Gas Volume Methodology

NTS Shrinkage Incentive

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Version control

Version/revision number	Date of issue	Notes
1.0	June 2021	First publication.
1.1	March 2022	Annual publication. No change to methodology.
1.2	March 2023	Annual publication. No change to methodology. Now National Gas Transmission.
1.3	March 2024	Annual publication. No change to methodology.
1.4	March 2025	Annual publication. No change to methodology. Clarification of units of volume in section 2 and 3

Contents

Executive summary

This document is the Gas Volumes Methodology for the formula year 2025/26. It describes the seasonal, quarter and daily gas volumes used in calculating benchmark costs, and the prices used to determine best case, worse case, and average costs. The methodology is the same as published in March 2024.

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1. Introduction

For the RIIO-2 period starting 1 April 2021, National Gas Transmission plc's Gas Transmission Licence states that (Part K: Management of NTS Shrinkage Costs, paragraph 5.6.57):

> The licensee must, by 1 June 2021, have in place a Gas Volumes Methodology, which will remain in place for each Regulatory Year except if modified in accordance with 5.6.59, detailing the calculations by which the licensee determines:
>
> a) seasonal forecast gas volumes;
>
> b) quarter forecast volumes;
>
> c) the prompt daily volumes to be bought and sold; and
>
> d) the costs to apply to the volumes referred to in sub-paragraphs 5.6.57(a) to (c).

Note that line (d) is interpreted as meaning the prices to apply to the volumes to calculate costs.

These volumes and prices will be used to calculate benchmark costs for reporting actual costs against (Licence paragraph 5.6.60):

> a) best case scenario NTS Shrinkage costs, excluding costs in procuring electricity;
>
> b) worst case scenario NTS Shrinkage costs, excluding costs in procuring electricity;
>
> c) average NTS Shrinkage costs, excluding costs in procuring electricity;

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2. Calculation of Volumes

National Gas Transmission will calculate seasonal and quarterly forecast volume requirements by

- Forecasting total gas shrinkage volume for periods of the Regulatory Year at different times ahead of delivery, and
- Choosing a proportion of this volume as a requirement for those periods.

Table 1 shows an example of when each of the volume requirements would be published. The table also shows the time periods that would be used to calculate the prices used for benchmark costs (described later). This example considers procurement for Formula Year April 2022 to March 2023.

Formula Year	Season	Period used to calculate seasonal benchmark costs	Seasonal volume require-ment published	Quarters	Period used to calculate quarterly benchmark costs	Quarter volume require-ment published	Prompt	Period used to calculate daily benchmark costs
Apr 22 – Mar 23	Apr 22 - Sept 22	Oct 21 – Mar 22	Sep 21	Apr 22-Jun 22	Jan 22 – Mar 22	Dec 21	All days in formula year	Within day
				Jul 22-Sept 22	Apr 22-Jun 22	Mar 22		
	Oct 22 – Mar 23	Apr 22 – Sep 22	Mar 22	Oct 22 – Dec 22	Jul 22-Sept 22	Jun 22		
				Jan 23 – Mar 23	Oct 22 – Dec 22	Sep 22		

Table 1. Example for Formula Year 2022/23, showing dates for each season/quarter, the periods used to calculate benchmark costs and when the volume requirements would be published

2.1 Forecasting total gas shrinkage volumes

Forecasts will be calculated in GWh for the volume in each half of the formula year, known as seasons: April to September (Summer), and October to March (Winter).

These will be calculated seven months ahead of the season. For example, in September 2021, a forecast is completed for Summer 22 (April to September 2022).

Shrinkage gas volume forecasts will also be calculated, in GWh, for each quarter of the formula year (April to June, etc).

For each quarter, forecasts will be calculated four months ahead of that quarter. For example, in December 2021, a forecast will be calculated for Q2 22 (April to June 2022).

Gas shrinkage has three components:

- Compressor Fuel Usage is the energy used to run compressors to manage pressures within the gas transmission system. This can either be gas or electricity, depending on the power source for the specific compressor.

- Calorific Value Shrinkage is gas which cannot be billed due to application of the Gas (Calculation of Thermal Energy) Regulations 1996 (amended 1997).

- Unaccounted for Gas is the remaining quantity of gas which is unallocated after taking into account all measured inputs and outputs from the system.

As the components are independent quantities, the total gas shrinkage will be forecast by considering the three components individually and summing these individual forecasts.

The method of forecasting the components of total gas shrinkage will be flexible. National Gas Transmission will consider the historical range of outturns, established trends, established drivers for change, and expectations of these drivers over the forecast period. This will allow forecasts to adapt to changing operational conditions, and avoid risks of adhering to fixed formulae and obtaining misleading results.

Factors that will be considered may include:

- For forecasting gas compressor fuel use (CFU), any established dependence of CFU on supply patterns, the available forecasts of supplies, and the likely levels of use of gas and electric powered compressors.

