Gas Transmission

Gas Operational Forum

WebEx
14th May 2020

Slido
#GasOps20

nationalgrid

Gas Transmission

Introduction & Agenda

Joshua Bates
Operational Liaison & Business Delivery Manager

nationalgrid

Presenters

National Grid

Joshua Bates – Operational Liaison and Business Delivery Manager

Martin Cahill – Operational Liaison Lead

George Killick – Operational Strategy Engineer

Phil Hobbins – Commercial Codes Change Manager

Richard Pickup – Network Manager, Gas National Control Centre

Alison Tann – NTS Capacity Manager

Karen Healy – Gas Network Strategy Analyst

SGN

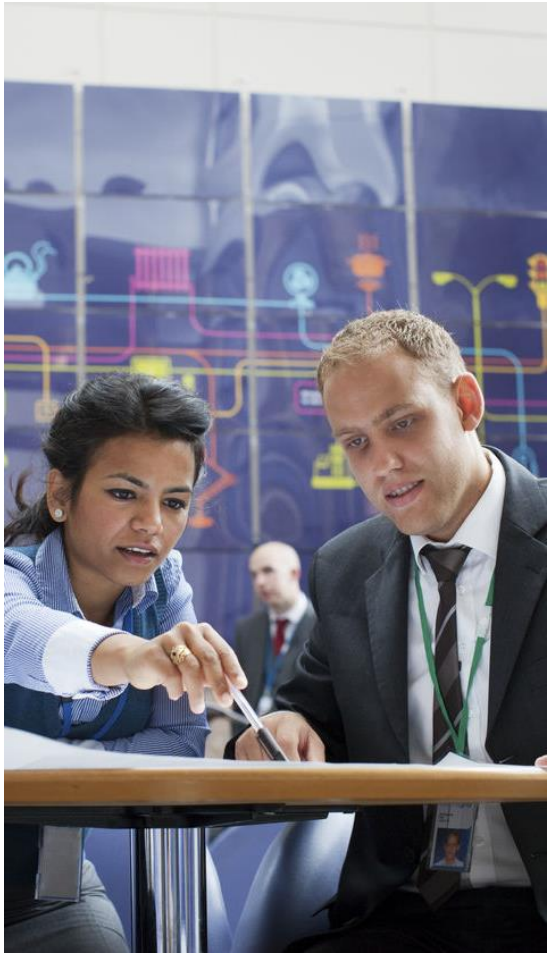
Roger Crane & Chris Trodd

Gas Networks Ireland

Paul Crowley

Wales & West Utilities

Bethan Winter



Calendar year 2020 Ops forums

All forums will be held via WebEx until further notice

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lon	Lon	Online	X	Online	Online	X	X	Lon	Lon	War	X
23/01	20/02	19/03		14/05	18/06			17/09	22/10	19/11	

Location:

Amba Hotel
Strand
Charing Cross
London
WC2N 5HX

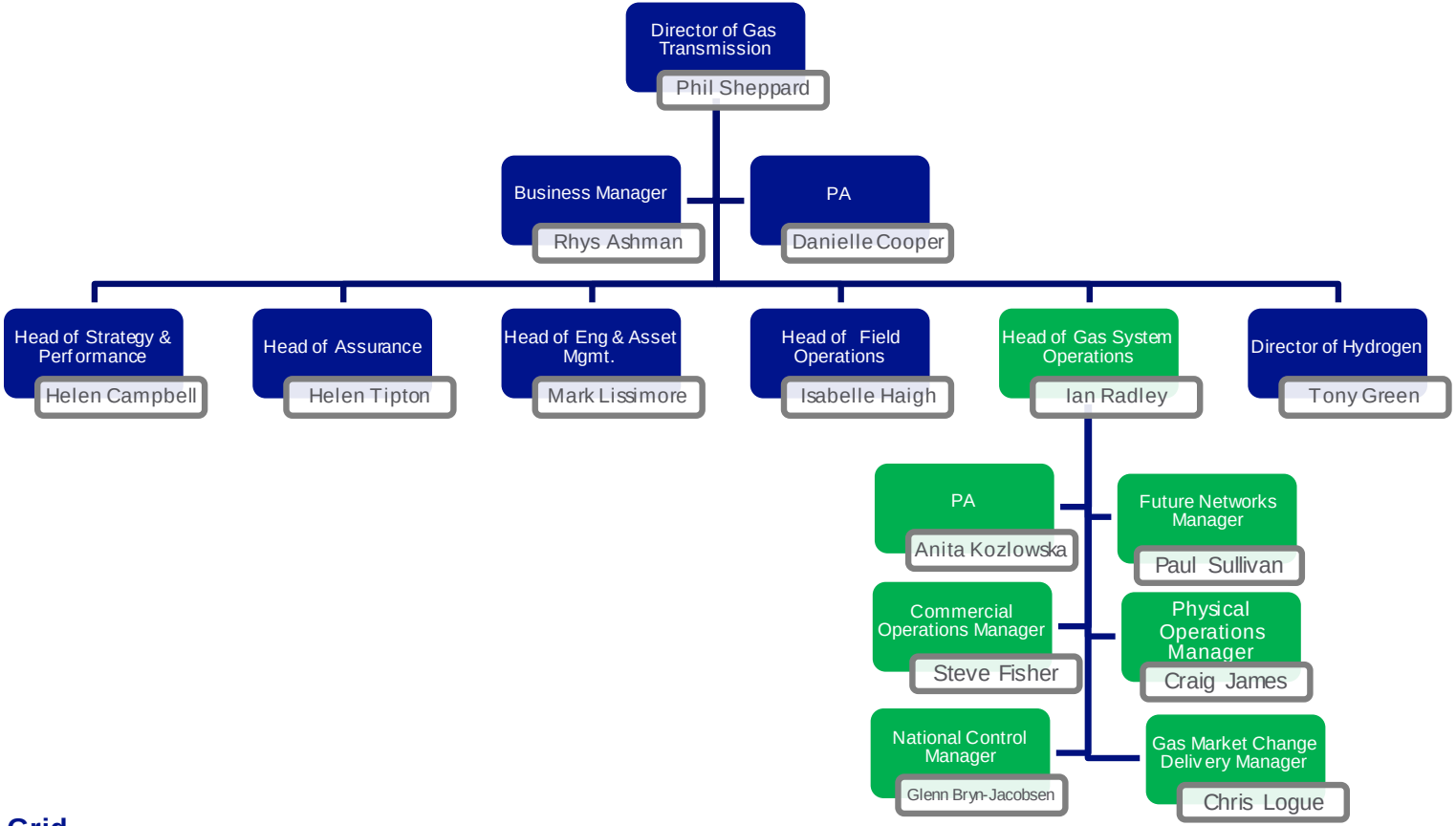
Registration is open for all 2020 events at:
https://www.nationalgridgas.com/data-and-operations/operational-forum

Housekeeping for WebEx Forums

During our WebEx events;

- Attendees will be automatically muted on dial-in, please ensure your cameras are off too.
- We will break at the end of each section to answer questions, please use the ‘raise a hand’ function on WebEx and we will un-mute you.
- Alternatively, you can ask any questions via sli.do and we will answer them at the end of each section. The meeting code is #GasOps20.
- For both presenters and any verbal comments, please state your name and company before speaking.

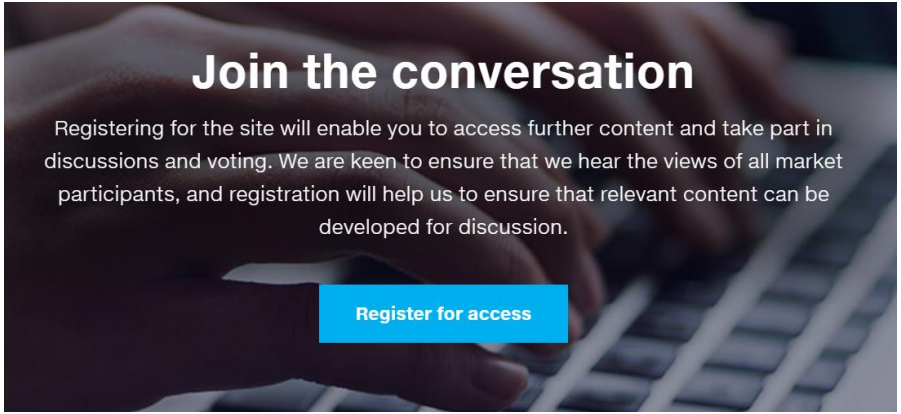
Gas Transmission Structure from 1st January 2020



Resources Available to you

Gas Ops Forums

Throughout the year, we hold regular Operational forum meetings. This forum aims to provide visibility and awareness for our customers and stakeholders to help understand and discuss the operation and performance of the National Transmission System (NTS). We also proactively invite any suggestions for operational topics that would promote discussion and awareness.



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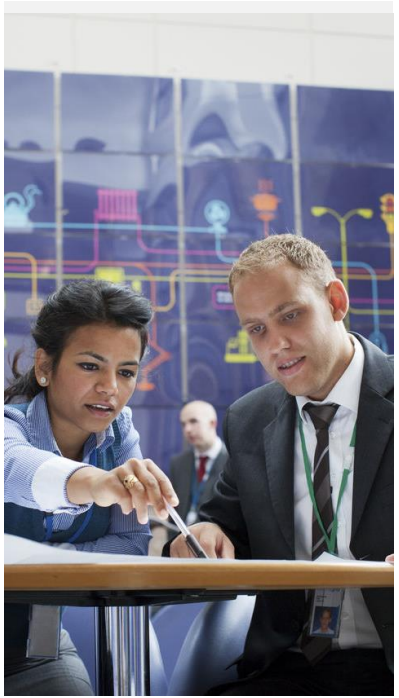
For updates and interaction with National Grid please visit;
https://datacommunity.nationalgridgas.com/

For the National Grid Gas Website, please visit;
https://www.nationalgridgas.com/about-us

How to contact us



Operational Liaison Team

Joshua Bates: Joshua.Bates@nationalgrid.com

Martin Cahill: Martin.Cahill@nationalgrid.com

Operational Liaison Email:
Box.OperationalLiaison@nationalgrid.com

For updates and interaction with National Grid please visit;
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For the National Grid Gas Website, please visit;
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Agenda for Today

01	Introduction, resources available to you and agenda	10:00
02	Operational overview	10:05
03	COVID-19 Update - LDZ and Power Station demand - Guest Presentation: SGN - Guest Presentation: Gas Networks Ireland - Guest Presentation: Wales and West Utilities	10:15
04	Margins Notice Winter Review	10:50
05	Milford Flows - Operational background - Recent commercial actions	11:05
06	Milford: Constraint Management Tools Available	11:25
07	Summer Outlook	11:35
08	MIPI Project update & future approach	11:45
09	GEMINI Re-Platforming Project	11:55
10	Questions & Feedback	12:00

Please ask any questions using slido #GasOps20 or by raising your hand.

These will be covered at the end of each agenda section

Gas Transmission

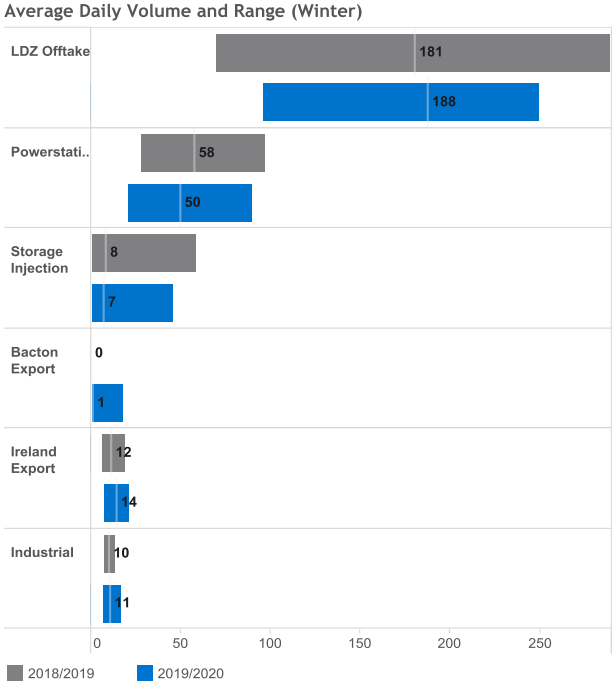
Operational Overview May 2020

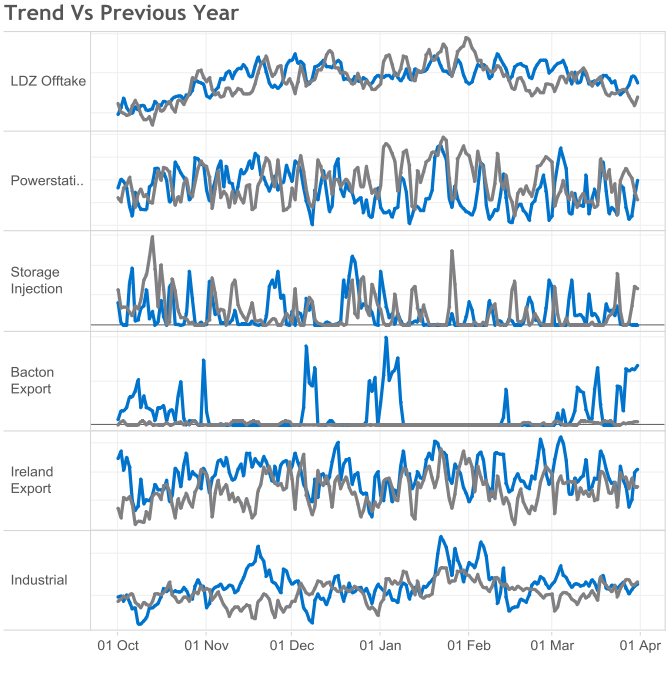
George Killick
Operational Strategy Engineer

