GAS INDUSTRY COMPANY LIMITED

Draft Balancing Rules Workshop

5 February 2010

9am to 2pm

Agenda

1. Overview of proposed balancing rules (presentation)
2. Discussion on draft rules
3. Implementation plan

Questions/ comments are welcome throughout

Next steps

Finalise rules and implementation plan	Next week
Submit recommendation to Associate Minister	End of February

Draft Gas Governance (Balancing) Rules

Summary of proposed rules and changes made since the Statement of Proposal

Changes are indicated with a *

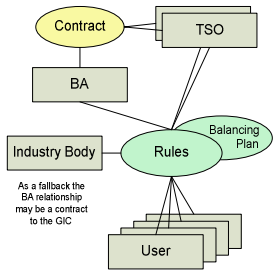
Scope of proposed rules

- **Purpose of the rules**
  - '…to achieve an efficient, unified balancing arrangement for managing imbalance in the transmission system'
- **The rules provide for**
  - appointment of a single Balancing Agent (BA)
  - development of a single balancing plan
  - minimum requirements for balancing
  - governance and funding

Design principles

- Primary obligation is on users to balance
  - however residual imbalance is managed
- Unified regime that is clear and transparent
  - TSOs attempt to agree a plan and appoint a single BA
  - deadlock breaking mechanism to give certainty
- Flexibility to adapt
  - rules cover policy / principles with details in an amendable plan
- Balancing costs only incurred if physically needed
  - balancing action taken on linepack thresholds
- Balancing costs allocated to causers
  - back-to-back (no notice) allocation of actual balancing gas and cost
- Correct price signals for investment and price risk manageable
  - marginally cleared and clearing price equals cash-out price
  - productive and allocative efficiency

Relationships



Terminology

- **User means**
  - A shipper, interconnected party, trader or TSO
    - TSO is a user with respect to managing target linepack
- **Balancing action means**
  - A set of balancing gas transactions committed at the same time
    - may have multiple balancing transactions in a balancing action
    - may have multiple balancing actions in a day
    - under current processes each ID cycle commitment would be a single balancing action and have its own clearing price and be cashed out separately

Terminology (cont.)

- **Balance means**
  - Shippers to match their allocation of receipts and deliveries
    - ie no mismatch
  - Interconnected parties to match flow to scheduled quantity
    - ie no ROI (Running Operational Imbalance)
  - Traders to match their purchases and sales
  - TSOs to manage target linepack
    - means linepack must match target linepack after adjustment for other users allocations of imbalance
    - ie must manage own gas use, UFG and target linepack changes

Balancing obligation

- **Obligation to balance**
  - Applies at all times on a users accumulated imbalance position
  - The allocation process uses the best information available
    - which may be daily data and end of day imbalance
  - Rules acknowledge that imbalance will occur
    - consequences are limited to cash-out
- **Balancing zones**
  - Transmission system is divided into balancing zones
    - users must balance within each zone
    - could be one or many
    - TSOs have joint obligations in jointly owned zones*

Key functions of the TSOs

- Jointly attempt to agree a draft balancing plan and BA
- Consult on the draft plan with persons likely to be impacted
- Obtain industry body approval of proposed plan
- Act consistently with the rules and cooperate with the BA
- Provide BA with necessary information
- Provide BA with balancing gas transmission services
- Publish its compressor operation policy
- Adjust user's allocations for any cash-out determined by the BA

Key functions of the industry body

- Review balancing plan against the purpose and rules
- Suggest amendments if needed
- Approve balancing plan if meets purpose and rules
- Develop balancing plan and appoint BA if TSOs in deadlock
- Audit BA performance against rules
- Review and approve proposed amendments to balancing plan

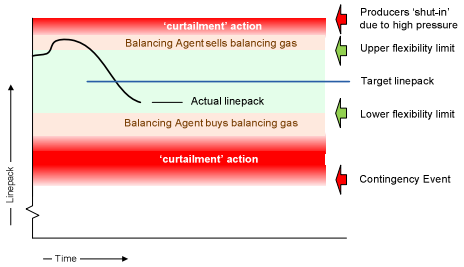
Key functions of the BA

- Manage linepack by buying or selling balancing gas
  - BA acting as an 'agent' on behalf of users*
- Allocate balancing gas and its cost (ie determine cash-outs)
  - Provide information on balancing gas allocations to the TSOs
  - Invoice / credit users for balancing gas costs ('pay when paid' provisions may be included in balancing gas contracts*)
  - Trade any unallocated balancing gas
  - Act independently and at arms length
  - Enter required balancing gas transmission service agreements
  - Title to balancing gas passes at time of balancing action*

