

D+1 Allocation business rules

Version control

Version	Date	Comments
0.9	10 November 2015	First draft for industry consultation
1.0	7 December 2015	First published version, incorporating industry feedback and comments from DAWG#9
1.1	11 March 2016	Included changes to models following NZIER review Added manual constraint of TOU ICPs to zero Added manual consumption forecasts for the first month for 'new' TOU ICPs with no historical data Added simple estimation of missing gas gate injections
1.2	19 October 2016	Changed the morning run time to 11am Replaced 'Vector' with 'First Gas' where appropriate Incorporated changes resulting from 'Proposed Modifications to D+1 Business Rules' consultation and DAWG#11 outcomes Added rule to address anomalous telemetry meter readings Modified 'manual constraint of TOU ICPs to zero' rule Modified 'manual consumption forecasts for the first month for 'new' TOU ICPs with no historical data' rule Added rule that provides for manual consumption forecasts for the first two months for TOU ICPs that have a marked change in consumption Added rule that sets the thresholds where the model stops because estimated gas gate volumes are too large

Introduction

This document outlines the process and lays out the business rules pertaining to Gas Industry Co's D+1 allocation trial. D+1 allocation is a process that, on the day following gas flow, allocates to shippers the gas that has flowed through gas gates allocated under the Gas (Downstream Reconciliation) Rules 2008. For the trial, Gas Industry Co and its contractor, Concept Consulting, have developed a D+1 model and intend to use reasonable endeavours to use it to produce allocations to First Gas and its shippers on a daily basis.

The D+1 allocation model is based on multivariate regression modelling. There are three separate stages to the D+1 modelling:

1. Estimation of UFG at global one-month gas gates, based on:
 - Individual gate (each gate is modelled separately)
 - UFG the previous month (UFG is often correlated with the previous month's UFG)

2. Estimation of daily consumption for allocation group 1 and 2 consumers (these estimates are used for allocation group 2 consumers and for instances where daily metered consumption is not available for a group 1 consumer), based on:
 - Individual consumer (each ICP is modelled separately)
 - Previous month's consumption (ICP consumption is often highly correlated with previous month) (not used for ICPs less than one year old)
 - Month of year (ICP consumption is often seasonal)
 - Injection at the gate (ICPs can sometimes make up a large proportion of the total gas gate injection volume. If this is the case, then gate injection and ICP consumption will be highly correlated)
 - Business day or non-business day (many ICPs have lower consumption on non-business days)
 - Currency of data (the model uses a weighting so that more recent values have more impact on the modelled fit)
 - Seasonal or non-seasonal demand (the model removes seasonal variables for ICPs that do not exhibit a seasonal profile)
3. Allocation of residual gas, based on the predicted share of residual gas volume attributable to each retailer within a pipeline pool. Residual gas volume in this case is the difference between the sum of consumption volumes allocated to groups 1 and 2 and the gas gate injection quantity. The share of residual gas allocated to each retailer is based on:
 - Individual pool (each pipeline pool is modelled separately)
 - Individual retailer (each retailer has its own mix of customers with different consumption patterns)
 - Month of year (retailer share tends to be seasonal)
 - Previous proportional allocation for the pool for the most recent historical month, based on retailer submissions (retailer share tends to be relatively constant over a short period of time)
 - Proportion of non-TOU ICPs served by each retailer (customer market share influences volume share and can be updated daily)
 - Currency of data (the model uses a weighting so that more recent values have more impact on the modelled fit)

To enable the modelled results to be used in place of the initial allocation, the model also apportions the residual gas allocations to the gas gate level. This process uses retailers' gate-level volume market shares as an input but also ensures that allocated volumes for each gate add up to the residual gas volume at that gate and that allocated volumes for each retailer add up to that retailer's D+1 allocated residual gas volumes.