Martin Cahill
Operational Liaison Lead

nationalgrid

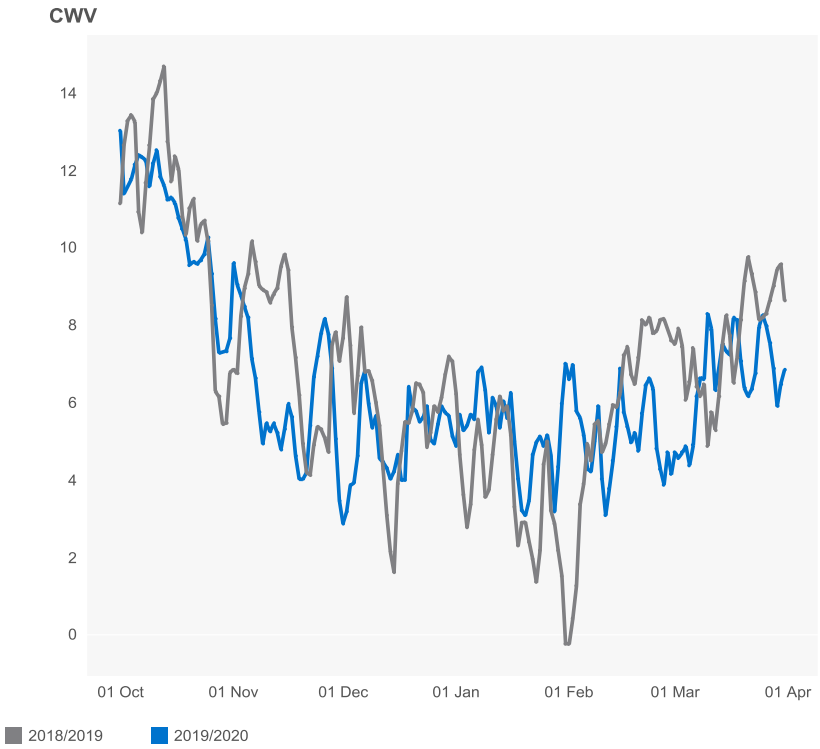
Components of NTS Demand

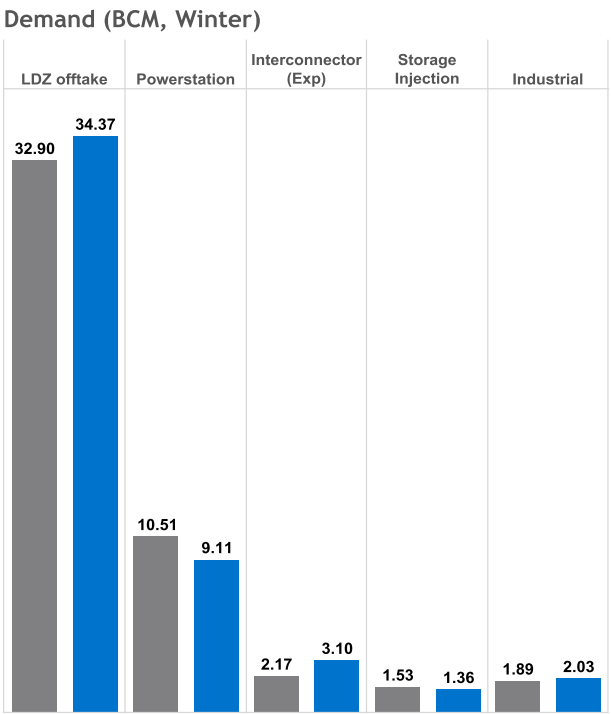




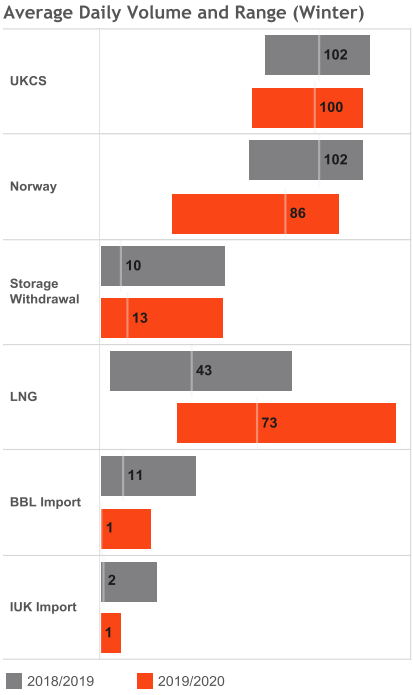
- LDZ Demand has been more consistent this winter
- PS Demand has been slightly lower
- Exports at both Bacton Interconnectors utilised in mid-winter

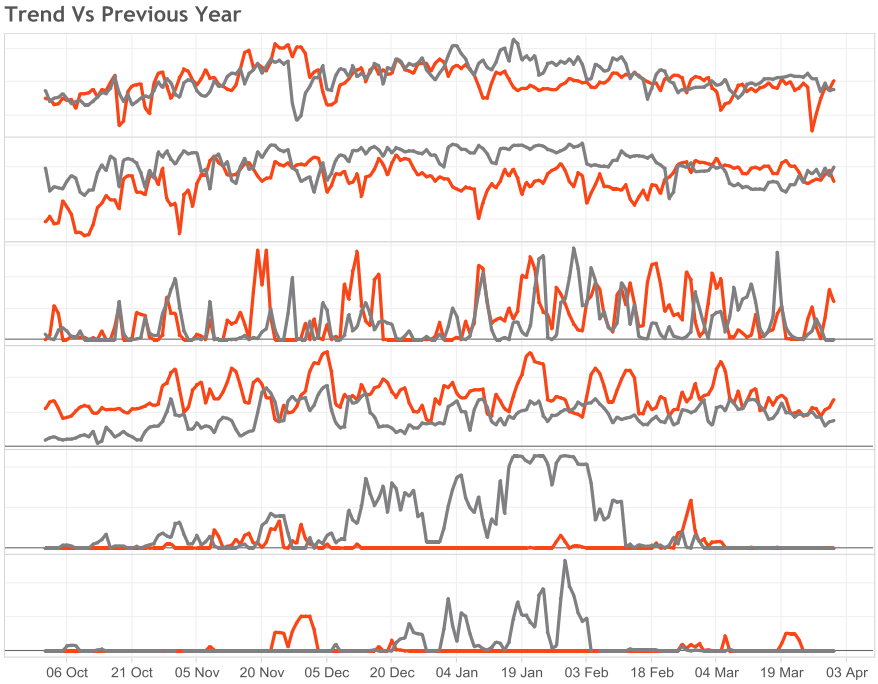
Demand – CWV & Components





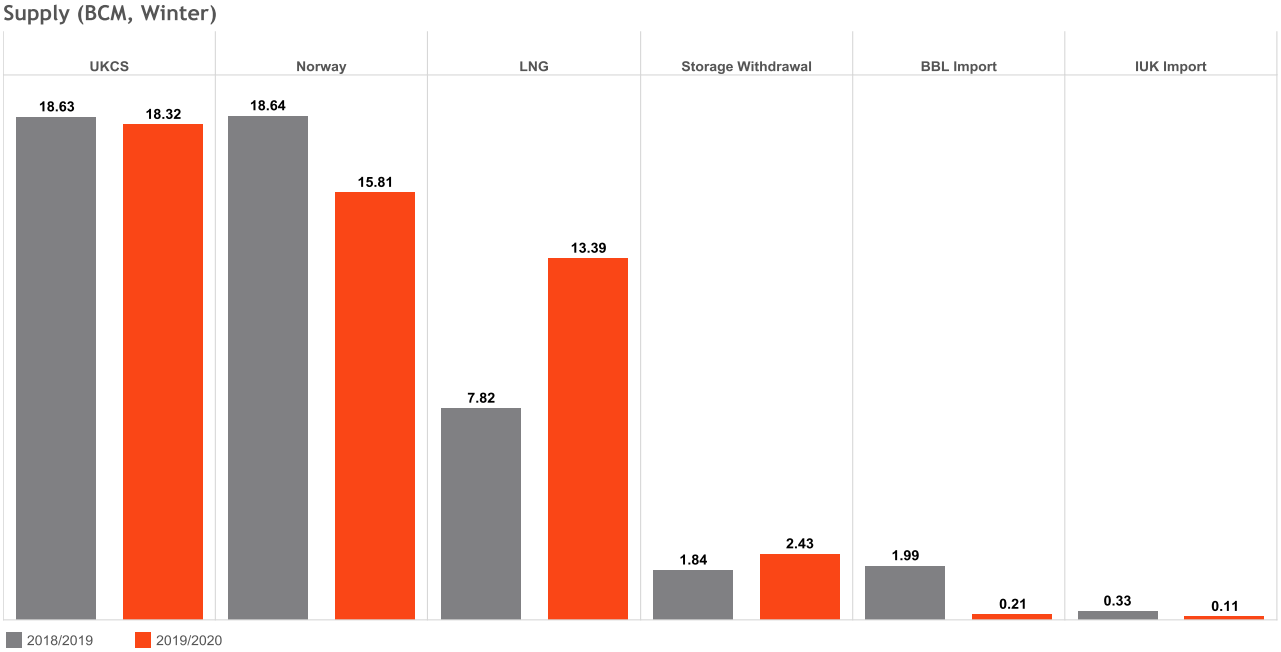
Components of NTS Supply





- Storage withdrawal and Norway supplies have reacted to LNG changes, with Interconnector exports also reacting at times of high supply/low prices

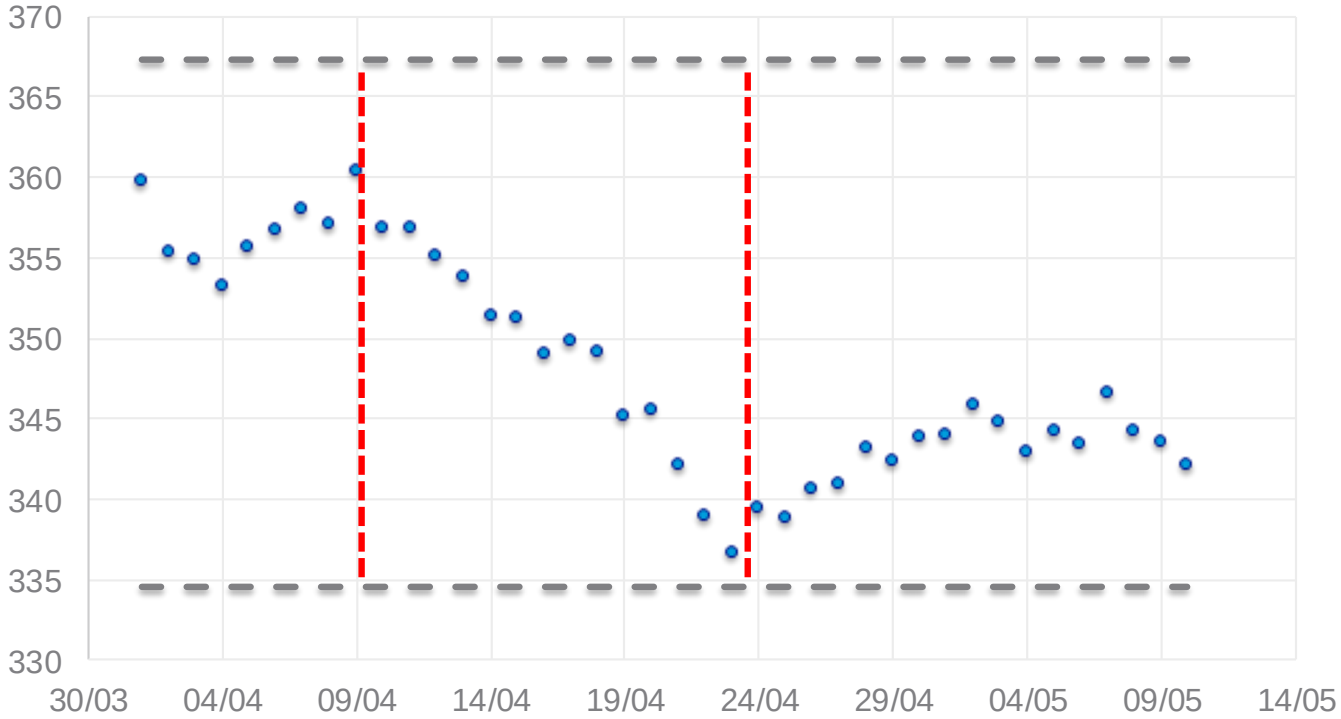
Supply - Components



- LNG supply continued to increase this winter
- Norway reduction in response to this
- Interconnector Imports negligible even in shoulder months

Recent Linepack Transition

- With warmer weather and lower demands, NTS linepack was gradually reduced to a lower level during April
- This increases the efficiency of how the network is operated



April Trading

Sell actions typically utilised more heavily during spring months

During April:

- Bought on 6 days (NBP Title)
- Sold on 15 days (NBP Title & Locational)

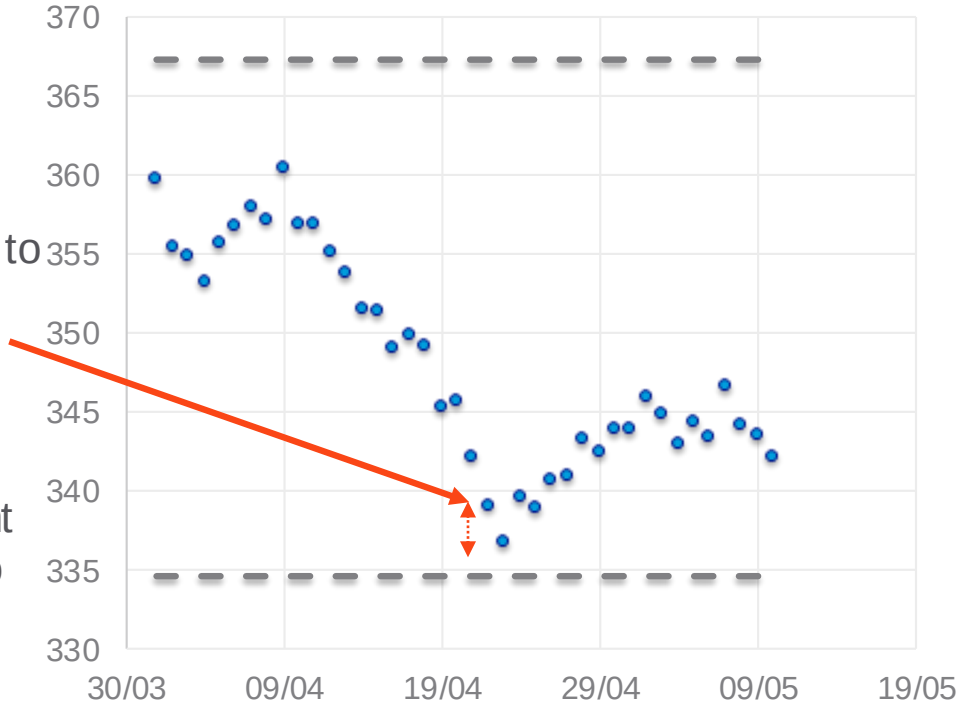
Largest Daily Changes:

- 8th April (+3.35mcm)
- 1st April (-4.37mcm)

Date	Bought	Sold
01-Apr	■	
02-Apr		■
03-Apr		■
04-Apr		
05-Apr		■
06-Apr		
07-Apr		
08-Apr		■
09-Apr		■
10-Apr		■
11-Apr		■
12-Apr		■
13-Apr		
14-Apr		■
15-Apr		■
16-Apr		
17-Apr	■	
18-Apr	■	■
19-Apr		■
20-Apr		■
21-Apr		■
22-Apr	■	
23-Apr	■	
24-Apr		
25-Apr		
26-Apr		
27-Apr		
28-Apr	■	
29-Apr		
30-Apr		■