Linepack management

- Balancing zones are either directly or indirectly managed
- For directly managed balancing zones
  - BA buys or sells balancing gas
  - balancing action taken when linepack will go outside thresholds
  - see next slide
- For indirectly managed balancing zones
  - balanced via directly managed zones (e.g. Huntly township via pressure regulator from Maui pipeline)
- Balancing zones and thresholds defined in balancing plan
  - thresholds must give maximum flexibility without unreasonably interfering with transmission services
- BA to warn TSO and CCO* if insufficient balancing gas available

Linepack management



Balancing market

An example is available at the end

- BA buys and sells gas through a balancing market
  - open to anyone who meets reasonable technical/commercial terms
  - accepts offers and changes as late as practical
  - accepts or partially accepts* the lowest call or highest put prices
  - the same clearing price for all transactions within a balancing action
  - prices are adjusted for transmission charges (if any)[1]
- Prices are capped and published in the balancing plan
  - maximum call price a pre-estimate of the critical contingency price
  - minimum put price a pre-estimate of the marginal cost of non-production
- BA must use the balancing market unless the industry body agrees the market has failed

[1] may be one reference location or different ones used for different balancing actions

Allocation of balancing costs

An example is available at the end

- Balancing plan specifies the allocation model
- Allocation model allocates balancing gas to users in proportion to the contribution of their imbalance to the balancing action
- Allocation model allocates to users in adjacent balancing zones according to their contribution to the zone being balanced
- BA must allocate:
  - in accordance with the balancing plan
  - as soon as practical after taking the balancing action
  - using the best available information
  - cash-out at the clearing price adjusted for transmission costs (if any)
  - cash-out price is not to include any profit or overheads
  - cash-out each balancing action separately

Allocation of balancing costs (cont.)

- Any unallocated gas under the model allocated to the relevant TSO*
  - Acting as TSOs agent* BA to buy or sell any unallocated gas on the NZ gas exchange with a view to minimising any loss or maximising any gain
  - note that unallocated gas should be minimised with back-to-back cash-out and appropriate (or zero) tolerances
- Rules are silent on tolerances
  - may or may not be included in the allocation model[1]
  - linepack flexibility is provided to BA via the linepack thresholds
- Any errors discovered within 6 months are adjusted with a new allocation rather than re-opening historic allocations

[1] a lack of allocation tolerances may be efficient, with appropriate balancing action thresholds and using back-to-back cash-out

Contents of the balancing plan

- Must be consistent with the rules and purpose, and provide:
  - identity of the BA
  - balancing zones (including which are directly managed)
  - linepack thresholds (may vary with time or be a formula)
  - target linepack for each balancing zone (must be midpoint where there are thresholds)
  - method of balancing indirectly managed balancing zones
  - process to notify and coordinate operations
  - technical requirements for procurement of balancing gas
  - times for decisions on procurement of balancing gas
  - price thresholds (caps)
  - allocation model

Development of the balancing plan

- TSOs attempt to agree the balancing plan and the BA
- TSOs consult on the draft plan (20 business days)
- TSOs may amend the draft plan
  - if minor changes then submit to industry body for approval
  - if material changes then repeat consultation
- Industry body approves plan if it meets the rules and purpose
  - if declined then TSO considers the reasons and may resubmit (and consult again for 10 business days if there is a material change)
- Industry body publishes the approved plan
  - go-live is the start of the month after approval (or following month if after the 25th)
- Industry body may produce plan and appoint BA if TSOs are dead-locked

Amendment of the balancing plan

- TSOs (in agreement) or industry body may propose amendments
- Amendments are approved as per the initial plan process (previous slide)
  - urgent or minor changes can be implemented without consultation and may be consulted on after coming into effect
- Changes take effect the beginning of the next month
  - or the following month after if approved after the 25th

Transparency

- BA to maintain records
- BA to publish:
  - balancing action quantities
  - clearing prices
  - any balancing gas allocated to the TSO*
  - monthly reports
  - tariff of any balancing gas transmission services agreement
- BA to report to industry body any known breaches
- Industry body can undertake an independent audit
  - audit report to be published (excluding any information the auditor considers confidential)

Funding

- TSOs to pay BA
- TSOs to pay any industry body costs in relation to the rules
  - cost of reviewing and approving balancing plan
  - costs of producing the balancing plan and appointing the BA if the industry body is forced to do this under the dead-lock breaking mechanism
  - similar funding model to other market arrangements
- TSOs to pay in proportion to their total pipeline gas flows received or delivered, other than to or from another TSO
  - i.e. pay on throughput into or out of the total transmission system
- TSOs pass costs on in proportion to the quantities of gas transmitted by that user or in another way agreed by the industry body*

