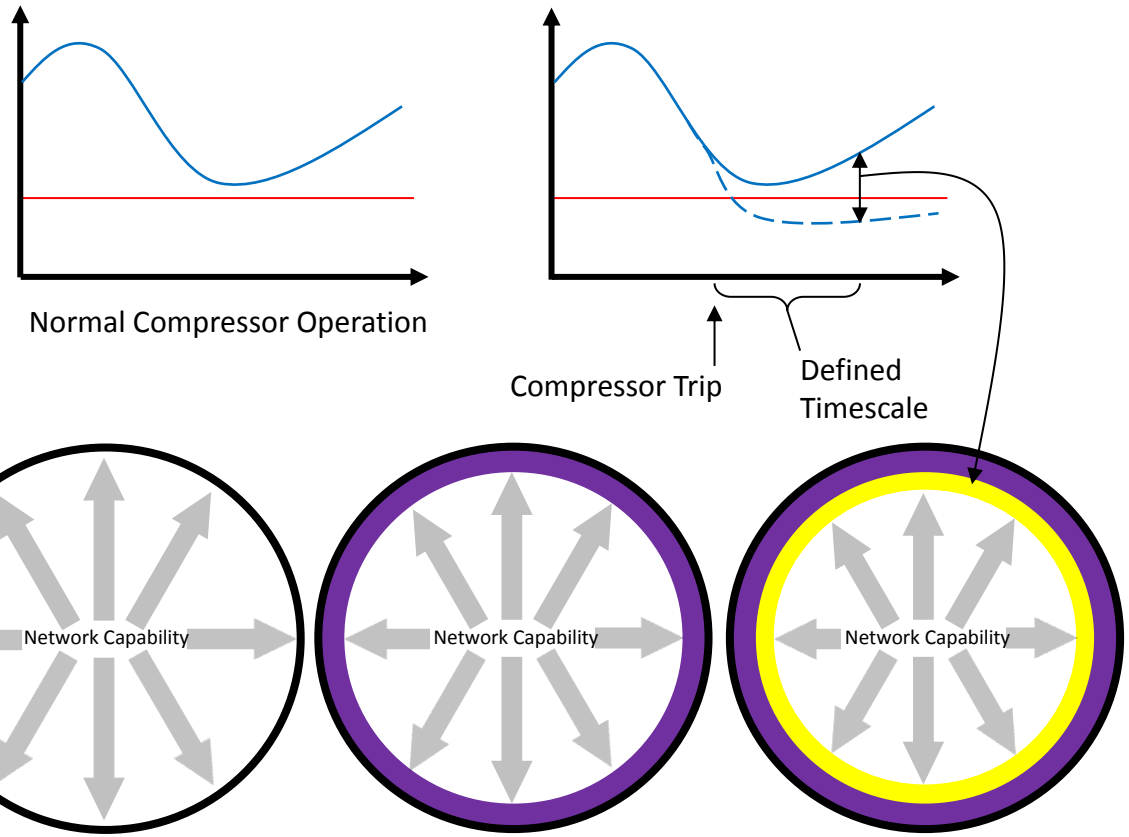
Asset Availability and Reliability

What should we assume with regard to asset availability & how should this change across planning horizons?

How should we treat uncertainties around asset reliability?

Pressure cover to also provide resilience for compressor trips…



Without Pressure Cover for uncertainties

With Pressure Cover for uncertainties around within day variation

With Pressure Cover for uncertainties around within day variation and asset reliability

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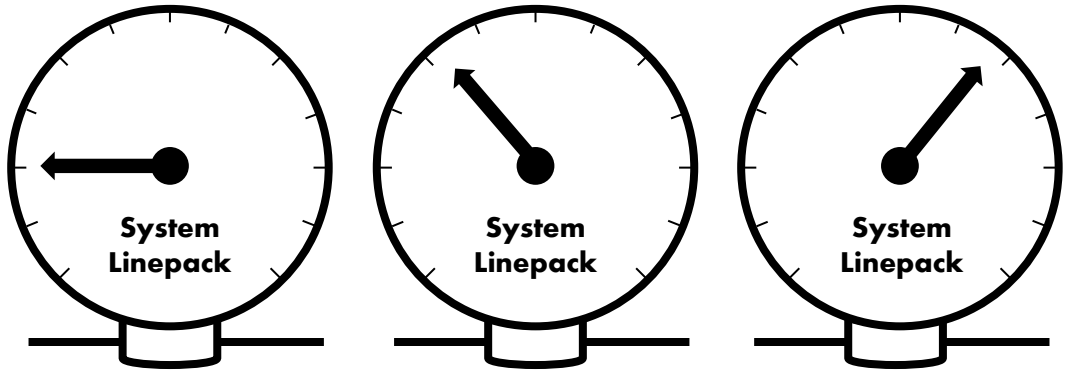
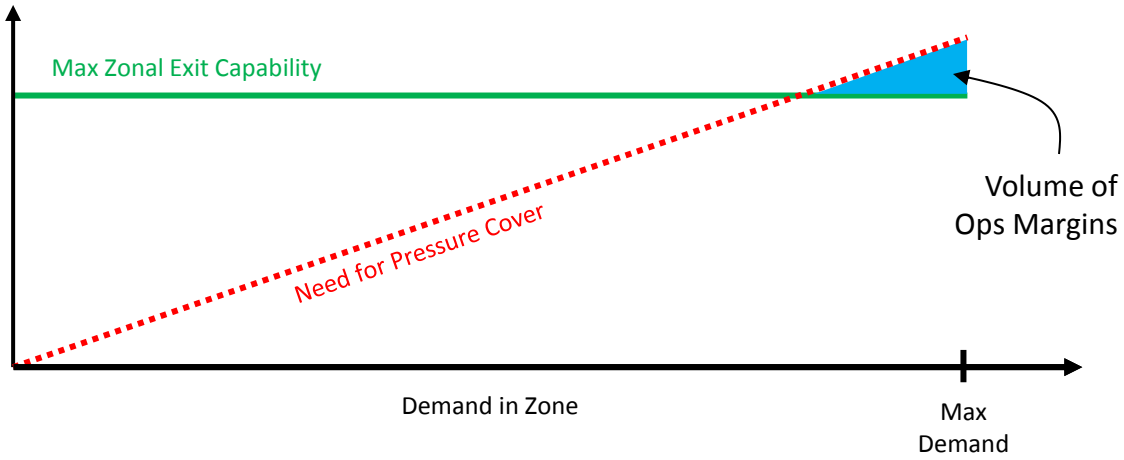
Taking account of such operational measures as are available to the licensee

Do we need to update how we treat linepack management in planning processes?

Can we create clearer links to Operating Margins Requirements?



Ranges of opening linepack to be considered in all planning processes to assess future linepack management requirements



If network has insufficient capability to meet pressure cover levels at highest demand levels, Operating Margins requirements will be identified – this is consistent with current OM calculation methodology