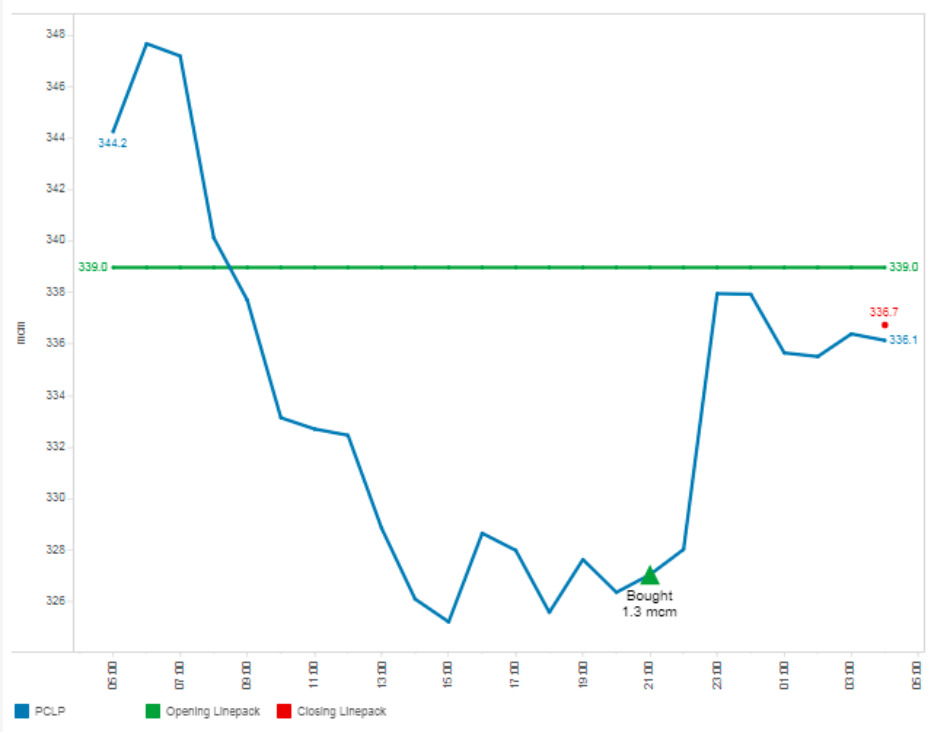
Trading Example – 22nd April

- Loss of 2.2mcm, after linepack had already been reduced significantly in previous days
- System light due to within day increases to CCGT and LDZ Demand
- Cost of taking further actions vs price considered later in the day
- Late supply loss at around 2.30pm meant an additional reduction by which point no further actions would be effective



Trading Example – 22nd April

05:00	NTS Linepack started the day at **339.0mcm**
	System opened balanced but became light throughout the morning with increases in CCGT and LDZ Demand
21:00	PCLP had reduced to 16mcm light, and at this point residual balancing actions were taken with 1.4mcm bought
	With SAP increasing b 2.4p/therm throughout the day, some storage reacted by switching from injection to withdrawal
00:00	Light imbalance by midnight. Although Linepack was already fairly low at start of the day, physical risk viewed to be minimal – low demand and system heavy forecast for the following day
02:30	Partial supply loss at Bacton reduced Linepack further
05:00	NTS Linepack closed at **336.7mcm, a loss of 2.3mcm**



Gas Transmission

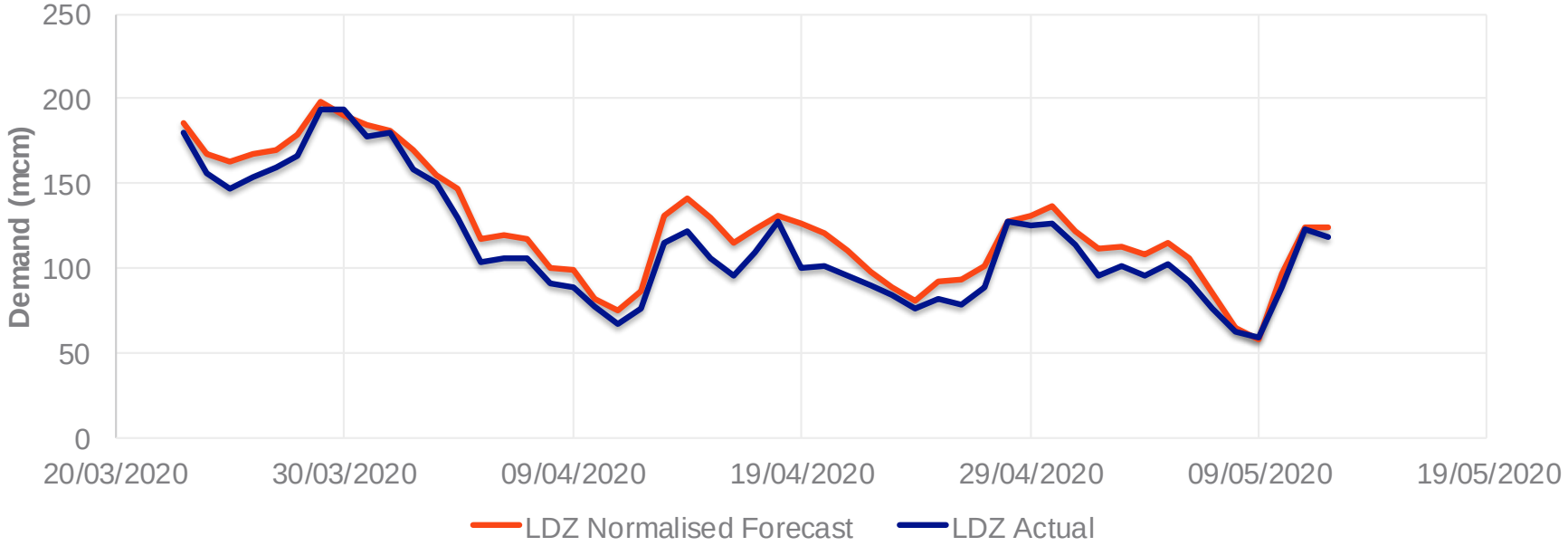
COVID-19 Update

National Grid
SGN
Gas Networks Ireland
Wales and West Utilities

nationalgrid

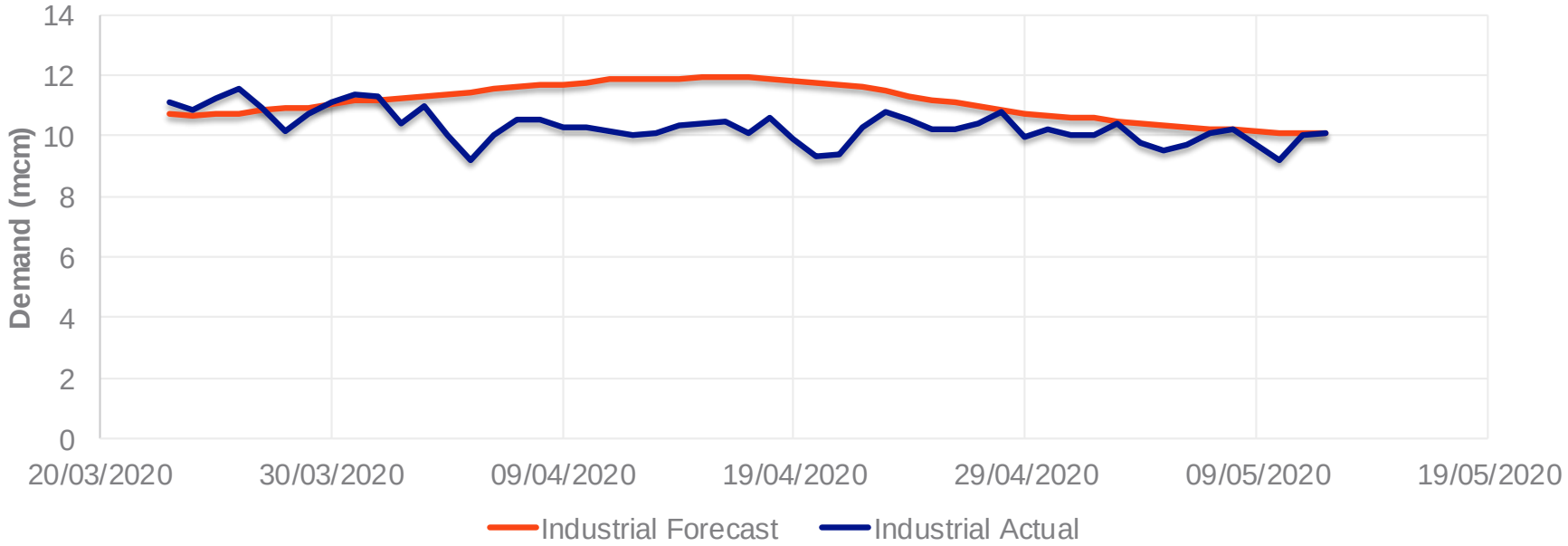
Demand Update: LDZ

On a National Level, the overall reduction in LDZ Demand (compared to expected demand based on CWV has been around 9% since the lockdown in the UK, with reductions in Daily Metered Demand



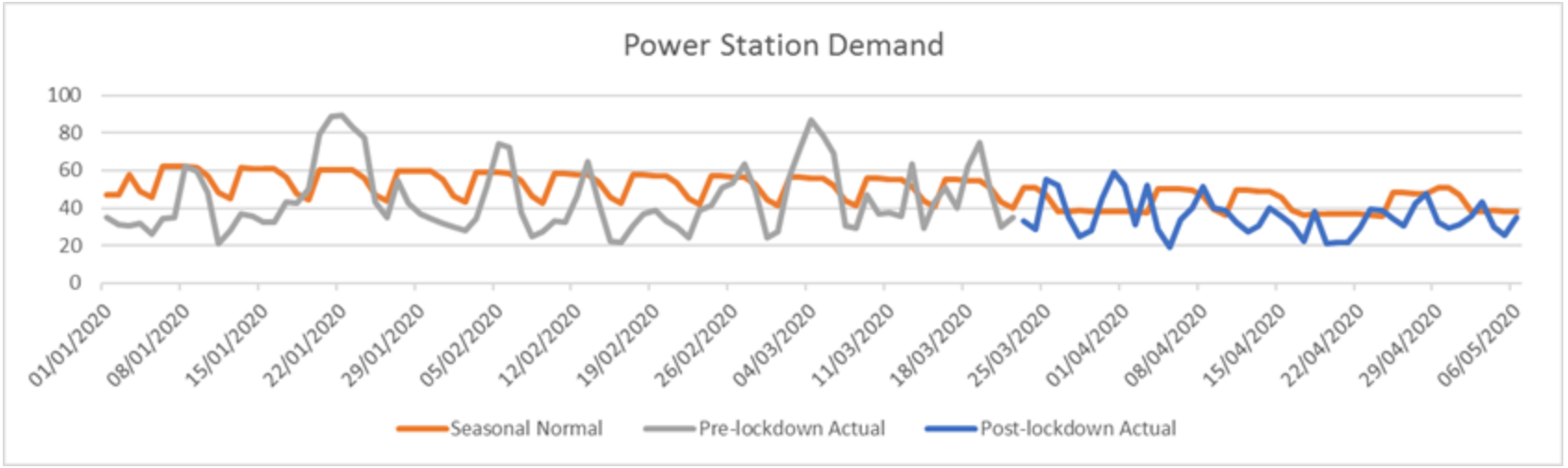
Demand Update: Industrial

Industrial Demand has reduced on average by 7% (when Shell Backhaul is removed from data set)

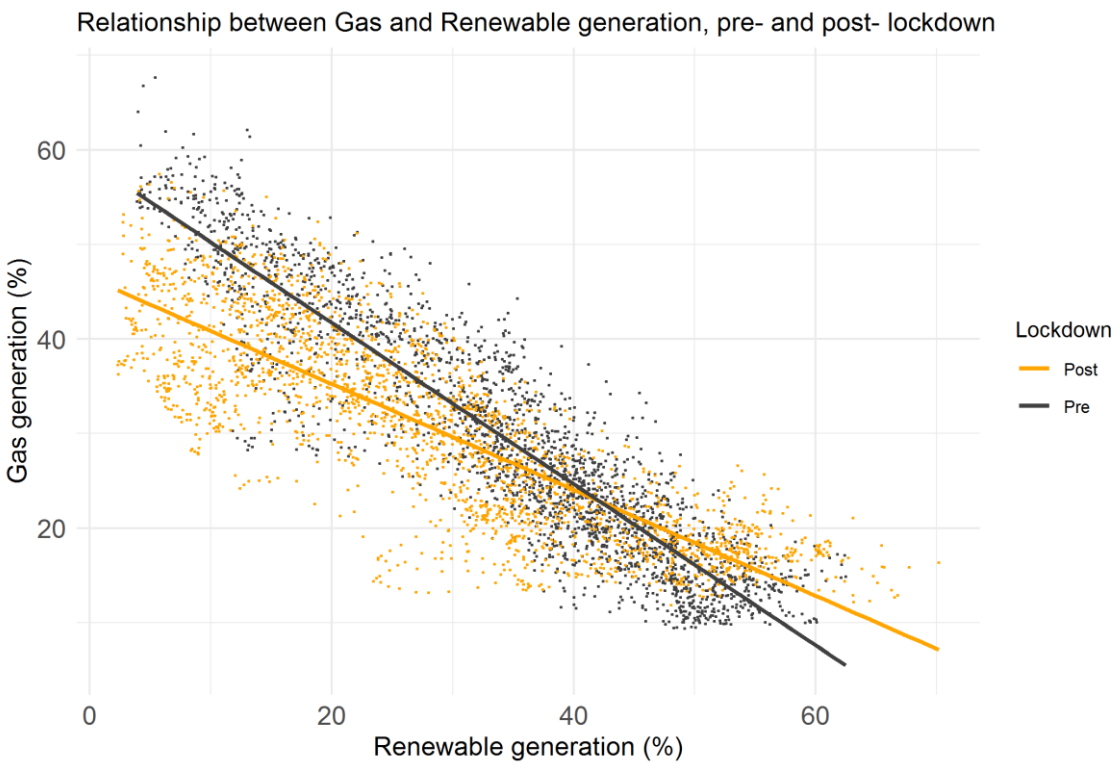


Power Station Demand

Most difficult to predict – but have seen a reduction on average of around 15% (NTS Direct Connects)



Gas & Renewable Generation (%)