Miscellaneous

- Obligations are subject to safety needs
- TSO codes are subject to the Rules
- Balancing actions in the affected balancing zone* are suspended during a critical contingency Disputes are handled under the Gas Governance (Compliance) Regulations 2008
  - consequential amendments to these regulations needed

Balancing example – scenario (slide 1)

- Same balancing zones as current
- Low Maui linepack with -2000 GJ imbalance
- Balancing reference location within Maui pipeline
- BA to buy 1000 GJ, has 3 offers to provide balancing gas
  - offer A, at Vector north pipeline, 600 GJ at $10 /GJ, BA transmission costs to reference location are $0.2/GJ
  - offer B, at Maui reference location, 800 GJ at $8 /GJ, no BA transmission costs
  - offer C, at Vector south pipeline, 700 GJ at $6 /GJ, BA transmission costs to reference location are $0.3 /GJ
- Note that this is one balancing action. Any others in the day would be cleared and allocated separately.

Balancing example – clearing (slide 2)

- Merit order of offers into the Maui pipeline
  - offer A 600 GJ @ $10 + 0.2 = $10.20 / GJ
  - offer B 800 GJ @ $8 + 0 = $8.00 /GJ
  - offer C 700 GJ @ $6 + 0.3 = $6.30 / GJ
- BA accepts 1000 GJ of the lowest priced offers i.e. B & C
- Clearing price is highest priced offer accepted i.e. $8 /GJ
  - 700 from C, paying C $8 – 0.3 = $7.70 /GJ
  - 300 from B, paying B $8 – 0 = $8.00 /GJ
- BA pays TSO $0.3 /GJ for 700 GJ
- BA pays a total $8 /GJ for 1000 GJ purchased

Balancing example – allocation (slide 3)

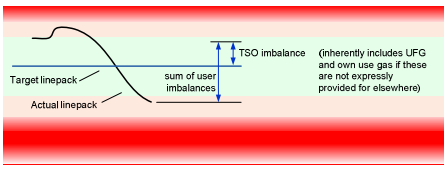
- Assume imbalance at time of accepting offers is
  - Maui total imbalance = - 2000 GJ
  - User X - 1000 GJ ROI at Pohokura
  - Adjacent balancing zone - 1000 GJ ROI at Rotowaro
  - User Y - 600 GJ running mismatch in northern pipeline
  - User Z - 400 GJ running mismatch in northern pipeline
- BA allocates 1000 GJ (the amount purchased)
  - User X 500 GJ at $8 / GJ
  - Vector north balancing zone allocated 500 GJ
  - User Y 300 GJ at $8 + 0.2 = $8.20 / GJ
  - User Z 200 GJ at $8 + 0.2 = $8.20 / GJ
- BA pays TSO transmission charge of $0.2 /GJ for 500 GJ
- BA receives a net of $8 / GJ for 1000 GJ total allocated

Balancing example – conclusion (slide 4)

- Result of process:
  - Participants can offer at short run marginal cost (even zero) and receive the going market price
  - Surplus market capacity (after endeavouring to self balance) is pooled and efficiently dispatched (i.e. static efficiency)
  - Supply and demand see the market price of their actions (correct price signals for investment, i.e. dynamic efficiency)
  - A user that is uncertain of their imbalance position can offer into the market and receive the same price for their offer and the cash-out, hedging their price risk (i.e. price risk is manageable)
  - Users can offer from remote locations (or use their own TSA to offer at the balancing reference location)
- There may be more than one balancing action on a day, each of which would be cleared and cashed out separately

Additional slide for TSO imbalance

- A TSO can be a causer of imbalance
  - TSOs will have imbalance positions and may be cashed out like other users
  - A TSO's imbalance in a balancing zone is the amount of linepack plus imbalances differs from the target linepack
  - e.g. from unresolved compressor use, UFG etc



Additional slide for TSO imbalance

- Definition of TSO imbalance
  - responsibility for any variation of linepack from the planned linepack ('target linepack') must be allocated to a party
  - linepack – target linepack = Σ all allocated imbalances
  - this includes imbalance with an adjacent balancing zone (note what is negative to a balancing zone is positive to the interconnected one)
  - the TSO is allocated any imbalance they have not allocated to another user or an adjacent balancing zone
  - TSO imbalance = linepack – target linepack - Σ other imbalances
  - TSO imbalance may be from metering error or unallocated flows (e.g. unmetered consumption)
  - TSO can avoid allocation of imbalance by adjusting linepack for UFG and the TSOs own gas use