D+1 Business rules

General

1. The D+1 model uses allocation results as model inputs. After an initial allocation is performed by the allocation agent, the D+1 model is updated as soon as practicable with information from all the allocation runs that have been performed since the previous model update.
2. The D+1 model runs twice each day: shortly after 11am and 2pm. The model uses the best gate and telemetry meter volume data available at run-time:
 - a. On Business Days, the 11am run uses validated data where this information is available, although from time to time, some data may be unvalidated or missing. The 2pm run almost always uses validated data.
 - b. On Non-Business Days, both D+1 model runs use unvalidated data.
 - c. First Gas uses the afternoon D+1 run on the first Business Day after gas has flowed for calculating daily BPP positions.
3. Each day, the D+1 model receives gate injection and consumption data for the current month, and the model recalculates the month based on the latest data. At the end of the month, Gas Industry Co will provide each shipper with a file that contains only the volumes as allocated in the afternoon run of the first Business Day following gas flow: these are the volumes used in the daily BPP calculations.

Data provision

4. Gas Industry Co receives gas gate injection data from First Gas via the GIEP Exchange (a file exchange interface provided by the gas registry).
 - a. If validated data are missing, then unvalidated data will be used
 - b. If files are not received via the GIEP Exchange, data may be downloaded from Oatis
 - c. Zero values are accepted as true
 - d. If no data is available for a gas gate then the injection will be estimated by the D+1 model based on the same day in the previous week. If the day in the prior week is a different type of Day (e.g. if the current day is a Business Day and the day 7 days ago was a Non-Business Day (or vice versa)), the day 8 days ago is used (and so on).
 - e. For each D+1 model run, gas gate injections will be estimated as long as the sum of estimated injections is less than or equal to a threshold. If the total of estimated injections exceeds this threshold, the model will stop. There are two thresholds:

- i. 1,000 GJ for days where the D+1 run is used for BPP calculation
 - ii. 5,000 GJ for days where the run is not used for BPP calculation (subject to a check that no pool is totally estimated).
 - f. For the days where the 5,000 GJ threshold applies, a notice will be posted on the GIEP Exchange informing parties of the D+1 run status. This notice will confirm whether the run has completed successfully and the amount of gas that has been estimated.
- 5. Gas Industry Co receives telemetry TOU data from AMS, Contact, and Genesis via the GIEP Exchange.
 - a. Missing data are estimated by the D+1 model
 - b. Zero values are accepted as true
 - c. The model tests for anomalous telemetry meter readings. If a potential anomalous reading is found, Gas Industry Co will contact the responsible retailer if possible to determine whether the reading is anomalous. If the retailer cannot be contacted in time, the ICP's consumption will be estimated by the model. If the retailer can be contacted and the test result is verified as anomalous, the retailer can either provide an estimate or consumption can be estimated by the model. The anomalous telemetry meter data test is:
 - i. For 'large' AG1 ICPs nominated by retailers (and agreed by Gas Industry Co) a reading in excess of 2x historical maximum consumption
 - ii. For all other AG1 ICPs, a reading in excess of 5x historical maximum consumption.
- 6. Gas Industry Co receives responsible retailer information for TOU ICPs and customer market share information for non-TOU ICPs from the gas registry.
 - a. If registry data are not available, the model uses the previous day's data
 - b. If retailers are aware of a TOU ICP switch that is not yet completed on the registry, they can notify Gas Industry Co of the switch no later than two Business Days before the switch is to take effect. The email must show the agreement of both the gaining and the losing retailer.
- 7. Gas Industry Co receives contract information directly from shippers/retailers.
 - a. Retailers have a shipper ID and a default contract ID which identifies their transmission services agreement with First Gas. Gas volumes are allocated to the default contract ID unless an active supplementary contract ID exists