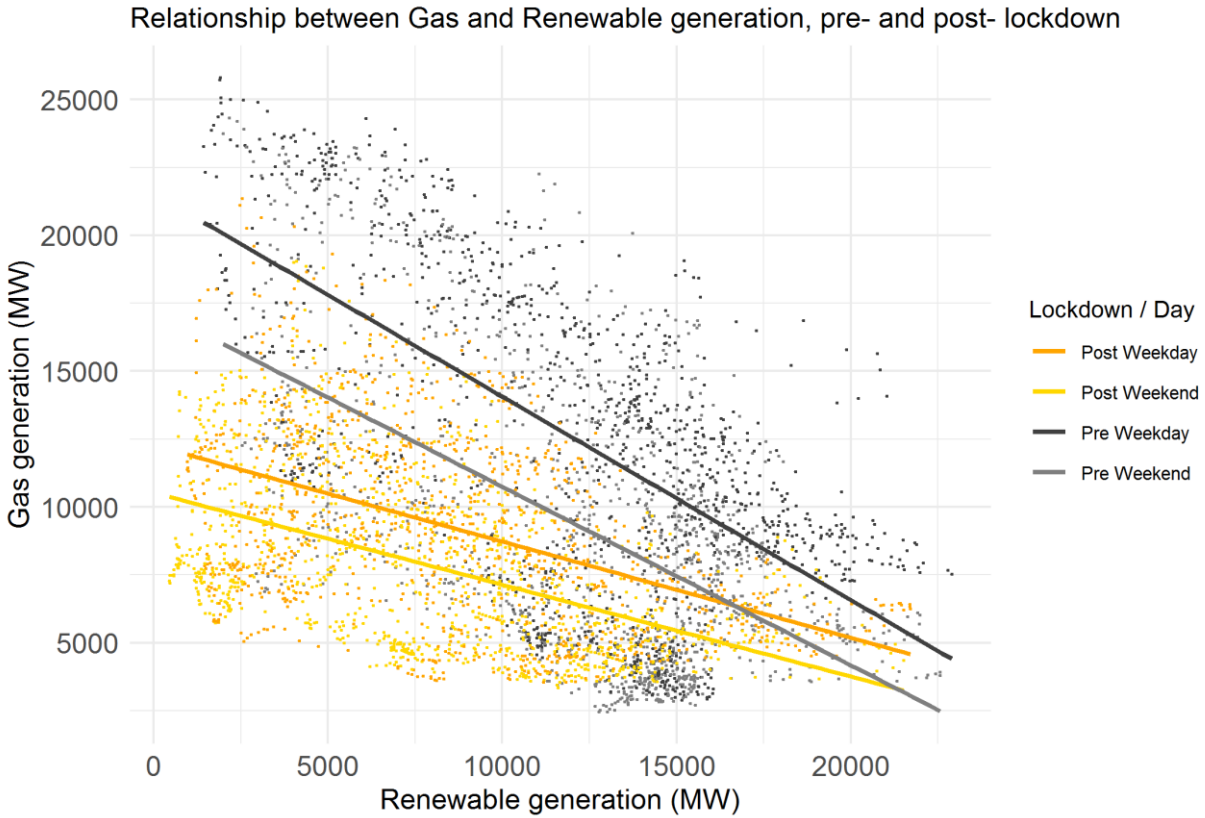


- Gas and renewable generation expressed as a percentage of total generation
- Clear difference between pre- and post-lockdown interaction
- Pre-lockdown there is almost a 1-2-1 interchange between gas and renewable
- Post-lockdown: more renewable displaces less equivalent gas

- Data note:
- We use a proxy for total generation:
  - Transmission + wind & solar distributed generation
  - We exclude non-renewable distributed generation because of lack of data
- Data comes from all settlement periods for 7 weeks either side of lockdown:
  - Tue 4 Feb – Mon 23 Mar; Tue 23 Mar – Mon 11 May
- Renewable defined as wind or solar generation

Data and notes provided by National Grid ESO

Gas & Renewable Generation (MW)



- Generation expressed in MW, with weekday and weekend separated
- Lower demand at weekends, but similar response
  - as seen by pre- and post- sets of (almost) parallel lines
- Pre-lockdown: as wind comes on the system, gas is taken off
  - Gives a 1-2-1 relationship
- Post-lockdown, with very low overall demand
- Increasing levels of renewables dealt with by two mechanisms
  - Reduce gas generation
    - this lowers system inertia
  - Increase generation requirement
    - Export on Interconnectors or increase pump storage load
- With lower demands, interconnector exports have increased more regularly to maintain inertia

Data and notes provided by National Grid ESO

GNI COVID-19 Update

Paul Crowley, Grid Control Engineer

Presentation to National Grid Operational Forum

14th May 2020

GNI network overview

- 688,000 Customers
- 2,427 km Transmission pipeline — Fully odorised network
- 11,527 km Distribution pipeline — ≤ 4 Bar
- PRE: 17,000 @ 28 min avg. response
- 52% of Electricity demand

Entry Points	Exit points	Compressors
Moffat	Twynholm	Beattock
Corrib	Isle of Man	Brighouse Bay
Inch	Gormanston	

Timeline of GNI Response to Covid-19

Today
GNI offices remain closed until mid-August

Jan 24th
First announcement to staff about Covid-19

Feb 16th
Grid Control utilise standby control room

March 16th
GNI employees work from home

March 31st
GNI cease all non-essential operations work

April
GNI continue any emergency works and critical projects such as the new Children's Hospital

January | February | March | April | May

Feb 16th
Policy of self-isolation of 14 days introduced for relevant staff

March 13th
Schools are shut

March 28th
Government implement nationwide lockdown

Grid Control Response to COVID-19 Crisis

- **Control Room Contingencies**
  - Controllers have been utilising our standby control room (located a 25 minute drive from our main Cork City HQ control room) for the 12-hour day shifts.
  - Night shifts remain at our HQ to help reduce risk of cross-contamination.
  - The number of Grid Controllers has been reduced from 3 to 2 for day shifts to free up an extra resource for added flexibility.
  - A standby-rota of competent engineers who have previous experience of working as a Grid Control operator has been prepared to minimise any disruptions to operations in the event of a Covid-19 outbreak.

- Within day demand behaviour - Sold over 140 GWh of gas on the trading platform since early March to keep pressures balanced due to shippers leaving gas on network.
- Pressures have been increased on our subsea pipelines from Scotland in order to maintain linepack and guard against any unforeseen supply issues.
- Corrective and reactive maintenance activities are continuing with one-person activities, PPE, social distancing being observed. Planned maintenance activities are postponed.

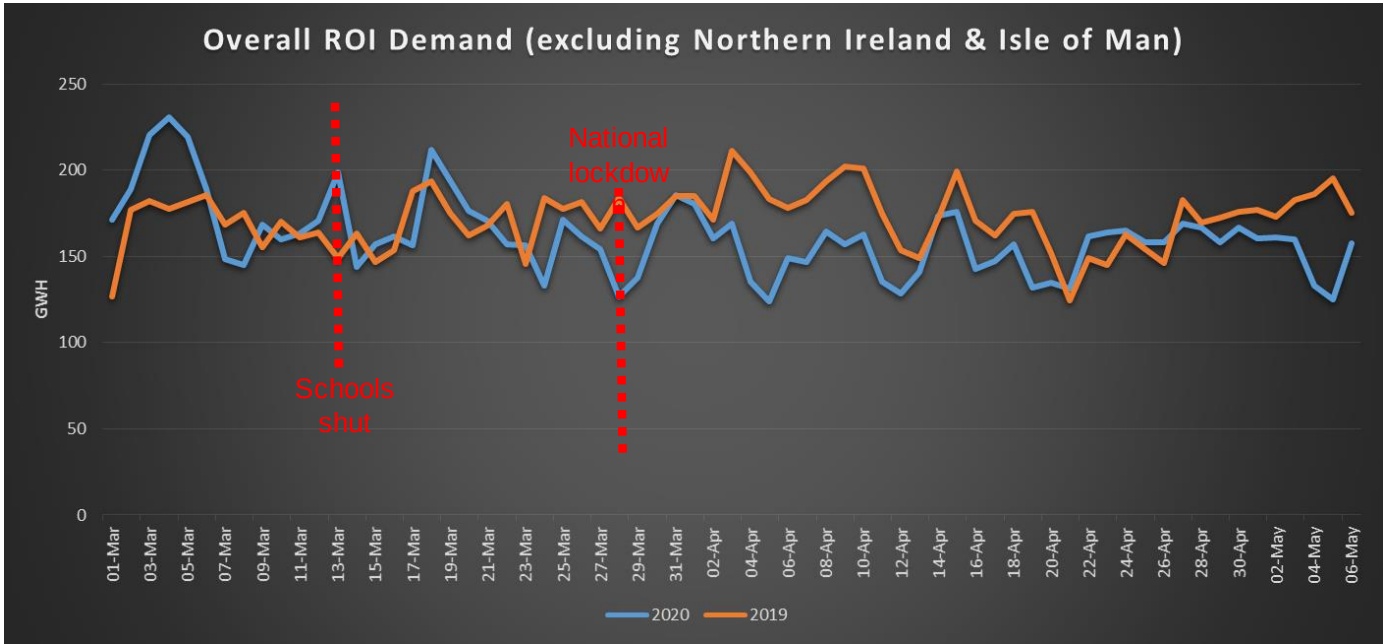
Gas Networks Ireland

Impact on Demand

Overall gas demand has reduced in ROI by 6% across March, April and early May since 2019.

- Electricity usage has remained stable despite the lockdown.
- Gas-fired Power Stations had a 61% share of the electricity mix in the last month.

- Certain sectors saw a sharp decline due to the lockdown – with major falls in construction, education, laundry and travel.
- Pharma, Biomedical and Food and Beverage remain very strong.

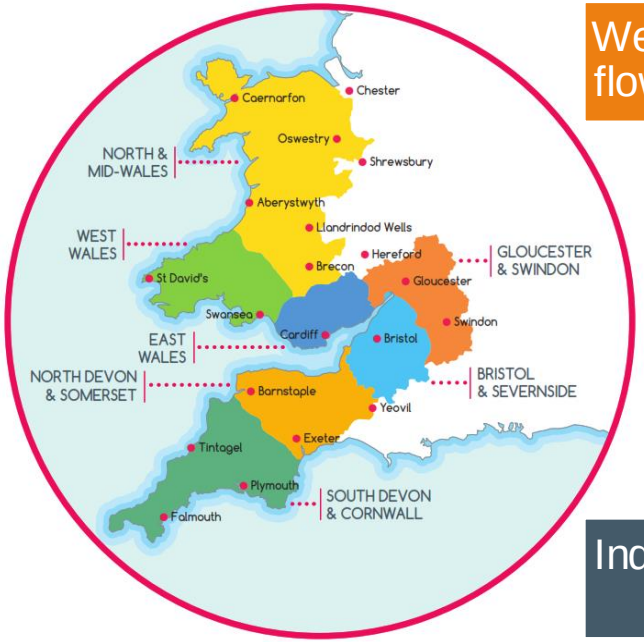


Wales & West Utilities Operational Update – Covid19 response

Bethan Winter
System Operation Manager

WALES&WEST UTILITIES

We are Wales & West Utilities



We look after the pipes that keep the gas flowing to Wales and south west England

We heat homes, power businesses and keep the lights on

We are the gas emergency service, responding to gas leaks

7.5m people rely on the services that our 1600-strong team deliver

Industry leading levels of health & Safety and customer service performance

The challenge

Preparing our people

Inform

Keep our colleagues up to date on developments

- Daily updates
- Weekly Colleague Email
- Regular Management Cascades
- Customer Contact Guide

Engage

Show visible leadership

- Leadership Films
- Blogs and Vlogs
- Internal newsletter
- Use technology

Support

Provide information to keep colleagues safe and look after their wellbeing

- Self-serve
- Guides and tools for Managers
- Articles and Top Tips
- DSE guidance
- Wellbeing e-newsletter

Listen

Demonstrate genuine two way engagement- act on feedback

- 'Ask Us Anything' Live events
- Line manager engagement

Current status

- Still maintaining an incident command process

- Operationally no issues, all working well, focus on Emergency Work, repairs and key maintenance,
  - Some replacement and capital works have now restarted
    - No customer impact and usual social distancing and hygiene rules followed
  - Standards of service of attendance to gas escapes excellent
  - Workload is low, weekdays are like weekends etc

- Absence is now lower than BAU at circa 2.5% That equates to just 35 people

System Operation

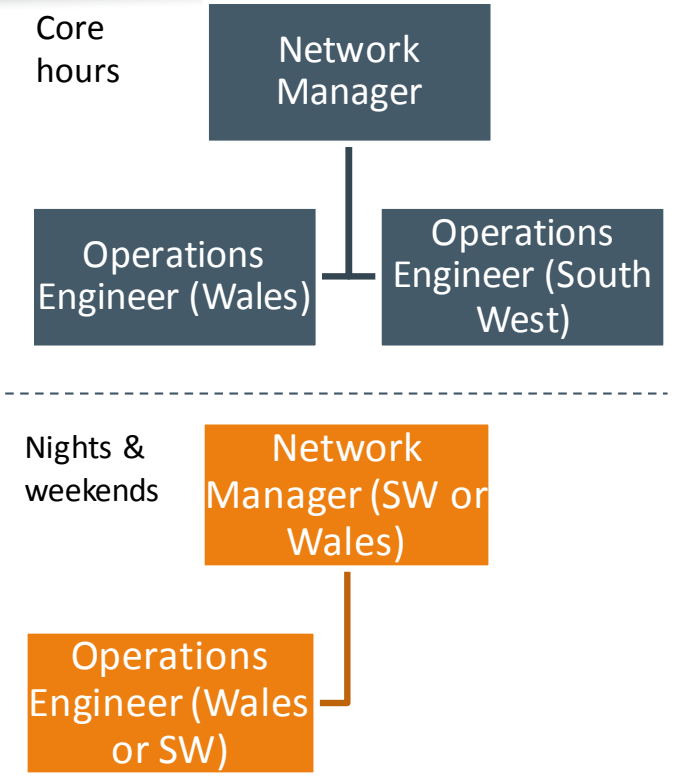
- Control room (16) can work over 2 sites but are currently back at our main office
  - New handover procedures
  - Social distancing in the control room
  - Increased cleaning
  - Departing shift use a different exit to the oncoming team
- Support team (16) all working from home
- Flexibility from the team and technology has enabled us to continue business as usual

Team Communications (Sys Ops specific)

- Significant and successful use of video and teleconferencing
- Use of forms to gather information and obtain feedback
- Regular catch-ups within team hierarchy
- Weekly placeholders for cross team meetings / surgeries on specific subject areas:
  - Control room
  - Planning & Gas Quality
  - Biomethane
  - Systems & Technical Support

System Operation – further options

- Increase use of 12 hour shifts so that fewer teams are needed
- Reduce planned maintenance and operate the night & weekend structure
- Boost teams with wider team members
- Undertake some strategic activities from home



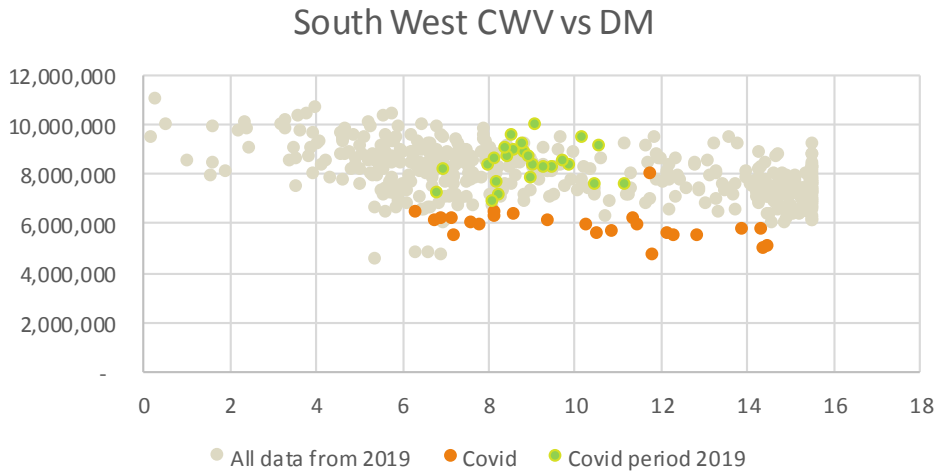
The order in which these options were implemented depends on considerations on the next slide

Considerations

- How long the issue was likely to go on for
- Type of maintenance we would need to reschedule
- Levels of cover needed before the incident i.e. current fatigue levels
- General demand / weather conditions
- Availability of wider team members to support

General observations

- Decreased industrial demand taking into account weather (example below for South West)
  - No need for bank holiday factors in our forecasting
- Normal operational issues associated with warmer weather and lower demand



Re mobilisation options

- Positive relationship being maintained with local HSE team, regular meetings taking place and a planned intervention on EC&I activities
- Good relationships also maintained with BEIS and Welsh Government, e.g. the Employee testing process is now in place should it be required.
- Re mobilisation current focus, plans take due account of the BEIS documents.
- Capital investment and Replacement works:
  - were there is no customer interaction,
  - subject to specific risk assessment

SGN Update

COVID-19

Thursday 14th May 2020

SGN

Your gas. Our network.