- For Calorific value shrinkage (CVS), the results of work to investigate the causes of CVS, and the likelihood of CV capping in individual regions of the National Transmission System.

- For Unaccounted for gas (UAG), the results of work to investigate the causes of UAG, and any established pattern of levels of UAG at different times of the year.

2.2 Calculating seasonal and quarterly volume requirements

For each season, the requirement in GWh will be calculated in the seventh month ahead of that season, by multiplying the latest forecast total gas shrinkage by a percentage chosen for long-term purchase. This percentage will be chosen at the time to balance risk and reward between forward and prompt prices, driven by market fundamentals. This will consider current market prices, current market direction, and the context of historical market price variation.

For each quarter, the requirement in GWh will be calculated in the fourth month ahead of that quarter, by multiplying the latest forecast total gas shrinkage by a percentage chosen for medium-term purchase. This will take into account the previous seasonal volume requirement. Again, this percentage will not be fixed, but driven by the market fundamentals at that time.

2.3 Calculating prompt daily volumes

For each day, National Gas Transmission will continue to forecast total gas shrinkage a short period ahead (from week ahead to working day ahead) of the day, and take into account differences in the actual shrinkage and the commercial Shrinkage allocation in previous days, as the basis for the commercial Shrinkage allocation for that day.

This is in accordance with Uniform Network Code – Transportation Principal Document Section N, paragraph 2.1.2.

For the purposes of calculating benchmarks, the prompt daily volume will be calculated in GWh as equal to the commercial allocation for that day, netting off the seasonal and quarterly forecast requirements.

3. Calculation of Costs

The volumes set out above will be used to calculate benchmark costs, in order to measure gas procurement performance. Actual costs will be compared to a best case cost, a worst case cost and an average cost.

3.1 Best case scenario gas procurement costs

For each formula year, the best case scenario gas procurement costs will be calculated by

For each season, the seasonal volume requirement will be costed using the lowest market prices of that season seen in the six months ahead of delivery (when it was the front season).

- The requirement in GWh will be converted into therms per day.

- The price applied will be calculated by
    - Ordering the trades in price order, lowest price first,
    - Selecting the lowest-priced trades whose cumulative volume in therms per day is greater or equal to the seasonal volume requirement.
    - Calculating a weighted average price of the selected trades.

- This will be based on data for all market trades done for the front season on the platforms used by National Gas Transmission for exchange and broker trading.

- This will then be compared to the actual weighted average price of the Shrinkage trades action in the seasonal market for that time period.

- For each quarter, the quarterly volume requirement will be costed using the lowest market prices of that quarter seen in three months ahead of delivery (when it was the front quarter).

- The requirement in GWh will be converted into therms per day.

- The price applied will be calculated by
    - Ordering the trades in price order, lowest price first,
    - Selecting the lowest-priced trades whose cumulative volume in therms per day is greater or equal to the quarterly volume requirement.
    - Calculating a weighted average price of the selected trades.

- This will be based on data for all market trades done for the front quarter on the platforms used by National Gas Transmission for exchange and broker trading.

- This will then be compared to the actual weighted average price of the Shrinkage trades action in the monthly market for that time period.

- For each day, the prompt daily volume will be costed using the lowest within day prices on that day.

- The requirement in GWh will be converted into therms per day.

- If the prompt daily volume is positive, the price applied will be calculated by
    - Ordering the trades in price order, lowest price first,
    - Selecting the lowest-priced trades whose cumulative volume therms per day is greater or equal to the prompt daily volume.
    - Calculating a weighted average price of the selected trades.

- If the prompt daily volume is negative, the price applied will be calculated by
    - Ordering the trades in price order, highest price first,
    - Selecting the highest-priced trades whose cumulative volume in therms per day is greater or equal to the prompt daily volume.
    - Calculating a weighted average price of the selected trades.

- This will be based on data for all market trades done for the within day market on the platforms used by National Gas Transmission for exchange and broker trading. This data will include trades done at all times of the gas day, including after normal business hours. Most trades for shrinkage are currently completed during normal business hours.

- This will then be compared to the actual weighted average price of the Shrinkage trades action in the daily markets for that time period.

The annual best case scenario gas procurement costs will then be determined as the sum of the best case costs for the two seasons, the four quarters, and all the gas days in the formula year.

3.1 Worst case scenario gas procurement costs

For each formula year, the worst case scenario gas procurement costs will be calculated using the same method as for best case costs, except:

- For each season, each quarter, and each day for which the prompt daily volume is positive, the highest market prices will be used instead of the lowest prices.

- For each day for which the prompt daily volume is negative, the lowest market prices will be used instead of the highest prices.

3.1 Average case scenario gas procurement costs

For each formula year, the average gas procurement costs will be calculated using the same method as for best case costs, except weighted average market prices will be used instead of the lowest prices. These weighted average market prices will be calculated using all market trades.

4. Application of this methodology

This methodology will apply to the formula year starting 1 April 2025, the final year of the RIIO-2 period, unless modified in accordance with the licence.

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