- b. Supplementary contract IDs can exist for direct connect gas gates (out of scope of the D+1 model) or for one or more TOU ICPs at an allocated gas gate
 - c. If a retailer has a supplementary contract ID for a TOU ICP, it must notify Gas Industry Co and supply the following information before the contract start date:
 - i. ICP number
 - ii. Shipper ID
 - iii. Contract ID
 - iv. Contract start date
 - v. Contract end date
8. For a TOU ICP that has no historical data in the D+1 model, Gas Industry Co requires forecast consumption information for the first two months from the retailer:
- a. For a newly commissioned or recommissioned ICP, or an existing (non TOU) ICP that has transitioned to AG1 or AG2, the model has no information to predict consumption in the first two months of consumption, and limited information for the first 12 months of gas flow.
 - b. The retailer should supply Gas Industry Co with an estimated consumption profile to improve modelling of the ICP, with the profile consisting of either:
 - i. An average daily quantity
 - ii. A weekly profile, split between weekdays and weekends if appropriate
9. For a current TOU ICP that has a marked change in consumption:
- a. When there has been a marked, permanent change in consumption (e.g. because an ICP has added a new process), the current regression model used to estimate daily consumption for the ICP is no longer relevant.
 - b. In this situation the retailer should supply Gas Industry Co with an estimated consumption profile for two months following the step-change in consumption, with the profile consisting of either:
 - i. An average daily quantity
 - ii. A weekly profile, split between weekdays and weekends if appropriate
 - c. Following this two month period, Gas Industry Co will reset the estimation start date for the relevant regression model so that it begins at the start of the step change in consumption.

Customer shutdowns

10. Where a retailer knows that a TOU customer will be shut down for a period, consuming zero or very little gas, that ICP's daily allocations can be constrained in the D+1 model.
 - a. Retailers should notify Gas Industry Co of the period when an estimated AG1 or AG2 consumer will have a shutdown period, consuming zero or very little gas.
 - b. For the purposes of this rule, 'very little gas' is defined as a daily amount that is less than 0.1 percent of the ICP's annual consumption, capped at 100 GJ/day.
 - c. The notification should include some level of supporting evidence such as:
 - i. a reference to similar shutdowns in the past (that can be verified with GAS050 data); or
 - ii. dialogue between the retailer and customer confirming the shutdown period.
 - d. The retailer should provide a consumption profile for the shutdown period or alternatively consumption may be set to zero (even though small amounts of gas may be consumed) for the period.
 - e. Gas Industry Co will use its discretion for including amounts reflecting shutdown/restart phases in the manually entered profile.
 - f. The retailer must notify Gas Industry Co if the shutdown period changes.
 - g. Gas Industry Co will review GAS050 submissions to check that constraint requests match actual meter reads.

D+1 allocation

11. The D+1 model checks results to ensure allocated volumes sum to total gate injection volumes in each pool.
12. The D+1 model checks to ensure gas gate allocations sum to gate volumes.
13. If the D+1 model is unavailable, the D+1 allocation results from the previous week will be used, scaled to yesterday's gate injections. (Generally, the basis of the estimates will be the same day the previous week, as long as that day is the same type of day (Business Day or non-Business Day) as the day for which allocations need to be estimated.) If Gas Industry Co is unable to produce D+1 allocations at all, then the missing day or days will be calculated as soon as possible after the event.
14. Gas Industry Co will make reasonable endeavours to provide D+1 allocation results for all shippers via the GIEP Exchange to First Gas by 3.00 PM on Business Days. Individual shippers will be provided with their own allocations via the GIEP Exchange. If the GIEP Exchange is not available, allocation results will be emailed.

Change process

Any person may propose a change to this document by writing to Gas Industry Co describing the proposed change and the reasons why the person believes it is worth making. Gas Industry Co will consult with allocation participants and determine whether or not to adopt the proposal. Changes to this document will be published on Gas Industry Co's website and take effect five Business Days after publication.

Communications

All communications and notifications to Gas Industry Co regarding D+1 (with the exception of files sent via the GIEP Exchange) should be emailed to allocations@gasindustry.co.nz