Six planning and decision-making groups

1. Operations group
2. BCM Solutions
3. HR solutions group
4. Corporate impact group
5. Stakeholder communications group
6. Staying Connected group

Meet between 3 and 5 times a week and produce weekly situation reports

SGN Staff Wellbeing

- '**Staying Connected**' microsite with guidance and support for remote working - now live
- **Keep in touch** with colleagues individually and through Teams etc, maintain online team meetings
- **Be mindful** of your own and colleagues mental health, look out for signs of stress
- **Maintain a sensible routine** if working remotely with breaks and exercise
- Ring each other for a short chat
- If you are finding your situation difficult **don't keep it to yourself**
- If necessary, professional help is available on **Employee Care (EAP)**
- **Telephone counselling** and information line 0800 111 6387 and portal on SGNapp

SGN

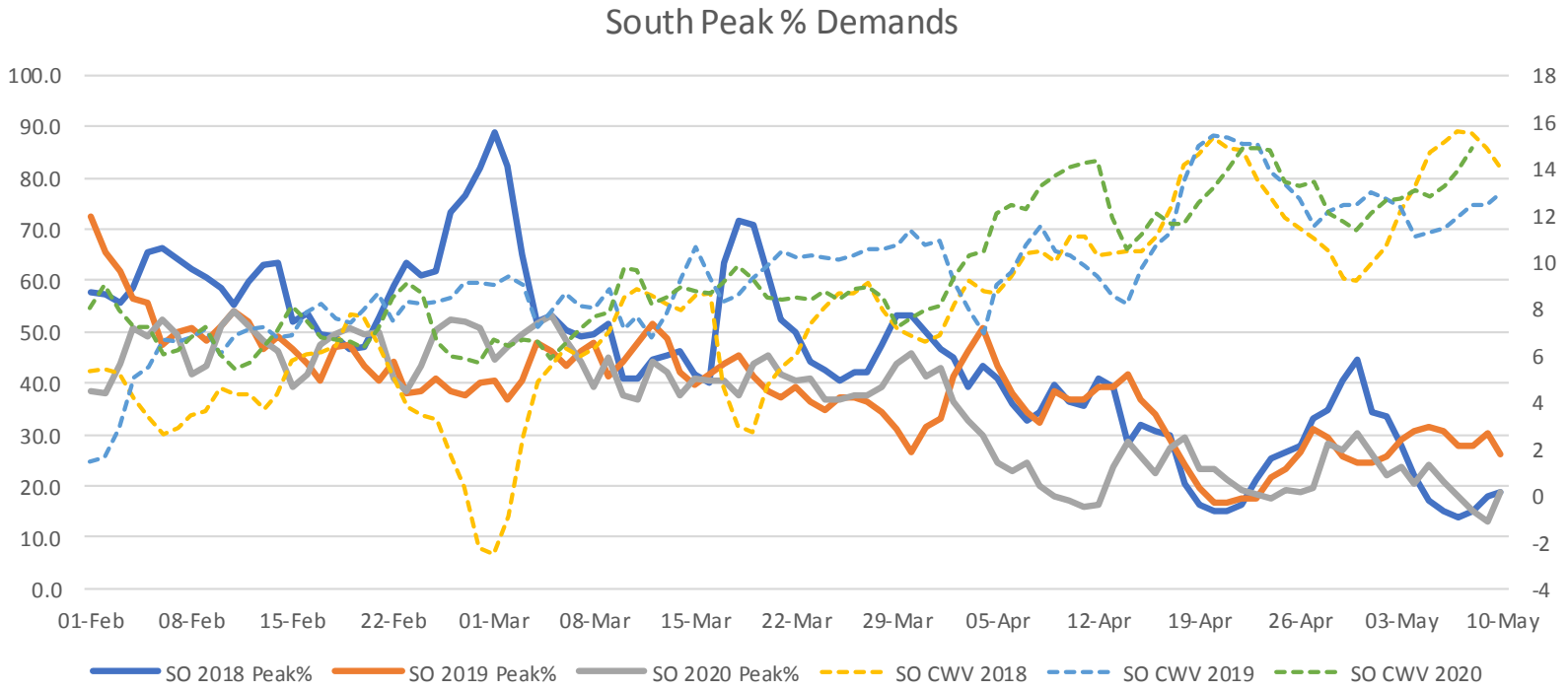
SGN Staff

1. All staff that can work at home are
    - 300 laptops provided
    - 300 smart phones issued
    - 300 remote Citrix accounts created
2. All offices/depots only have skeleton staff

SGN

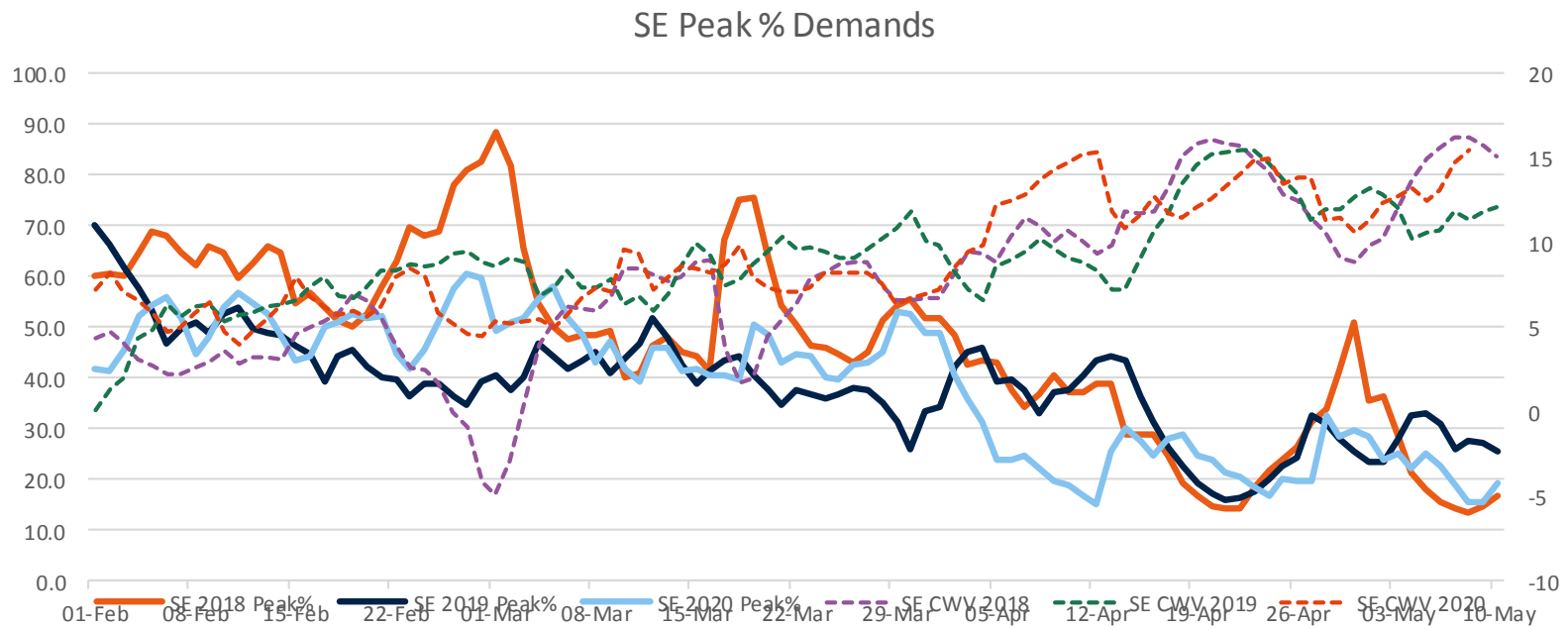
SGN Demands and Escape Numbers

SGN demands South



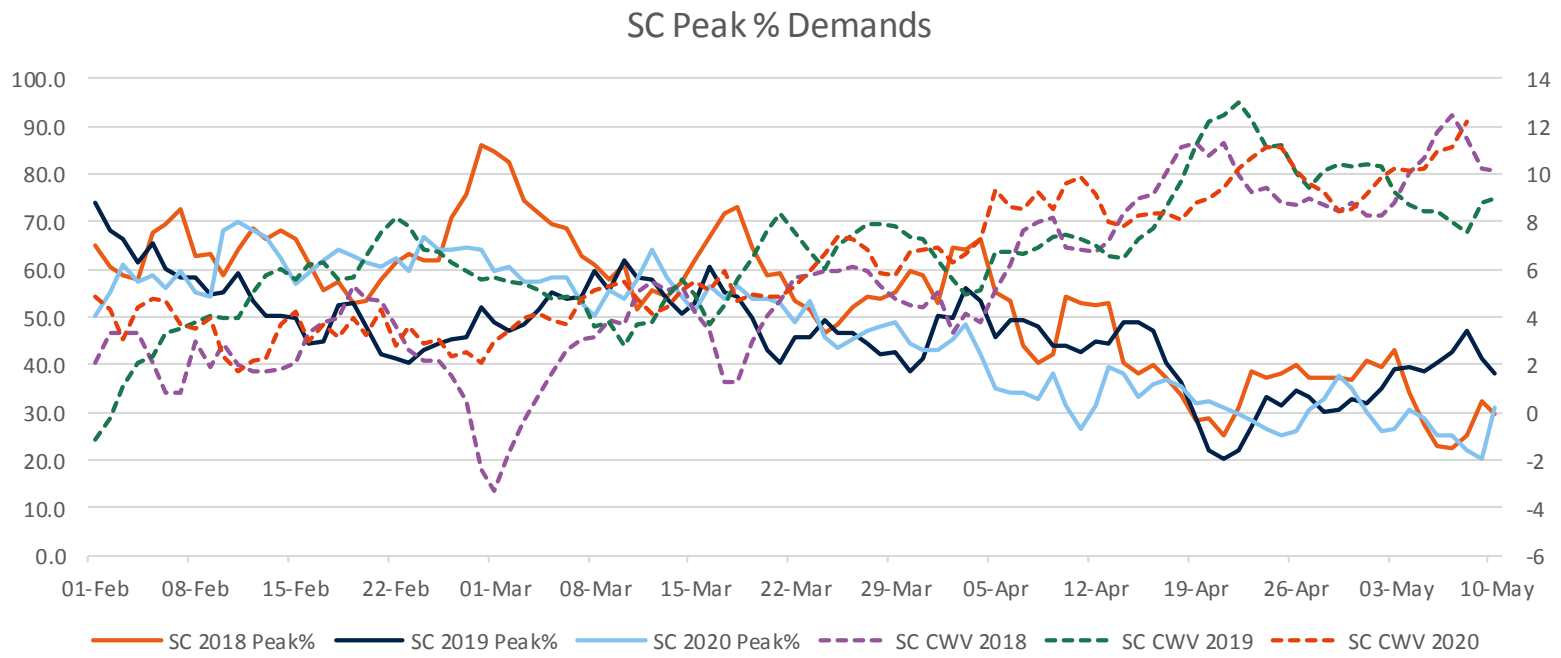
SGN

SGN Demands South East



SGN

SGN Demands Scotland



SGN

Escapes April to may 2020

		Received		
		08/05/2020	08/04/2020	
Southern	Uncontrolled	1,046	1,207	
	Controlled	525	487	
	Team Requests	177	191	
Scotland	Uncontrolled	550	468	
	Controlled	250	293	
	Team Requests	74	43	

SGN

Escapes may 2020 to 2019

		Received		
		08/05/2020	08/05/2019	
Southern	Uncontrolled	5,657	7,690	
	Controlled	2,641	3,935	
	Team Requests	891	1,307	
Scotland	Uncontrolled	2,712	3,868	
	Controlled	1,427	2,054	
	Team Requests	311	567	

SGN

Standards

ALL STANDARDS REMAIN BEING MET by SGN

Gas Control Centre and Operational control Centre

Managing supply /demand and public safety

– a critical function

SGN

Gas Control Centre

What have we done?

Shifts separated across two sites

- Main control room and contingency site
  - Third facility in alternative office in Horley engineered by IT
  - Investigating alternative hardware for remote working
- Temperature checks for new shifts (skin monitors sourced)
- Strict cleanliness policy on shift change – all surfaces cleaned, social distancing between shifts
  - Horley facilities segregated
    - Access to GCC limited to key staff; support staff WFH or in other offices
    - Toilet facilities exclusively allocated to GCC
  - Contingency site separated from depot activities
    - Alternative welfare, relocated gascoseeker tester, PAM tester

SGN

Gas Control Centre

What further mitigations are being considered?

Changes in rotas – e.g. revert to 12 hours

Ex-GCC (current SGN) staff have been contacted for additional support

- Arranged for system access to be re-instated

Retired personnel contacted and willingness to support discussed

Local facilities for temporary accommodation explored

Remote operation explored and costings sourced

SGN

Operational Control Centre

What have we done?

Shifts separated across two sites

- Main call centre and contingency site
  - Third facility in alternative office in Portsmouth engineered by IT
  - Home working for some
- Temperature checks for new shifts (skin monitors sourced)
- Strict cleanliness policy on shift change – all surfaces cleaned, social distancing between shifts

SGN

The near future

1. Home working is likely to be the last removed measure
2. No matter what the government decides, GCC are to stay as we are for the next 12 to weeks. I have agreed this at Silver command
3. COVID-19 will remain a threat for many months.

Asset Management

Actions taken to support the wider business

Key contracts

Maintaining regular contact with key contractors

Activity	Company	Network	Status
Aerial surveillance	Heli Air	Southern	
	PDG Aviation Services DG Helicopters	Scotland	
Emergency response	nationalgrid Pipeline Maintenance Centre	Southern and Scotland	
Odourant	RobinsonBrothers Excellence in Chemistry	Southern and Scotland	
Weather forecasting	DTN	GCC	
Maintenance of CNI	Aylesford Electrical CONTRACTORS LTD	Southern and Scotland	
Demand forecasting	tpa solutions TPA Solutions	GCC	

SGN

Winter 2020/2021 forecast supplied by DTN

Winter 2020/2021 Forecast

- This forecast offers an early look at winter 2020-21 for the UK, based on statistical insight / forecaster experience and research
- The last couple of winters have seen predominant mild westerlies over the UK, especially during December and February. UK cold spells were short-lived and snowfall events infrequent and mostly confined to the higher ground.
- Compared with winters 2018-19 and 2019-20, we see a higher probability that the UK could be affected by a few notable cold spells (widespread sharp frosts and lowland snowfall), as the prevailing mild westerlies are disrupted more frequently.

SGN

Winter 2020/2021 Forecast

- The cold episodes are most likely in first half of winter as opposed to late winter. But the distribution of the cold risk could shift to later in winter if we see a major disruption of the Stratospheric Polar Votex (high altitude westerly winds), as we did in winter 2017-18.
- The success of this forecast partly hinges on a sustained cooling of the Tropical Pacific sea surface temperatures over the next 6-8 months (La Nina) and also the North and North-East Pacific Ocean being cooler than the long term average during the autumn.
- Winters 2009-10 and 2010-11 were unusual in the persistence and severity of the cold weather impacts over the UK. A repeat of a winter like these has a low probability.

SGN

Gas Transmission

Margins Notice Review Winter 2019/20

Phil Hobbins
Commercial Codes Change Manager

nationalgrid

Recap: LNG Methodology introduced by Mod 0698

$$LNG_d = Min\left[ECWC_{d,}\frac{US_d}{2}\right]$$

$ECWC_d$ the expected cold weather capability for all LNG Importation Facilities for the Gas Flow Day

US_d the aggregate usable stock at all LNG Importation Facilities for the Gas Flow Day

- When LNG stocks are high, this methodology ensures that a higher LNG figure contributes to the overall Non-Storage Supply (NSS) number and vice-versa
- Pre-mod 0698, the LNG number was a best view from National Grid and tended to remain constant during winter unless supply patterns changed

Interconnector Methodology

- The 0669R workgroup also considered changing the contribution of interconnectors to the daily NSS figure using the correlation between interconnector flow and hub price differentials

$$BBL\ Interconnector = Min\left(Max\ BBL\ Technical\ Capability, Average\ Flow\ from\ last\ 2\ Days * \frac{D-1\ NBP:TTF\ Differential}{NBP:TTF\ Average\ Differential\ from\ last\ 2\ Days}\right)$$

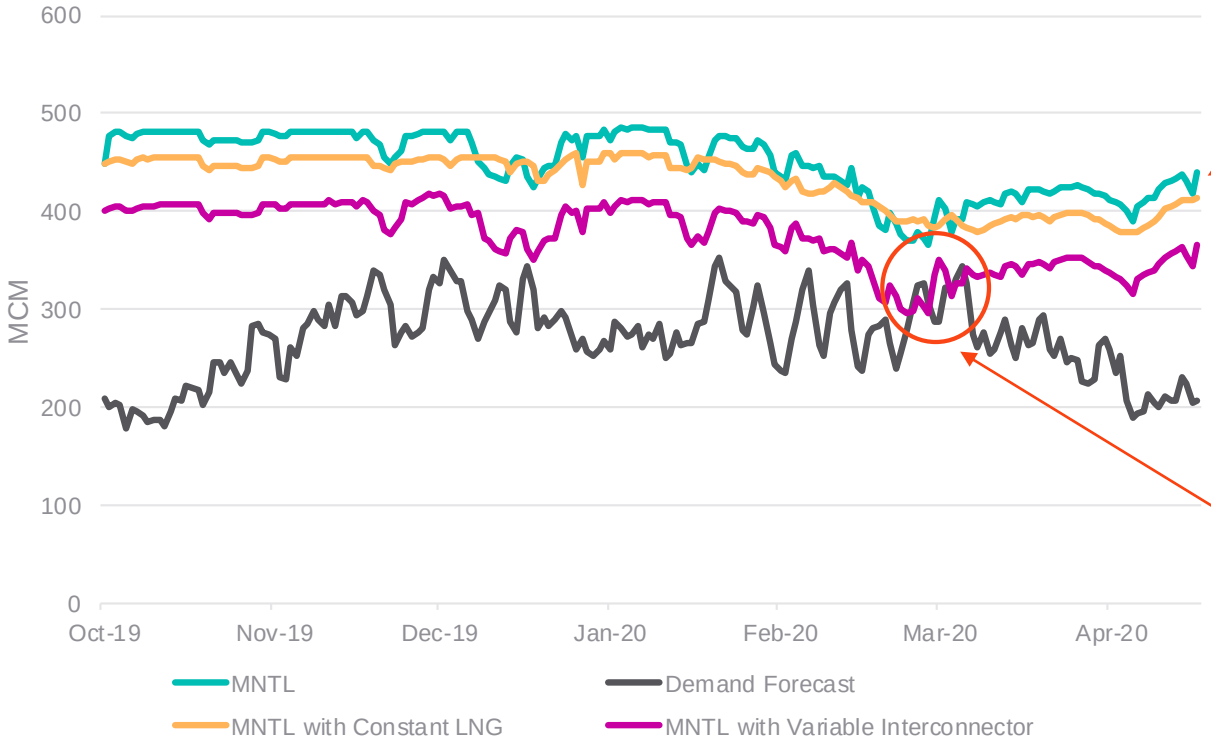
$$IUK\ Interconnector = Min\left(Max\ IUK\ Technical\ Capability, Average\ Flow\ from\ last\ 2\ Days * \frac{D-1\ NBP:ZEE\ Differential}{NBP:ZEE\ Average\ Differential\ from\ last\ 2\ Days}\right)$$

- However, when this methodology was applied to previous winters, it would have triggered Margins Notices at demand levels below 300mcmd and therefore was not adopted into Mod 0698

Monitoring During Winter 2019/20

- We committed to report back to the industry during and post winter 2019/20, to
  - Share how the new Margins Notice methodology is functioning
  - Review what effect the Interconnector methodology would have had
- We reported on this topic mid-winter in February
- The following graph shows for October 2019 to mid-April 2020:
  - The D-1 demand forecast
  - The actual margins notice trigger level (MNTL) (including the LNG methodology change)
  - What MNTL would have been without the LNG methodology change
  - What MNTL would have been with the LNG methodology change and the revised IC methodology

Margins Notice Winter Review



MNTL has usually been above what it would have been, had the new LNG methodology not been introduced

The Margins Notice would have been triggered on 7 days in late Feb / early March had the interconnector methodology been used

Observations

- A mild winter; no Margins Notices or 95% warnings issued have been issued
- For the majority of the winter, high LNG stock levels and entry flows resulted in a higher MNTL than would have been the case without Mod 0698
- MNTL dropped in late Feb / early March due to a reduction in storage inventories and lower LNG stocks
- Interconnectors have exported as well as imported over the period and flows have been low (typically <10 mcmd). Therefore, had the interconnector methodology been in force, the MNTL would have been materially lower (pink line)
- If the interconnector methodology had been applied in addition to the new LNG methodology:
  - Margins Notices would have been issued on 7 days between 25th to 28th February and 3rd to 5th March 2020 despite additional interconnector capability. IUK was even exporting on some of these days, indicating an oversupplied system
  - 95% notices would have been issued on 9 days during the period
- The Margins Notice process for this winter was extended by an additional two weeks to mid-April.

Conclusions

- We expected that Mod 0698 would lead to an increase in the number of Margins Notices during winter 2019/20. This didn't happen, mainly because the winter was so mild and due to high LNG flows
- When LNG stocks dropped, the MNTL responded in the mechanistic way designed by Mod 0698
- We do not believe that system conditions in late Feb / early March warranted Margins Notices being issued and therefore the decision not to include the interconnector methodology in Mod 0698 was correct
- We would be interested to hear any views from the industry about the suitability of the Mod 0698 reforms and whether further refinements should be considered.

Gas Transmission

Milford Haven Flows & Actions Taken

Richard Pickup
Gas Network Manager (GNCC)

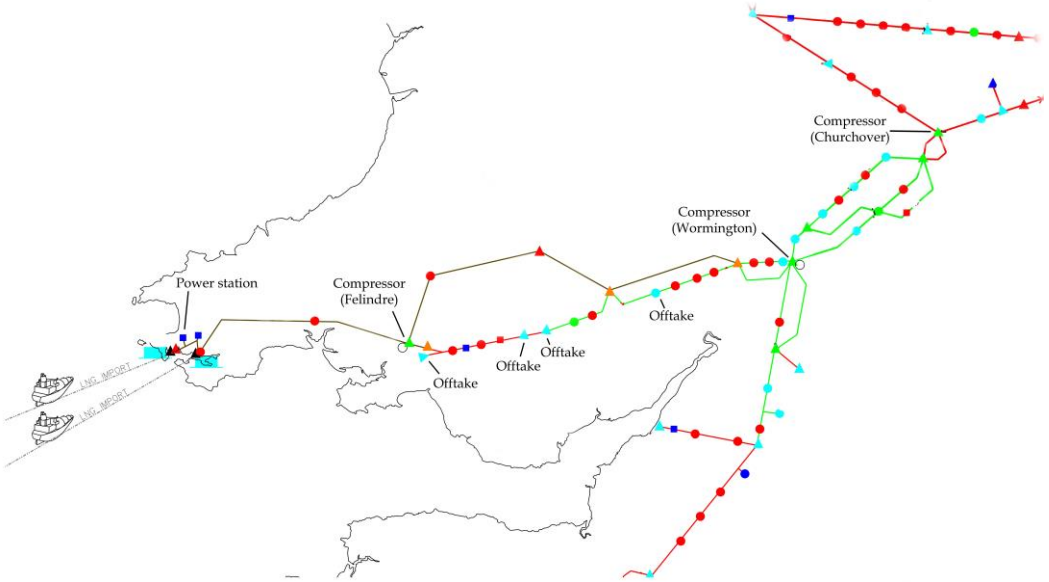
Alison Tann
NTS Capacity Manager

nationalgrid

The South West

NTS was adapted to connect and transport the gas arriving from the Milford Haven ASEP

- South Wales originally an NTS extremity terminating at Dyffryn Clydach and was designed to flow East to West.
- New 94barg pipeline added to connect the terminals in addition to new compression and flow reversals.
- The South West system has 3 different pressure tiers (94, 75 and 70barg) and requires 3 large pressure reduction stations
- Gas can travel many 100's kms into the NTS

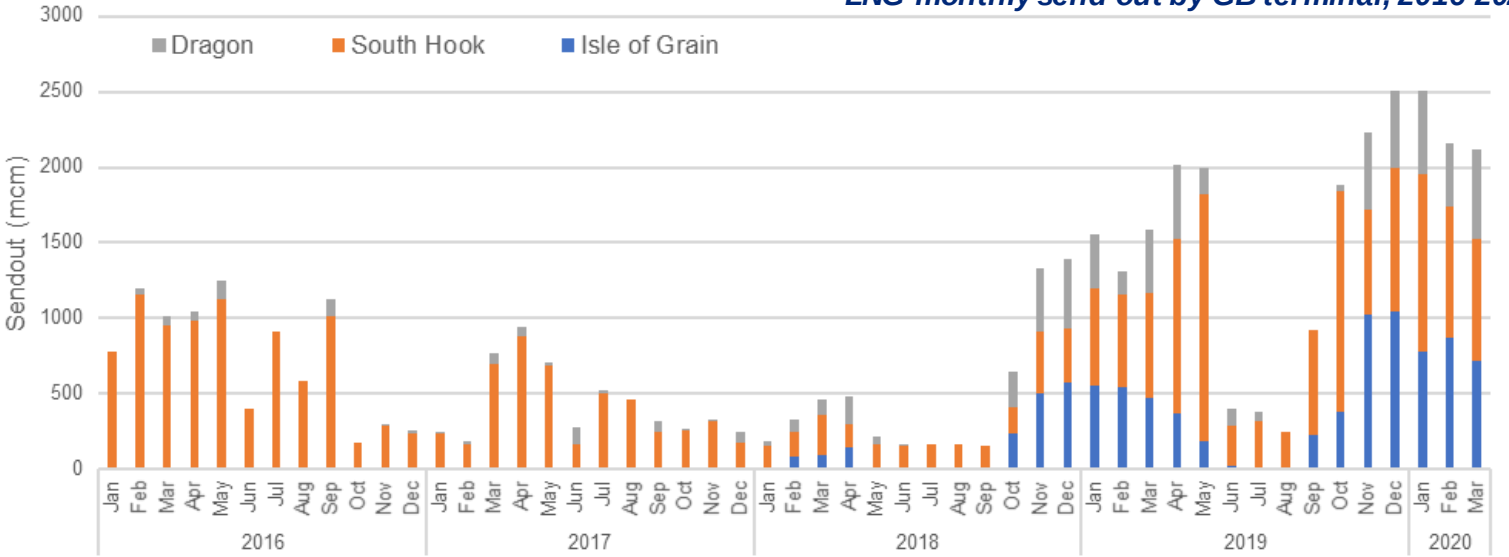


High Entry Flows

Delivery of LNG to the UK continues to grow

- The volume of LNG delivered has increased from 2019 levels so far this year
- The Summer Outlook expectation is for LNG deliveries to remain high this Summer

LNG monthly send-out by GB terminal, 2016-2020



The Physical Backdrop

Capability and Constraints:

- Capability continually varies (seasonally, day to day and within day) due to a number of factors.
  - Demand - lower DN and CCGT demand
  - Supplies - levels, sustained period, profiling etc.
  - Pressure - DN requirements, linepack swing
  - Plant - availability (planned and unplanned), trip location and timing, limits etc.
- The major variables in forecasting constraints are;
  - Notifications
  - Balance
  - Modelling (plant & market)
- Operational tools

This schematic shows the movement of gas away from Milford Haven - almost pure LNG mix seen north of Manchester.

The Commercial Backdrop

National Grid are obliged under its Licence to make available capacity beyond levels of network capability.

The Constraint Management Incentive encourages National Grid to maximise the release of capacity whilst minimising the cost of constraints.

The NTS Capacity Team manage enduring strategies, and develop bespoke ones, as required.

The GNCC manage real-time constraint risk, assessing most efficient approach, aligned to strategy.

Constraint risk continually varies seasonally, day to day and within day due to a number of factors;

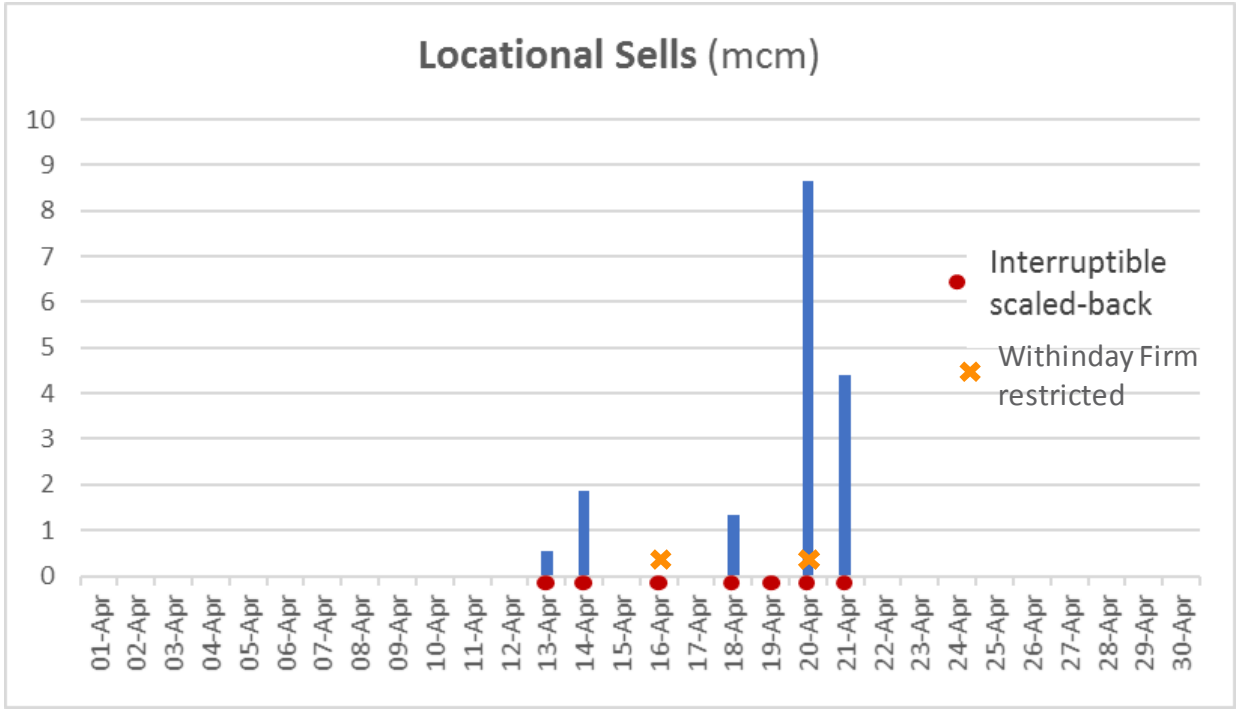
- Demand - Lower DN and CCGT demand
- Supply - levels, period it is sustained for, profiling etc.
- Pressure - DN requirements, linepack and pressure fluctuations
- Plant - availability (planned and unplanned), trip location and timing, limits

Constraint Management Actions Taken in April

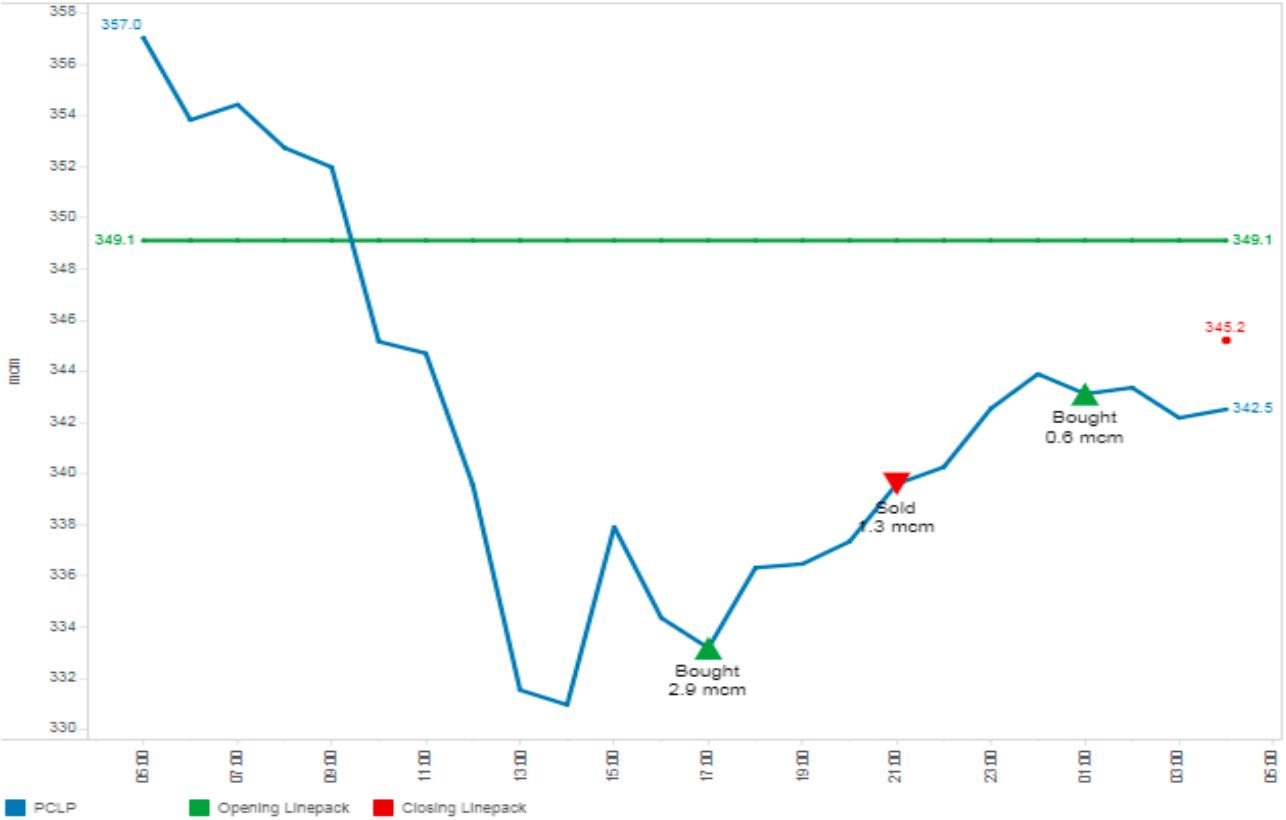
In summary, Interruptible Entry Capacity was scaled-back on 7 days, Withinday Firm withheld on 2 days, and Locational Sells taken on 5 days.

Why were these actions taken?

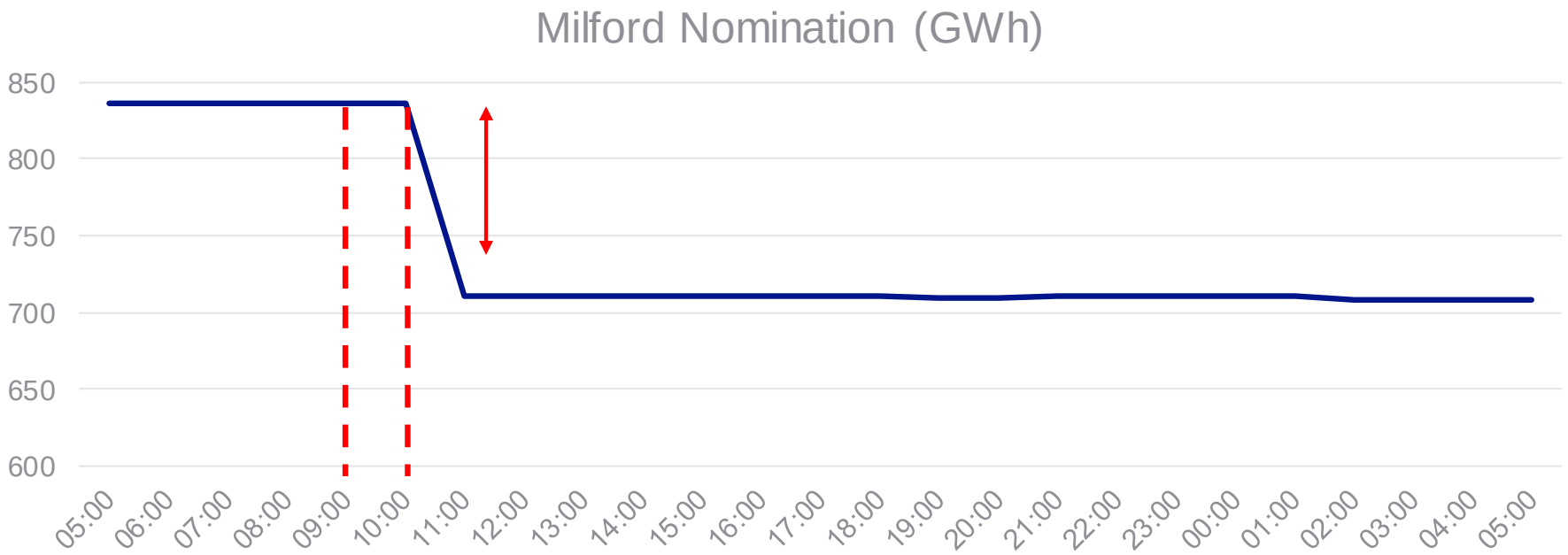
- Interruptible capacity was scaled back to reduce the risk of the forecast constraint.
- Daily Firm capacity was withheld where considered helpful in reducing constraint risk.
- Locational Sells were taken to reduce entry flows to manageable levels (e.g. daily capability).
- Buying Back capacity was considered less efficient given ~16mcm Firm capacity booked, beyond capability levels. Buy Back actions can also have more impact on market prices.



Gas Day: 18th April 2020

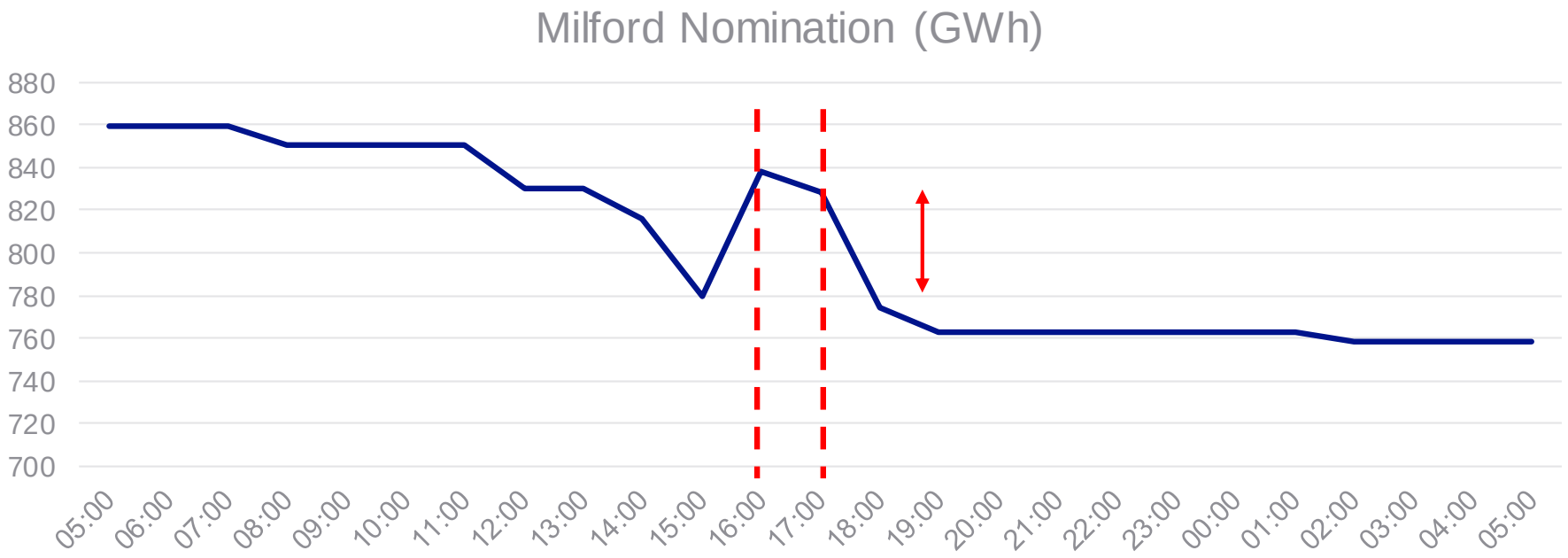


Example – 20th April



Locational Bids Accepted by 10am, with Nominations reflecting reductions shortly afterwards

Example – 21st April



Locational Bids Accepted at 4pm and 5pm

Gas Transmission

Constraint Management Tools Available

Alison Tann
NTS Capacity Manager

nationalgrid

Constraint Management Tools Available

Operational tools (internal)	Operational tools (external)	Commercial tools	Network Integrity
Reconfigure Network Optimise Compressor Fleet Manage Outages	Agree Pressures (Distribution Network Operator (DNO) Only) Flow Swaps (Distribution Network Operator (DNO) Only) Enforce Contractual Offtake Rules	Scaleback Capacity (Entry Interruptible & Exit Off-peak) Locational Energy Actions Restrict Daily Capacity Buy Back Firm Capacity Offtake Flow Reductions Constraint Management Agreements	Operating Margins Terminal Flow Advice (TFA) (Entry) Critical Transportation Constraint Gas Balancing Notification
Information Provision (MIPI *(Market Information Provision Initiative)* / Website / Gemini / ANS *(Active Notification System)*)			

The System Management Principles document can be found via the following link:

https://www.nationalgridgas.com/about-us/how-were-regulated/gas-industry-compliance

Scaling Back Interruptible / Off-peak Capacity

National Grid may scale back up to 100% of Interruptible NTS Entry Capacity / Off-peak NTS Exit Capacity in areas of the NTS impacted by a potential constraint.

Aim:	Prevent a forecast constraint from happening and protect firm entry capacity rights where possible.

	D-1	D	
	Earliest time	**Lead time**	**Last time for scale back**
Entry	**15:00, effective for 5am D**	**60 minutes (hour bar +1)**	**01:00 (process before 23:59)**
Exit	**15:00, effective for 5am D**	**4 hours**	**01:00 (process before 21:00)**

- All restorations are applicable from the start of the next hour bar. Capacity may be partially or fully restored
- **ANS notifications** issued to Users to confirm scale back and restoration.

NB: Arrangements differ for Interconnection Points

Milford Haven: During April, we scaled back 100% of Interruptible NTS Entry Capacity on 7 days

Withhold Daily Firm capacity

National Grid can restrict the release of daily capacity in the Within Day and/or Day Ahead auctions

Aim:	Prevent a forecast constraint from happening and protect firm entry capacity rights where capacity has already been allocated.
Process:	**Notified through ANS** – before the auction is due to run. A further ANS notice shall be issued when the constraint has been resolved allowing participation in the auctions.

Milford Haven: During April, we withheld 100% of Daily Firm capacity on 2 days

Locational Energy Actions

Users are requested to post offers to buy gas from National Grid at the ASEP(s), or at an NTS Exit Point(s) in the area.

Aim:	Increase or reduce actual flow rates without affecting capacity entitlements.
Process:	1. Users will be **notified via ANS** of any requests by National Grid for locational bids or offers. 2. Users post bids or offers to the Locational Energy Market within the WebICE Platform. 3. National Grid accepts bids or offers based on factors including cost, location and lead-time in line with the System Management Principles Statement. 4. User approves trade(s) in Gemini. The trade must be accepted within 60 minutes to avoid a Physical Re-nomination Incentive (PRI) Charge.

Milford Haven: During April, we took Locational Sell actions on 5 days, with a total of 11 bids accepted

Gas Transmission

Summer Outlook

Karen Healy
Gas Network Strategy Analyst

nationalgrid

Gas Summer Outlook

The Gas Summer Outlook was published on Thursday 16th April. Here are the key messages;

Demand:

1. The forecasts contained within the publication were compiled before the COVID-19 outbreak. We have provided a qualitative assessment of the potential impact of COVID-19 throughout the publication.
2. We expect demand to be lower than seasonal normal levels due to reductions in business and industrial activity.
3. With more people staying at home as part of COVID-19 controls, we could see an increase in domestic demand; but as temperatures rise this effect could diminish.
4. Any increase in domestic demand would be far outweighed by the expected reduction in demand from businesses and industry.
5. Low demand conditions on the NTS increase network resilience.
6. We have the right tools and services available to manage operability.

Supply

1. The outbreak of COVID-19 is not predicted to affect the security of supply to the UK.
2. Supply is available from multiple diverse sources & we expect there will be sufficient gas supply available to meet energy demands for the coming summer.
3. We envisage LNG supply to be high again this year, similar to the levels we saw in 2019.

2

Gas Summer Outlook

If you'd like to be added to the mailing list for Gas Publications, please let us know.

We really value your feedback on our publications; please send any comments you have.

Box.OperationalLiaison@nationalgrid.com

You can find the Gas Summer Outlook 2020 here:

https://www.nationalgridgas.com/insight-and-innovation/summer-outlook

Gas Transmission

MIPI Project Update

Martin Cahill
Operational Liaison Lead

nationalgrid

MIPI Project Remaining Deliverables

The new MIPI system will go live within the next few months

This will be an upgrade of infrastructure (providing the same data)

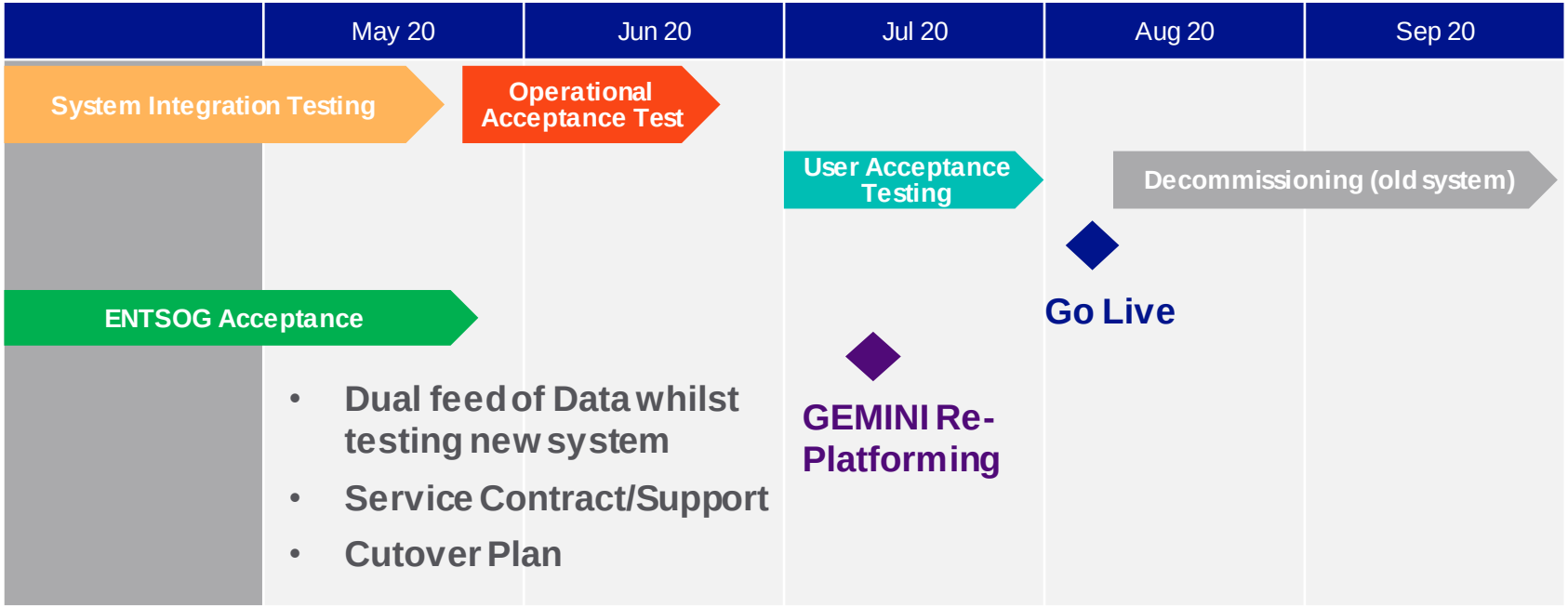
Alongside the upgrade of infrastructure, we are introducing improved data quality measures, alerting and monitoring of MIPI and a new support model which should lead to fewer outages and issues with individual data items.

Today, we will also be confirming the long-term approach for future enhancements to MIPI

Delivered so far:

- **Instantaneous Demand Data**
- **NG Hourly Trades**
- **Updated Prevailing View Screen**
- **Custom Data Download Tool**

Project Remaining Timeline



Prevailing View Pages

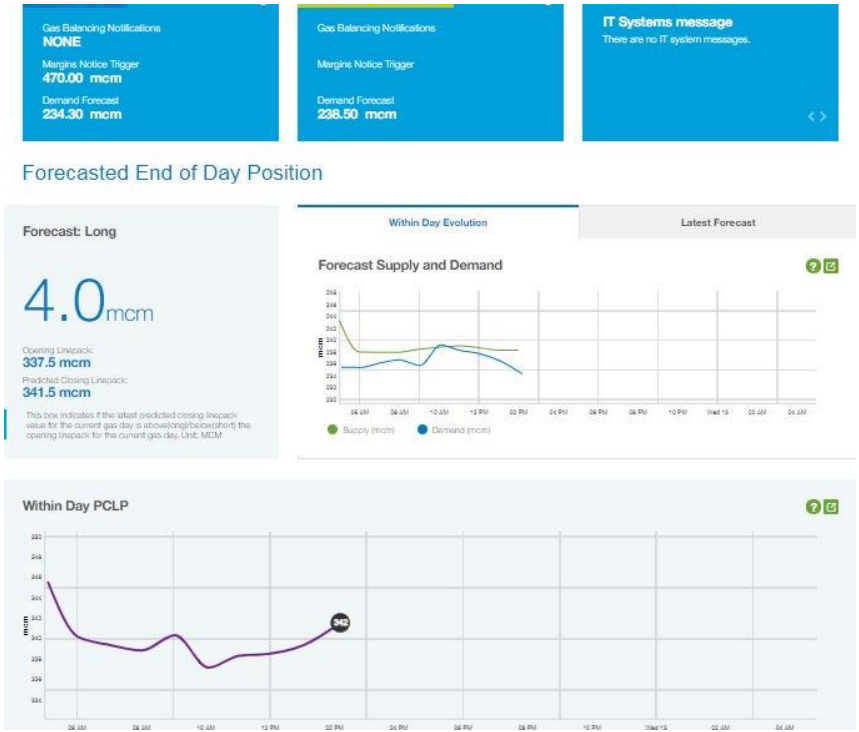
Recent fixes implemented to supply and demand data

Both old and new sites available currently

Proposal is to make new site the default page when accessing online or through a search engine, with a link to old page available

Support for old page will be phased out

Flow data – we will be archiving decommissioned sites



Data: Future Approach

The Energy Data Taskforce, commissioned by Government, Ofgem, and Innovate UK, has set out five key recommendations that will modernise the UK energy system and drive it towards a Net Zero carbon future within their report '*A Strategy for a Modern Digitalised Energy System*':

1. Digitalisation of the Energy System
2. Maximising the Value of Data
3. Visibility of Data
4. Coordination of Assets
5. Visibility of Infrastructure and Assets

"Data will play a crucial role in enabling competition and innovation to drive down prices for customers and provide them with new products and services. This is why Ofgem fully supports the Taskforce's five recommendations to improve data use. We will be working with BEIS, consumer groups and the industry to ensure better use of data unlocks a brighter future for energy consumers."

Martin Cave, Ofgem chairman

There is an increasing need for more visible and relevant data for all industry participants to be able to utilise. We are committed to providing more data and working with the industry to ensure all the data is relevant and fit for purpose.

Evolutionary path towards the EDTF Recommendations

Today: The Energy Data Taskforce recommendations are subject to ongoing consultation with the industry, discussing the practicalities of how to deliver this vision. This doesn't preclude us from making stepwise improvements, which take us a step closer to achieving the broad aims set out by the Taskforce.

Next Steps: Q3 2020

Improved Data Governance Process

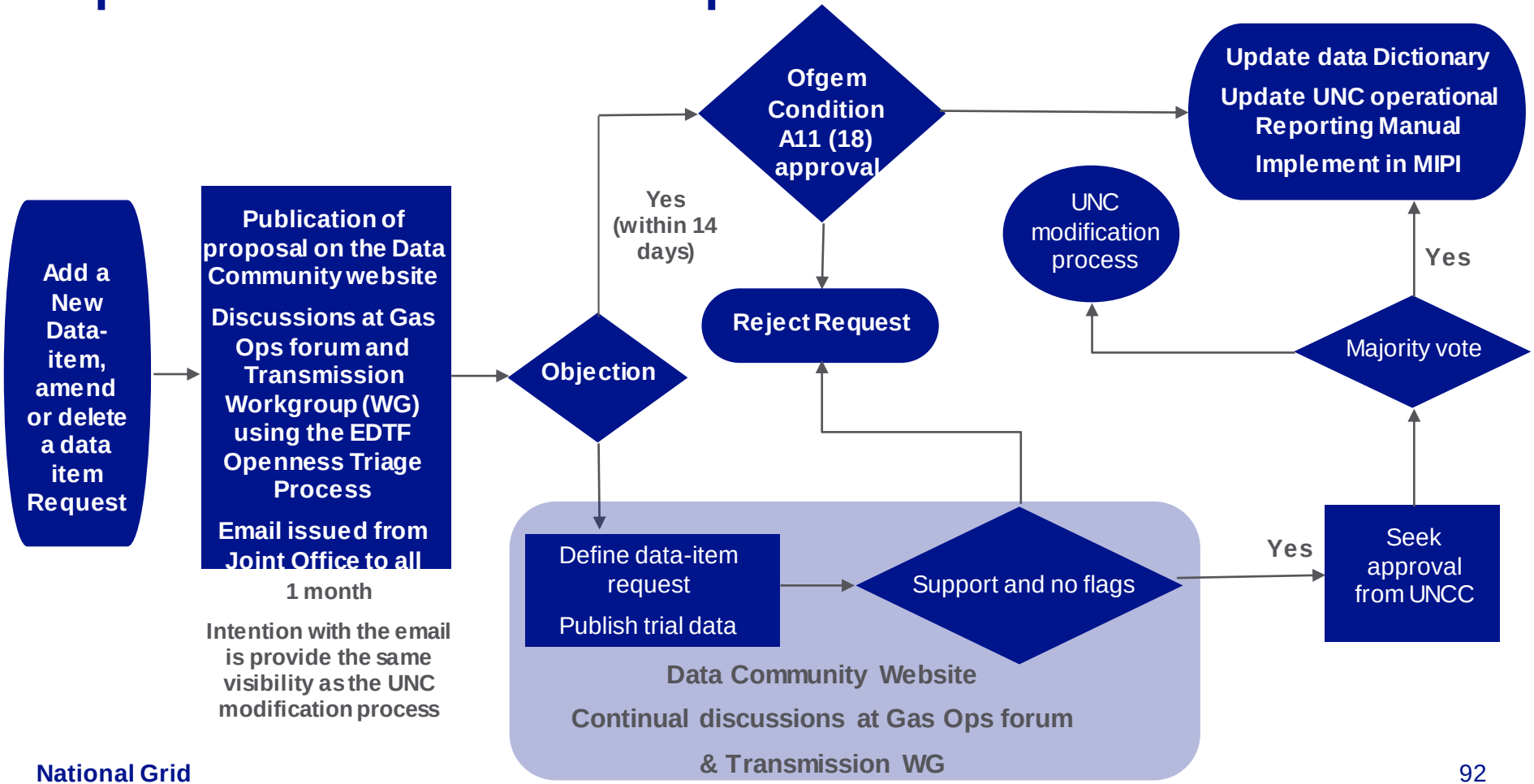
Improved Data Dictionary

EDFT Aim: Energy Sector Uniform Standards

Data Triage Process

Data Catalogue

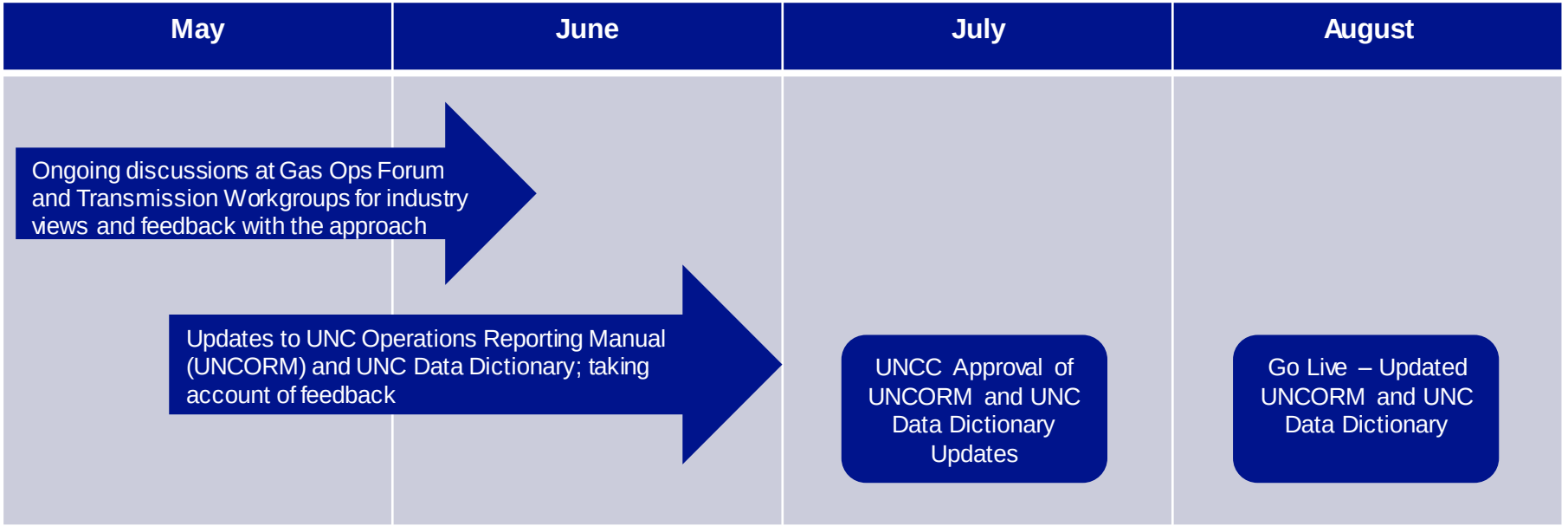
Proposed Data Governance process



Improvements to the Data Dictionary

- Include 100% of data currently available on MIPI
- Add some status fields (Live/Not Live; First Published and Last Published
- Improve the data definitions, making it easier for new entrants and wider stakeholders (e.g. academics) to understand the data.
- Remove Data items no longer published >= 5 years. (MIPI holds data up to 5 years old.)
- Visibility of these draft proposals will be made at Future Gas Forums and via Industry Workgroups such as the Gas Transmission Working Group as usual.

Timeline / Next Steps



The Data Triage process will be ongoing, taking into consideration any EDTF recommendations working alongside the ENA. All updates and impacts will be communicated to industry, with a chance for feedback, via Gas Ops forum, Transmisson workgroup etc.

Gas Transmission

GEMINI Re-Platforming Project

Martin Cahill
Operational Liaison Lead

nationalgrid

Gemini Re-Platforming Extended Outage

- Extended outage will be required on the Gemini system on 5th July 2020
- Estimated outage window is currently anticipated to be between 8 to 12 hours
- Provisional timescales for the Gemini Re-Platforming implementation are as follows:
  - Gemini Maintenance Window: 03:00 to 5:00
  - Extended outage: 05:00 to 13:00
  - In the event of a rollback an additional outage will be required from 13:00 to 17:00
- Details have already been circulated via the Xoserve Change Pack and Xoserve Change Managers meeting
- Details will continue to be circulated to the industry via the usual comms channels

Gas Transmission

Close

Joshua Bates
Operational Liaison & Business Delivery Manager

nationalgrid

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